

Client
134 Moray Street Pty Ltd

Date
5 February 2026

Planning

Transport

Urban Design

Waste Management

Transport Impact Assessment Report

Proposed Mixed Use Development

134 Moray Street, South
Melbourne

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134 Moray Street, South Melbourne

Prepared for
134 Moray Street Pty Ltd

Our reference
20915T

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Date	Version	Issue	Prepared by	Checked by
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05/02/2026	20915T-REP02-F01	Final	C. Deng S. Dangol	B. Young

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1. Introduction

Ratio Consultants Pty Ltd was commissioned by 134 Moray Street Pty Ltd to assess the transport engineering implications of the proposed mixed-use (residential hotel, commercial office and restricted retail premises) development on the subject site at 134 Moray Street, in South Melbourne.

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

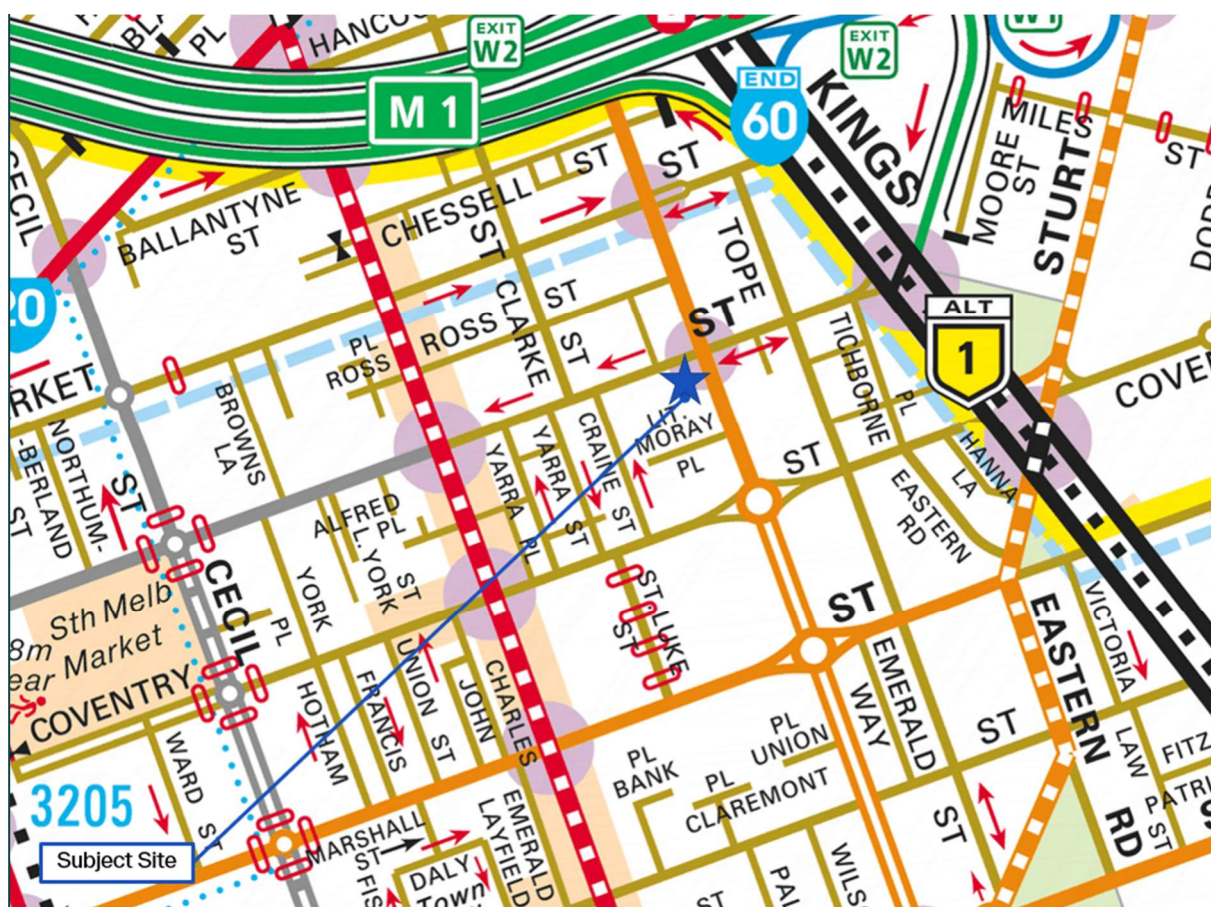
2. Existing Conditions

2.1. Location and Environment

The subject site is addressed as 134 Moray Street in South Melbourne and is located on the south-western corner of the intersection of Moray Street and York Street, in South Melbourne.

The location of the subject site relative to the surrounding road network is shown in Figure 2.1.

Figure 2.1: Site Location and Surroundings



SOURCE: MELWAYS

The subject site is rectangular in shape with a frontage to Moray Street of approximately 25.5 metres, a frontage to York Street of approximately 40.7 metres and an overall area of approximately 1,040 square metres.

The subject site is currently unoccupied, and it is understood that the previous use was an office building up until late 2017, following a demolition with two existing vehicle crossovers remaining as follows:

- Single-width crossover along York Street at the northwestern corner of the site

– Double-width crossover along Moray Street at the southeastern corner of the site

The site is located within a Commercial 2 Zone (C2Z) and is subject to a Design and Development Overlay – Schedule 8 (DDO8).

In addition, the subject site is located within the South Melbourne Structure Plan and is located 200 metres away from the South Melbourne Activity Centre as shown below in Figure 2.2.

Figure 2.2: South Melbourne Central Activity Centre



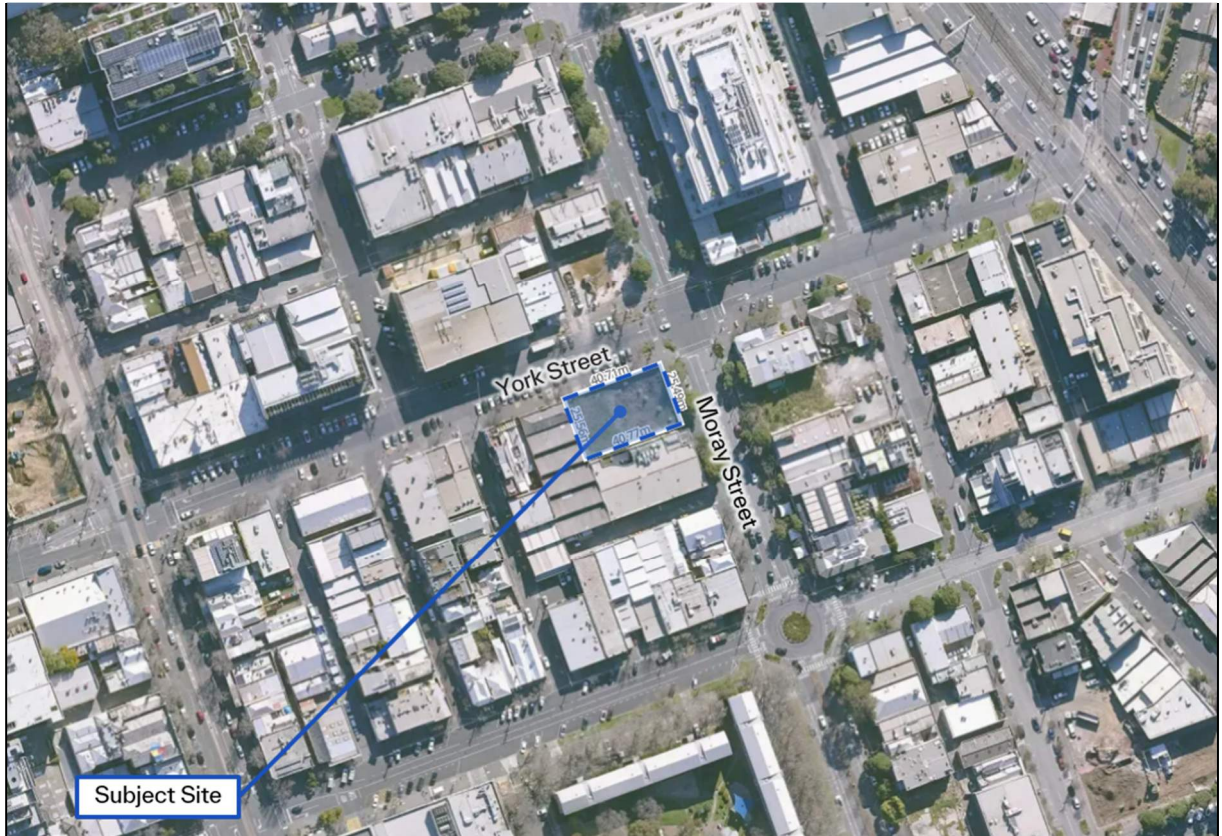
Land uses within the immediate vicinity of the subject site consists of predominantly commercial businesses.

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

- South Melbourne Activity Centre, located approximately 200 metres west of the subject site;
- South Melbourne Market, located approximately 600 metres west of the subject site;
- Royal Botanic Gardens, located approximately 1.0km east of the subject site; and
- University of Melbourne - Southbank Campus, located approximately 1.1km north-east of the subject site.

Figure 2.3 provides an aerial photograph of the site and its surrounds.

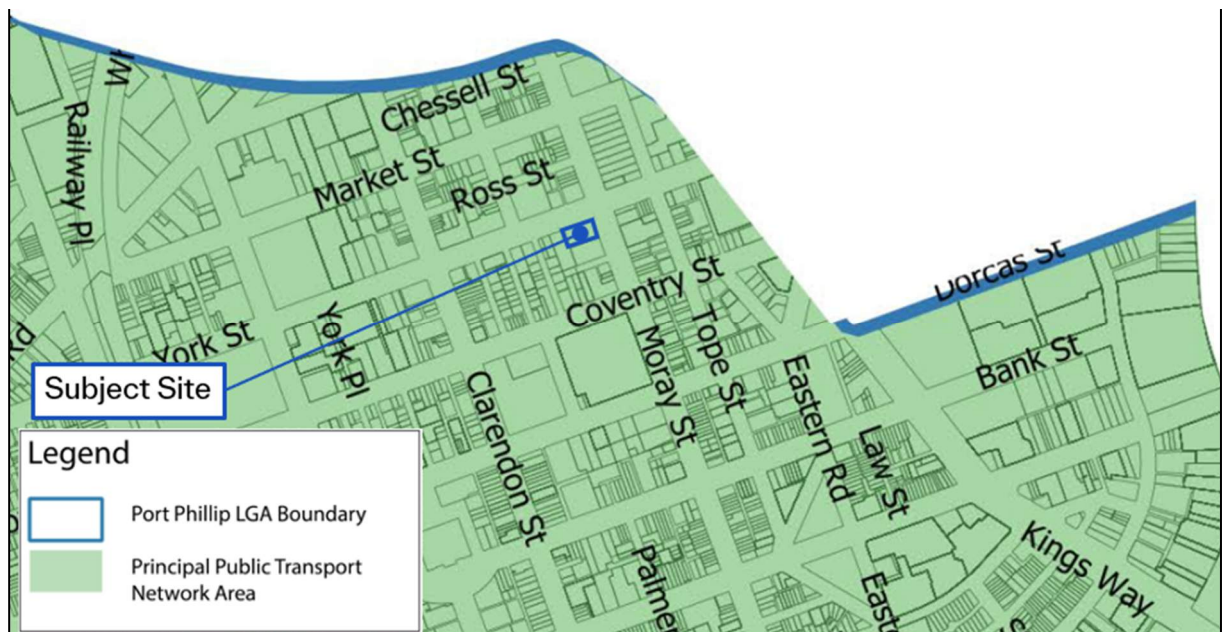
Figure 2.3: Aerial of Site and Surrounds



SOURCE: LANDCHECKER (DATED 22 JANUARY 2022)

The site is also located within the Principal Public Transport Network (PPTN) Area as shown on the PPTN Maps of the State Government of Victoria (July 2018) and illustrated in Figure 2.4.

Figure 2.4: Subject Site with respect to the PPTN Area



SOURCE: WWW.PLANNING.VIC.GOV.AU

2.2. Road Network

Moray Street is a Council managed Major Road that runs in a north to south alignment between City Road in Southbank to the north and Albert Road in South Melbourne to the south.

In the vicinity of the site, Moray Street accommodates one traffic lane in each direction and a separated bicycle lane on both sides of the road. The trafficable lanes are separated by a line marked central median. Kerbside ticketed 1P parallel parking and constructed footpaths are provided on both sides of the road and the road has a posted speed limit of 40km/hr.

Views of Moray Street adjacent the subject site are shown in Figure 2.5 and Figure 2.6.

Figure 2.5: View of Moray Street, adjacent to the subject site, facing North



Figure 2.6: View of Moray Street, adjacent to the subject site, facing South



York Street is a Council managed Local Road. It runs in an east-west alignment between Kings Way and City Road in South Melbourne.

To the west of Moray Street, York Street has a carriageway width of approximately 18 metres and caters for one-way westbound traffic with 90-degree angled parking provided on both sides of the road. To the east of Moray Street, York Street caters for two-way vehicle movements with angled parking on either side of the road. Constructed footpaths are provided on both sides of the road. York Street operates at a posted speed limit of 40km/hr.

Views of York Street adjacent the subject site are shown in Figure 2.7 and Figure 2.8.

Figure 2.7: View of York Street, adjacent the subject site, facing west



Figure 2.8: View of York Street, adjacent the subject site, facing east



2.3. Sustainable Transport

Public Transport

The site has very good access to public transport services, with the following services provided within convenient walking distance to the site, as detailed in Table 2.1 and Figure 2.9.

Table 2.1: Public Transport Services

Service	Route No	Route	Nearest Stop	Approximate Walking Distance
Tram	58	West Coburg - Toorak	York Street / Kings Way	200 metre (3 mins)
	12	Victoria Gardens - St Kilda	York Street / Clarendon Street	280 metres (4 mins)
	1	East Coburg - South Melbourne Beach	Dorcas Street / Eastern Road	500 metres (6 mins)
	96	East Brunswick - St Kilda Beach	City Road/Light Rail	900 metres (12 mins)
Bus	236	Garden City - Queen Victoria Market via City	South Melbourne Market / Cecil Street	550 metres (8 mins)
	234	Garden City - City (Queen Victoria Market)	City Road / Queensbridge Street	500 metres (7 mins)
Train	All Train Lines		Southern Cross Station Flinders Street Station Anzac Station	Accessible by Tram

Figure 2.9: Port Philip Public Transport Map



SOURCE: WWW.PTV.VIC.GOV.AU

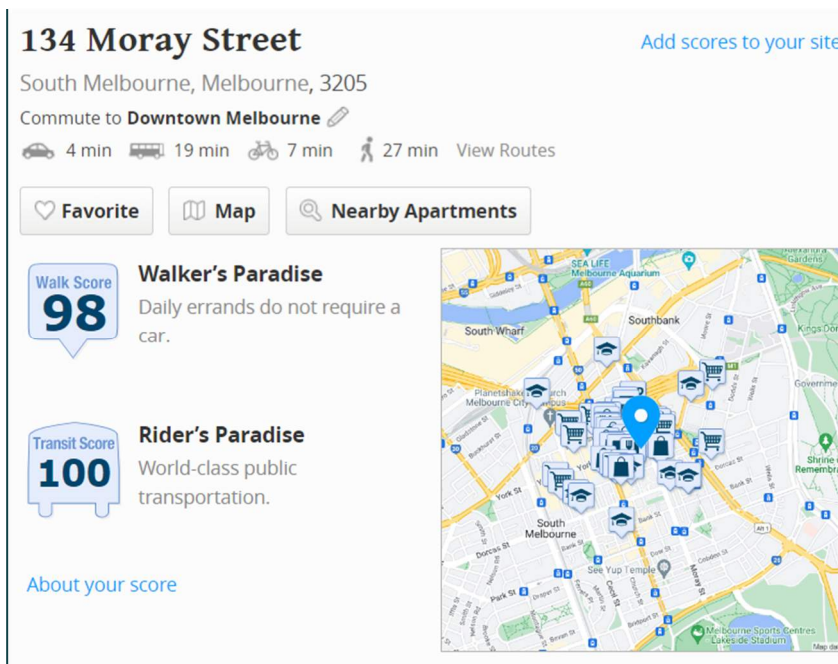
The subject site is also located within the PPTN area as discussed in Section 2.1 and illustrated in Figure 2.4.

Walkability

The site is located within the Eastern Business Precinct of the South Melbourne Central Structure Plan and is located 200 metres from the South Melbourne Activity Centre.

The site achieves a 'Walk Score' of 98 points (out of a possible 100) and is described as a 'Walker's Paradise' on WalkScore.com and most errands can be accomplished on foot as shown in Figure 2.10. A site's walk score is calculated based on the walking distance to local amenities, such as supermarkets, food and drink premises, restaurants, parks, public transport etc.

Figure 2.10: Walkscore



Bicycle Network

The subject site has very good access to the surrounding bicycle network. The key bicycle routes in the vicinity of the site are summarised below:

- Protected on-road bicycle lanes along both sides of Moray Street which provide a connection to the north towards Melbourne CBD and to the south towards Albert Park.
- On-road bicycle lanes along Dorcas Street are accessible via Moray Street and provide a connection towards the Royal Botanic Gardens to the east and Port Melbourne to the west.
- On-road bicycle lanes also exist on Cecil Street which provide a similar connection to those on Moray Street. The Cecil Street bicycle lanes can be accessed via Dorcas Street.

Access to the nearby bicycle infrastructure is available via the immediate road network. The bicycle network facilities within close proximity to the site are outlined in Figure 2.11.

Figure 2.11: Port Philip TravelSmart Map



SOURCE: WWW.PORTPHILLIP.VIC.GOV.AU

Car Share

Car share schemes offer a viable alternative for employees to attend meetings and site visits during the workday without requiring access to their own vehicle.

There are a number of car share vehicles available for use within the vicinity of the site. A summary of the car share pods within convenient proximity of the site is outlined in Table 2.2.

Table 2.2: Car Share Pod Locations

Operator	Locations	Number of Cars	Approximate Walking Distance
Flexicar	Moray Street / Chessell Street	1 vehicle	230 metres (3 mins)
	York Street / Clarendon Street	1 vehicle	270 metres (4 mins)
	Park Street / Moray Street	1 vehicle	500 metres (7 mins)
	Market Street / Cecil Street	1 vehicle	650 metres (9 mins)
	Market Street / Tope Street	1 vehicle	650 metres (9 mins)
GoGet	York Street near Clarke Street	1 vehicle	150 metres (2 mins)
	Dorcas Street near Clarendon Street	1 vehicle	450 metres (6 mins)

York Street near Cecil Street	1 vehicle	500 metres (7 mins)
Cecil Street near York Street	1 vehicle	500 metres (7 mins)
Clarendon Street near Ballantyne Street	1 vehicle	500 metres (7 mins)
Eastern Road near Bank Street	1 vehicle	550 metres (7 mins)
Dorcas Street near Francis Street	1 vehicle	600 metres (8 mins)
York Street near Ferrars Street	1 vehicle	700 metres (9 mins)
Park Street near Clarendon Street	1 vehicle	700 metres (9 mins)
Dorcas Street near Cecil Street	1 vehicle	750 metres (11 mins)
TOTAL	15 vehicles	

The map shown in Figure 2.12 illustrates the locations of car share pods in the vicinity of the site.

Figure 2.12: Car Share Pod Locations










Taxi Services & Rideshare

Taxis and ride sharing schemes are a convenient way for people to make trips to a range of facilities.

Uber and other ride share schemes are a popular way to commute when travelling and can be booked through their respective applications.

Table 2.3 shows some of the popular taxi and ride share services around the subject site:

Table 2.3: Taxi and Ride Share Services near the Subject Site

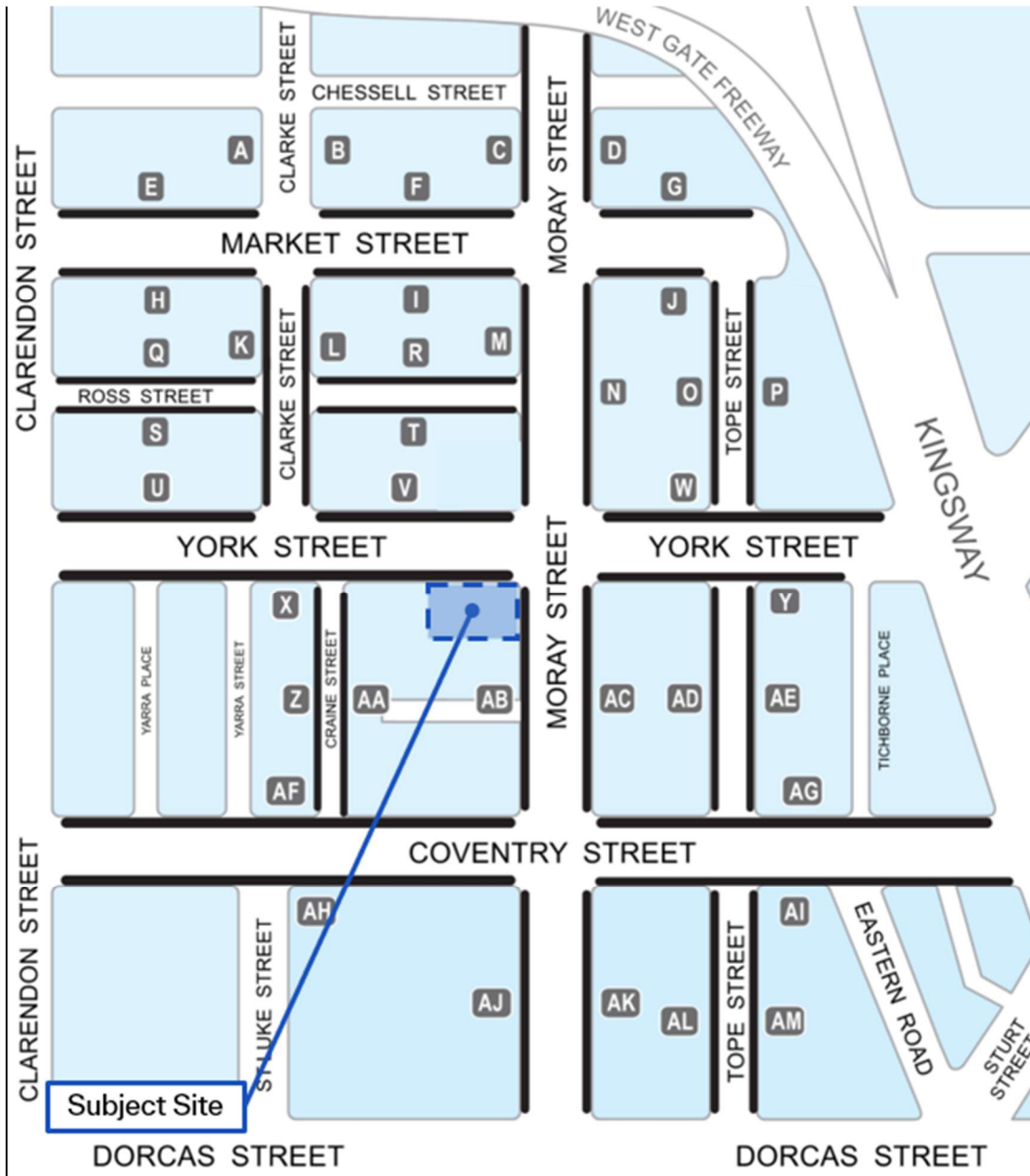
Service	How to order
 Silver Top Taxis	<p>Call 8413 7202</p> <p>Wheelchair accessible taxis (WATs) are also available. Simply request a WAT when making a booking</p>
 13Cabs	<p>Call 13 22 27</p> <p>Wheelchair accessible taxis (WATs) are also available. Simply request a WAT when making a booking</p>
 Silver Cabs	<p>Call 1300 183338</p> <p>Maxi Taxis available on request.</p>
 Uber	<p>Get a reliable ride in minutes with the Mobile App for each service. No reservations are required</p>
 DiDi	
 Ola	
 InDrive	<p>InDrive offers peer-to-peer carpooling services for city and intercity travel. Planning your journey has never been simpler with their Mobile App.</p>

2.4. Car Parking Conditions

In order to determine the current car parking conditions in the vicinity of the site, Ratio Consultants commissioned car parking surveys in the precinct on Thursday 24 March 2022 between 8:00am and 6:00pm.

The extent of the survey area is shown in Figure 2.13, with detailed survey results presented in Appendix A.

Figure 2.13: Car Parking Occupancy Survey Area



The parking surveys reveal that the supply of on-street parking surrounding the subject site is typically subject to time-restricted and ticketed parking.

Parking Inventory

The parking inventory is summarised in Table 2.4.

Table 2.4: Parking Inventory

Parking Restriction	Supply
Time restricted short-term parking (2P or less)	85 spaces

Time restricted mid-term parking (4P)	2 spaces
Ticketed short-term parking (2P or less)	216 spaces
Ticketed mid-term parking (4P)	13 spaces
Ticketed long-term parking (P)	149 spaces
Disabled parking	7 spaces
Permit Zone, Reserved or Car Share	7 spaces
Work Zones	4 spaces
Loading Zones	26 spaces
Total Spaces	509 spaces

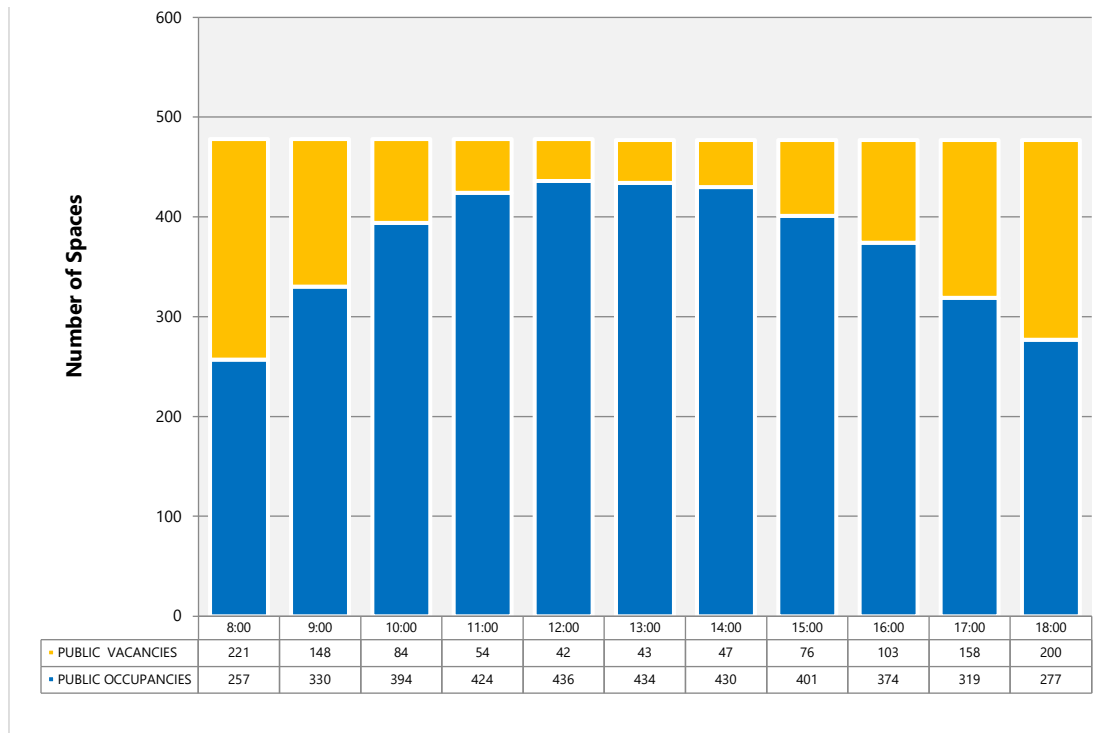
In summary, the survey results revealed:

Car Parking Occupancy Results

- There was observed to be a supply of between 477 and 478 publicly available on-street car parking spaces within the survey area (depending on the time of the day and excluding Permit Zones, Work Zones and Loading Zones, etc).
- The overall demand for parking during the survey period was moderate to very high, ranging between 54% and 91%.
- The demand for car parking peaked at 12:00 noon when a total of 436 car parking spaces were recorded occupied out of a supply of 478 spaces, representing a demand percentage of 91%. There was a minimum of 42 car parking spaces within the survey area at this time.
- There was observed to be a total of 164 time restricted or ticketed parking spaces that were subject to 4P or unlimited time restrictions. The demand for car parking within these spaces was very high and peaked at 11:00am and 12:00 noon when a total of 163 car parking spaces were recorded occupied out of a supply of 164 spaces, representing a demand percentage of 99%. There was only one vacant car parking space available at these times.

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

Figure 2.14: Thursday 24 March 2022 – Temporal Profile of Parking Demand



2.5. Local Planning Policy

General

There is considerable support within the Port Phillip 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.

Clause 18 – Transport

Clause 18 of the Port Phillip Planning Scheme is the State Planning Policy on Transport.

Clause 18.01-1L-01 – Land use and transport integration

Clause 18.01-1L-01 is in relation to supporting development that promotes alternate modes of transport and reduces reliance on private vehicles.

Clause 18.01-1L-01 states the following:

“Ensure new use and development supports the prioritisation of the following transport modes in the following order:

- *Walking.*
- *Bicycle riding.*
- *Public transport.*
- *Subscription based vehicles (for example, car share) and electric vehicles.*
- *Private motor vehicles.*

Support the provision of active transport infrastructure in developments (such as high levels of bicycle parking and end-of-trip facilities).”

Clause 18.01-3S – Sustainable and safe transport

Clause 18.01-3S is in relation to facilitating an environmentally sustainable and safe transport system that supports health and wellbeing.

Clause 18.01-3S states the following:

“Supports forms of transport and energy use that have the greatest benefit for, and least negative impact on, health and wellbeing.”

“Design development to promote walking, cycling and the use of public transport, in that order, and minimise car dependency.”

Clause 18.02-1S – Walking

The objective of this policy is to:

“Facilitate an efficient and safe walking network and increase the proportion of trips made by walking.”

The strategy to meet this objective includes:

- Provide pedestrian routes that are safe, direct and comfortable to use.
- Enable walking as a part of everyday life.
- Enable people to meet more of their needs locally and rely less on their cars.
- Be accessible to vehicles that use footpaths, including wheelchairs, prams and scooters.
- Accommodate emerging forms of low-emission, low-speed personal transport.

Clause 18.02-2S – Cycling

The objective of this policy is to:

“Facilitate an efficient and safe bicycle network and increase the proportion of trips made by cycling.”

The strategy to meet this objective includes:

- Provide routes that are safe, comfortable, low-stress and well connected.
- Enable cycling as a part of everyday life.
- Enable people to meet more of their needs locally by cycling and to rely less on their cars.
- Accommodate emerging forms of low emission, low and moderate speed personal transport.

Protect and develop the Principal Bicycle Network to provide high-quality cycling routes that are direct and connected, to and between key destinations including activity centres, public transport interchanges, employment areas, urban renewal precincts and major attractions.

Clause 18.02-3S – Public Transport

The objective of this policy is to:

“Facilitate an efficient and safe public transport network and increase the proportion of trips.”
(made by public transport).

The strategy to meet this objective includes planning and developing public transport to:

- Connect activity centres, job-rich areas and outer suburban areas.

- *Enable people to not have to rely on cars for personal transport.*

Clause 18.02-3R – Principal Public Transport Network

The site is within the Principal Public Transport Network (PPTN) Area. This policy, amongst other things seeks to:

“Maximise the use of existing infrastructure and increase the diversity and density of development along the Principal Public Transport Network, particularly at interchanges, activity centres and where principal public transport routes intersect.”

Move, Connect, Live – Integrated Transport Strategy 2018-2028

Port Phillip Council adopted Move, Connect, Live in September 2018. The 10-year strategy aims to deliver on Port Phillip Council’s commitment to supporting a well-connected transportation future for the City, to make it easy for people to move around and connect with places in a way that suits them as the City grows.

The ITS identifies a *“long-term plan to ensuring that as a community we can adapt to the increasing number of trips and the challenges associated with increased congestion, while creating travel choices, prioritising effective and equitable access to transport options, and ensuring the liveability and safety of our streets”*.

The ITS identifies seven key priorities, including the following four which are considered of particular relevance to this assessment:

- *“Creating 10-minute walkable neighbourhoods”*
- *“Boosting bike riding”*
- *“Partnering to deliver reliable, accessible and more frequent public transport”*
- *“Improving parking management”*

The ITS acknowledges that *“with a road network that is at capacity and cannot be increased, requires a rethink of how more sustainable modes of transport can be used.”*

South Melbourne Structure Plan (August 2024)

The subject site is located within the Eastern Business Precinct of the South Melbourne Central (SMC) Structure Plan and is located 200 metres from the South Melbourne Activity Centre. The South Melbourne Structure Plan was prepared in August 2024 and sets out the long-term strategic vision for South Melbourne and an action plan on how it will be achieved.

The South Melbourne Structure Plan was developed to help the City of Port Phillip plan and manage growth and change in the centre, while at the same time responding to community aspirations and providing vibrant, livable local places for everyone to enjoy. The South Melbourne Structure Plan includes four key themes, one of which is ‘Access and Movement’.

The ‘Access and Movement’ theme aims to improve the accessibility of South Melbourne’s streets to provide an opportunity to create a safe and comfortable walking and cycling environments for all, particularly to:

- *“Support health and wellbeing (including social inclusion and exercise) and sustainability*
- *Encourage the community to make less trips using private vehicles*
- *Enable a walkable community for all people regardless of age or ability*
- *Provide a network of ‘amenity pockets’, providing opportunities for rest and social interaction.”*

The objectives and actions outlined within the ‘Access and Movement’ themes are listed below:

- *“Enhance South Melbourne’s movement network to prioritise sustainable and active travel, while improving capacity and circulation (Access and Movement Objective 1)*
- *Provide an attractive and safe local pedestrian and cycling network that connects key destinations and strategic corridors (Access and Movement Objective 2)*
- *Improve public transport services and access to meet the needs of South Melbourne’s residents, workers and visitors (Access and Movement Objective 3)*
- *Car parking and loading approaches support more sustainable modes of transport and reduce the impacts of development generated parking demand (Access and Movement Objective 4)”*

As such, the South Melbourne Structure Plan supports the prioritization of sustainable and active transport modes and the reduced reliance on private motor vehicles.

3. The Proposal

3.1. Approved Development (Planning Permit No.: P1194/2016/B)

The subject site was previously approved (Planning Permit No.: P1194/2016/B) for the development of an eight-storey commercial development comprising predominately office use with commercial display and café use. More specifically, the previously approved plans consisted of the following:

- 4,476 sqm of office floor space;
- 543 sqm commercial display area on the ground floor;
- 35.5 sqm of café floor space on the ground floor;
- 68 car parking spaces (including one accessible space) within three levels of the basement car park;
- 107 bicycle parking spaces along with end of trip facilities, comprising:
 - 80 x bicycle parking spaces within two-tier racking systems (including two electric bicycle charge points);
 - 21 x wall-mounted bicycle parking spaces;
 - 3 x floor-mounted bicycle hoops (six spaces) along the site's frontage to Moray Street.
 - 152 lockers within change room facilities;
 - 11 x showers (including one accessible shower); and
 - A bicycle repair station.

Vehicular access via a 5.3-metre-wide modified crossover to/from Moray Street in the southeast corner of the site.

Recently Approved Development (Planning Permit No.: PA2503652)

The subject site has been recently approved (Planning Permit No.: PA2503652 issued on 5 August 2025) for the development of a nine-storey commercial development comprising predominantly residential hotel use with restricted retail and office use. More specifically, the previously approved plans consisted of the following:

- 162 residential hotel rooms from Level 1 to 7, consisting of:
 - 135 studio guest rooms.
 - 27 one-bedroom guest rooms.
- 278.6 sqm of restricted retail premises on the Ground Floor
- 845.1 sqm of office floor space on Levels 6 and 7.
- Lobby, gym and conference rooms are only available to guests of the residential hotel and therefore considered as ancillary to the site.

- A total of 26 car spaces, inclusive of one (1) accessible space within a Basement carpark arranged as:
 - 12 at-grade car spaces;
 - One (1) accessible parking space; and
 - 13 car spaces provided within Klaus Trendvaio 6200+ car stacker system.
- A total of 31 bicycle parking spaces within the Basement carpark comprising:
 - 23 x wall-mounted bicycle parking spaces; and
 - 8 x floor-mounted bicycle spaces (five rails).
- 12 bicycle parking spaces along Moray Street and York Street.
- Vehicular access to the Basement carpark is provided modified double-width crossover at the southeastern corner of the site.
- The existing redundant crossover to York Street will be reinstated with a kerb and channel to the satisfaction of the Responsible Authority.
- Primary pedestrian access to the residential hotel and restricted retail premises will be provided via the respective entrances along York Street and Moray Street. Primary pedestrian access to the office will be provided via a separate entrance along York Street connecting to a lift and staircore.

3.2. Amended Development

It is now proposed to amend the approved development by providing an additional level (10-storey development) resulting in an additional 9 residential hotel rooms to a total of 171 hotel rooms and reducing the office area. As part of the development, the car parking provision, bicycle parking provision, access, loading and waste collection arrangements are maintained as per the approved development. More specifically, the proposed development comprises:

Development Summary

- 171 residential hotel rooms from Level 1 to 7, consisting of:
 - 141 studio guest rooms.
 - 30 one-bedroom guest rooms.
- 275.3 sqm of restricted retail premises on the Ground Floor.
- 589.4 sqm of office floor space on Level 8.
- Residential hotel conference space on Level 9.
- Lobby, gym and conference space are only available to guests of the residential hotel and therefore considered as ancillary to the site.

Parking Provision

- A total of 26 car spaces, inclusive of one (1) accessible space within a Basement carpark arranged as:
 - 12 at-grade car spaces;
 - One (1) accessible parking space; and
 - 13 car spaces provided within Klaus Trendvaio 6200+ car stacker system.
- A total of 31 bicycle parking spaces within the Basement carpark comprising:
 - 23 x wall-mounted bicycle parking spaces; and

- 8 x floor-mounted bicycle spaces (five rails).
- 12 bicycle parking spaces along Moray Street and York Street.

Site Access Arrangements

- To maintain adequate clearance from the existing street tree on Moray Street, the existing double-width vehicle crossover at the southeast corner of the site has been slightly realigned. The modified crossover continues to accommodate two-way vehicle movements in accordance with the approved development.
- The existing redundant crossover to York Street will be reinstated with a kerb and channel to the satisfaction of the Responsible Authority.
- Maintain Primary pedestrian access to the residential hotel and restricted retail premises via the respective entrances along York Street and Moray Street. Maintain Primary pedestrian access to the office via a separate entrance along York Street connecting to a lift and stair core.

Waste Collection Arrangements

- A waste room is provided on Basement Level 1 carpark. Waste is proposed to be collected privately via a 6.4-metre mini-rear loader accessing the Basement Level 1 carpark as per approved development.

3.3. Comparison between Approved Development and Amended Development

A comparison between the development schedule of the approved development (Planning Permit No.: PA2503652) and the proposed amended development is provided in Table 3.1.

Table 3.1: Comparison between Approved Development and Amended Development

Land Use	Approved Development	Amended Development	Change
Residential Hotel Rooms	162 rooms	171 rooms	+9 rooms
Ancillary to the Residential Hotel	Lobby, gym and conference rooms	Lobby, gym and conference rooms	-
Restricted Retail	291.2 sqm	275.3 sqm	-15.9 sqm
Office	845.1 sqm	589.4 sqm	-255.7 sqm
Car Parking	26 car spaces	26 car spaces	-
Bicycle Parking	31 bicycle spaces on-site 12 spaces along Moray Street/York Street, subject to Council endorsement	31 bicycle spaces on-site 12 spaces along Moray Street/York Street, subject to Council endorsement	-

4. Car Parking Assessment

4.1. Planning Scheme Assessment

Clause 52.06 – Car Parking Assessment

Car parking requirements for a range of developments are set out under Clause 52.06 of the Port Phillip Planning Scheme. The purpose of the Clause, among other things, is:

- To ensure that car parking is provided in accordance with the Municipal Planning Strategy and 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 various land 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.

The site is located within 'Category 3' of the Car Parking Requirement Maps as shown in Figure 4.1 below.

Figure 4.1: Subject Site within the Car Parking Requirement Maps



The application of the 'Category 3' rates as per Table 1 of Clause 52.06 of the Planning Scheme are detailed in Table 4.1:

Table 4.1: Statutory Car Parking Requirement

Use	Size / Number	Category 3 - Parking Rate	Parking Requirement
Residential hotel	171 rooms	To the satisfaction of the Responsible Authority	-
Restricted retail premises	275.3 sqm	<u>Minimum</u> - 1.5 spaces to each 100 sqm of leasable floor area <u>Maximum</u> - 2.0 spaces to each 100 sqm of leasable floor area	Minimum 4 spaces and Maximum 5 spaces
Office	589.4 sqm	<u>Minimum</u> - 0 spaces to each 100 sqm of net floor area <u>Maximum</u> - 0.9 spaces to each 100 sqm of net floor area	Minimum 0 spaces and Maximum 5 spaces
TOTAL			Minimum 4 spaces and Maximum 10 spaces

Accordingly, the proposed development has a statutory parking requirement to provide

between 4 and 10 spaces, with additional parking required for the residential hotel to the satisfaction of the Responsible Authority. A total of 26 on-site car spaces are proposed within the basement carpark (13 at-grade spaces and 13 spaces within a mechanical car stacker system).

It is proposed to allocate the 13 car spaces within the car stacker system to the staff of the development, including 4 spaces to the restricted retail premises, 4 spaces to the residential hotel and 5 spaces to the office. The remaining 13 at-grade spaces will be allocated to guests of the residential hotel.

Therefore, the office and restricted retail car parking comply with the statutory car parking requirements. As such, the Car Parking Demand Assessment will assess the appropriateness of providing 4 staff car spaces and 13 at-grade spaces for guests of the residential hotel.

Based on the revised development schedule and the associated re-allocation of car spaces, the residential hotel has been provided with a car parking rate of **0.1 spaces per room**. This is marginally higher than the previously approved rate of **0.09 spaces per room**, which is discussed in detail in Section 4.2 below.

4.2. Car Parking Demand Assessment

In accordance with Clause 52.06-7 of the Port Phillip 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.

Guests of the residential hotel may be staying temporarily (on a business trip) and working in the surrounding area, thereby reducing the need for any car parking. Therefore, the car parking demand associated with some uses of the development is anticipated to be significantly reduced as a result of multipurpose trips.

Availability of Public Transport in the Locality

The site has excellent access to public transport services with several tram and bus services operating in close proximity to the subject site. The site is located within close proximity to tram services running along three different routes (Tram Routes 1,12 & 58). Of particular note, Flinders Street Station and Southern Cross Station can both be accessed via tram lines which provides access to all train lines given it is within the City Loop.

Given excellent access to public transport services, including a new Anzac Station, a majority of users are expected 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 footpaths on both sides of Moray Street, York Street and other streets in the vicinity of the site, which are generally in good condition. These facilities provide a link between the subject site and surrounding public transport services, retail facilities, amenities and shopping precincts for pedestrians. As noted in Section 2.3, the site achieves a 'Walk Score' of 98 points (out of a possible 100) and is described as a 'Walker's Paradise' on WalkScore.com which is reflective of the excellent level of pedestrian facilities afforded to the subject site.

The site also has very good access to the surrounding bicycle network, primarily via the physically separated on-street bicycle lanes along Moray Street. Other bicycle facilities were previously mentioned in Section 2.3.

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 provision of 31 bicycle spaces with a further 12 spaces to be provided along the site frontage (subject to approval from Council) which will encourage cycling as an alternative transport mode, therefore reducing the reliance on the use of private motor vehicles to access the site.

Access to Car Share Facilities

As discussed in Section 2.3, there are 15 car share pods located within proximity to the subject site. In particular, these vehicles can be utilised by guests of the residential hotel and office staff who are not provided with on-site car parking to run errands or use them for work-related trips.

Residential Hotel Demand

Distinct from traditional hotel accommodation, residential hotel typically provide extended in-room facilities to cater for longer guest durations of stay and are often tailored towards business customers and travel customers seeking longer term local accommodation.

To understand potential demands that may be generated by the residential hotel aspect of the proposed development, guidance has been sought from the RMS/RTA Guide to Traffic Generating Developments. With respect to short-term/ casual accommodation, the RMS Guide states that driving trips and parking demands typically depend on the level of amenity and facilities provided by the property, and therefore the hotel rating. The hotel rates suggested by the RMS Guide, based on a model average from survey results and exclusive of parking demand generated by hotel functions such as conference activities, is 1 car space per 4 rooms for 3 and 4-star hotels, or a rate of 0.25 spaces per room. While for 5-star hotels, the suggested rate is 1 car space per 5 rooms, or a rate of 0.2 spaces per room. In general, residential hotel car parking demand can fluctuate, and vary between properties, depending on the location of the site, the type and nature of the hotel proposed, and the general market the hotel will specifically target.

Empirical data collected by Ratio and other industry sources from inner metropolitan Melbourne shows that peak car parking demand for residential hotels typically ranges between 0.3 and 0.6 spaces per room. Examples include:

- Oakford, South Yarra – 0.34 spaces per room

- Quest on Redan, St Kilda – 0.23 spaces per room
- Quest, South Yarra – 0.43 spaces per room

In addition, Ratio has provided input into several residential hotel developments where lower parking rates were approved, including:

- 79–89 Wellington Street, Collingwood – 83 serviced apartments with 28 car spaces (0.34 spaces per room)
- 373–375 Bridge Road, Richmond – 26 hotel rooms with 5 car spaces (0.19 spaces per room)
- 229–331 Maroondah Highway, Ringwood – 94 serviced apartments with 44 car spaces (0.47 spaces per room)

Further, it has been acknowledged that the site has the following key considerations:

- Excellent connection to the public transport, cycling and walking network which provides a link between the subject site and surrounding public transport services, retail facilities, amenities and shopping precincts for pedestrians including:
 - Multiple tram lines in close proximity to the site with all train lines accessible via tram.
 - Bicycle infrastructure surrounding the subject site, particularly with protected bicycle lanes along Moray Street.
 - Wide pedestrian footpaths on all roads surrounding the subject site.
- Proximity to the South Melbourne Activity Centre located 200 metres west of the subject site.
- Multitude of car share pods for guests to travel to/from the site especially for work-related trips.

As such, having regard to the site context and surrounding land uses, the provision of 0.1 car spaces per residential hotel room is considered sufficient to accommodate the parking demand generated by the residential hotel. Notably, the re-allocation of car spaces has resulted in a provision of 0.1 car spaces per room, which is marginally higher than the previously approved rate of 0.09 car spaces per room under the approved scheme and is therefore considered appropriate.

4.3. 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 and are discussed in more detail below:

Relevant Planning Policies

As detailed in the Section 2.5, there is significant support within the Port Phillip Planning Scheme and various Council strategies for developments that encourage the use of sustainable transport alternatives from private motor vehicle.

Availability of Car Parking in the Locality

Long Term Parking

As outlined in Section 2.4, the availability and nature of on-street parking in the vicinity of the site that could potentially be utilised by staff of the development is constrained given that the majority of surrounding on-street parking is subject to short-term parking restrictions during weekday business hours.

This results in a disincentive for future staff who are not allocated any on-site car parking to travel to work via a private motor vehicle and park on-street and will encourage alternative modes of transport.

The parking surveys identified that there is a supply of 164 ticketed on-street parking spaces suitable for long-term use (i.e. 4P or longer) that could potentially be utilised by the staff of the development if they chose to drive. However, these spaces were highly occupied (reaching 99% occupancy by 11:00am) and the cost would likely deter most staff from choosing to park in these spaces all day. Guests of the residential hotel would also similarly be deterred from parking long-term on-street if not allocated an on-site space. These factors will further encourage alternate modes of transport.

Short Term Parking

Conversely, the short-term on-street parking restrictions will ensure any short-term visitors/customers to the area are able to find a parking space within close proximity to the subject site even during periods of peak activity. The parking surveys demonstrate that there was a minimum of 40 short-term parking spaces (2P or less time restricted or ticketed) vacant for use by visitors/customers of the proposed development during weekday business hours. On this basis, it is considered that the on-street parking can readily cater for the expected short-term parking demand associated with short-term visitors.

Accessibility to Alternate Transport Modes

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

Local Traffic Management in the Locality of the Land

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

4.4. Adequacy of the Proposed Car Parking Provision

It is proposed to provide 26 car parking spaces on-site and this level of parking provision is considered adequate for the proposed development based on the following reasons:

- The site will generate multipurpose trips associated with walk-up trade from restricted retail visitors and guests of the residential hotel already working in the surrounding area.
- The site is located close to excellent sustainable transport alternatives such as tram routes, bus routes, train lines, bicycle and pedestrian facilities.

- The development is provided with 31 bicycle spaces within the basement car park with 12 spaces along Moray Street which will encourage cycling as a viable mode of transport to access the site.
- There are 15 car share pods located within the vicinity of the site to enable staff of the office and guests of the residential hotel to travel for work-related purposes or run errands.
- Local Council Policy and relevant Strategies are in support of reducing reliance on private motor vehicles and encouraging a shift to sustainable alternative modes of transport.
- There is sufficient car parking located in the vicinity of the site to cater for short-term car parking which will have a high car parking turnover. On the other hand, the long-term car parking (4P or longer) is highly occupied or ticketed which will disincentivise staff and guests to access the site via private motor vehicles unless guests are allocated a car space within the basement car park.
- The suppressed car parking provision will reduce traffic congestion and improve the pedestrian amenity in the vicinity of the site.

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

5. Access and Car Parking Layout

5.1. Clause 52.06-9 Design Standard Assessment

The proposed car park and access arrangements have been designed in accordance with the objectives and design requirements of Clause 52.06-9 of the Port Phillip Planning Scheme and/or the relevant sections of AS/NZS 2890.1:2004.

Design Standard 1 – Accessways

Vehicular access to the basement car park is provided via a ramp and modified double-width crossover along Moray Street at the southeast corner of the site.

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.	Satisfied – The accessway have been designed with a width in excess of 3.0 metres complying with this standard.
Have an internal radius of at least 4m at changes of direction or intersection or be at least 4.2m wide.	Satisfied – The accessway has a width in excess of 4.2 metres at a change of direction.
Allow vehicles parked in the last space of a dead-end accessway in public car parks to exit in a forward direction with one manoeuvre.	N/A – The proposed car park is not a public car park. Notwithstanding, all vehicles will be 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.	Satisfied – A headroom clearance of at least 2.1 metres has been provided throughout the car parking area.
If the accessway serves four or more car spaces or connects to a road in a Transport Zone 2 or Transport Zone 3, the accessway must be designed so that cars can exit the site in a forward direction.	Satisfied – All vehicles are able to depart the site in a forward direction.

<p>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 Transport Zone 2 or Transport Zone 3.</p>	<p>N/A – The accessway is not more than 50 metres (between points where passing can occur) and does not connect to Transport Zone 2 or Transport Zone 3. As such, a passing area is technically not required in this instance.</p> <p>Notwithstanding this, the accessway width at the site entrance is sufficient to enable a B85 and a B99 vehicle to pass one another at the entrance, as demonstrated by the swept path assessment provided in Appendix C.</p>
<p>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.</p>	<p>Satisfied – A pedestrian sight splay triangle measuring 2.0 x 2.5 metres has been provided on the departure side of the entrance. Noting that the entrance provides for two-way access, a pedestrian triangle is not required on the entry side.</p>
<p>If an accessway to four or more car parking spaces is from land in a Transport Zone 2 or Transport Zone 3, the access to the car spaces must be at least 6m from the road carriageway.</p>	<p>N/A – Access is not provided via Transport Zone 2 or Transport Zone 3.</p>
<p>If entry to the car space is from a road, the width of the accessway may include the road.</p>	<p>N/A – Car parking spaces are not accessed directly from the road.</p>

Design Standard 2 - Car Parking Spaces

Design Standard 2 of Clause 52.06-9 relates to the design of car parking spaces. It is proposed to provide a total of 26 car parking spaces including 13 at-grade car spaces and 13 spaces within a car stacker system.

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
<p>Car parking spaces and accessways must have the minimum dimensions as outlined in Table 2 of Design Standard 2</p>	<p>Satisfied – 12 of the 26 car parking spaces have been designed in accordance with Planning Scheme dimensions as follows:</p> <ul style="list-style-type: none"> - 1 x car space dimensioned at 2.8 x 4.9 metres access via an aisle of at least 5.8 metres wide.

	<ul style="list-style-type: none"> - 11 x car spaces dimensioned at 2.6 x 4.9 metres access via an aisle of at least 6.4 metres wide. <p>The remaining car spaces are provided within a mechanical car stacker system and are discussed in Design Standard 4 below.</p>
<p>A wall, fence, column, tree, tree guard or any other structure that abuts a car space must not encroach into the area marked 'clearance required' on Diagram 1 of Design Standard 2, other than:</p> <ul style="list-style-type: none"> – 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 	<p>Satisfied – All car parking spaces are clear of any encroachments within the area marked on Diagram 1 of Design Standard 2 in Clause 52.06-9 of the Planning Scheme.</p>
<p>Car spaces in garages or carports must be at least 6m long and 3.5m wide for a single space and 5.5m wide for a double space measured inside the garage or carport.</p>	<p>Not Applicable – No garages or carports have been provided.</p>
<p>Where parking spaces are provided in tandem (one space behind the other) an additional 500mm in length must be provided between each space.</p>	<p>Not Applicable – No car parking spaces have been provided in tandem format.</p>
<p>Where two or more car parking spaces are provided for a dwelling, at least one space must be under cover.</p>	<p>Not Applicable – The proposal does not include any dwellings. Notwithstanding, all car parking spaces are provided under cover.</p>
<p>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.</p>	<p>Satisfied – The accessible space has been designed in accordance with Australian Standard AS2890.6-2009 (disabled) and the Building Code of Australia.</p>

Design Standard 3 – Gradients

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

Table 5.3: Design Standard 3 Assessment - Gradients

Requirement	Comments
<p>Accessway grades must not be steeper than 1:10 (10%) within 5m of the frontage to ensure safety for pedestrians and vehicles. The design must have regard to the wheelbase of the vehicle being designed for; pedestrian and vehicular traffic volumes; the nature of the car park; and the slope and configuration of the vehicle crossover at the site frontage. This does not apply to accessways serving three dwellings or less.</p>	<p>Satisfied – Accessway grades are not steeper than 1:10 within the first 5 metres of the site.</p>
<p>Ramps (except within 5 metres of the frontage) must have the maximum grades as outlined in Table 3 of Design Standard 3 and be designed for vehicles travelling in a forward direction.</p>	<p>Satisfied – The proposed grades are in accordance with Table 3 of Design Standard 3 and the maximum of 1:5 in accordance with AS2890.1 for private or residential car parks.</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>Satisfied - Appropriate transition sections have been provided to prevent scraping or bottoming.</p>

Design Standard 4 – Mechanical Parking

Design Standard 4 of Clause 52.06-9 relates to the design of mechanical parking. It is proposed to provide a total of 13 spaces within an independent semi-automatic car stacker system (Klaus TrendVario 6200+) with a ground and upper floor. The car stacker system will accommodate a ground floor and an upper floor vehicle height of up to 1.80 metres for a total floor to ceiling height of 3.90 metres. The requirements of Design Standard 4 are assessed against the proposal in Table 5.4 below.

Table 5.4: Design Standard 3 Assessment – Mechanical Parking

Requirement	Comments
<p>At least 25 per cent of the mechanical car parking spaces can accommodate a vehicle height of at least 1.8 metres.</p>	<p>Satisfied – A generous headroom clearance of 3.90 metres has been provided within the basement car park which will allow for the implementation of a car stacker system such as the TrendVario 6200+ with a seven-wide grid</p>

	<p>system (refer to Appendix B for the car stacker specifications).</p> <p>The car stacker system will accommodate a ground floor and an upper floor vehicle height of up to 1.80 metres, representing 100% of all car spaces with a vehicle height of 1.8 metres within the mechanical system.</p>
Car parking spaces that require the operation of system are not allocated to visitors unless used in a valet parking situation.	<u>Satisfied</u> – The car parking within the mechanical car stacker system is allocated to staff of the development only.
The design and operation is to the satisfaction of the responsible authority.	<p><u>Satisfied</u> – The design of the stacker system is considered satisfactory noting the following key points:</p> <p>The system accommodates vehicle lengths up to 5.0 metres. This represents the vast majority of vehicles within the Australian passenger vehicle fleet (noting the B85 comprises a length of 4.91 metres) and is therefore considered acceptable.</p> <p>Each bay comprises a usable platform of 2.6 metres which aligns with the width of a standard car parking space from the Planning Scheme requirements.</p> <p>The car spaces within the stacker system are allocated to staff only who will become quickly familiar with the operation and access arrangements to/from the car stacker.</p> <p>The swept path assessment attached in Appendix C demonstrates that vehicles are able to access the critical spaces in the stacker system in a suitable manner.</p>

5.2. Swept Path Assessment

An assessment (refer to Appendix C) of the accessibility to/from the site using the ‘Autodesk Vehicle Tracking’ software has been conducted. All vehicles will be able to enter and exit the site in a forward direction with a single manoeuvre.

An assessment of the car parking access and circulation was undertaken using a passing B85 (85th percentile car) and B99 (99.8th percentile car) and it was found that vehicles are able to adequately pass at the entrance and within the basement car park.

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

An assessment of the nominated 6.4 metres long mini-rear loader was also undertaken and it was found that it was able to access the basement car park and turn around using the accessway to depart the site in a forward direction.

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

5.3. Site Access Arrangements

It is noted that a security door will be provided within the basement ramp.

Guests of the residential hotel will be made aware of whether they have an allocated car parking space within the basement car park prior to arriving on-site. This ensures that car spaces can be allocated at the time of booking and avoids instances of guests arriving via private motor vehicle without being allocated one in the first place.

Guests arriving via a private motor vehicle would first park their vehicle within the surrounding on-street parking, check-in at reception within the residential hotel lobby and then be granted access to the basement car park via a remote or fob key.

The staff of the development with an allocated car space will be able to access the basement car park via a remote or fob key.

6. Bicycle Parking

6.1. Bicycle Parking

Bicycle facility requirements for developments are set out under Clause 52.34 of the Port Phillip Planning Scheme. The purpose of the Clause, amongst other things, is:

- To encourage cycling as a mode of transport; and
- To provide secure, accessible and convenient bicycle parking spaces and associated shower and change facilities.

The provisions set out under Clause 52.34-5 of the Port Phillip Planning Scheme establish the requirement for bicycle parking spaces at the follow rates, as shown in Table 6.1.

Table 6.1: Bicycle Parking Provision

Land Use		Size / Number	Parking Rate	Parking Requirement
Residential hotel	Employee	171 rooms	In developments of four or more storeys, 1 to each 10 lodging rooms	17 spaces
	Visitor		In developments of four or more storeys, 1 to each 10 lodging rooms	17 spaces
Office	Employee	589.4 sqm	1 to each 300sqm of net floor area if the net floor area exceeds 1000 sqm	-
	Visitor		1 to each 1000 sqm of net floor area if the net area exceeds 1000 sqm	-
Restricted retail premises	Employee	275.3 sqm	1 to each 300sqm of leasable floor area	1 space
	Visitor		1 to each 500sqm of leasable floor area	1 space
TOTAL				36 spaces

Based on the above assessment, the proposal has a requirement to provide 36 bicycle parking spaces (18 staff spaces and 18 visitor spaces).

The development proposes to provide 31 bicycle parking spaces on-site within the basement car park, which is a shortfall of 5 spaces to be provided on-site.

Notwithstanding, it is proposed to provide a further 12 spaces along Moray Street and York Street subject to approval from the Responsible Authority. It is noted that the previously approved development was approved with 12 spaces along York and Moray Street.

The 31 on-site bicycle spaces comprise of 5 'Arc De Troimphe' or similar horizontal rails (providing 8 spaces) and 23 'Ned Kelly' or similar vertical rails (providing 27 spaces).

This exceeds the requirement for the provision of horizontal bicycle parking (requiring at least 20%), with 25.8% of on-site bicycle parking provided in horizontal format.

The 12 on-street bicycle spaces comprise 6 'Arc De Troimphe' or similar horizontal rails (providing 12 spaces).

As such, the development meets the intent and requirements of the Port Phillip Planning Scheme subject to approval from the Responsible Authority for on-street bicycle spaces.

Bicycle parking specifications have been provided in Appendix D.

6.2. Shower and Change Room Facilities

Table 2 and Table 3 of Clause 52.34-5 of the Port Phillip Planning Scheme specify that bicycle facilities should be provided for employee bicycle parking. The rates are applied in Table 6.2.

Table 6.2: End of Trip Facility Requirements – Clause 52.34-5

Component	Required Rate	Bicycle Parking Required	Shower Requirement
Showers	If five or more employee bicycle spaces are required, one shower for the first five employee bicycle spaces, plus one to each 10 employee bicycle spaces thereafter.	18 employee spaces	2 showers
Change Rooms	One 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 (or direct access to a communal change room)

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

WC and DDA bathrooms have been provided separately for restricted retail premises, office and residential hotel which meets the demand for showers and change rooms.

Additionally, the provision of 4 staff lockers for the residential hotel and 2 staff lockers for the restricted retail premises has been provided near the bathrooms which will encourage active modes of transport to and from the site.

7. Loading and Waste Collection Arrangements

7.1. Loading

Clause 65.01 'Decision Guidelines' of the Port Phillip Planning Scheme outlines the provision of loading requirements, and states the following:

"Before deciding on an application or approval of a plan, the Responsible Authority must consider, as appropriate: The adequacy of loading and unloading facilities and any associated amenity, traffic flow and road safety impacts."

Loading and unloading activities associated with the proposed development will primarily be related to the delivery of mail/stationery for the office tenancies, and the delivery of goods for the retail tenancy via vans and small trucks. Loading and unloading activities associated with the residential hotel will also be undertaken by vans and smaller loading vehicles.

It is considered that all loading and unloading associated with the proposed development can appropriately be accommodated on-street via the existing Loading Zones along York Street (directly opposite the subject site), and within Little Moray Place. Additionally, Loading Zones have also been identified along Moray Street located north of the intersection with York Street and directly opposite Little Moray Street which can also be used to service the site.

The above arrangement is consistent with the recently approved development and are considered appropriate from a traffic perspective.

7.2. Waste Collection

A Waste Management Plan (WMP) has been prepared for development by Ratio Consultants.

A bin storage room is provided on the basement floor along the northern boundary of the site. Waste is proposed to be collected from within the vehicle accessway on the basement floor privately via a 6.4-metre long mini-rear loader waste collection vehicle. The swept path assessment (refer to Appendix C) demonstrates the ability of this waste collection vehicle to access the basement car park, collect waste and depart the site in a forward direction.

It is recommended that waste collection occurs outside of the peak commuter traffic periods and guest arrival/departure times to minimise the potential impact on traffic conditions during peak hour periods.

The above arrangement is consistent with the recently approved development and are considered appropriate from a traffic perspective.

8. Traffic Assessment

8.1. Traffic Generation

Residential Hotel Traffic Generation

The NSW RTA guide to Traffic Generating Developments provides traffic generation rates for a number of different uses and recommends the adoption of a traffic generation rate of 3 daily vehicle trips per unit and a rate of 0.4 movements per unit during the PM peak hour, for motel uses. The RTA Guide to Traffic Generating Developments also states that the above mentioned conservatively assume 100% occupancy of units.

The above rates have been applied to the proposed parking provision rather than the total room provision as motels typically provide one parking space per room.

Accordingly, a peak hour (morning and evening) traffic generation rate of 0.4 vehicle movements per space has been adopted to assess the likely traffic impacts of the proposed development. Application of this rate to the 17 parking spaces equates to a generation of 7 vehicle movements during both commuter peak hours.

During the morning, it is estimated that 80% of traffic will be outbound while during the afternoon, 80% of traffic will be inbound. The expected traffic generation is summarised in Table 8.1.

Table 8.1: Traffic Generation for Residential hotel

	AM Peak	PM Peak
Arriving trips:	1 vph	6 vph
Departing trips:	6 vph	1 vph
Total trips:	7 vph	7 vph

Office Traffic Generation

Empirical evidence collected by Ratio Consultants suggests that office developments located in inner city locations with good access to public transport services generate parking at a rate given below:

- 2 vehicle trips per parking space per day; and
- 0.38 vehicle trips per parking space in the AM peak hour and 0.43 vehicle trips per parking space in the PM peak hour.

It is expected that the office trips would be mainly arriving in the morning peak (10% out and 90% in) and departing in the afternoon peak (90% out and 10% in). Accordingly, application of the above rates to 5 office spaces results in a peak hour traffic generation as shown Table 8.2.

Table 8.2: Traffic Generation for Office

	AM Peak	PM Peak
Arriving trips:	2 vph	0 vph
Departing trips:	0 vph	2 vph
Total trips:	2 vph	2 vph

Restricted Retail Premises Traffic Generation

It is also anticipated that each staff member of the restricted retail premises will generate traffic at a rate of one vehicle movement per space during peak hour periods. Accordingly, this will equate to 4 vehicle movements per peak hour period with all trips expected to be inbound during the AM peak and outbound during the PM peak.

Table 8.3: Traffic Generation for Restricted Retail Premises

	AM Peak	PM Peak
Arriving trips:	4 vph	0 vph
Departing trips:	0 vph	4 vph
Total trips:	4 vph	4 vph

Total Traffic Generation

The total traffic generation is summarised below in Table 8.4 below

Table 8.4: Total Traffic Generation

	AM Peak	PM Peak
Arriving trips:	7 vph	6 vph
Departing trips:	6 vph	7 vph
Total trips:	13 vph	13 vph

8.2. Traffic Distribution and Impact

As discussed in Section 5.2, vehicles will enter and depart from the site via Moray Street.

The proposed development is estimated to add 13 vehicle movements in the AM and PM peak hours. The level of traffic generated by the development is relatively modest and is not expected to adversely affect Moray Street or the surrounding road network.

Further, it should be noted that the proposed traffic generation from the proposed development is significantly lower than what was originally approved for the site, noting that the originally approved development had a much higher parking provision and traffic generation.

9. Conclusion

The proposed amended development is a 10-storey mixed-use development at 134 Moray Street, South Melbourne, comprising 171 residential hotel guest rooms, 589.4 sqm of office floor area, 275.3 sqm of restricted retail premises, and 26 on-site car parking spaces within a basement carpark, accessed via Moray Street.

Based on the above assessment, it is concluded that:

Car Parking Provision

The proposed provision of 26 on-site car parking spaces meets the car parking requirements for the office and restricted retail development. An assessment of the car parking provision was undertaken for the residential hotel development and it was considered adequate for the following reasons:

- The site will generate multipurpose trips associated with walk-up trade from restricted retail visitors and guests of the residential hotel already working in the surrounding area.
- The site is located close to excellent sustainable transport alternatives such as tram routes, bus routes, train lines, bicycle and pedestrian facilities.
- The development is provided with 31 bicycle spaces within the basement car park with 12 spaces along Moray Street and York Street (subject to Council approval) which will encourage cycling as a viable mode of transport to access the site.
- There are 15 car share pods located within the vicinity of the site to enable staff of the office and guests of the residential hotel to travel for work-related purposes or run errands.
- Local Council Policy and relevant Strategies are in support of reducing reliance on private motor vehicles and encouraging a shift to sustainable alternative modes of transport.
- There is sufficient car parking located in the vicinity of the site to cater for short-term car parking which will have a high car parking turnover. On the other hand, the long-term car parking (4P or longer) is highly occupied or ticketed which will disincentivise staff and guests to access the site via private motor vehicles unless guests are allocated a car space within the basement car park.
- The suppressed car parking provision will reduce traffic congestion and improve the pedestrian amenity in the vicinity of the site.
- The proposed car parking provision of 0.1 car spaces per room is marginally higher than the previously approved rate of 0.09 car spaces per room and is therefore considered appropriate.

Vehicular Access Arrangements and Car Parking Layout

- The proposed car parking layout and vehicle access arrangements have been suitably designed and in accordance with the relevant sections of Clause 52.06 of the Port Phillip Planning Scheme and/or AS/NZS2890.1.

Bicycle Parking & End of Trip Facilities

- The provision of 31 bicycle parking spaces on-site along with 12 bicycle parking spaces on-street meets the intent and requirements of the Port Phillip Planning Scheme and is considered acceptable. The provision will encourage cycling as a mode of transport to and from the site.
- The provision of end of trip facilities meets the requirements of Clause 52.34 of the Port Phillip Planning Scheme.

Loading and Waste Collection Arrangements

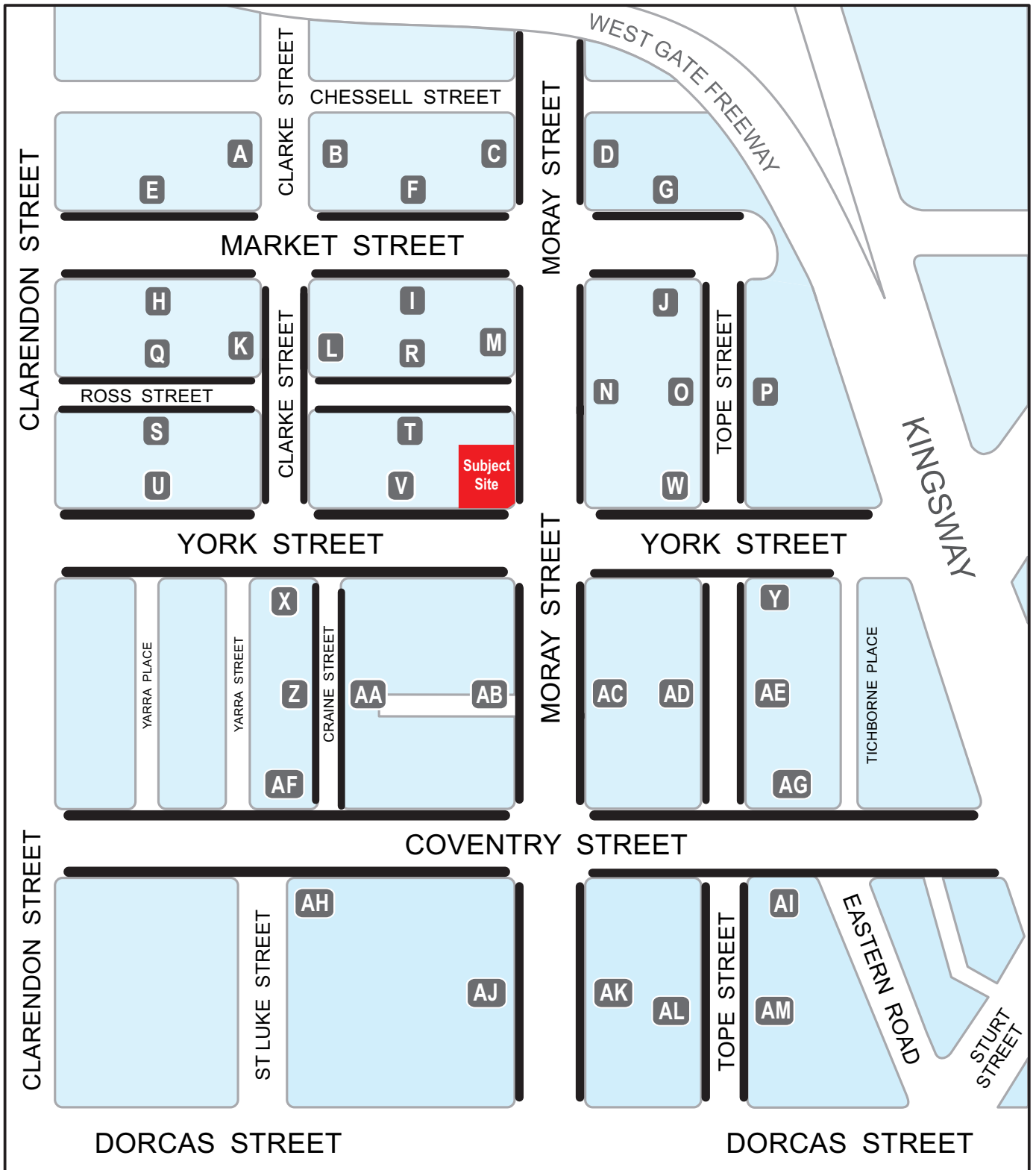
- Waste collection is proposed to be undertaken from within the vehicle accessway within the basement carpark via a 6.4 metres mini rear loader collection vehicle. This is considered to be an acceptable arrangement from a traffic engineering perspective, subject to the waste collection occurring outside of peak traffic times.
- Loading and unloading can suitably be undertaken within the existing Loading Zones along York Street, Moray Street and Little Moray Place. This is considered to be an acceptable arrangement from a traffic engineering perspective.

Traffic Impacts

- The development is estimated to generate in the order of 13 vehicle movements (one vehicle every 5 minutes on average). It is expected that Moray Street and the surrounding road network have the capacity to accommodate this level of additional traffic in a safe and satisfactory manner.

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

Appendix A Survey Results





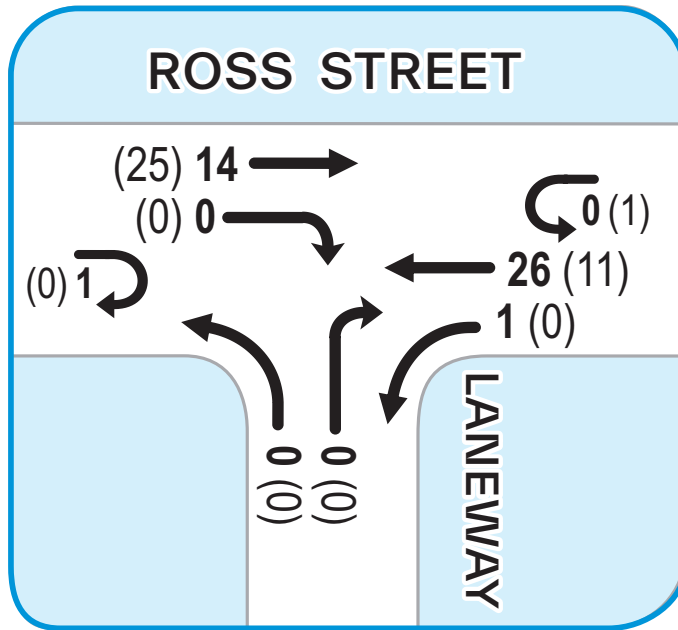
Date:	Thursday, 24 March 2022
Location:	122-132 Moray Street, South Melbourne
GPS:	-37.829695, 144.961938
Weather:	Fine
Customer:	Ratio

Public Parking (1/0)	Map Ref	Street	Section (GPS/Street Address if Off-Street Car Park)	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	18:00		
1	A	Clarke St	From Bridge To Market St	W	2P 8am-6pm Mon-Fri		1	0	0	1	1	1	0	0	0	0	0	0	0	0
1					P Ticket 8am-6pm Mon-Fri		6	4	5	6	6	6	6	6	6	5	5	4	4	4
0	AA	Craine St	From Coventry St To York St	E	No Stopping		0	0	0	0	0	0	0	0	0	0	0	0	0	0
1	AB	Moray St	From York St To Coventry St	W	1P Ticket 8am-6pm Mon-Fri		2	0	0	1	2	1	0	1	1	2	2	2	2	2
1					2P Ticket 8am-6pm Mon-Fri		4	2	3	4	4	4	4	4	4	4	4	3	3	3
1	AC			E	1P Ticket 8am-6pm Mon-Fri		7	4	4	5	6	7	7	7	6	6	5	5	5	5
1					P 15min Ticket 8am-8pm Mon-Fri		1	0	1	1	0	0	0	0	0	0	0	0	0	0
0					Loading Zone 8am-6pm Mon-Sat		1	0	0	1	1	1	0	0	0	1	1	1	1	1
1	AD	Toppe St	From Coventry St To York St	W	4P Ticket 8am-6pm Mon-Fri		7	4	6	7	7	7	7	7	6	5	4	4	4	4
1					P Disabled		1	0	0	1	1	1	1	1	1	0	1	1	1	1
0					Loading Zone 15min 8am-6pm Mon-Sat		1	1	1	1	0	1	1	1	0	1	1	1	0	0
1	AE			E	1P Ticket 8am-6pm Mon-Fri		11	4	5	6	7	8	8	8	7	7	6	6	4	4
1	AF	Coventry St	From Moray St To Clarendon St	N	1P Ticket 8am-6pm Mon-Sat		28	11	13	14	15	17	19	18	16	14	12	9	9	9
1					2P Disabled		1	0	1	1	1	1	1	1	0	0	0	0	1	1
0					Loading Zone 15min 8am-6pm Mon-Sat		2	0	2	1	0	1	2	2	2	2	1	0	0	0
1	AG		From Kings Way To Moray St	N	2P Ticket 8am-6pm Mon-Fri		14	9	11	12	13	14	14	14	14	12	10	9	9	9
0					Works Zone 7am-5pm Mon-Fri, 9am-3pm Sat		4	2	3	3	3	3	3	3	3	3	2	3	2	3
1	AH		From Moray St To Clarendon St	S	1P Ticket 8am-6pm Mon-Sat		35	10	14	15	16	19	21	19	17	16	15	11	11	11
1					P Disabled		2	0	2	2	2	1	0	1	2	2	1	0	1	0
1					Mail Zone 1pm-7am Mon-Fri, 1/4P All Other Times		1	0	1	1	0	1	1	1	0	1	1	1	1	1
1	AI		From Kings Way To Moray St	S	2P Ticket 8am-6pm Mon-Fri		11	7	9	10	10	11	11	11	10	9	8	7	7	7
1					1P Ticket 8am-6pm Mon-Fri		5	2	3	4	4	5	5	5	5	4	4	4	4	4
1	AJ	Moray St	From Coventry St To Dorcas St	W	1P Ticket 8am-6pm Mon-Fri		10	6	7	8	9	10	10	10	10	9	9	7	7	7
1	AK			E	P 10min 8am-6pm Mon-Fri		1	0	0	0	0	0	0	1	1	1	0	1	0	1
0					Loading Zone 15min 8am-6pm Mon-Sat		1	1	0	0	0	1	1	1	1	1	1	1	1	1
1					1P 8am-6pm Mon-Fri		2	1	0	1	2	1	0	1	2	2	2	0	0	0
1					2P 8am-6pm Mon-Fri		7	4	5	6	7	7	7	7	6	5	4	4	4	4
1	AL	Toppe St	From Dorcas St To Coventry St	W	1P Ticket 8am-6pm Mon-Fri		10	4	5	6	7	8	9	9	9	8	7	7	7	7
1	AM			E	P Ticket 8am-6pm Mon-Fri		11	6	8	10	11	11	11	11	10	9	9	7	7	7
1	B			E	P Ticket 8am-6pm Mon-Fri		8	5	6	7	8	8	8	8	8	7	5	5	5	5
0	C	Moray St	From Bridge To Market St	W	No Stopping Police Vehicles Excepted		3	0	0	1	1	1	1	2	2	1	0	1	1	1
0					Permit Zone Market Police Vehicles Excepted		2	1	0	0	0	1	2	2	2	2	1	1	1	1
1					1/2P 8am-6pm Mon-Fri		3	0	2	3	3	3	3	3	3	3	2	3	2	3
1	D			E	P Ticket 8am-6pm Mon-Fri		5	3	4	5	5	5	5	5	5	4	4	4	4	4
1	E	Market St	From Clarendon St To Clarke St	N	P Ticket 8am-6pm Mon-Fri		23	15	18	21	23	23	23	23	22	20	18	15	15	15
1	F		From Clarke St To Moray St	N	P Ticket 8am-6pm Mon-Fri		18	11	15	17	18	18	18	18	17	16	15	12	12	12
1	G		From Moray St To End	N	P Ticket 8am-6pm Mon-Fri		16	9	12	14	16	16	16	15	14	13	12	12	12	12
0					Loading Zone 15min 8am-6pm Mon-Sat		3	0	2	1	0	0	0	1	1	2	2	2	2	2
1	H		From Clarendon St To Clarke St	S	2P Ticket 8am-6pm Mon-Fri		16	10	12	14	15	16	16	16	15	13	11	10	10	10
1					P Disabled		1	1	0	1	1	1	1	1	1	1	0	0	0	0
1	I		From Clarke St To Moray St	S	P Ticket 8am-6pm Mon-Fri		12	6	8	10	12	12	12	11	10	9	8	8	8	8
0					Loading Zone 15min 8am-6pm Mon-Sat		2	0	0	0	0	0	0	0	0	0	0	0	0	0
1					1P Ticket 8am-6pm Mon-Fri		6	4	5	6	6	6	6	6	6	5	4	4	4	4
1	J		From Moray St To End	S	2P Ticket 8am-6pm Mon-Fri		11	9	10	11	11	11	11	11	10	9	7	7	7	7
1					P Ticket 8am-6pm Mon-Fri		5	3	4	5	5	5	5	5	5	4	4	4	4	4
0	K	Clarke St	From Market St To York St	W	Loading Zone 15min 8am-6pm Mon-Fri		1	0	0	0	0	0	0	0	0	0	0	0	0	0
1					P Ticket 8am-6pm Mon-Fri		5	3	4	5	5	5	5	5	4	4	3	2	2	2
1	L			E	P Ticket 8am-6pm Mon-Fri		10	6	8	9	10	10	10	10	10	9	8	7	7	7
1	M	Moray St	From Market To York St	W	P Ticket 8am-6pm Mon-Fri		5	3	4	5	5	5	5	5	4	4	3	2	2	2
1	N			E	P Ticket 8am-6pm Mon-Fri		7	4	6	7	7	7	7	7	7	6	5	5	5	5
1					2P 8am-6pm Mon-Fri		1	0	1	1	1	1	1	1	0	0	0	0	0	0
0					Loading Zone 15min 8am-6pm Mon-Fri		1	0	0	1	1	1	0	1	1	1	0	1	0	1
1	O	Toppe St	From York St To Market St	W	4P 8am-6pm Mon-Fri		2	0	0	1	2	1	0	1	1	1	0	2	2	2
1					2P 8am-6pm Mon-Fri		16	9	12	14	16	16	16	15	14	12	10	9	9	9
1	P			E	P Ticket 8am-6pm Mon-Fri		13	8	10	12	13	13	13	13	12	11	10	10	10	10
0	Q	Ross St	From Clarke St To Clarendon St	N	No Stopping		0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	R		From Moray St To Clarke St	N	No Stopping		0	0	0	0	0	0	0	0	0	0	0	0	0	0
1	S		From Clarke St To Clarendon St	S	1P 8am-6pm Mon-Sat		1	0	0	1	1	1	1	1	1	1	0	0	0	0
0					Permit Zone		2	0	0	0	0	0	0	0	0	0	0	0	0	0
1					2P Ticket 8am-6pm Mon-Fri		8	3	4	5	5	6	6	6	5	5	4	3	3	3
1	T		From Moray St To Clarke St	S	P Ticket 8am-6pm Mon-Fri		11	7	8	10	11	11	11	11	11	10	9	7	7	7
1	U	York St	From Clarke St To Clarendon St	N	2P Ticket 8am-6pm Mon-Fri		25	19	22	24	25	25	25	23	21	19	17	13	13	13
1	V		From Moray St To Clarke St	N	2P 8am-6pm Mon-Fri		14	10	11	13	14	14	14	14	13	12	11	9	9	9
0					Loading Zone 15min 8am-6pm Mon-Sat		3	0	0	0	0	1	2	1	0	0	0	0	0	0
1	W		From Kings Way To Moray St	N	4P Ticket 8am-6pm Mon-Fri		6	3	4	5	5	6	6	6	5	4	4	4	4	4
0					Loading Zone 15min 8am-6pm Mon-Sat		2	1	0	0	0	0	0	1	2	2	2	2	2	2
0					Permit Zone		2	1	0	1	2	1	0	0	0	0	0	0	1	1
1					2P 8am-6pm Mon-Fri		5	4	4	5	5	5	5	5	4	4	3	3	3	3
1	X		From Moray St To Clarendon St	S	2P 8am-6pm Mon-Fri		24	15	18	21	24	24	24	24	24	21	17	16	16	16
1					2P Ticket 8am-6pm Mon-Fri		6	4	5	6	6	6	6	6	5	5	4	3	3	3
1					2P Disabled		1	0	0	1	1	1	1	1	1	0	0	0	0	0

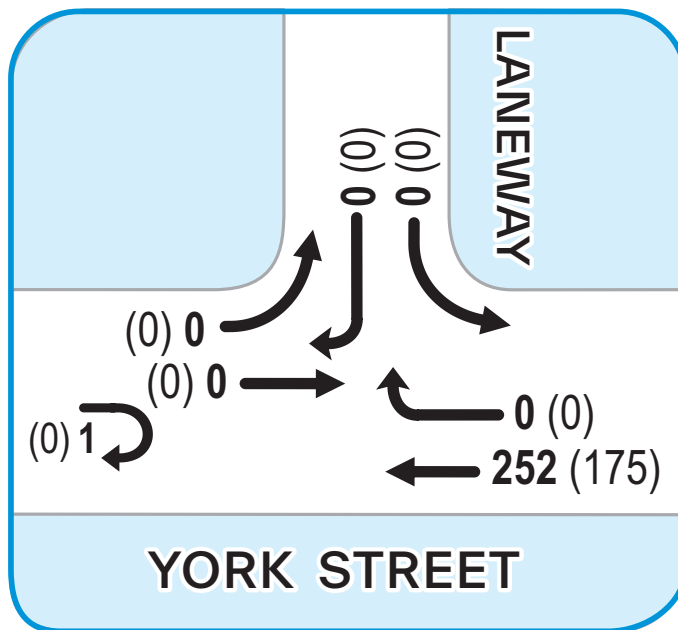
Parking 122-132 Moray St, South Melbourne - Analysis

0				Permit Zone, Carshare Go Get		1	0	1	1	1	1	1	1	1	0	1	1	0
0				Loading Zone 15min 8am-6pm Mon-Sat		3	0	0	0	0	0	0	0	0	0	0	0	0
1				P Disabled		1	0	0	1	1	1	1	1	1	1	1	0	1
1	Y		From Kings Way To Moray St	S	1P Ticket 8am-6pm Mon-Fri	6	2	3	4	4	4	4	4	4	4	4	4	3
1					2P 8am-6pm Mon-Fri	6	3	4	5	6	6	6	6	6	6	5	4	3
1	Z	Craine St	From Coventry St To York St	W	1P 8am-6pm Mon-Fri	1	0	1	1	1	1	0	0	0	0	1	1	0
0					Loading Zone 15min 8am-6pm Mon-Sat	6	0	0	1	2	3	3	3	3	3	2	0	
1					1/2P 8am-6pm Mon-Fri	2	0	2	2	2	2	2	1	0	0	0	0	1
PUBLIC CAPACITY							478	478	478	478	478	477	477	477	477	477	477	
PUBLIC OCCUPANCIES							257	330	394	424	436	434	430	401	374	319	277	
PUBLIC VACANCIES							221	148	84	54	42	43	47	76	103	158	200	
PUBLIC % OCCUPANCIES							54%	69%	82%	89%	91%	91%	90%	84%	78%	67%	58%	

not available for public parking



XX - AM PEAK: 8:30am - 9:30am
 (XX) - PM PEAK: 4:30pm - 5:30pm



XX - AM PEAK: 8:30am - 9:30am
 (XX) - PM PEAK: 5:30pm - 6:30pm



FIGURE 2.4

PEAK HOUR TURNING
 MOVEMENT COUNTS SURVEY

TRANS TRAFFIC SURVEY

TURNING MOVEMENT SURVEY

trafficsurvey.com.au



Intersection of York St and Laneway, South Melbourne

GPS -37.830148, 144.961591

Date:	Thu 24/03/22
Weather:	Fine
Suburban:	South Melbourne
Customer:	Ratio

North:	Laneway
East:	York St
South:	N/A
West:	York St

Survey Period	AM:	7:30 AM-9:30 AM
	PM:	4:30 PM-6:30 PM
Traffic Peak	AM:	8:30 AM-9:30 AM
	PM:	5:30 PM-6:30 PM

All Vehicles

Time		North Approach Laneway			East Approach York St			West Approach York St			Hourly Total	
Period Start	Period End	U	R	L	U	R	WB	U	EB	L	Hour	Peak
7:30	7:45	0	0	0	0	0	33	0	0	0	186	
7:45	8:00	0	0	0	0	0	43	0	0	0	218	
8:00	8:15	0	0	0	0	0	56	0	0	0	248	
8:15	8:30	0	0	0	0	0	54	0	0	0	250	
8:30	8:45	0	0	0	0	0	65	0	0	0	253	Peak
8:45	9:00	0	0	0	0	0	73	0	0	0		
9:00	9:15	0	0	0	0	0	58	0	0	0		
9:15	9:30	0	0	0	0	0	56	1	0	0		
16:30	16:45	0	0	0	0	0	44	0	0	0	147	
16:45	17:00	0	0	0	0	0	31	0	0	0	153	
17:00	17:15	0	0	0	0	0	42	0	0	0	163	
17:15	17:30	0	1	0	0	0	29	0	0	0	168	
17:30	17:45	0	0	0	0	0	50	0	0	0	175	Peak
17:45	18:00	0	0	0	0	0	41	0	0	0		
18:00	18:15	0	0	0	0	0	47	0	0	0		
18:15	18:30	0	0	0	0	0	37	0	0	0		

Peak Time		North Approach Laneway			East Approach York St			West Approach York St			Peak total
Period Start	Period End	U	R	L	U	R	WB	U	EB	L	
8:30	9:30	0	0	0	0	0	252	1	0	0	253
17:30	18:30	0	0	0	0	0	175	0	0	0	175

Appendix B Mechanical Car Stacker Specifications



PRODUCT DATA

DIMENSIONS, TECHNICAL INFORMATION AND PERFORMANCE SPECIFICATION

trendvario 6200+



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Explanation of symbols.....	2	Arrangement of grids – KombiSystem.....	8
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Vehicle data.....	3	Electrical installation.....	11
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Width dimension and door height.....	5	Performance specification.....	12
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Configuration with sliding door.....	6	Subject to technical changes.....	14
Detail of building configuration - rail system.....	7		
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Explanation of symbols



Platforms accessible horizontally.



max. load per parking space in kg.
Upweighting over 2000 kg possible with surcharge (see "Vehicle data", page 3).



Parking space load can be subsequently upweighted (see "Vehicle data", page 3).



Traversable and can be combined with other TrendVario systems as a KombiSystem.



The systems provided are consistent with DIN EN 14010, the VDMA 15423 specification and the EC Machinery Directive 2006/42/EC.

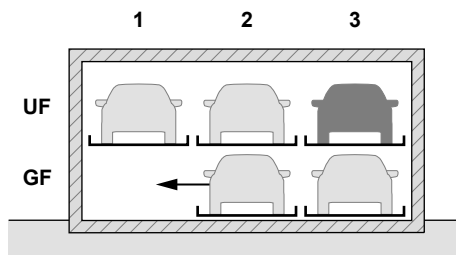


This system has also undergone a voluntary compliance test conducted by TÜV SÜD.

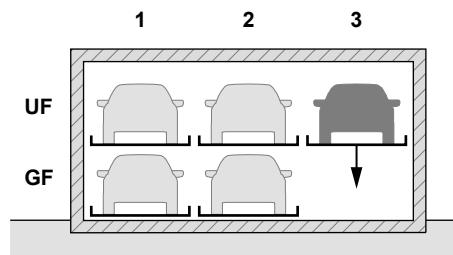
Function diagram with standard designation



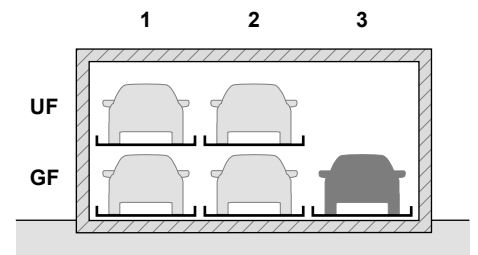
Example for vehicle on upper floor (UF) of grid 3:
Selection via the control panel; all doors must be closed.
Representation of parking spaces in a row.



To remove the vehicle from the space in **grid 3/UF**, the GF platforms are moved to the left.



The empty space is now located under the vehicle being removed. The parking space in **grid 3/UF** is lowered.



The vehicle in the space in **grid 3/UF** can now be removed.

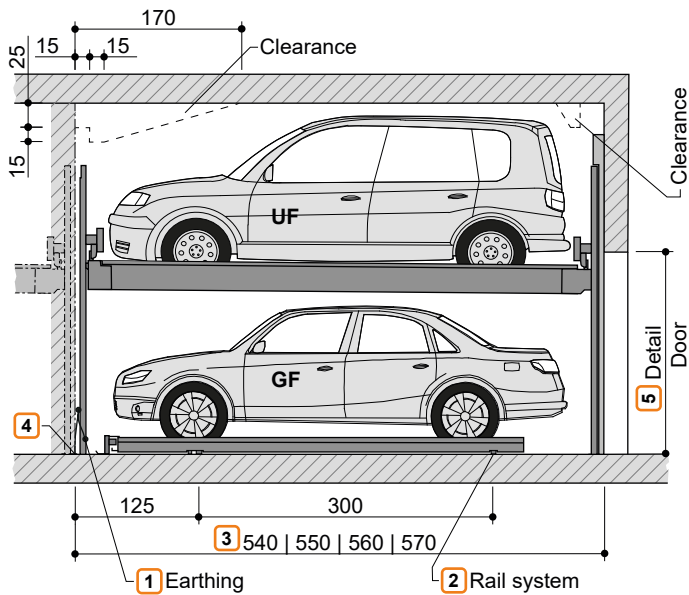
Dimensions and tolerances



All dimensions and minimum final dimensions.
Tolerance for dimensions +3/-0. Dimensions in cm.
In order to adhere to the minimum final dimensions, the tolerances in accordance with the German Construction Tendering and Contract Regulations [VOB], Part C (DIN 18330 and 18331) and DIN 18202 must also be taken into account.

Overview of building configuration

Building configuration with vertical door 5



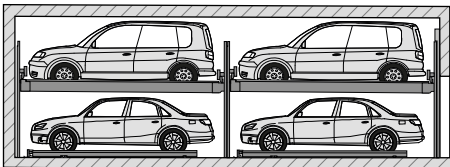
- 1 Equipotential bonding from foundation earth connection to system (to be provided by the customer).
- 2 The tolerances for evenness of the roadway (floor) must be adhered to in accordance with DIN 18202, Table 3, row 3. (see "Detail of building configuration - rail system", page 7).
- 3
 - 540 cm for vehicles up to 5.0 m long
 - 550 cm for vehicles up to 5.1 m long
 - 560 cm for vehicles up to 5.2 m long
 - 570 cm for vehicles up to 5.3 m long
 Shorter versions are possible on request - observe local regulations on parking space lengths.
We recommend a minimum length of 560 cm for comfortable use of your parking space and increasingly longer vehicles.
- 4 No fillets/haunches are permitted at the transition from the pit floor to the walls. If fillets/haunches are required, the systems must be narrower or the pits wider.
- 5 Door detail and other door variants (see "Configuration with vertical door", page 5 and see "Configuration with sliding door", page 6).



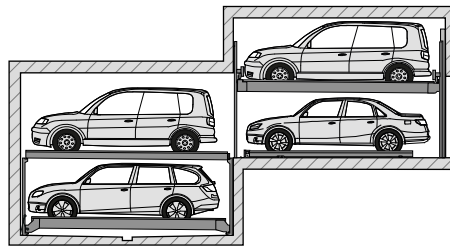
If fire-extinguishing systems are required, the customer must ensure that sufficient clearance is provided.

KombiSystem examples

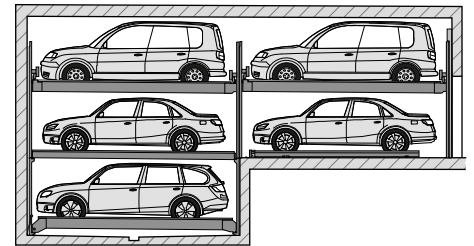
Combination 6200+ with 6200+



Combination 6100 with 6200+



Combination 6300 with 6200+



Vehicle data

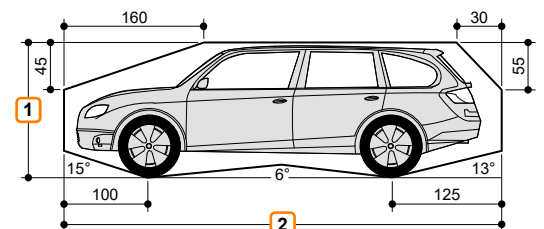
Parking options

Series vehicles:
saloon, estate, SUV, van in accordance with clearance gauge and maximum parking space load.

	UF GF 3		
Weight 4	2000 kg	2600 kg	3000 kg
Wheel load	500 kg	650 kg	750 kg

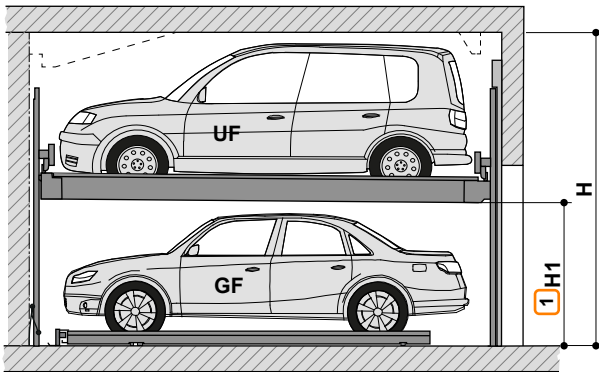
- 1 Vehicle height (see "Overview of system types and ceiling heights", page 4)
- 2 Vehicle length (see "Overview of building configuration", page 3)
- 3 UF = upper floor | GF = ground floor
- 4 Individual space loads can also be subsequently upweighted to 3000 kg.

Clearance gauge



Vehicle width 190 cm with platform width 230 cm.
Correspondingly wider vehicles can be parked with wider platforms.

Overview of system types and ceiling heights



H: Ceiling height
H1: Headroom

Type	H1	Vehicle height GF	Vehicle height UF														
			150	155	160	165	170	175	180	185	190	195	200	205	210	215	220
6200+/160	160	150	330	335	340	345	350	355	360	365	370	375	380	385	390	395	400
6200+/165	165	155	335	340	345	350	355	360	365	370	375	380	385	390	395	400	405
6200+/170	170	160	340	345	350	355	360	365	370	375	380	385	390	395	400	405	410
6200+/175	175	165	345	350	355	360	365	370	375	380	385	390	395	400	405	410	415
6200+/180	180	170	350	355	360	365	370	375	380	385	390	395	400	405	410	415	420
6200+/185	185	175	355	360	365	370	375	380	385	390	395	400	405	410	415	420	425
6200+/190	190	180	360	365	370	375	380	385	390	395	400	405	410	415	420	425	430
6200+/195	195	185	365	370	375	380	385	390	395	400	405	410	415	420	425	430	435
6200+/200	200	190	370	375	380	385	390	395	400	405	410	415	420	425	430	435	440
6200+/205	205	195	375	380	385	390	395	400	405	410	415	420	425	430	435	440	445
6200+/210	210	200	380	385	390	395	400	405	410	415	420	425	430	435	440	445	450
6200+/215	215	205	385	390	395	400	405	410	415	420	425	430	435	440	445	450	455
6200+/220	220	210	390	395	400	405	410	415	420	425	430	435	440	445	450	455	460

H - Ceiling height

1 Maximum vehicle height for the passage = H1 - 5 cm

Example configuration



Example: Vehicle height, GF 165 cm and vehicle height, UF 180 cm.

Type: 6200+/175

Ceiling height: 375 cm

Type	H1	Vehicle height GF	Vehicle height UF														
			150	155	160	165	170	175	180	185	190	195	200	205	210	215	220
6200+/160	160	150	330	335	340	345	350	355	360	365	370	375	380	385	390	395	400
6200+/165	165	155	335	340	345	350	355	360	365	370	375	380	385	390	395	400	405
6200+/170	170	160	340	345	350	355	360	365	370	375	380	385	390	395	400	405	410
6200+/175	175	165	345	350	355	360	365	370	375	380	385	390	395	400	405	410	415
6200+/180	180	170	350	355	360	365	370	375	380	385	390	395	400	405	410	415	420

H

Width dimension and door height

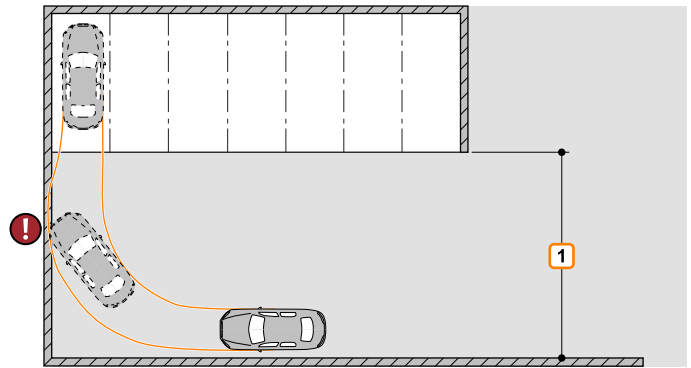


We recommend platform widths of minimum 250 cm and driving lane widths of 650 cm in order that vehicles can comfortably access the Multiparking system and enter and leave without difficulty.

Narrower platforms may impede parking according to the following criteria.

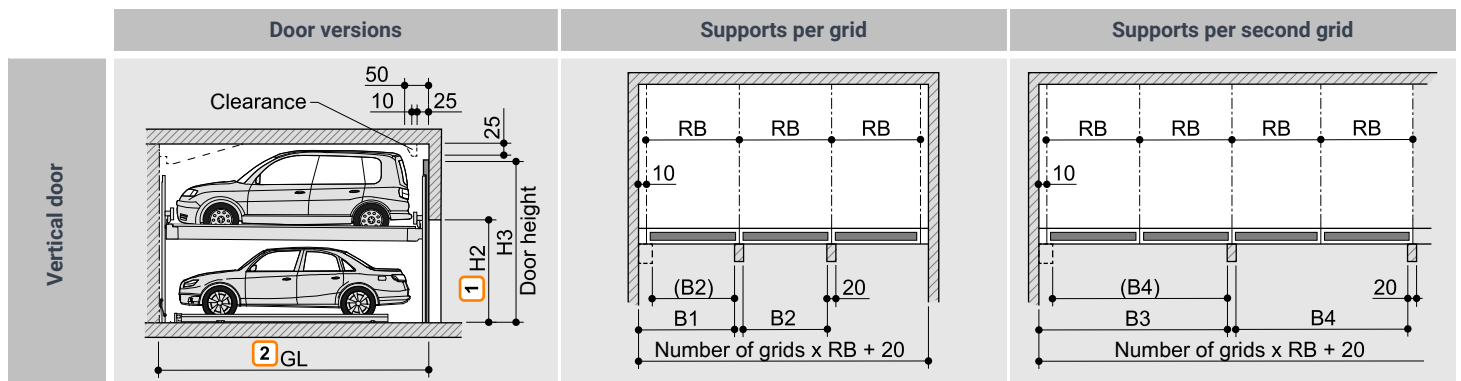
- Driving lane width
- Entrance conditions
- Vehicle dimensions

- 1 Observe minimum driving lane width in accordance with local regulations.



For commercial use of doors with electrical drive systems, an inspection log is required in accordance with ASR A1.7 'Technical rules for workplaces' in Germany. The door must be inspected by an expert before commissioning and annually thereafter and the result entered in the inspection log. The inspection must be carried out independently of maintenance. Observe local regulations on operation of electrical doors.

Configuration with vertical door



	Clear platform width		RB 3	Supports per grid		Supports per second grid	
	UF	GF		B1	B2	B3	B4
Width dimensions	230	220	250	250	230	500	480
	240	230	260	260	240	520	500
	250	240	270	270	250	540	520
	260	250	280	280	260	560	540
	270	260	290	290	270	580	560

	max. vehicle height UF GF															
	150	155	160	165	170	175	180	185	190	195	200	205	210	215	220	
H2	210	210	210	210	210	210	210	210	210	210	215	220	225	230	235	
H3	325	335	335	335	335	335	360	360	360	360	360	380	380	380	380	

- 1 Observe minimum clear height H2 in accordance with local regulations.
 2 GL = building length (see "Overview of building configuration", page 3).
 3 RB = grid width. These dimensions **must** be adhered to.

Configuration with sliding door

	Door versions			Supports per grid		Supports per second grid									
Sliding door behind the supports															
Sliding door inside the supports		Not possible!													
Sliding door in front of the supports															
	Clear platform width		RB ³	Supports per grid		Supports per second grid									
	UF	GF		B1	B2	B3	B4								
Width dimensions	230	220	250	250	230	500	480								
	240	230	260	260	240	520	500								
	250	240	270	270	250	540	520								
	260	250	280	280	260	560	540								
	270	260	290	290	270	580	560								
	max. vehicle height UF GF														
	150	155	160	165	170	175	180	185	190	195	200	205	210	215	220
H2	210	210	210	210	210	210	210	210	210	210	215	220	225	230	235
H3	220	220	220	220	220	220	220	220	220	220	225	230	235	240	245
H4	210	210	210	210	210	210	210	210	210	210	215	220	225	230	235

- ¹ Observe minimum clear height H2/H3/H4 in accordance with local regulations.
- ² GL = building length (see "Overview of building configuration", page 3).
- ³ RB = grid width. These dimensions **must** be adhered to.

Detail of building configuration - rail system

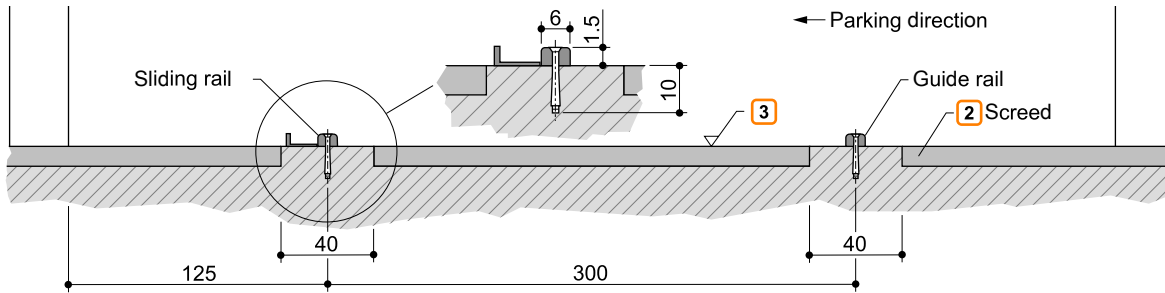


Various options are available for rail installation depending on the structural conditions.

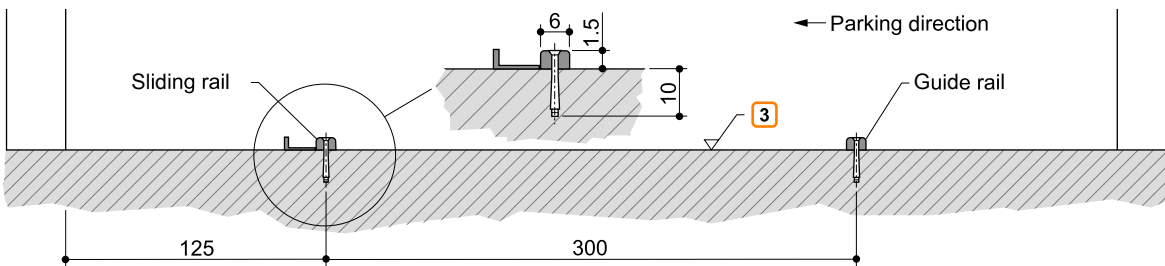
Rail load due to a moving traffic load:

- With parking space load 2000 kg: 6.5 kN per wheel
- With parking space load 2600 kg: 8.0 kN per wheel
- With parking space load 3000 kg: 9.0 kN per wheel

Laying on strip foundation ¹



Laying on finished floor ¹



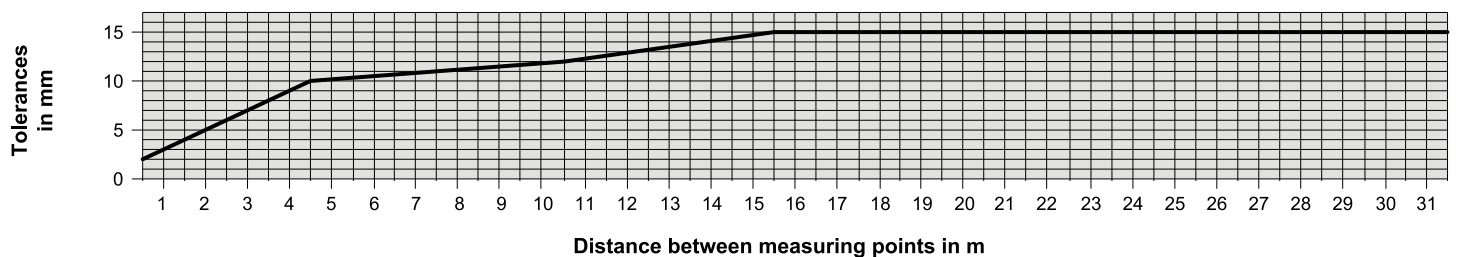
- ¹ The tolerances for evenness of the roadway (floor) must be adhered to in accordance with DIN 18202, Table 3, row 3. There must be no building joints or expansion joints in the area around the rail system.
- ² We do not recommend using poured asphalt.
- ³ Upper edge finished floor

Evenness tolerance – extract from DIN 18202, Table 3



The safety clearance between the outer lower edges of the ParkBoard and the floor must not exceed 2 cm. To comply with the requirement in DIN EN 14010 and to reach the requisite floor evenness, the evenness of the finished floor in accordance with DIN 18202, Table 3, row 3 must not be exceeded. The customer does not, therefore, need to level the floor.

Row	Reference	Inside micrometer as limit values in mm with measuring point distances in m to ¹				
		0.1	1	4	10	15
3	Finished floors, e.g. screeds as floor screeds, screeds for floor coverings, floor coverings, tile coverings, levelled and glued coverings	2	4	10	12	15

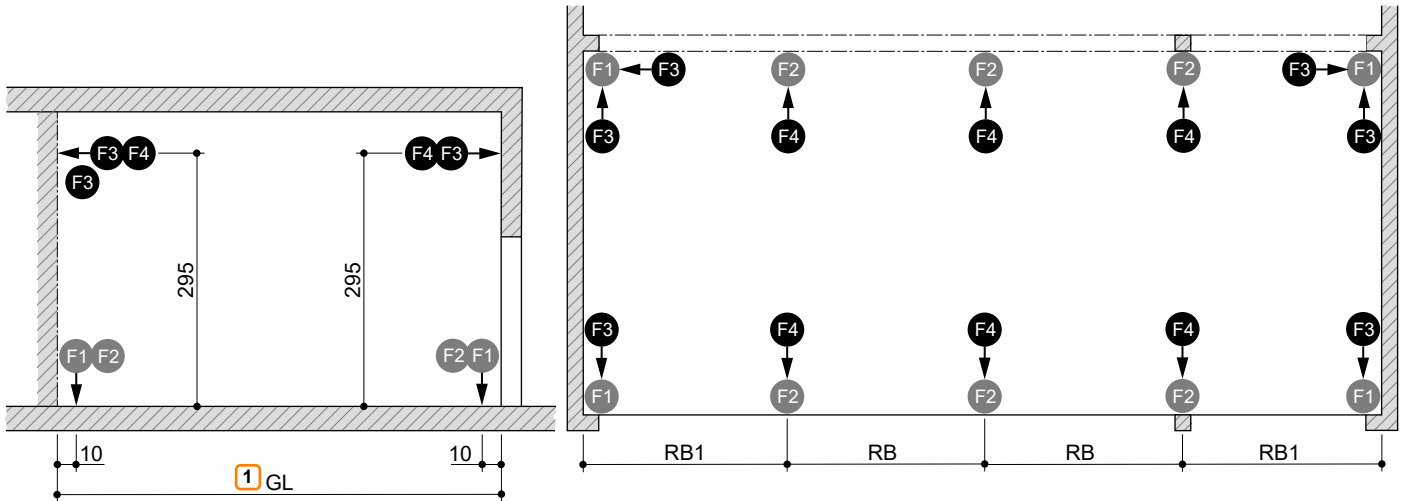


- ¹ Intermediate values can be found in the diagram and should be rounded up.

Loading schedule



The systems are dowelled into the ground. The drill hole depth in the floor plate is approx. 15 cm, in the walls approx. 12 cm. The floor plate and walls must be from concrete (quality min. C20/25). The dimensions for the bearing points have been rounded. If the precise figures are required, please consult KLAUS Multiparking.

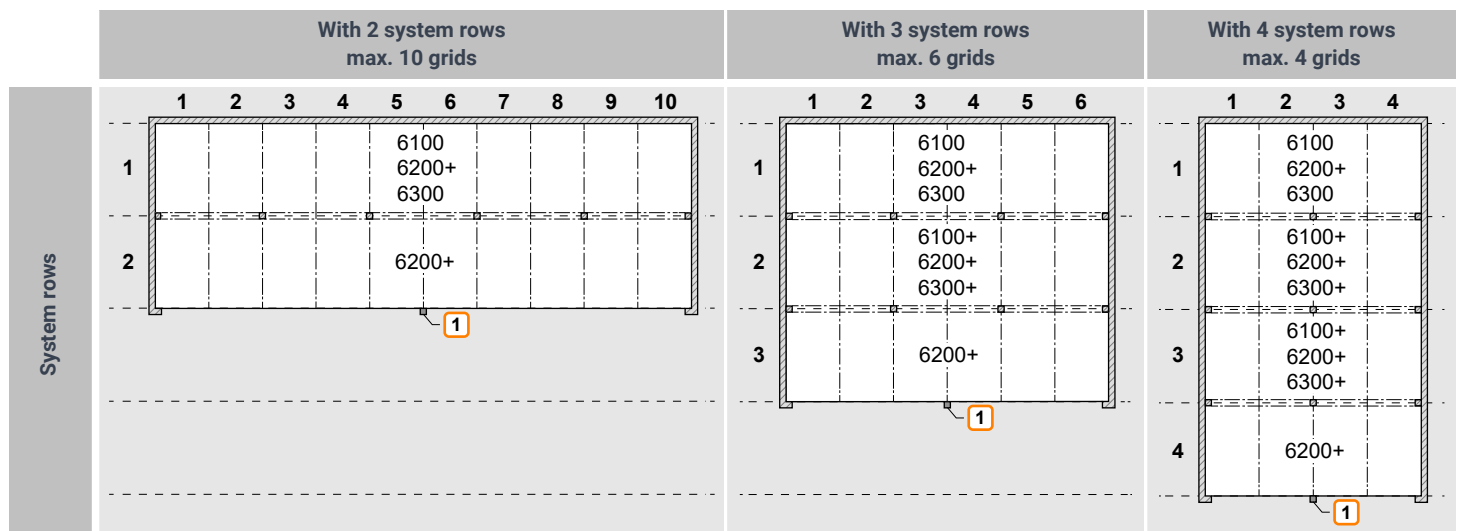


Parking space load	F1	F2	F3	F4
2000 kg	+ 9.0 kN - 0.1 kN	+ 18.0 kN - 0.2 kN	± 0.5 kN	± 1.0 kN
2600 kg	+ 12.0 kN - 0.3 kN	+ 24.0 kN - 0.6 kN	± 0.8 kN	± 1.6 kN
3000 kg	+ 13.0 kN - 0.4 kN	+ 26.0 kN - 0.8 kN	± 1.0 kN	± 2.0 kN

Clear platform width UF	RB 2	RB1
230	250	260
240	260	270
250	270	280
260	280	290
270	290	300

- 1 GL = building length
- 2 RB = grid width. These dimensions **must** be adhered to.

Arrangement of grids – KombiSystem

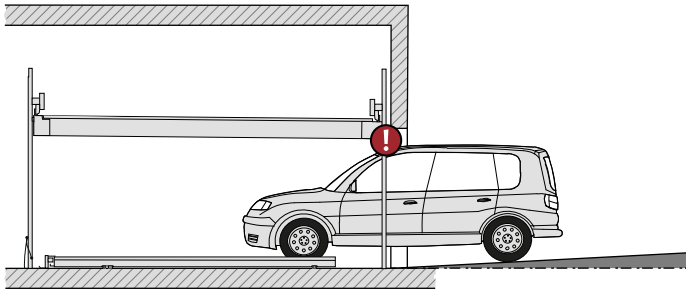


- 1 Control panel

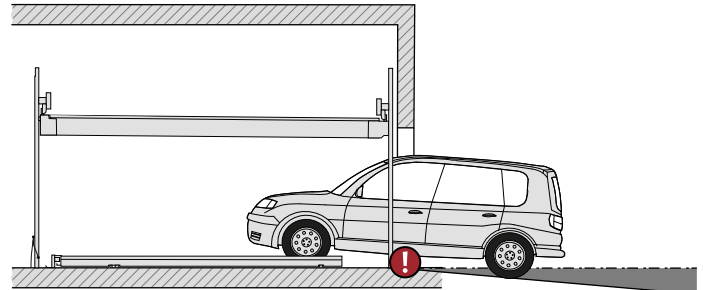
Access incline



The maximum access inclines specified in the symbol sketch must not be exceeded. Improper configuration can lead to extreme difficulty accessing the system, for which KLAUS Multiparking cannot be held liable. Where above-ground garages are on a slope, provision of a drainage gutter in the access is recommended.

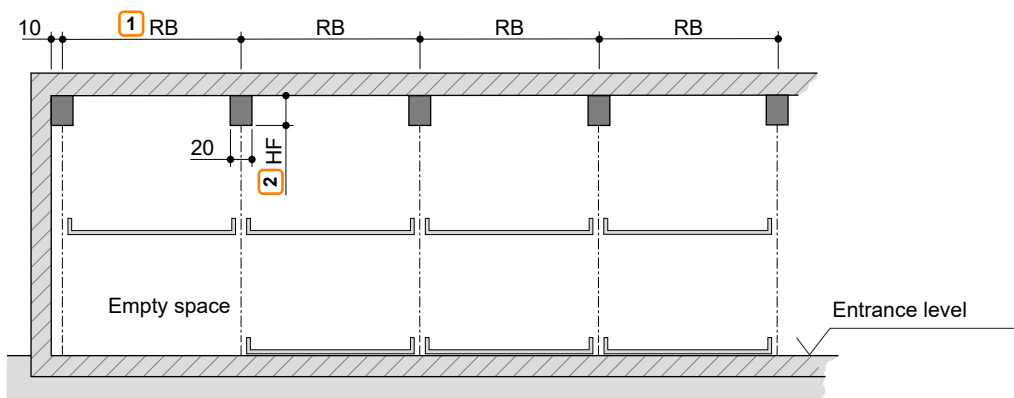


max. 3% slope



max. 5% gradient

Clearance for installations




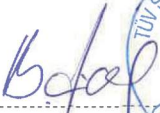

1 RB = grid width. These dimensions **must** be adhered to.

2 HF: Clearance height = building height (H) - 305 cm | where CH max. = 45 cm (see "Overview of system types and ceiling heights", page 4).

■ Clearance for lengthways cable routing

CE conformity

The systems provided are consistent with DIN EN 14010, the VDMA 15423 specification and the EC Machinery Directive 2006/42/EC. This system has also undergone a voluntary compliance test conducted by TÜV SÜD.

ZERTIFIKAT ◆ CERTIFICATE ◆ 認証証書 ◆ CERTIFICADO ◆ CERTIFICAT	 Industrie Service
	<h2>Certificate concerning the examination of conformity</h2>
	Certificate no: CA 695
	Certification body: TÜV SÜD Industrie Service GmbH Westendstr. 199 80686 München – Germany
	Applicant / Certification holder: KLAUS Multiparking GmbH Hermann-Krum-Str. 2 88319 Aitrach – Germany
	Manufacturer: KLAUS Multiparking GmbH Hermann-Krum-Str. 2 88319 Aitrach – Germany
	Product: Equipment for power driven parking of motor vehicles
	Type: TrendVario 6200+ 2.000 kg, 2.600 kg, 3.000 kg
	Directive: 2006 / 42 / EC, Annex I
	Test specifications: DIN EN 14010:2003+A1:2009
Date and number of the test report / mark of conformity: No. CA 695 from 2023-03-17	
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: 2023-03-31	
Validity: 2028-03-30	
 Bernd Gründling Zertifizierstelle der Fördertechnik	
 TÜV®	

Electrical installation

Switch cabinet and master switch

Access to the switch cabinet (about 60 x 60 x 25 cm) must be possible without danger. The lockable master switch must be positioned so that the entire entry area of the facility can be surveyed.

With wall opening from switch cabinet to system (consultation with KLAUS Multiparking required).

Hydraulic unit

- 3.0 kW, three-phase current 230/400 V / 50 Hz

Alternative versions for a surcharge:

- 5.2 kW, three-phase current 230/400 V / 50 Hz for shorter access times.
- One hydraulic unit per row (3 kW or 5.2 kW) for shorter access times.

Supply cable to master switch

With one hydraulic unit:

Customer-provided supply cable min. 5 x 2.5 mm² (3 PH+N+PE) to master switch with pre-fuse 3 x 16 A (slow) or circuit breaker 3 x 16 A (trip characteristic K or C).

With multiply hydraulic units:

Customer supply cable at least 5 x 2.5 mm² to master switch with pre-fuse 3 x 32 A (slow) or circuit breaker 3 x 32 A (trip characteristic K or C). DIN/VDE and local regulations of energy-supply companies must be observed (see "Supply cable to master switch - foundation earth", page 14).

Control panel with emergency-stop

- Attachment at a clear point (e.g. pillar).
- Secured against external operation.

Technical information

Usage area

The system is suitable for a fixed group of users as standard. Where users change (e.g. short-term parking in office buildings or hotels), structural modifications to the Multiparking system are required. Please request a consultation if required.

Units

Low-noise, bearing-mounted hydraulic units are installed on rubber-metal blocks. Consequently, we recommend separating the garage body from the residential building.

Parking space designation

Please consult the function diagram for the standard designation of the parking spaces (see "Function diagram with standard designation", page 2). Alternative designations are possible with a surcharge.

Please note the following specifications:

- The empty space is situated on the left as standard.
- Any alternative designations must be notified 8 to 10 weeks before delivery.

Ambient conditions

Ambient conditions for the areas around Multiparking systems: Temperature range -10 to +40° C. Relative humidity 50 % to a maximum external temperature of +40° C.

If ascent/descent times are specified, these relate to an ambient temperature of +10° C and with the system positioned immediately adjacent to the hydraulic unit. These times are increased at lower temperatures or with longer hydraulic lines.

Building application documents

Multiparking systems generally require approval. Please observe local regulations and stipulations.

Care

To prevent corrosion damage, please observe our special cleaning and care instructions and ensure that your garage is well ventilated.

Corrosion protection

In accordance with the 'Corrosion protection' supplement.

Electrically driven doors

For commercial use of doors with electrical drive systems, an annual inspection is required in accordance with ASR A1.7 'Technical rules for workplaces' in Germany. We urgently recommend concluding a maintenance contact as these services are included for the complete system.

CE conformity

The systems provided are consistent with DIN EN 14010, the VDMA 15423 specification and the EC Machinery Directive 2006/42/EC. This system has also undergone a voluntary compliance test conducted by TÜV SÜD.

Noise protection

Standard noise protection:

In accordance with DIN 4109-1 Noise protection in high-rise - Section 9: Maximum sound pressure level in living and sleeping areas 30 dB (A). User noise is not subject to the requirements.

The following dimensions are required for adherence to this value:

- Noise protection package in accordance with quote/order (KLAUS Multiparking)
- Sound insulation dimension of the building structure of min. R'_w = 57 dB (service to be provided by the customer)

Increased sound protection (special agreement):

In accordance with DIN 4109-5 Increased noise protection in high-rise - Section 8: Maximum sound pressure level in living and sleeping areas 25 dB (A). User noise is not subject to the requirements.

The following dimensions are required for adherence to this value:

- Noise protection package in accordance with quote/order (KLAUS Multiparking)
- Sound insulation dimension of the building structure of min. R'_w = 62 dB (service to be provided by the customer)

Note:

User noise is noise that can be influenced individually by the user of our Multiparking systems. This includes, e.g., accessing the platform, the slamming of vehicle doors, engine and brake noise.

Performance specification

Description

Multiparking system for independent parking of vehicles one on top of and next to one another.

The system is traversable and can be combined with the TrendVario 6100, 6100+, 6200+, 6300 and 6300+ (details on these systems can be found on the corresponding product sheets).

Dimensions in accordance with the underlying building, width and height dimensions.

Access to the parking spaces horizontally (installation tolerance $\pm 1\%$).

An access must be provided over the entire width of the system (minimum driving lane width in accordance with local regulations).

The parking spaces are arranged on 2 levels one on top of the other. Vehicles park on stable steel platforms.

The platforms on the upper floor (UF) move vertically, the platforms on the ground floor (GF) move horizontally. At entrance level (GF), there is always 1 parking space less. This empty space is used for sideways movement of the GF parking spaces to allow a parking space on the UF above to lower to entrance level. Consequently, 3 parking spaces (1 on GF, 2 on UF) is the smallest unit for this parking system.

Vehicle positioning in any parking space by positioning aid mounted on one side (to be adjusted in accordance with the operating instructions).

For safety reasons, the movement operation of the platforms always takes place behind locked doors.

All requisite safety equipment is integrated into the system. This essentially comprises a chain monitoring system, locking levers for the upper platforms and locked doors. The doors can only be opened when the selected parking space has reached its parking position.

Steel frame (secured to the floor) comprising:

- Supports (arranged in rows)
- Crossbeams and lengthways beams
- Sliding rails for the sideways moving GF platforms

Platform comprising:

- Platform profiles
- Adjustable positioning aid
- Chamfered ramp
- Side beams
- Crossbeams
- Screws, nuts, washers, spacers, etc.

Lifting equipment for platforms on the UF comprising:

- Hydraulic cylinders with solenoid valves
- Chain wheels
- Chains
- Limit switches
- The platforms are each suspended at 4 points and are guided at the supports by means of plastic plain bearings

Drive unit for sideways moving platforms on GF:

- Gear motor with chain wheel
- Chains
- Sliding and guide rollers (low-noise)
- Power supply via energy chain

Hydraulic unit comprising:

- Hydraulic unit (low-noise, fitted to bracket and bearing mounted on rubber-metal block)
- Hydraulic oil tank
- Oil filling
- Internal gear pump
- Pump holder
- Coupling
- Three-phase motor
- Noise protection, motor protection switch and control fuse
- Test pressure gauge
- Pressure relief valve
- Hydraulic hoses (to attenuate noise transmission to the hydraulic pipes)

Control:

- Central control point (control panel with emergency-stop) for selecting the desired parking space
- The electrical wiring from the system cabinet is provided by the supplier

Vertical doors:

Size

Dimensions adjusted to the underlying widths and height dimensions. The door comprises two door leaves

Frame

- Frame structure with two vertical centre rungs from extruded aluminium profiles (anodised, coating thickness approx. 20 μm)
- There is a rubber lip on the closing edge for a clean seal with the building.

Door filling

Aluminium perforated plate

- Thickness 1.5 mm., RV 8-14 E6/EV1, anodised, coating thickness approx. 20 μm
- Ventilation cross-section of the filling approx. 30%

Guide rails

- The sliding rails of the doors are attached to the steel frame of the system.
- Galvanised steel guide rails (coating thickness approx. 20 μm).

Door actuation

■ Electrical drive system by means of electric motor, above the door frame. For safety reasons, the movement operation of the platforms always takes place behind locked doors. An electrical signal generator is used to query the positions 'door open' and 'door closed'.

Please note:

Door apertures (at the side, covers over the sliding rails, etc.) and door suspensions are not included with the standard configuration but can be supplied as special equipment with a surcharge.

Sliding doors:

Size

- Sliding doors, size approx. 2500 mm x 2000 mm (width x height).

Frame

- Frame structure with one vertical centre rung from extruded aluminium profile (anodised, coating thickness approx. 20 µm)
- A handle shell is provided in a vertical aluminium profile for opening the doors.
- There is a rubber lip on the closing edge for a clean seal with the building.

Standard door filling

Aluminium perforated plate

- Thickness 2 mm, RV 5-8 E6/EV1, anodised, coating thickness approximately 20 µm
- Ventilation cross-section of the filling approx. 40%

Alternative door filling

Plain aluminium sheet

- Thickness 2 mm E6/EV1, anodised, coating thickness approximately 20 µm

Corrugated steel sheet

- Thickness 1 mm galvanised, coating thickness approximately 20 µm
- Additional powder coating, coating thickness approx. 25 µm on the outside and approx. 12 µm on the inside
- Colour options on the outside (building view):

RAL 1015 (light ivory)	RAL 3003 (ruby red)
RAL 5014 (pigeon blue)	RAL 6005 (moss green)
RAL 7016 (anthracite grey)	RAL 7035 (light grey)
RAL 7040 (window grey)	RAL 8014 (sepia brown)
RAL 9006 (white aluminium)	RAL 9016 (traffic white)

- Door inside in a light grey tone

Wood filling

- Nordic spruce in A sorting
- Vertical tongue and groove boards
- Colourless, pre-coated

Composite safety glass

- Composite safety glass from 8/4 mm

Wire mesh

- Mesh size 12 x 12 mm
- Wire diameter 2 mm, galvanised, coating thickness approx. 20 µm
- Ventilation cross-section of the filling approx. 70%

Sliding rails

- The running gear comprises 2 double-pair roll systems per door, height-adjustable
- The sliding rails of the doors are attached to brackets with cover bushings or directly to the concrete lintel or a building-specific door suspension
- The lower guide comprises 2 plastic rollers on a base plate which is dowelled to the floor
- Sliding rails, cover bushings, guide roller base plate are galvanised

Door actuation

- Electrical drive system by means of electric motor attached to the rail system in the turning point of the sliding doors. The drive pinion engages a chain attached to the door.

For safety reasons, the movement operation of the platforms always takes place behind locked doors. An electrical signal generator is used to query the positions 'door open' and 'door closed'.

Separation (if required)

- On request

Please note:

Door apertures (at the side, cover over the sliding rails, etc.) and door suspensions are not included with the standard configuration but can be supplied as special equipment with a surcharge.

Services to be provided by the customer

Barriers

Barriers that may be required in accordance with DIN EN ISO 13857 where there are roadways immediately in front of, adjacent to or behind the systems. This also applies during the construction stage.

Parking space numbering

Parking space numbering, if required.

Building services systems

Any lighting, ventilation, fire-extinguishing and fire-alarm systems that may be required, plus clarification and compliance with corresponding official documentation.

Lighting

The customer must observe local regulations pertaining to the illumination of parking spaces and roadways. In accordance with DIN EN 12464-1 'Light and lighting - Lighting of work places', an illumination level of min. 200 lx is recommended for the parking spaces and operating area of the system. A floating contact can be provided for actuation of parking space lighting provided by the customer.

Floor structure – rails

Floor structure in accordance with the details on the product data sheet (see "Detail of building configuration - rail system", page 7).

Recesses, tolerances for evenness of the roadway must be adhered to in accordance with DIN 18202, Table 3, row 3.

Lining for the rail system by means of cement screed over the entire length. Laying the screed

Wall openings

Wall openings, if required.

Supply cable to master switch - foundation earth

The customer must lay the supply cable to the master switch during assembly. Functional capability can be checked by our engineers on site, in conjunction with the electronics engineer. If this is not possible during assembly for reasons attributable to the customer, the customer must commission an electronics engineer.

The customer must earth the steel structure with a foundation earth connection (earthing distance max. 10 m) and equipotential bonding in accordance with DIN EN 60204.

Door suspensions

Please note that if the specified clear heights (see "Width dimension and door height", page 5) are not adhered to, additional measures for door attachment (door suspensions) will be required for a surcharge.

Door apertures

Door apertures, if required. This may be requested from KLAUS Multiparking for a surcharge.

Subject to technical changes

In the course of technical progress, KLAUS Multiparking shall be entitled to use newer or different technologies, systems, processes or standards to provide the services than initially offered, provided that this does not disadvantage the customer in any way.

KLAUS Multiparking GmbH

Hermann-Krum-Straße 2
88319 Aitrach / Germany

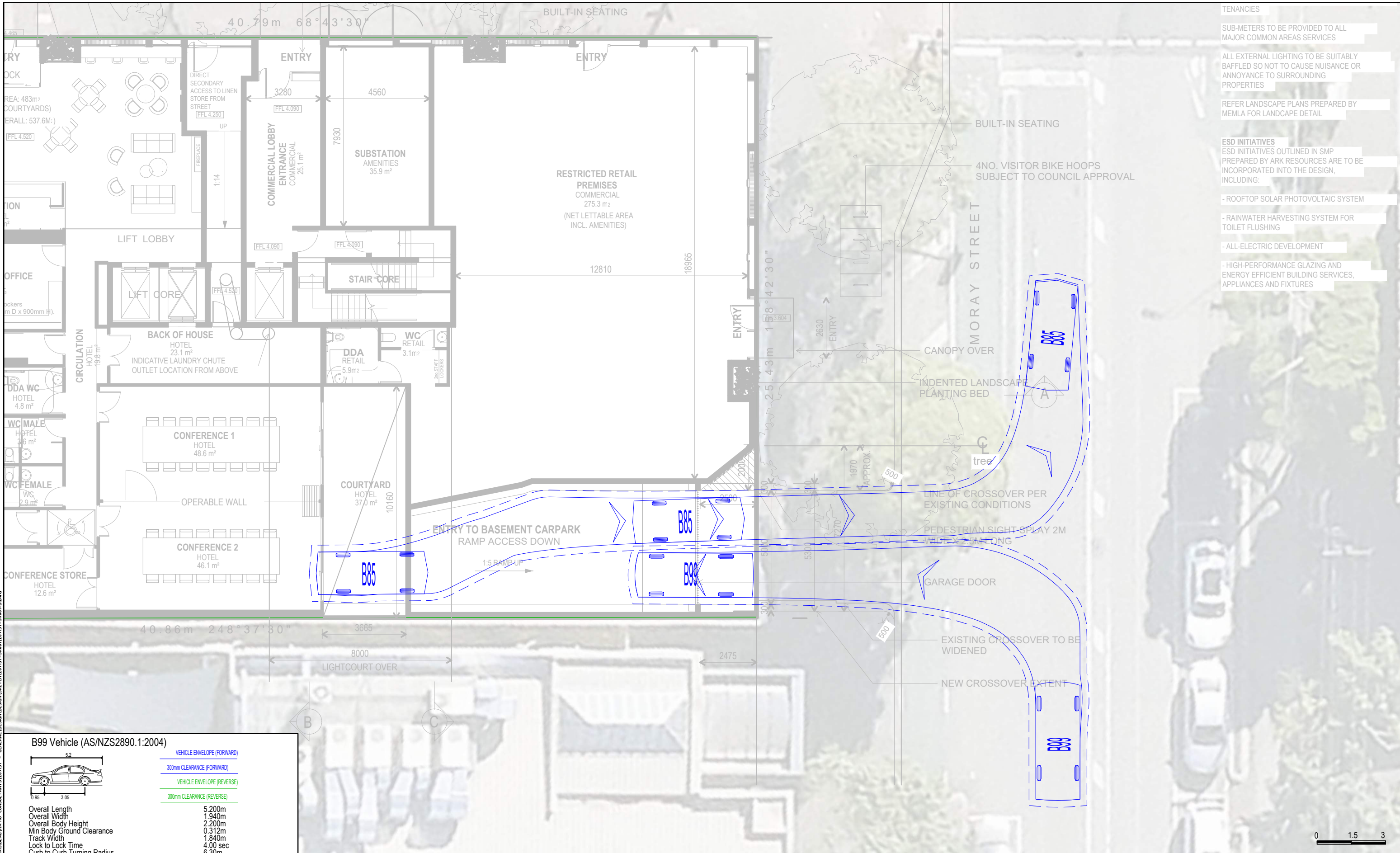
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info@multiparking.com
www.multiparking.com



PARK
& SMILE

Appendix C Swept Path Assessment



- TENANCIES**
- SUB-METERS TO BE PROVIDED TO ALL MAJOR COMMON AREAS SERVICES
 - ALL EXTERNAL LIGHTING TO BE SUITABLY BAFFLED SO NOT TO CAUSE NUISANCE OR ANNOYANCE TO SURROUNDING PROPERTIES
 - REFER LANDSCAPE PLANS PREPARED BY MEMLA FOR LANDSCAPE DETAIL
- ESD INITIATIVES**
- ESD INITIATIVES OUTLINED IN SMP PREPARED BY ARK RESOURCES ARE TO BE INCORPORATED INTO THE DESIGN, INCLUDING:
- ROOFTOP SOLAR PHOTOVOLTAIC SYSTEM
 - RAINWATER HARVESTING SYSTEM FOR TOILET FLUSHING
 - ALL-ELECTRIC DEVELOPMENT
 - HIGH-PERFORMANCE GLAZING AND ENERGY EFFICIENT BUILDING SERVICES, APPLIANCES AND FIXTURES

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

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	1.770m
Lock to Lock Time	4.00 sec
Curb to Curb Turning Radius	5.80m

Proposed Commercial Development 134 Moray Street, South Melbourne Swept Path Assessment

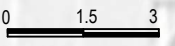
NOTE:
1) Base Plan Supplied By hayball dated 22/01/2025
2) Maximum Design Speed 10km/h

RATIO REFERENCE 20915T-SK001-D	SHEET No. 1 of 7	PREPARED BY C.D.	SCALE 1:150@A3	DATE 3/02/2026
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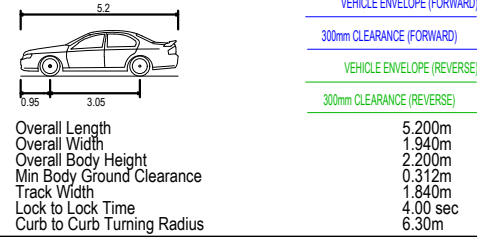
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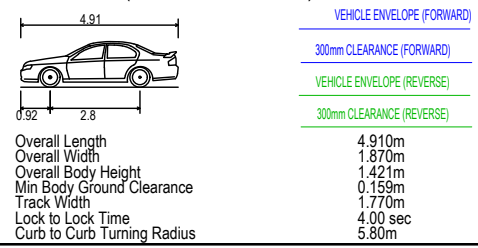
MORAY STREET



B99 Vehicle (AS/NZS2890.1:2004)



B85 Vehicle (AS/NZS2890.1:2004)



**Proposed Commercial Development
134 Moray Street, South Melbourne
Swept Path Assessment**

NOTE:
1) Base Plan Supplied By hayball dated 22/01/2025
2) Maximum Design Speed 10km/h



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

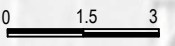


RATIO REFERENCE 20915T-SK001-D	SHEET No. 2 of 7	PREPARED BY C.D.	SCALE 1:150@A3	DATE 3/02/2026
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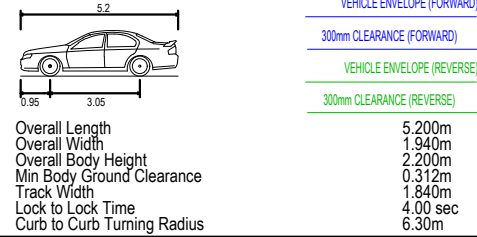
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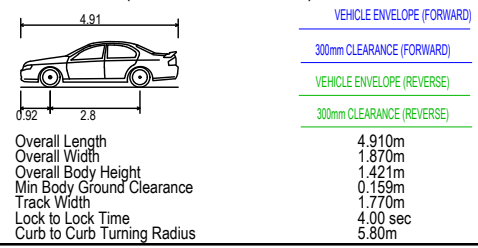
MORAY STREET



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**Proposed Commercial Development
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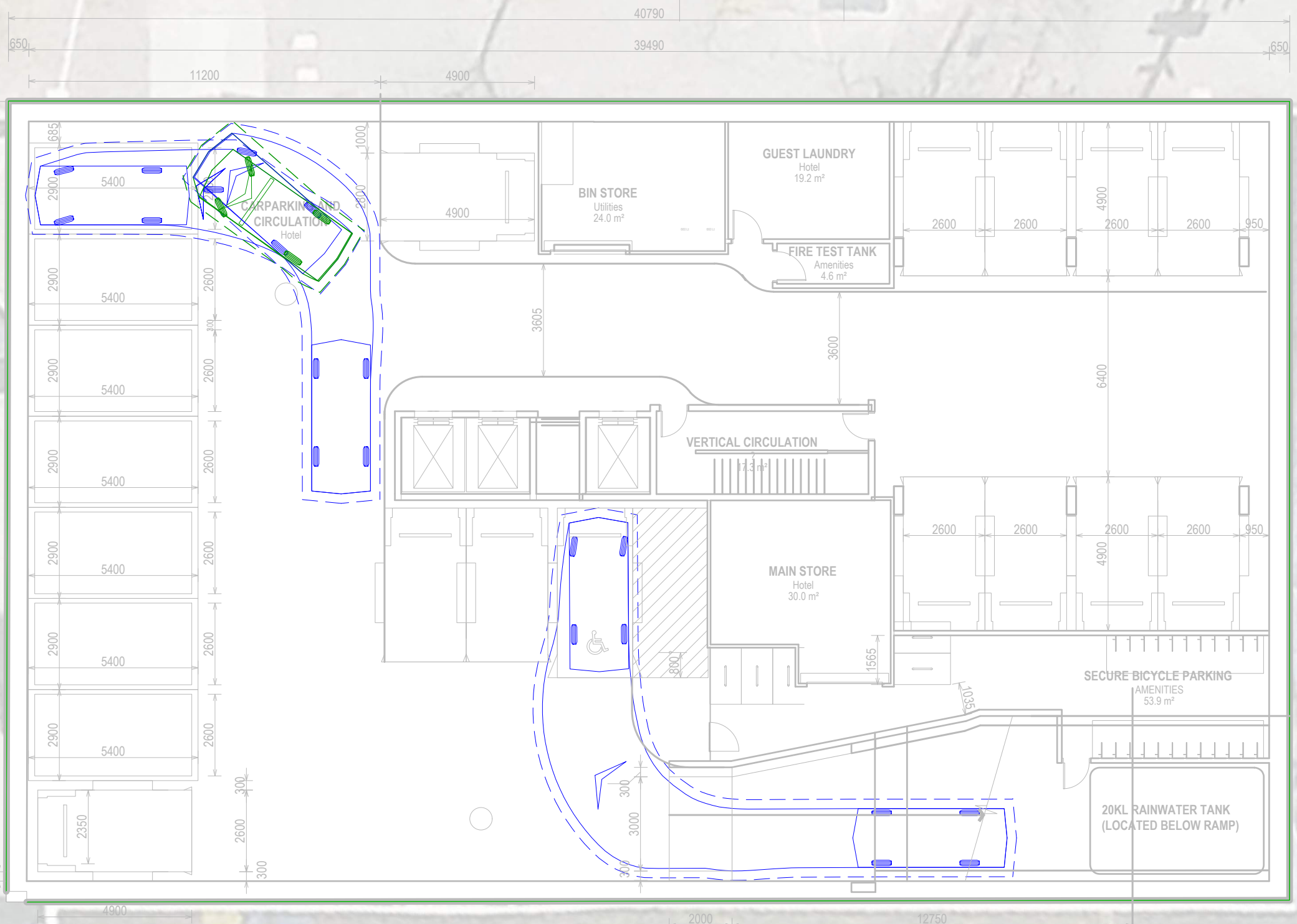


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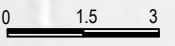


RATIO REFERENCE 20915T-SK001-D	SHEET No. 3 of 7	PREPARED BY C.D.	SCALE 1:150@A3	DATE 3/02/2026
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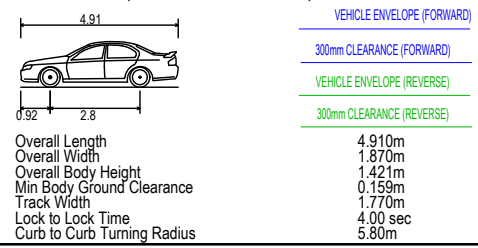


MORAY STREET



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B85 Vehicle (AS/NZS2890.1:2004)



Proposed Commercial Development 134 Moray Street, South Melbourne Swept Path Assessment

NOTE:
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 2) Maximum Design Speed 10km/h

RATIO REFERENCE
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SHEET No.
 4 of 7

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 C.D.

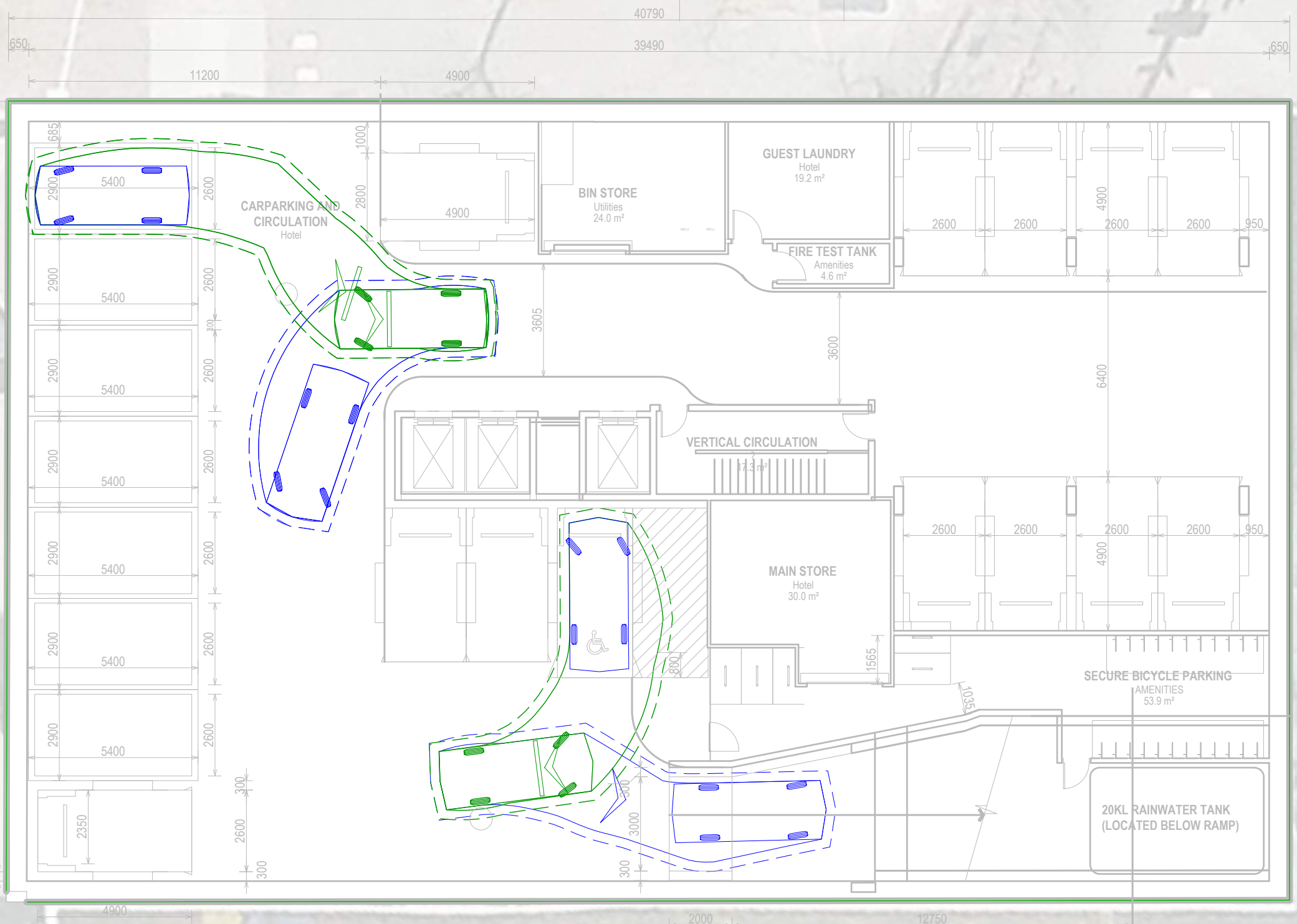
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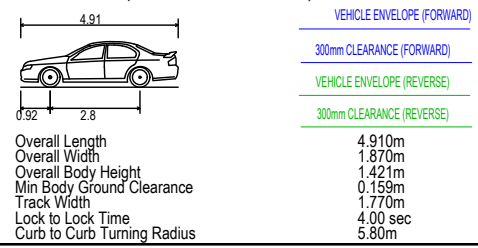
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B85 Vehicle (AS/NZS2890.1:2004)



Proposed Commercial Development 134 Moray Street, South Melbourne Swept Path Assessment

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 20915T-SK001-D

SHEET No.
 5 of 7

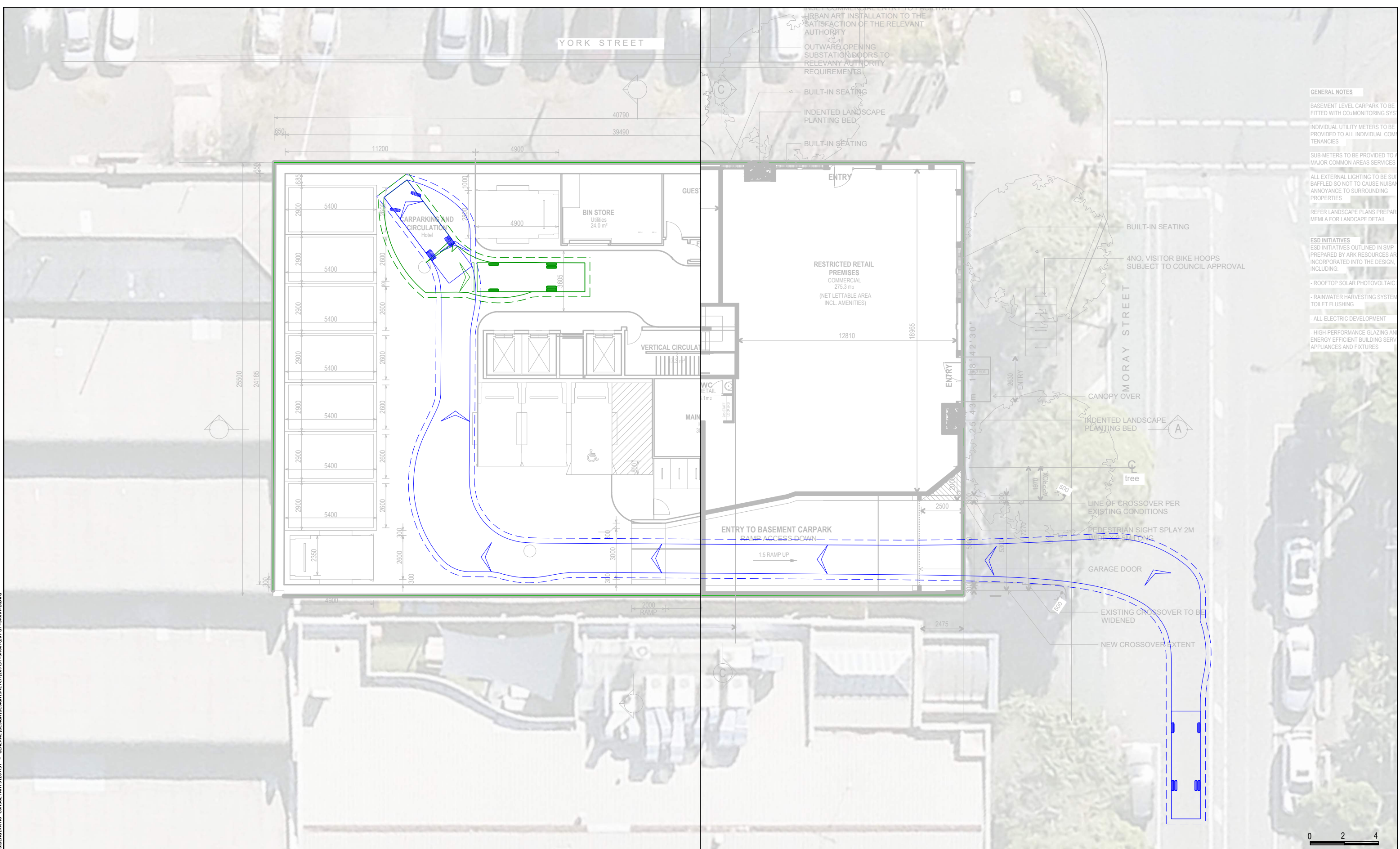
PREPARED BY
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SCALE
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DATE
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- GENERAL NOTES**
- BASEMENT LEVEL CARPARK TO BE FITTED WITH CO-MONITORING SYS
 - INDIVIDUAL UTILITY METERS TO BE PROVIDED TO ALL INDIVIDUAL COM TENANCIES
 - SUB-METERS TO BE PROVIDED TO A MAJOR COMMON AREAS SERVICES
 - ALL EXTERNAL LIGHTING TO BE SU BAFLED SO NOT TO CAUSE NUISAN ANNOYANCE TO SURROUNDING PROPERTIES
 - REFER LANDSCAPE PLANS PREPAR MEMLA FOR LANDSCAPE DETAIL
 - ESD INITIATIVES
 - ESD INITIATIVES OUTLINED IN SMP PREPARED BY ARK RESOURCES AR INCORPORATED INTO THE DESIGN, INCLUDING:
 - ROOFTOP SOLAR PHOTOVOLTAIC
 - RAINWATER HARVESTING SYSTEM TOILET FLUSHING
 - ALL-ELECTRIC DEVELOPMENT
 - HIGH-PERFORMANCE GLAZING AN ENERGY EFFICIENT BUILDING SERV APPLIANCES AND FIXTURES

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ratio:

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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 Commercial Development
134 Moray Street, South Melbourne
Swept Path Assessment

NOTE:
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 2) Maximum Design Speed 10km/h

RATIO REFERENCE 20915T-SK001-D	SHEET No. 6 of 7	PREPARED BY C.D.	SCALE 1:200@A3	DATE 3/02/2026
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Appendix D Bicycle Parking Specifications

Arc de Triomphe™



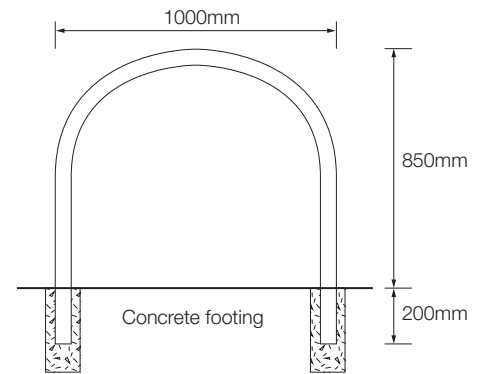
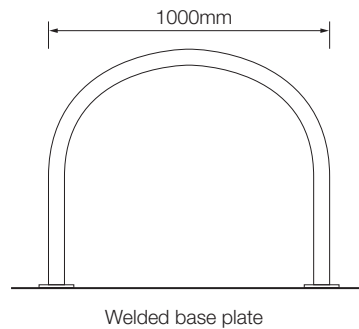
Galvanised finish / Stainless Steel finish

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

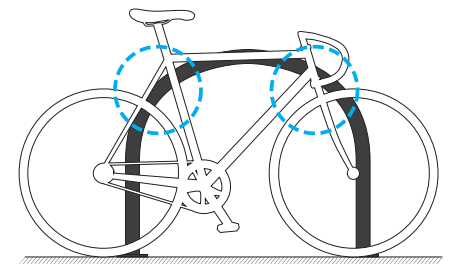
Recommended fasteners

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

Dimensions

1000mm [w] x 850mm [h]

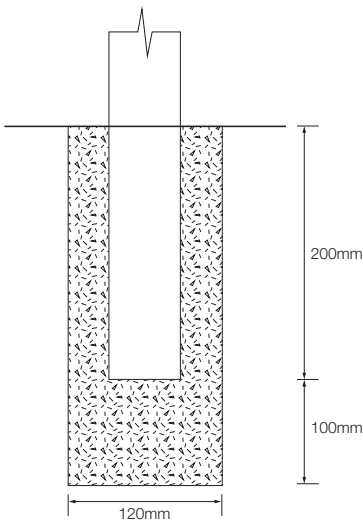
Locking Points



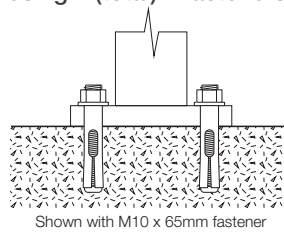
V4.1 - 1/05/2017 | Specification may be subject to change without notice. ©Bicycle Network

Fixing options

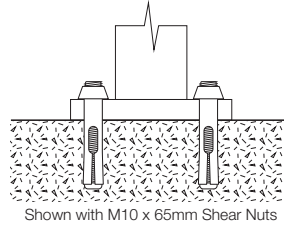
In situ (Concrete footing)



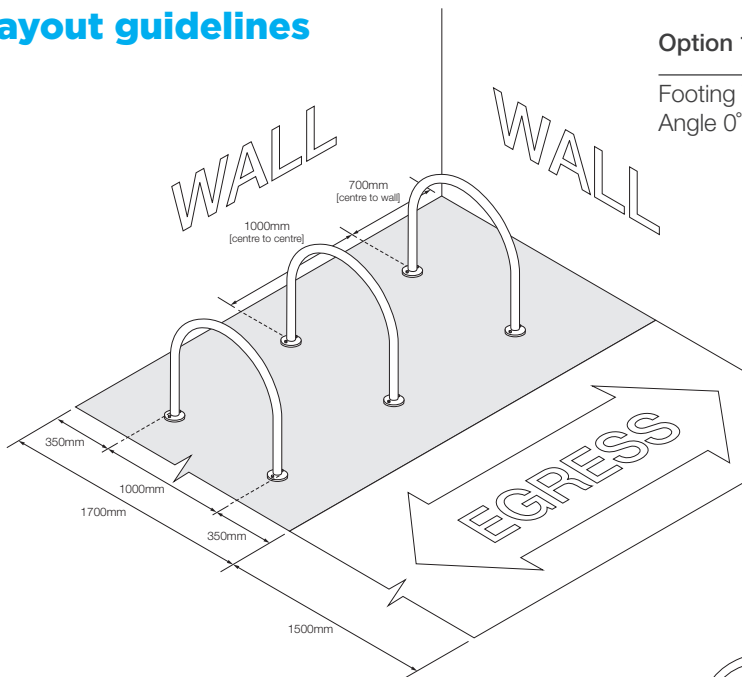
Welded flange (Bolt on)
using 4 (total) x fasteners



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



Layout guidelines

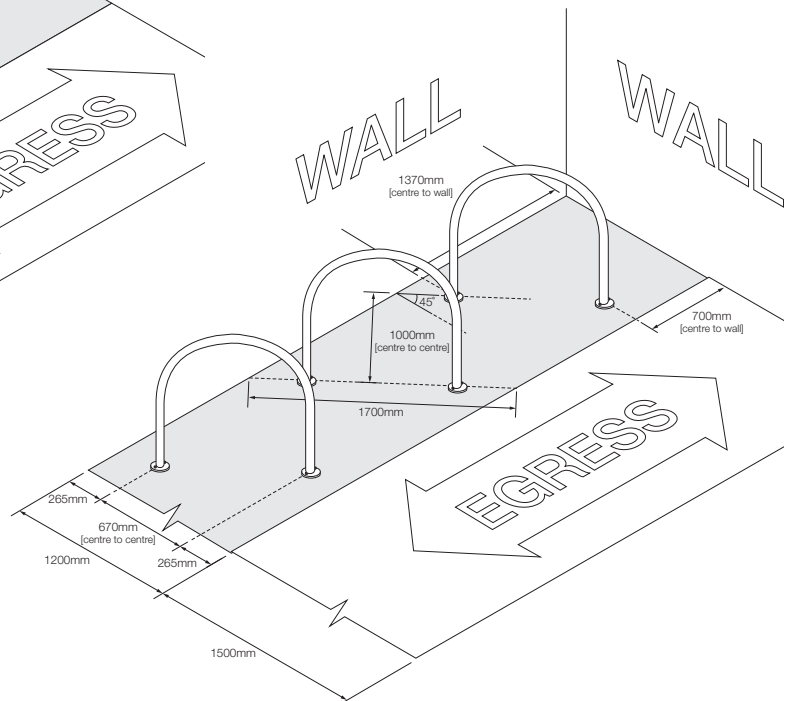


Option 1:

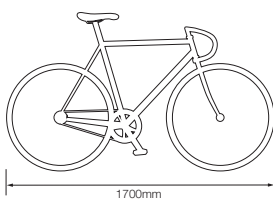
Footing Width 1700mm
Angle 0°

Option 2:

Footing Width 1200mm
Angle 45°



Typical Bicycle Length



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Ned Kelly™



Zinc finish



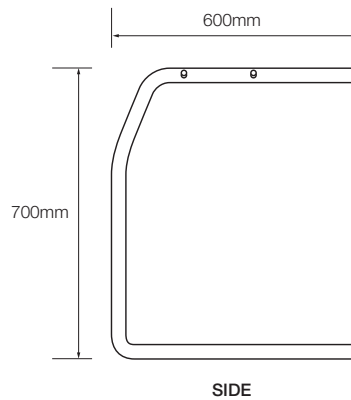
Black powder coat finish

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



SIDE

FRONT

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

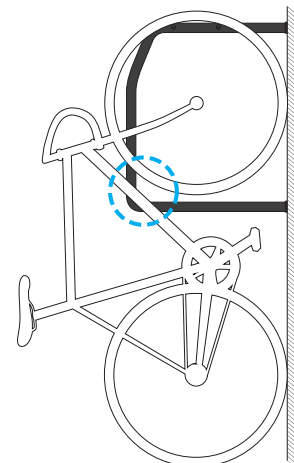
Recommended fasteners - framing

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

Dimensions

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

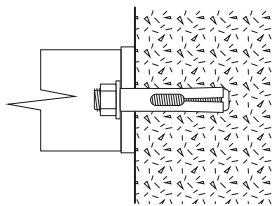
Locking Points



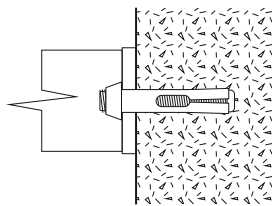
V4.1 - 1/05/2017 | Specification may be subject to change without notice. ©Bicycle Network

Fixing options

Fix to a wall using 4x fasteners or Shear Nuts

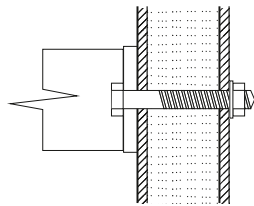


Shown with M8 x 40mm fastener

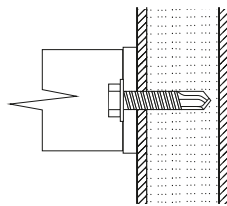


Shown with M8 x 40mm Shear Nuts

Fix to a frame using 4x bolts or Tek Screws



Shown with M10 x 60mm Bolt, Washer & Nut

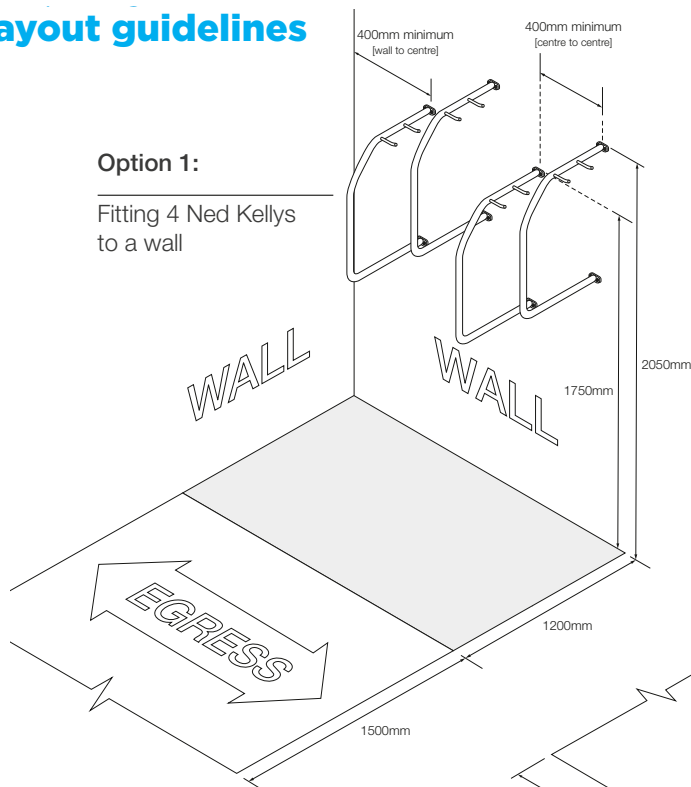


Shown with Tek Screw

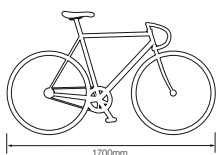
Layout guidelines

Option 1:

Fitting 4 Ned Kellys to a wall



Typical Bicycle Length



Option 2:

Fitting 7 Ned Kellys to a Duragal steel frame

