

Traffix Group

Traffic Engineering Assessment

Proposed Student Accommodation Development
1959-1963 Dandenong Road & 75 Beddoe
Avenue, Clayton

Prepared for
Team Optimum Pty Ltd

September 2023

G26548R-01F

Document Control

Our Reference: G26548R-01F

Issue No.	Type	Date	Prepared By	Approved By
A	Draft	10/05/2021	D. Economou	J. Stone
B	Draft 2.0	12/05/2021	D. Economou	J. Stone
C	Final	13/05/2021	D. Economou	J. Stone
D	Final	20/05/2021	D. Economou	J. Stone
E	Final	25/05/2021	D. Economou	J. Stone
F	Final	27/09/2023	D. Economou	J. Stone

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1. Introduction

Traffic Group has been engaged by Team Optimum Pty Ltd to prepare a traffic engineering report for a proposed student accommodation development at 1959-1963 Dandenong Road & 75 Beddoe Avenue, Clayton.

This report provides a detailed traffic engineering assessment of the parking and traffic issues associated with the proposed development.

2. Proposal

The proposal is for a 7-storey student accommodation development on the site. A convenience restaurant/convenience shop is proposed at ground level and will be open to the public. The table below summarises the development and car parking allocation.

Table 1: Development summary and car parking allocation

Proposed Use	No.	Car Parking Allocation	Resultant Car Parking Rate
One-bedroom studio	155	76 ^(Note 1)	0.30 spaces per bed
One-bedroom apartment	60		
Two-bedroom apartment	19		
Sub-Total	234 apts (253 beds)		
Convenience Restaurant/Convenience Shop	112m ²	3	Approximately 2.7 spaces/100m ²
Total		79	-

Note 1: A total of 1 space is allocated to a staff member managing the student accommodation component

Vehicle access to the basement carpark is via a 6.1m wide accessway to Beddoe Avenue at the site's north-east corner. A total of 79 car spaces are located within the basement level carpark. A total of 26 of the spaces are provided via car stacker systems, while 2 DDA spaces are also proposed.

A total of 135 bicycle spaces are provided across the development, comprising 14 spaces at ground level along the frontage to Beddoe Avenue and 121 bicycle spaces within the basement carpark.

Post-development, as a result of the construction of a two-way, double width crossover to Beddoe Avenue and the re-instatement of 2 single width crossovers to Beddoe Avenue and the Dandenong Road Service Road, respectively, a total of 9 car spaces will be retained along the site's frontage to Dandenong Road subject to '1/2P 8am-6pm Mon-Fri' restrictions

(increase of 1 space). No car spaces will be provided along the site's frontage to Beddoe Avenue (decrease of 1 space).

Pedestrian access to the site is proposed from Beddoe Avenue via a foyer at the site's midpoint and secondary access via a pedestrian pathway located at the site's south-western boundary along the Dandenong Road service road.

A copy of the development plans prepared by Metaxas Architects (dated August 2023) which form the basis of our assessment are attached at Appendix A to this report.

3. Existing Conditions

3.1. Subject Site

The subject site is located on the northern corner of the intersection between Beddoe Avenue and the Dandenong Road Service Road, in Clayton. A locality plan, aerial photograph and photograph of the site's frontages to Dandenong Road and Beddoe Avenue are presented in Figure 1 to Figure 4, respectively.

The subject site is irregular in shape and has a total area of approximately 2,484m² with frontages to the Dandenong Road Service Road and Beddoe Avenue of approximately 60.5m and 75.6m respectively. The site comprises four properties:

- No. 1959 Dandenong Road is a currently occupied by a single storey dwelling, with vehicle access provided to the site via a single-width crossover from the Dandenong Road Service Road at the site's southern corner.
- No. 1961 Dandenong Road is currently occupied by a single storey dwelling, with vehicle access provided to the site via a single-width crossover from the Dandenong Road Service Road at the site's southern corner.
- No. 1963 Dandenong Road is a currently occupied by a single storey dwelling, with vehicle access provided to the site via a double-width crossover from Beddoe Avenue at the site's eastern corner.
- No. 75 Beddoe Avenue is currently occupied by a single storey dwelling, with vehicle access provided to the site via a single-width crossover from Beddoe Avenue at the site's southern corner.

There are currently 8 on-street car spaces along the site's frontage to the Dandenong Road Service Road and 1 on-street car space along the site's frontage to Beddoe Avenue. The car spaces along the service road are subject to '1/2P 8am-6pm Mon-Fri' restrictions while the car space along Beddoe Avenue is subject to 'Permit Zone 8am-6pm Mon-Fri' restrictions.

The site is located within a Residential Growth Zone – Schedule 3 (RGZ3) under the Monash Planning Scheme as presented at Figure 5. The site is also located within the Principal Public Transport Network Area (PPTN). Existing land uses surrounding the subject site comprise a mixture of commercial and residential uses.

Traffic Engineering Assessment

1959-1963 Dandenong Road & 75 Beddoe Avenue, Clayton

Significant nearby land uses are detailed below:

- **John Monash Science School**, located approximately 250m east of the site,
- **Monash University**, located approximately 450m east of the site,
- **Clayton North Primary School**, located approximately 450m west of the site,
- **Mannix College**, located approximately 550m south-east of the site,
- **Fregon Reserve**, located approximately 750m south of the site,
- **Monash Medical Centre**, located approximately 850m south of the site, and
- **CSIRO**, located approximately 1km north of the site.

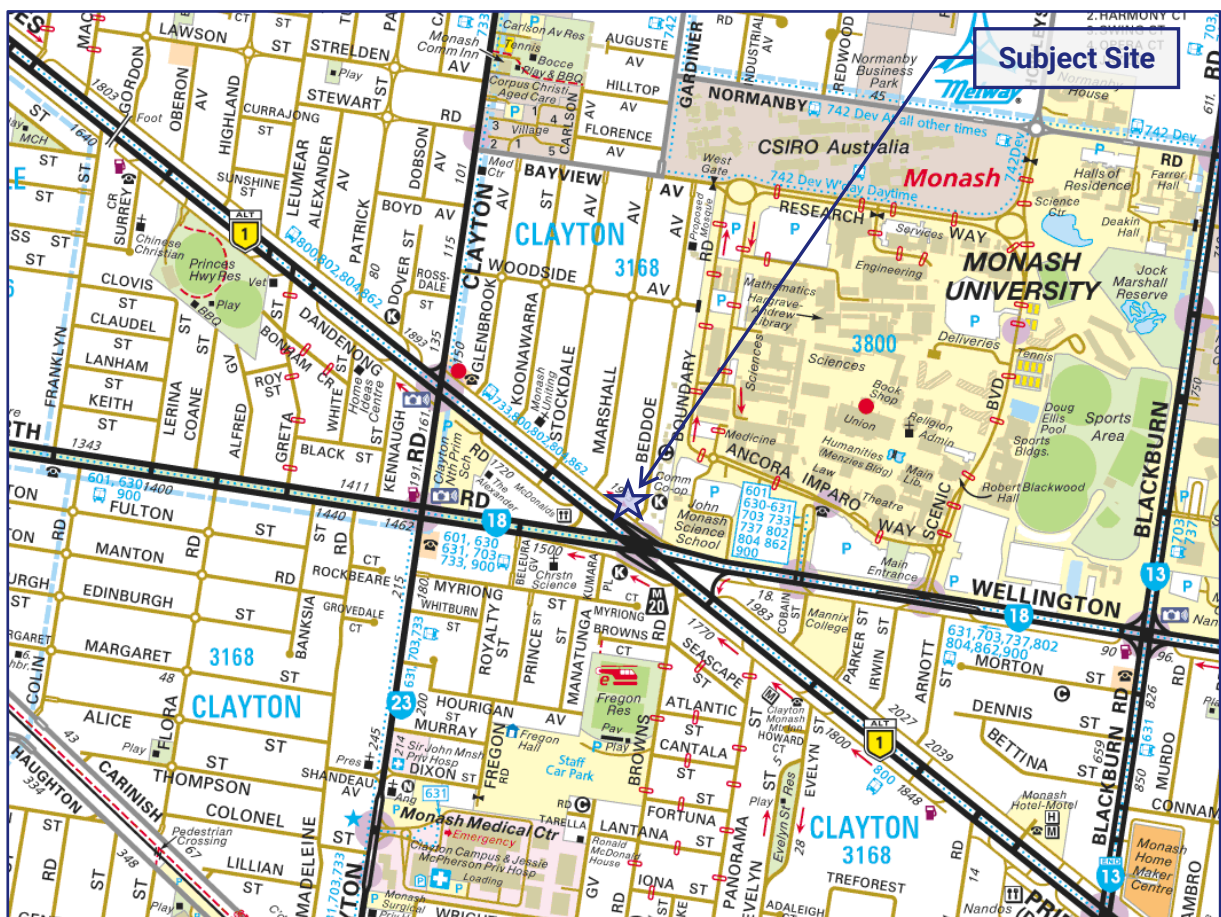


Figure 1: Locality plan

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Figure 2: Aerial photograph

Source: www.nearmap.com



Figure 3: Subject site frontage to Dandenong Road Service Road (view north-west)



Figure 4: Subject site frontage to Beddoe Avenue (view south-west)

3.2. Road Network

Dandenong Road is a Department of Transport and Planning (DTP) declared Arterial Road and Transport Zone 2 under the Planning Scheme. Dandenong Road is generally aligned in a north-west to south-east direction.

In the vicinity of the site, Dandenong Road provides three traffic lanes in each direction separated by a central median. A service road is provided on both sides of the road, which provides parallel kerbside parking. The signalised intersection with North Road is located approximately 50m south-east of the site. Right-turns from Dandenong Road to North Road are prohibited. A U-Turn facility is provided approximately 100m south-east of the intersection for south-eastbound vehicles and approximately 200m north-west of the intersection for north-westbound vehicles. A median break is provided at the intersection with Stockdale Avenue which also provides access to the Dandenong Road Service Road adjacent to the site.

The Dandenong Road Service Road adjacent to the site is separated by a median and is a two-way road, between Stockdale Avenue and North Road. The carriageway is 7.3m wide, allowing for kerbside parking along the north-eastern side and two lanes of traffic. The south-western side of the carriageway is subject to 'No Stopping' restrictions.

In the vicinity of the site, a posted speed limit of 80km/h applies to the main carriageway of Dandenong Road. The default urban speed limit of 50km/h applies to the Dandenong Road Service Road.

Beddoe Avenue is a Council operated 'Local Road', which extends in a north-south direction between Dandenong Road in the south and Bayview Avenue in the north. In the vicinity of the site, Beddoe Avenue provides a carriageway width of 7.3m.

A carriageway width of 7.3m allows sufficient width for vehicles to legally park on both sides of the road and maintain one lane of shared two-way traffic. Alternatively, the road width can accommodate two lanes of traffic and kerbside parking on one side of the road. These configurations are illustrated in Figure 6.

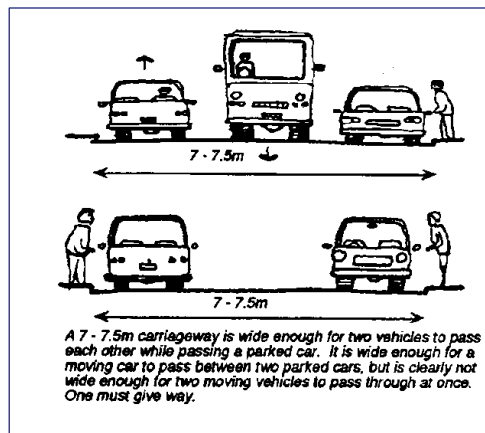


Figure 6: Typical on-street parking arrangements in local streets¹

The default urban speed limit of 50km/h applies to Beddoe Avenue.

¹ Victorian Code for Residential Development: Subdivision and Single Dwelling (VicCode 1).

Photographs depicting the surrounding road network are presented in Figure 7 to Figure 10.



Figure 7: Dandenong Road Service Road - view north-west Figure 8: Dandenong Road Service Road - view south-east



Figure 9: Beddoe Avenue - view north

Figure 10: Beddoe Avenue - view south

3.3. Existing Parking Conditions

A parking inventory has been conducted by Traffix Group in order to establish the on-street parking conditions of the nearby area. The parking inventory was undertaken at 11am on Monday 3rd August, 2020.

The inventory area included on-street parking within a walking distance of up to approximately 200m from the site as presented at Figure 11. The detailed breakdown of the parking inventory and map are provided at Appendix B.

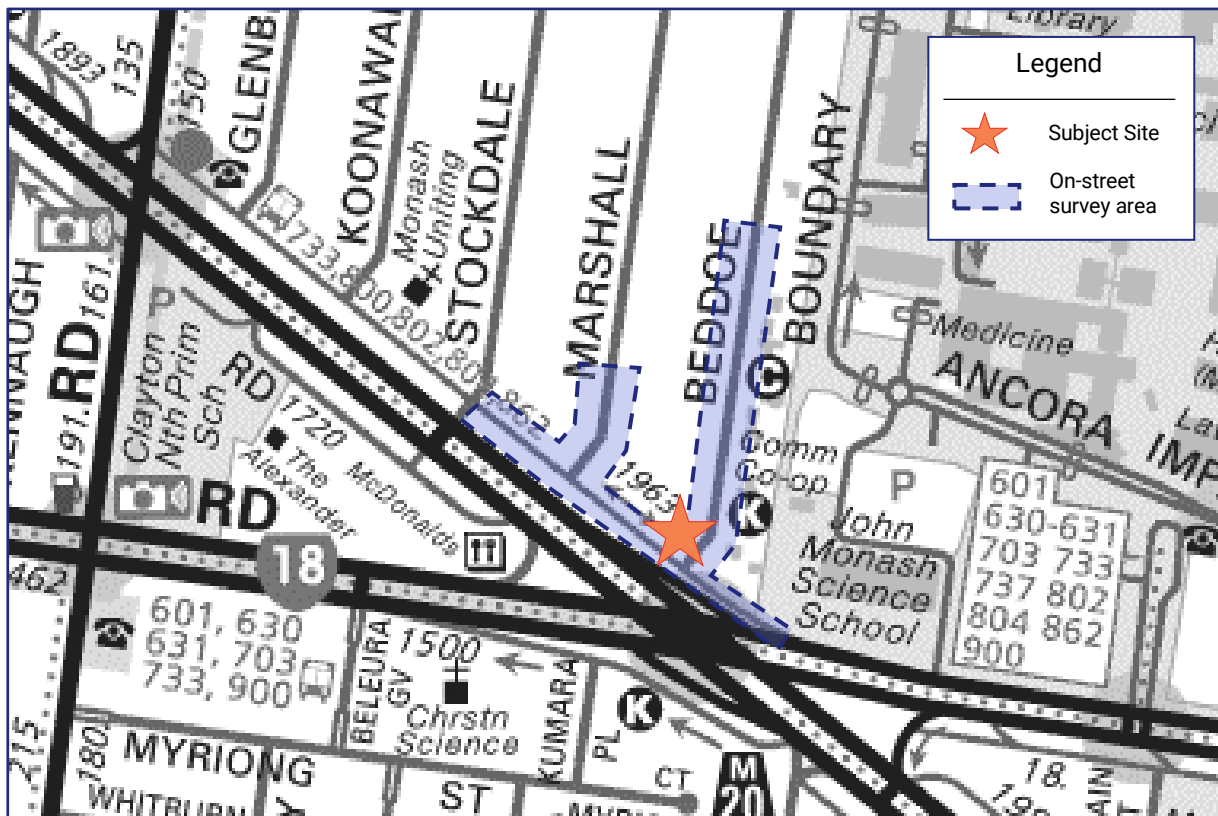


Figure 11: Parking inventory area

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The following analysis only includes car spaces available to the general public and excludes 'Permit Zones' and other 'No Stopping' areas during the relevant enforcement times.

The overall inventory area includes 70 on-street car spaces available to the general public. On-street parking in close proximity to the site is limited to short-term 1/2P and Permit Zone parking. There is no long-term unrestricted car parking available within the survey area.

The results of the inventory indicate that there is a low demand for on-street parking in the vicinity of the site. At the time of the parking inventory, on-street parking was in low demand with 67 vacant spaces (4% occupancy).

Nearmap aerial analysis has also been conducted for dates after the COVID-19 pandemic related lockdowns. The imagery from March and April, 2021 highlighted that parking within the vicinity of the site is low, as was observed within our parking inventory.

3.4. Alternative Transport Modes

3.4.1. Public Transport

The site has access to a number of public transport services including multiple bus services within walking distance of the site. The available bus services surrounding the site provide a link to Clayton Station, which has access to a greater number of train and bus services.

We note that the range of public transport services is anticipated to increase as per Plan Melbourne 2017-2050. The Victorian Government has proposed to build the Suburban Rail Loop which will include the construction of a new railway station at Monash University. In the event that the project is realised, it will provide a direct connection to surrounding railway lines and activity centres.

Overall, the proximity of the site to convenient public transport services linking the site to activity centre and train services reduces the site’s dependence on motor vehicles as a mode of transport compared to similar development in an outer suburban area.

The existing available public transport services within proximity of the site are shown in Figure 12 and a summary is provided in Table 2. The site is located within the PPTN area as shown in Figure 13.

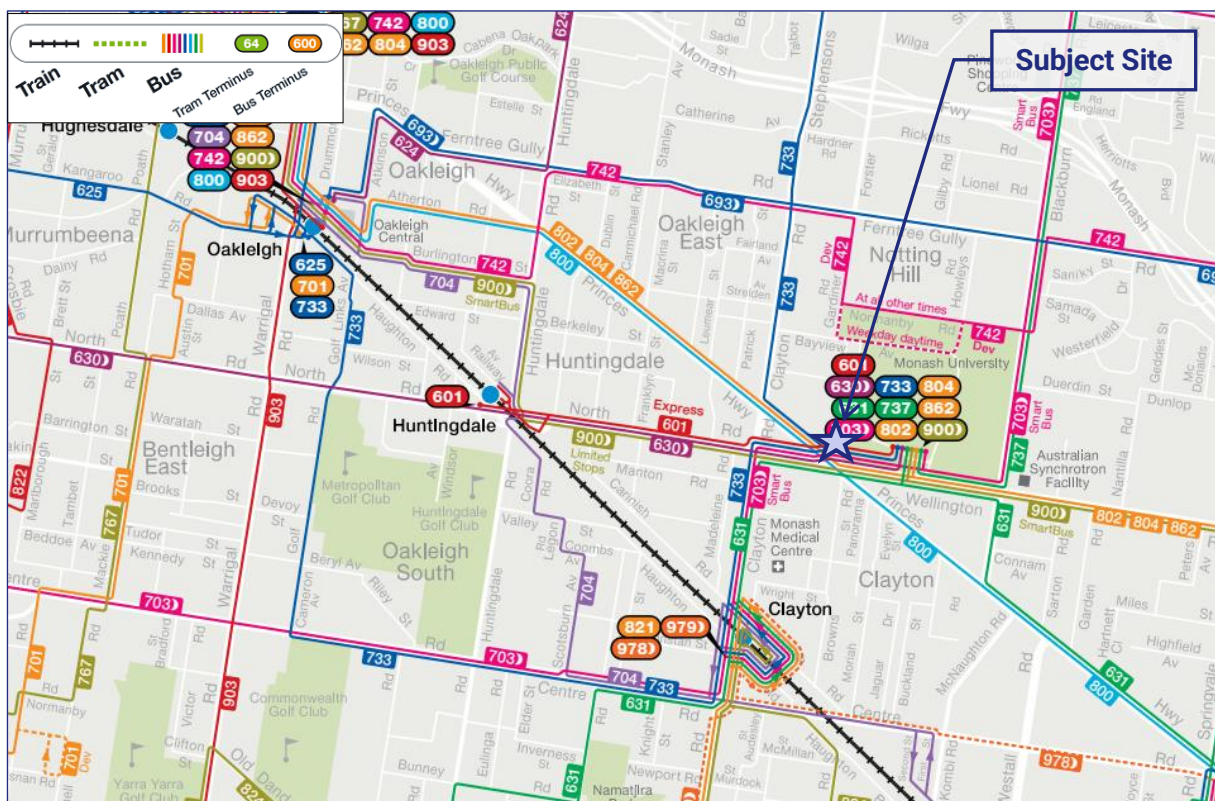


Figure 12: Public transport map

Source: Public Transport Victoria, ptv.vic.gov.au

Table 2: Summary of public transport services

Service	Between	Via	Operating Times (Frequency)		
			Weekday	Saturday	Sunday
Dandenong Road – located outside the site frontage					
Bus Route 800	Dandenong & Chadstone	Princes Highway & Oakleigh	6:30am-7:35pm 20-45 minutes	7:50am-4:15pm 20-60 minutes	Does not operate
Bus Route 802	Dandenong & Chadstone	Mulgrave & Oakleigh	7:10am-6:45pm 40 minutes	Does not operate	Does not operate
Bus Route 804	Dandenong & Chadstone	Whealers Hill & Oakleigh	6:40am-6:10pm 40 minutes	6:55am-3:25pm 60 minutes	Does Not Operate
Bus Route 862	Dandenong & Chadstone	North Dandenong & Oakleigh	7:05am-9:40pm 40 minutes	7:30am-9:45pm 60 minutes	9:35am-9:45pm 60 minutes
North Road – located approximately 250m south-west of the site					
Bus Route 630	Elwood & Monash University	Gardenvale & Ormond & Huntingdale	6:30am-10:00pm 10-30 minutes	6:45am-8:50pm 30 minutes	8:25am-8:25pm 40 minutes
Bus Route 631	Southland & Waverley Gardens	Clayton & Monash University	6:15am-9:40pm 30-60 minutes	7:05am-9:40pm 40-60 minutes	9:10am-10:10pm 60 minutes
Bus Route 703	Middle Brighton & Blackburn	Bentleigh & Clayton & Monash University	5:40am-9:30pm 15-45 minutes	8:10am-9:10pm 20-60 minutes	9:15am-9:15pm 60 minutes
Bus Route 733	Oakleigh & Box Hill	Clayton & Monash University & Mt Waverley	6:25am-9:40pm 15-30 minutes	7:30am-9:30pm 30-40 minutes	9:30am-9:30pm 60 minutes

Service	Between	Via	Operating Times (Frequency)		
			Weekday	Saturday	Sunday
Monash University – located approximately 500m east of the site					
Bus Route 601	Huntingdale & Monash University	-	7:00am-9:40pm 8 minutes	Does not operate	Does not operate
Bus Route 737	Croydon & Monash University	Boronia & Knox City SC & Glen Waverley	5:55am-9:00pm 20-45 minutes	6:55am-9:05pm 30 minutes	7:55am-9:10pm 30 minutes
Bus Route 900	Stud park SC & Caulfield	Monash University & Chadstone	5:25am-12:14am 10-30 minutes	6:20am-12:10am 30 minutes	7:45am-9:40pm 30 minutes

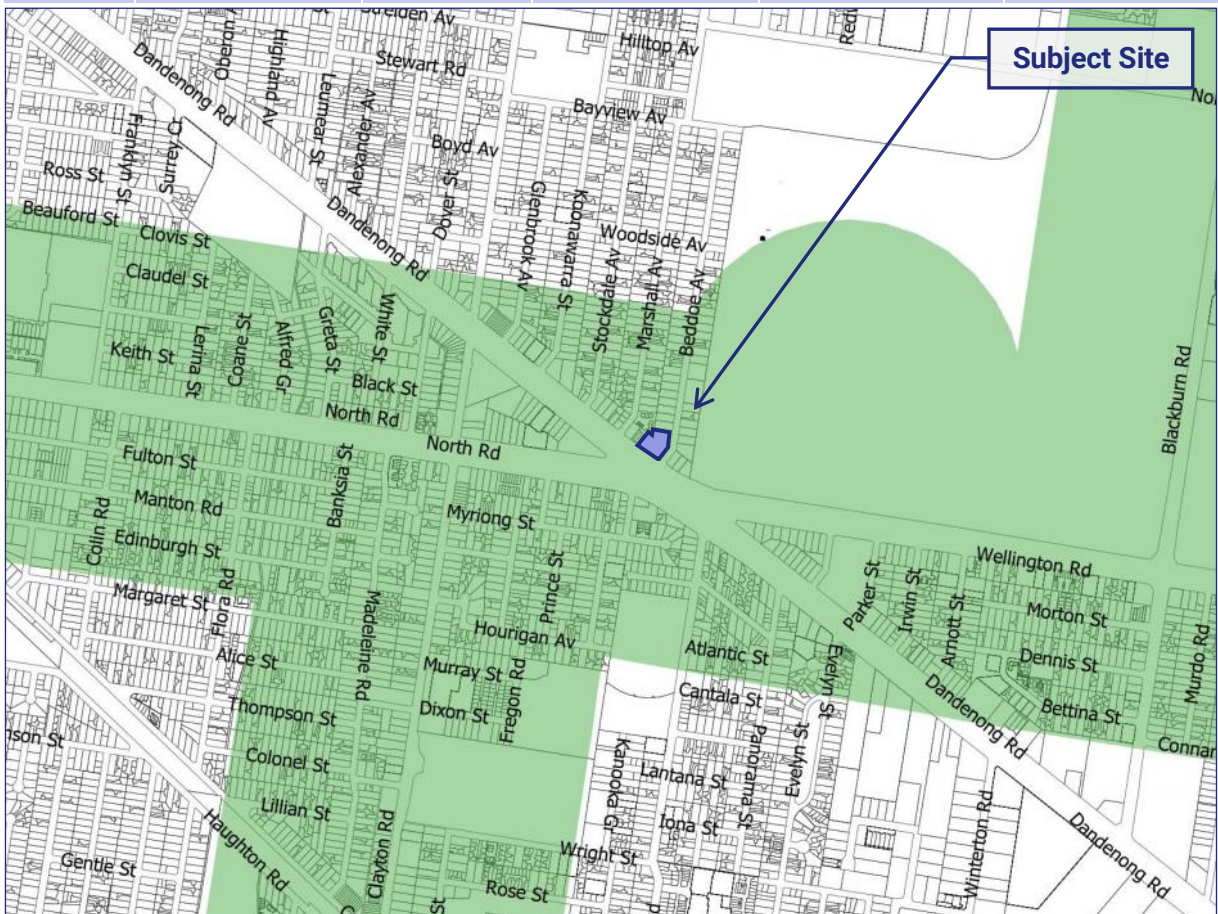


Figure 13: Principal Public Transport Network map

Source: Principal Public Transport Network

3.4.2. Bicycle Infrastructure & Walkability

The City of Monash is well serviced by the Principal Bicycle Network (PBN) with on-road and off-road bicycle paths directly linking the City of Monash with surrounding municipalities and the city.

As detailed in Figure 14, the subject site has access to bicycle infrastructure with informal bicycle routes along major and minor roads in the vicinity of the site including Wellington Road, Blackburn Road and Princes Highway.

Additionally, the site is located 1.6km from Clayton Station and the Clayton Activity Centre (a 15-20 minute walk).

Monash University Clayton Campus is also located 450m east of the site, which includes a number of bicycle routes, walking paths and everyday services.



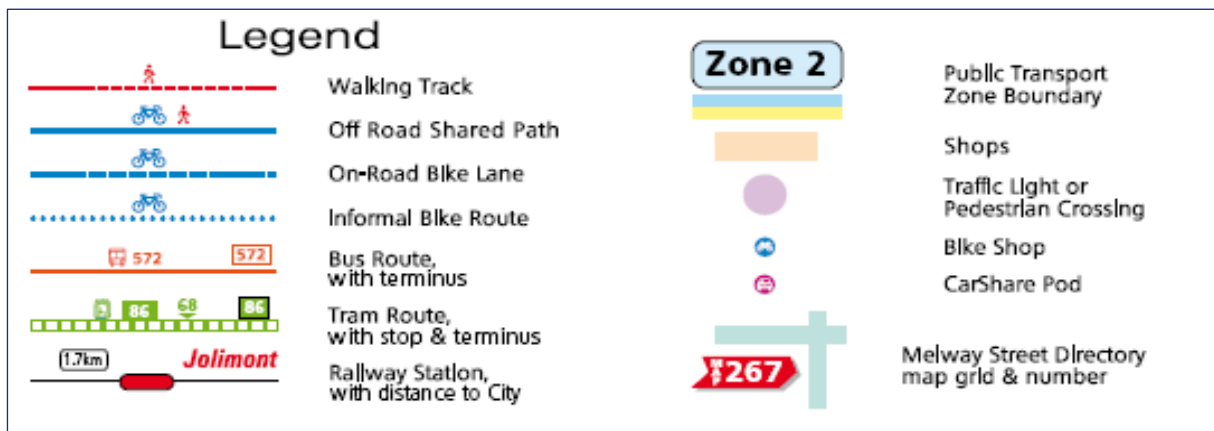


Figure 14: TravelSmart map

Source: TravelSmart Map sourced from City of Monash Council

4. Traffic Engineering Assessment

4.1. Statutory Car Parking Assessment

'Student Accommodation' is not a defined land-use category under Clause 73.03 of the Planning Scheme. In any event, we are instructed by the project town planners that the development proposed generally fits the definition of 'Dwelling' under Clause 73.03, given that the apartments are self-contained, rather than relying on shared facilities.

The convenience restaurant/convenience shop falls under the land-use category of 'convenience restaurant' or 'convenience shop' under Clause 73.03 of the Planning Scheme.

The Planning Scheme sets out the parking requirements for new developments under Clause 52.06.

The purpose of Clause 52.06 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 adversely 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 Planning Scheme sets out the parking requirements for new developments under Table 1 at Clause 52.06-5. In this regard Clause 52.06-5 states:

Column B applies if:

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

The site is located within the Principal Public Transport Network Area (PPTN Area) and accordingly, the Column B rates set out at Table 1 of Clause 52.06-5 apply to the site.

Clause 52.06-5 states:

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.*

Whilst assessed as 'dwellings', the proposal is for student accommodation, with further guidance regarding the car parking requirement for student accommodation specified under Clause 22.10 of the Monash Planning Scheme (Council's Student Accommodation Policy). As such, it is not reasonable to require a statutory rate of car parking for the student accommodation as per the requirement for 'dwellings' under a Clause 52.06-5 assessment. Clause 22.10 recognises a dispensation from the typical requirements of Clause 52.06-5 given that student accommodation tends to have reduced demand for car parking compared to apartment developments.

Clause 22.10-4 states:

Car parking

Car spaces should be provided on site at the rates of:

- *Min. 0.3 car spaces per bed for sites located within Preferred Locations.*
- *Min. 0.4 car spaces per bed for sites located outside of Preferred Locations.*

The Preferred Location for student accommodation should satisfy one or more of the following criteria:

- *Within 1500 metres of a tertiary educational institution.*
- *Within 800 metres of a Railway Station.*
- *Within 800 metres of a Principal, Major or a larger Neighbourhood Activity Centre.*
- *Within 400 metres of a bus route that provides access to a tertiary educational institution.*

The site is located within the Preferred Location (being located 450m west of Monash University), accordingly, the proposed development has a general requirement to provide car parking at a rate of at least 0.3 spaces per bed.

The assessment of car parking requirements associated with the proposed development is set out in Table 3.

Table 3: Statutory car parking assessment – Clause 22.10-4 and Clause 52.06-5 (Column B)

Proposed Use	No.	Car Parking Rate (Clause 22.10-4) and Clause 52.06-5 (Column B)	Car Parking Requirement ^(Note 1)	Car Parking Provision	Shortfall (-) /Surplus (+)
Clause 22.10-4 Assessment					
Student Accommodation	253 beds	At least 0.3 spaces per bed	75	76	+1
Clause 52.06-5 Assessment ^(Note 2)					
Convenience Restaurant/Convenience Shop	112m ²	3.5 spaces to each 100m ² of leasable floor area (LFA)	3	3	0
Total			78	79	+1
<p>Note 1: Clause 52.06-5 specifies that where a car parking calculation results in a requirement that is not a whole number, the number of spaces should be rounded down to the nearest whole number.</p> <p>Note 2: It is understood that Clause 52.06-5 allows exemptions from the requirements of Table 1 provided a car parking requirement for the use is specified under another provision of the Planning Scheme. In this case, the relevant provision is Clause 22.10, which outlines specific requirements for student accommodation use.</p>					

Under Clause 22.10-4, the general car parking requirement for the student accommodation component is 75 car spaces. The provision of 76 car spaces exceeds the requirements of Clause 22.10-4 of the Monash Planning Scheme.

Under a Clause 52.06-5 assessment, dwellings would be required to provide 234 car spaces, while the commercial tenancy is required to provide a total of 3 car spaces.

In this case, the proposal is for student accommodation, with further guidance regarding the car parking requirement for student accommodation specified under Clause 22.10 of the Monash Planning Scheme (Council’s Student Accommodation Policy). The proposal is fully compliant with the 22.10 requirements for the student accommodation element as indicated above. Therefore, it is not reasonable to require a statutory rate of car parking for the student accommodation as per the requirement for ‘dwellings’ under a Clause 52.06-5 assessment.

The provision of 3 staff spaces for the commercial tenancy satisfies the car parking requirement under Clause 52.06-5.

4.2. Reducing the Requirement for Car Parking

Clause 52.06-7 allows for the statutory car parking requirement to be reduced (including to zero). An application to reduce (including reduce to zero) the number of car spaces required under Clause 52.06-5 or in a schedule to the Parking Overlay must be accompanied by a Car Parking Demand Assessment.

Clause 52.06-7 sets out that a Car Parking Demand Assessment must have regard to the following key factors:

- *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 proposed occupants (residents or employees) of the land.*
- *Any empirical assessment or case study.*

Practice Note 22 (June, 2015) specifies that the provisions for reducing the car parking requirement draw a distinction between the assessment of likely demand for parking spaces (the Car Parking Demand Assessment), and whether it is appropriate to allow the supply of fewer spaces than assessed by the Car Parking Demand Assessment. These are two separate considerations, one technical while the other is more strategic. Different factors are taken into account in each consideration.

Accordingly, the applicant must satisfy the responsible authority that the provision of car parking is appropriate on the basis of a two-step process, which has regard to:

- *The car parking demand likely to be generated by the use.*
- *Whether it is appropriate to allow fewer spaces to be provided than the number likely to be generated by the site.*

An assessment of the appropriateness of reducing the car parking provision below the statutory requirement is set out below.

4.3. Car Parking Demand Assessment

The following Car Parking Demand Assessment has regard to the above factors as appropriate.

Student Accommodation

Whilst assessed as 'dwellings' as instructed by the project town planners, the proposal is for student accommodation, with further guidance regarding the car parking requirement for student accommodation is specified under Clause 22.10 of the Monash Planning Scheme (Council's Student Accommodation Policy).

The development provides resident/student car parking in accordance with the requirements of Clause 22.10 of the Monash Planning Scheme and accordingly no car parking reduction is required for students, with on-site parking being adequate to satisfy demands.

The proposed student housing development will offer student accommodation, with a significant proportion of students likely to be overseas or regional students studying locally at Monash Clayton. A large proportion of these students do not own or require a car, with cost being a significant consideration.

Students are far less likely to own a vehicle due to the financial cost, along with the location of student accommodation in areas which facilitate a greater use of alternative transport and accordingly have lower car ownership rates. Therefore, it is not reasonable to require a statutory rate of car parking for the student accommodation as per the requirement for 'dwellings' under a Clause 52.06-5 assessment.

Convenience Restaurant/Convenience Shop

Convenience Restaurant/Convenience Shop tenancies located nearby to activity centres and within close proximity to a large tertiary institution (i.e. Monash University Clayton Campus) do not typically generate car parking demands in their own right.

We expect the convenience restaurant/convenience shop to be largely ancillary to the student accommodation development, serving students of the site, rather than attracting a large amount of additional patrons from further afield.

The provision of 3 staff spaces on-site ensures staff demands will be accommodated on-site and no car parking reduction is sought.

4.4. Appropriateness of providing fewer car spaces than the number likely to be generated

Based on the Empirical Assessment of Parking Demand detailed above, all car parking generated by the site will be accommodated within the car parking provided and a permit for a car parking reduction is not being sought.

4.5. Review of Car Parking Layout and Access Arrangements

A total of 79 car spaces are provided within a basement carpark with vehicle access via Beddoe Avenue, at the site's north-eastern boundary.

Traffic Group has provided design advice to the project architect to achieve a satisfactory carpark layout. The proposed parking layout has been assessed under the following guidelines:

- Clause 52.06-9 (Design Standards for car parking) of the Planning Scheme,
- AS2890.1-2004 – Part 1: Off-street car parking, where relevant, and
- AS2890.6-2022 – Part 6: Off-street car parking for people with disabilities.

Key elements of the design include:

Design Standard 1 – Accessways

- Vehicle access to the site is provided via a 6.1m wide accessway to Beddoe Avenue which accords with the requirements of Clause 52.06-9 and AS2890.1-2004 for a two-lane two-way accessway.
- A minimum headroom clearance of 2.2m is provided along the entry ramp to the basement carpark, satisfying the requirements under Clause 52.06-9 and AS2890.1-2004.
- All vehicles will be able to enter and exit the site in a forwards direction in accordance with Clause 52.06-9.
- A pedestrian sight triangle is provided on both sides of the accessway, in accordance with Clause 52.06-9 and AS2890.1-2004. A pedestrian sight triangle is not required on the south side of the accessway due to the width of the accessway (i.e. sight triangle achieved within the accessway), however one has been provided regardless.

Design Standard 2 – Car Parking Spaces

- Car space dimensions accord with Clause 52.06-9 (Design Standard 2) with minimum dimensions provided at 4.9m long x 2.6m wide with at least a 6.4m wide access aisle, along with 2 spaces being provided at 4.9m long x 2.9m wide with at least a 5.9m access aisle.
- The proposal includes two disabled car spaces which are designed in accordance with the requirements of Clause 52.06-9 (Design Standard 2) and AS2860.6-2022.
- Car spaces located adjacent to walls or obstructions are provided with 300mm clearance in accordance with Diagram 1 of Clause 52.06-9.
- Column locations comply with Clause 52.06-9.
- Access to and from the critical car spaces within the basement carpark have been checked for access by the B85 design car (specified at Appendix B of AS2890.1-2004) and found to be acceptable. A copy of the swept path diagrams prepared for critical car spaces is provided at Appendix C.

Design Standard 3 – Gradients

- The ramp grades comply with the requirements of Clause 52.06-9, including a grade of no steeper than 1:10 for the first 5m into the site.
- Grade changes are provided in accordance with Clause 52.06-9.
- A maximum grade of 1:4 (25%) is provided through the mid-section of the ramp to the basement carpark, which accords with Clause 52.06-9 for a private carpark.

Clause 52.06-9 Design Standard 4 – Mechanical Parking

The proposed car parking arrangement is to accommodate a total of 26 car spaces within mechanical car stacker systems. The development proposes 4 x two-level stacker systems, such as the Klaus Multibase 2072i (or equivalent model by alternate stacker provider). These systems provide stacker spaces over two levels ('entry level' and 'pit level') and will be allocated for use by students only, with a pit to allow independent access to spaces.

Clause 52.06-9 of the Planning Scheme sets out design standards for mechanical car parking under Design Standard 4. Under this clause, mechanical parking must be provided in accordance with the following:

Design standard 4: Mechanical parking

Mechanical parking may be used to meet the car parking requirement provided:

- *At least 25 per cent of the mechanical car parking spaces can accommodate a vehicle clearance height of at least 1.8 metres.*
- *Car parking spaces that require the operation of the system are not allocated to visitors unless used in a valet parking situation.*
- *The design and operation is to the satisfaction of the responsible authority.*

Residents will be able to use these systems via a remote control, ensuring that they do not need to exit their vehicle in order to park their car.

The car stacker systems effectively allow up to two vehicles to park in the one 'grid or space'. A pit level allows each space to be accessible independently. This type of stacker is the preferred model of car stacker as the system provides a more convenient arrangement and efficient use of space in comparison to traditional tandem parking.

A summary of the car stacker system proposed in this development is provided in Table 4 with the relevant specifications attached at Appendix D.

Table 4: Car stacker design specifications

Car Stacker		
Suitable Systems	Klaus Multibase 2072i	
Type of system	2 level mechanical car stacker	
Number of spaces	26 spaces (6 x double platform units and 1 x single platform unit)	
Grid Unit (Minimum)	5.35m/5.45m for the double platform units and 2.85m for the single platform unit	
Usable Platform Width	2.6m for the single platform unit and 5.2m for the double platform units (Accords with AS2890.1-2004 and Clause 52.06-9)	
System Length	5.4m (Accommodates vehicles up to 5.2m in length)	
Headroom Clearance	3.8m minimum	
Pit Depth	2.0m	
Car Height Clearance	Ground Level	1.8m
	Pit Level	1.8m
% of mechanical spaces accommodating 1.8m car heights	<u>100% (26/26 spaces)</u> Accords with Clause 52.06-9 (Design Standard 4) which requires at least 25% of spaces to accommodate 1.8m high cars	

In addition to the information provided above, the stackers have been designed with the following considerations:

- The dimensions in the table above accord with AS2890.1-2004 for User Class 1A (long-term parking) and Clause 52.06-9 and are satisfactory.
- Access to and from each of the critical car stacker spaces has been checked based on the B85 (85th percentile) design car presented in AS2890.1-2004 and we are satisfied that vehicles will be able to safely manoeuvre to and from each space and exit the development in a forwards direction. Swept paths to critical spaces are provided at Appendix C.

Response to Council Queries

- Council had a concern regarding the available car parking aisle space adjacent to the car stackers as a result of the DDA car space.
 - The carpark aisle is 6.4m wide adjacent to the car stackers. 500mm of the DDA car space is allowed to be ‘shared’ with the accessway – it does not reduce the usable

space of the accessway. See Planning Practice Note 22 extract below. 6.4m is still available for manoeuvring if required.

Disabled car parking spaces

CI 52.06-9 – DS 2

Under the *Building Code of Australia*, some of the required number of car parking spaces must be allocated as disabled car parking spaces. The design standards for these spaces must be in accordance with *Australian Standard AS2890.6-2009 (Off-street Parking for People with Disabilities)* and the *Building Code of Australia*.

Disabled car parking spaces are longer than car parking spaces specified in the design standard at clause 52.06-9. To accommodate their additional length, disabled car parking spaces may encroach into an accessway width specified in Table 2 of clause 52.06-9 by 500mm – refer to Diagram 2 below.

Diagram 2: disabled car parking spaces

The diagram illustrates a disabled car parking space and an adjacent accessway. The parking space is a rectangle containing a wheelchair icon, with a vertical dimension of 4.9m labeled '4.9m car space length'. To its right is an accessway with a vertical dimension of 6.4m labeled '6.4m accessway width'. A dashed line shows the parking space extending 500mm into the accessway, with a vertical double-headed arrow and the label '500mm' indicating this encroachment.

Figure 15: Planning Practice Note 22 - Disabled Car Parking Space

- Council provided the following comments regarding the car stacker systems:
 - Independent operation for each parking space.
 - A minimum ground level overhead clearance of 1.8 metres.
 - A car/van up to 175cm height on the upper level.
 - A clear/usable platform width of at least 230cm.
 - Minimum pit length of 520cm.
 - Loading weight per platform of at least 2000kg.
 - A minimum aisle width adjacent to the mechanical parking system of 6.2 metres

- Each of these items has been met already or will be at the time of installation with the car stacker supplier.

Based on the above, we are satisfied that the layout of the proposed carpark and vehicle access arrangements as detailed in the plans at Appendix A are satisfactory and that the access arrangements for the development will provide for safe and efficient movements to and from the development.

4.6. Bicycle Parking Requirement

The bicycle parking requirements for the proposed student accommodation is set out under Clause 22.10 and Clause 52.34.

Clause 22.10-4 of the Monash Planning Scheme states:

Bicycle parking spaces should be provided at a rate of 1 bicycle space for every 2 students.

Clause 52.34 of the Planning Scheme specifies bicycle parking requirements for new developments and changes in use in Table 1. The table below details the statutory bicycle parking requirement of the proposed student accommodation development.

Table 5: Statutory bicycle parking assessment - Clause 22.10 and Clause 52.34

Planning Provision	No.	Bicycle Parking Rate		No. of Bicycle Spaces Required
		Resident/Employee	Visitor/Customer	
Clause 22.10 Student Accommodation	234 apartments 253 beds	1 per 2 beds		127
Clause 52.34 Convenience Restaurant	112m ²	1 to each 25m ² of floor area available to the public	2	4 employee 2 customer

Note: It is understood that Clause 52.34 allows exemptions from the requirements of bicycle parking provided, given that a bicycle parking requirement for the use is specified under another provision of the Planning Scheme. In this case, the relevant provision is Clause 22.10, which outlines specific requirements for student accommodation use.

The proposed development has the following bicycle parking requirements:

- **Clause 22.10** – 127 total spaces accounting for both residents and visitors.
- **Clause 52.34** –4 employee spaces and 2 customer spaces associated with the convenience restaurant/Convenience Shop.

A total of 135 bicycle spaces are provided across the development, comprising 14 spaces at ground level along the frontage to Beddoe Avenue typically for employees and visitors, along with 121 bicycle spaces within the basement carpark.

Accordingly, the development satisfies the minimum bicycle parking requirements of both Clause 22.14 and Clause 52.34.

The bicycle parking spaces within the basement will be provided as 40 x spaces via horizontal 'Flat Top' rails and 81 x spaces via vertical 'Ned Kelly' bicycle spaces. The space allowed for bicycle parking on the plans satisfies the manufacturer's specifications for the 'Ned Kelly' vertical bicycle rails and AS2890.3-2015 for the 'Flat Top' horizontal rails and is satisfactory. An additional 14 x spaces are provided typically for visitor parking via horizontal 'Flat Top' rails along the site's frontage to Beddoe Avenue.

A minimum of 20% of the bicycle spaces must be provided in the form of ground level (horizontal) rails in accordance with Clause 2.1 (e) of AS2890.3-2015. We are satisfied that this has been achieved on the plans given that a total of 54 bicycle spaces have been provided as horizontal rails, equating to 40% of the overall provision.

Based on the above, we are satisfied with the provision of bicycle parking in this development.

4.7. Loading and Waste Collection

Loading

Clause 65.01 of the Planning Scheme specifies that:

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

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

The proposed student accommodation provides 234 apartments (253 beds). The apartments may require loading from time-to-time associated with removal trucks or vans. Given the size of the apartments, these trucks are likely to be small trucks or vans.

There will be some demand for loading by the convenience restaurant/convenience shop on the site. This includes the transportation of food/drinks and merchandise for the café/shop. We are satisfied that any loading activities can be undertaken on-street in the nearby area as required and is acceptable.

Based on the above, we are satisfied that a dedicated on-site loading bay is not necessary and that suitable alternatives are available on-street in close proximity to the site.

Waste Collection

Waste bins will be stored within two separate bin storage room at basement level. It is proposed that waste collection will occur on-site within the basement level by a private contractor utilising a rear loading mini waste truck (typically 6.4m long x 2.08m high waste truck vehicle). The waste collection vehicle will prop on the accessway and transfer the waste bins to the truck and back to the bin store, this will typically occur outside peak periods.

Swept path diagrams demonstrating the 6.4m long, 2.08m high mini waste collection vehicle undertaking entry and exit movements in a forwards direction are provided at Appendix C.

Based on the above, we are satisfied the loading and waste collection arrangements are acceptable from a traffic engineering perspective.

4.8. Traffic Impacts

Student Accommodation Parking

The proposed student accommodation is expected to generate traffic movements at a rate of 3 vehicle trip ends per car space per day. This is reflective of the fact that students are unlikely to use their car to travel to Monash University. This equates to a daily traffic generation of 228 vehicle trip ends per day for the 76 student accommodation car spaces.

Typically, 10% of this traffic can be expected in the AM and PM commuter peak hours, which equates to 23 vehicle trip ends in each peak hour. This equates to 1 vehicle movement every 2-3 minutes.

This level of traffic is moderate, residential in nature and will not have a detrimental impact on the safety or operation of Beddoe Avenue and other nearby roads.

Convenience Restaurant/Convenience Shop Parking

For the purpose of assessing traffic impacts associated with the convenience restaurant/convenience shop which is allocated 3 car parking spaces, a traffic generation rate of 4 vehicle trip ends per space per day (allows for staff change over), with 0.7 vehicle trips per space during each of the peak hours.

It is noted that any traffic impacts associated with off-site parking demands (customers) will be evenly distributed over the nearby road network and have negligible impacts on the wider road network.

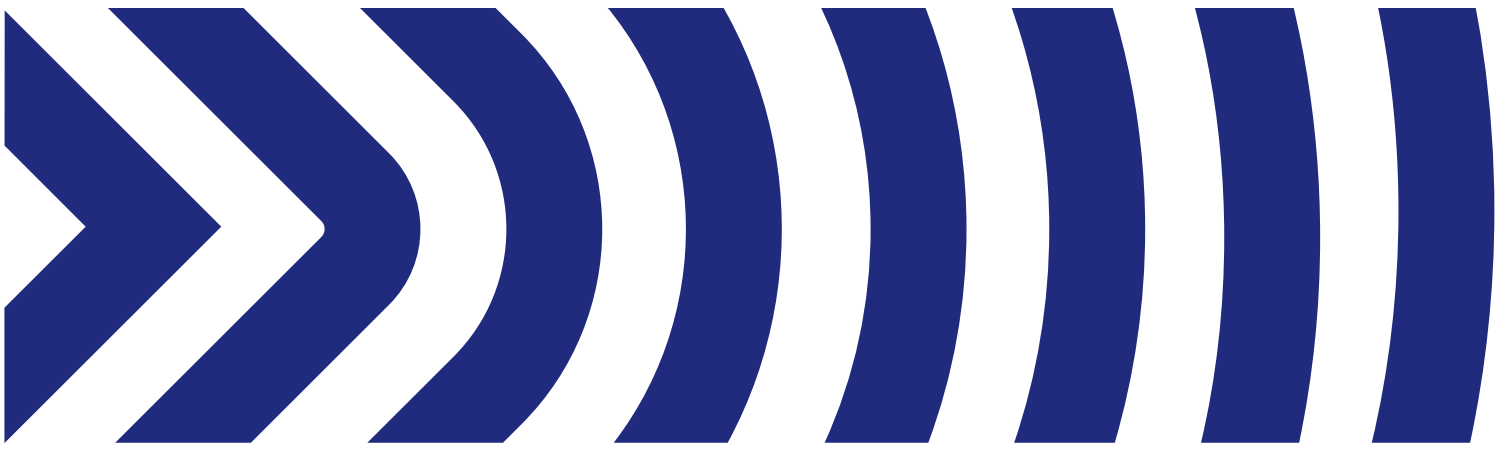
Based on the above, the convenience restaurant/convenience shop car parking is expected to generate 12 vehicle trip ends per day with 2 vehicle trip ends per peak hour.

Based on the above, we are satisfied that the level of traffic generated by the proposed development is moderate, spread throughout the day and will not have a detrimental impact on the operation or safety of Beddoe Avenue or the surrounding road network.

5. Conclusions

Having undertaken a detailed traffic engineering assessment for the proposed student accommodation development at 1959-1963 Dandenong Road & 75 Beddoe Avenue, Clayton, we are of the opinion that:

- a) a 'student accommodation' use is not a defined land use under Clause 73.03 of the Planning Scheme. In this instance, we are instructed to assess the use as 'dwellings', which results in a statutory requirement of 234 car spaces under Clause 52.06 of the Monash Planning Scheme,
- b) whilst assessed as 'dwellings', the proposal is for student accommodation. Monash City Council has a local policy in regards to Student Housing and Clause 22.10-4 of the Monash Planning Scheme specifies that car parking should be provided at a minimum rate of 0.3 car spaces per bed, resulting in a requirement for 75 car spaces, the provision of 76 car spaces for the student accommodation component at a rate of 0.3 car spaces per bed exceeds the requirements specified by Clause 22.10-4.
- c) the proposed convenience restaurant/convenience shop has a statutory parking requirement of 3 car spaces under Clause 52.06-5 and the provision of 3 car spaces satisfies this requirement.
- d) on-site bicycle parking is provided according to the statutory requirements under Clause 22.10-4 and Clause 52.34 and the bicycle parking layout complies with either the manufacturer's specifications and/or AS2890.3-2015,
- e) loading activities will be minimal and can be accommodated on-street in the nearby area, including within Beddoe Avenue and is acceptable,
- f) waste collection will be collected on-site within the basement carpark via a private contractor,
- g) the level of traffic generated as a result of this proposal is moderate, spread throughout the day, mostly residential in nature and have a negligible impact on the operation or safety of Beddoe Avenue or the surrounding road network, and
- h) there are no traffic engineering reasons why a planning permit for the proposed student accommodation development at 1959-1963 Dandenong Road & 75 Beddoe Avenue, Clayton, should be refused, subject to appropriate conditions.



Appendix A

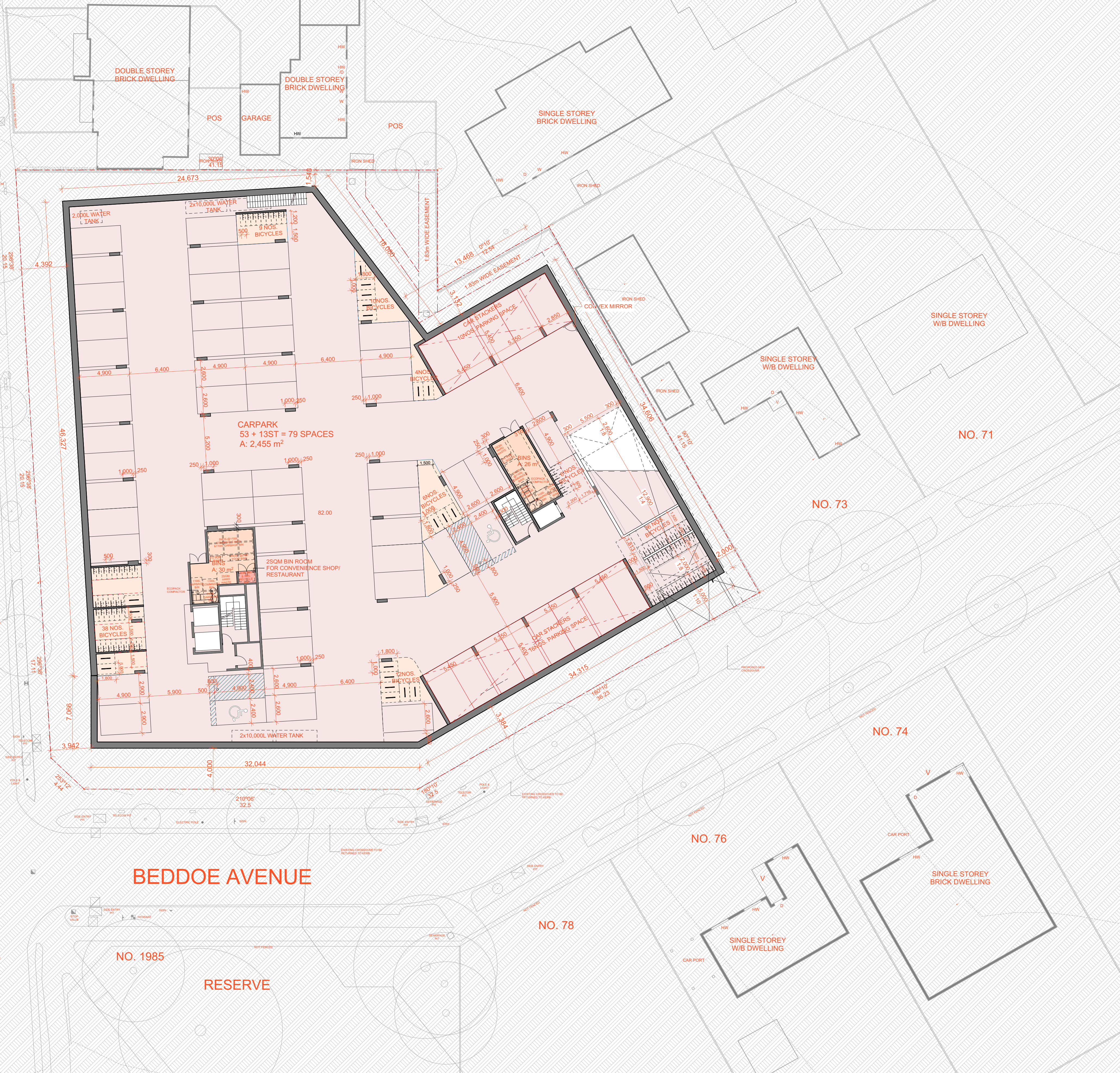
Development Plans

DANDENONG ROAD

SERVICE ROAD

BEDDOE AVENUE

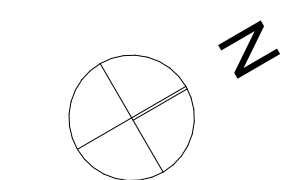
RESERVE



NOTE:
 -RAINWATER FROM THE ROOF AREA WILL BE CAPTURED (40,000L TANK) TREATED & REUSED FOR TOILET FLUSHING IN THE LODGING ROOMS AS WELL AS THE COMMUNAL LAUNDRY. FIRE TEST WATER WILL BE CAPTURED FOR REUSED IN THE BUILDING FOR IRRIGATION (2,000L TANK).
 -DETAIL OF THE BESS REQUIREMENT REFER TO ESD REPORT PREPARED BY SBE.

METAXAS

METAXAS ARCHITECTS PTY LTD. ABN 180 791 78626. 114 CARDIGAN STREET, CARLTON VIC 3053. AUSTRALIA
 TEL 03 9349 5344 EMAIL mail@metaxasarch.com WEB: www.metaxasarch.com



Client
KANG Y CHAI
 Project Name
STUDENT HOUSING
1959-63 DANDENONG ROAD & 75 BEDDOE AVE, CLAYTON

Drawing Title:
BASEMENT PLAN
 Scale: 1:200 @ A1 Date: 20 MAY 2021
 Status: SKETCH Checked By:
 Project No: Drawing No.: Rev.:
18.027 TP.2.1 A
 Plot Date: 3/08/2023

M:\2018\18.027 Dandenong Rd Clayton\01 Model\18.027\23 Dandenong TP_A 230726.pln

DANDENONG ROAD

SERVICE ROAD

BEDDOE AVENUE

NO: 1985

RESERVE

NO. 71

NO. 73

NO. 74

NO. 76

NO. 78

DOUBLE STOREY BRICK DWELLING

DOUBLE STOREY BRICK DWELLING

SINGLE STOREY BRICK DWELLING

SINGLE STOREY W/B DWELLING

SINGLE STOREY W/B DWELLING

SINGLE STOREY BRICK DWELLING

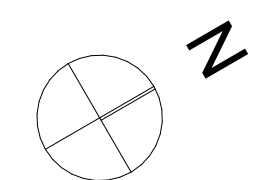
SINGLE STOREY W/B DWELLING

STAGE TWO STAGE ONE



EXISTING STREET TREE TO BE REMOVED

NOTE:
 1. LANDSCAPE DETAIL REFER TO LANDSCAPE DRAWING PREPARED BY HANSEN PARTNERSHIP.
 2. DETAIL OF THE BESS REQUIREMENT REFER TO ESD REPORT PREPARED BY SBE.
 EXTENT OF DOUBLE GLAZING REFERED TO IN ENFIELD ACOUSTICS REPORT



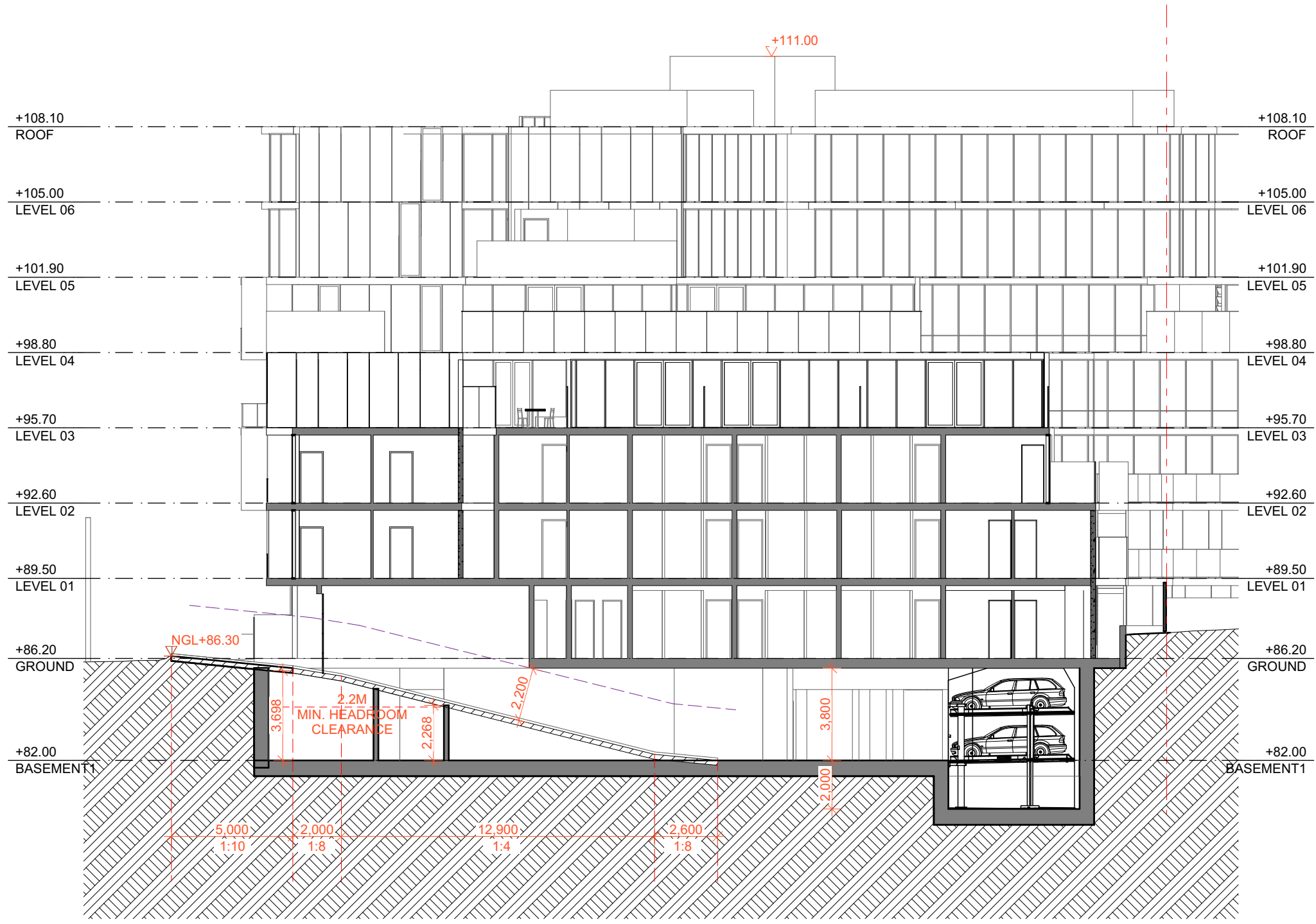
METAXAS

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 TEL 03 9349 5344 EMAIL mail@metaxasarch.com WEB: www.metaxasarch.com

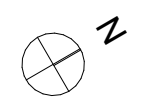
Client
KANG Y CHAI
 Project Name
STUDENT HOUSING
1959-63 DANDENONG ROAD & 75 BEDDOE
AVE, CLAYTON

Drawing Title:
GROUND FLOOR PLAN
 Scale: 1:200 @ A1 Date: 20 MAY 2021
 Status: SKETCH Checked By:
 Project No.: 18.027 Drawing No.: TP.2.2 Rev.: A
 Plot Date: 3/08/2023

M:\2018\18.027 Dandenong Rd Clayton\01 Model\18.027\23 Dandenong TP_A 230726.pln



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 TEL 03 9349 5344 EMAIL mail@metaxasarch.com WEB: www.metaxasarch.com



Client	KANG Y CHAI		
Project Name	STUDENT HOUSING		
	1959-63 DANDENONG ROAD & 75 BEDDOE AVE, CLAYTON		

Drawing Title: SECTION ALONG THE ENTRY RAMP			
Scale: 1:200 @ A3	Date: 20 MAY 2021		
Status: SKETCH	Checked By:		
Project No: 18.027	Drawing No.: TP.4.5	Rev.: A	
Plot Date: 3/05/2023			

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Appendix B

Parking Inventory and Map




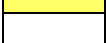
Surveyed By: Dimitri. Economou

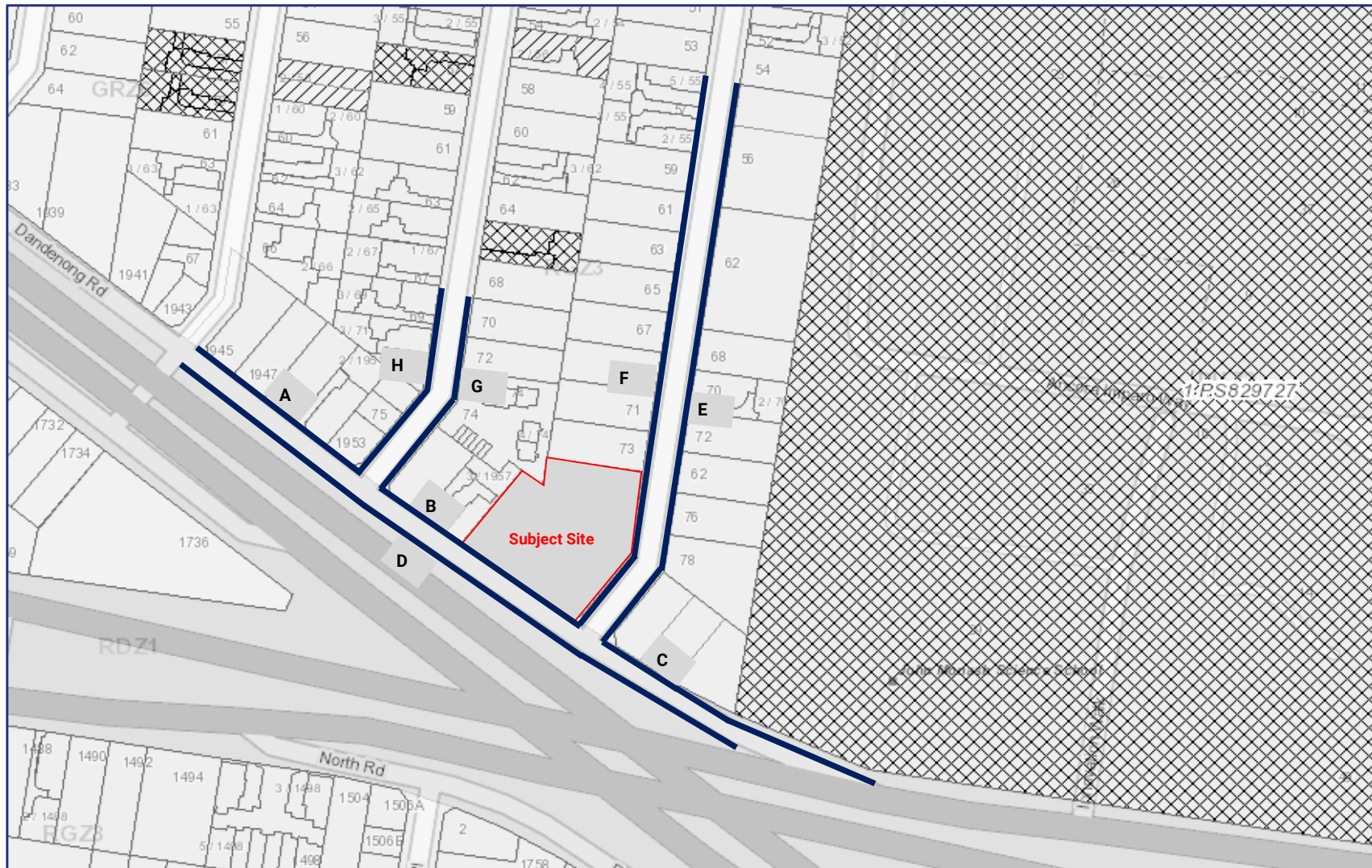
Survey Dates & Times: See below

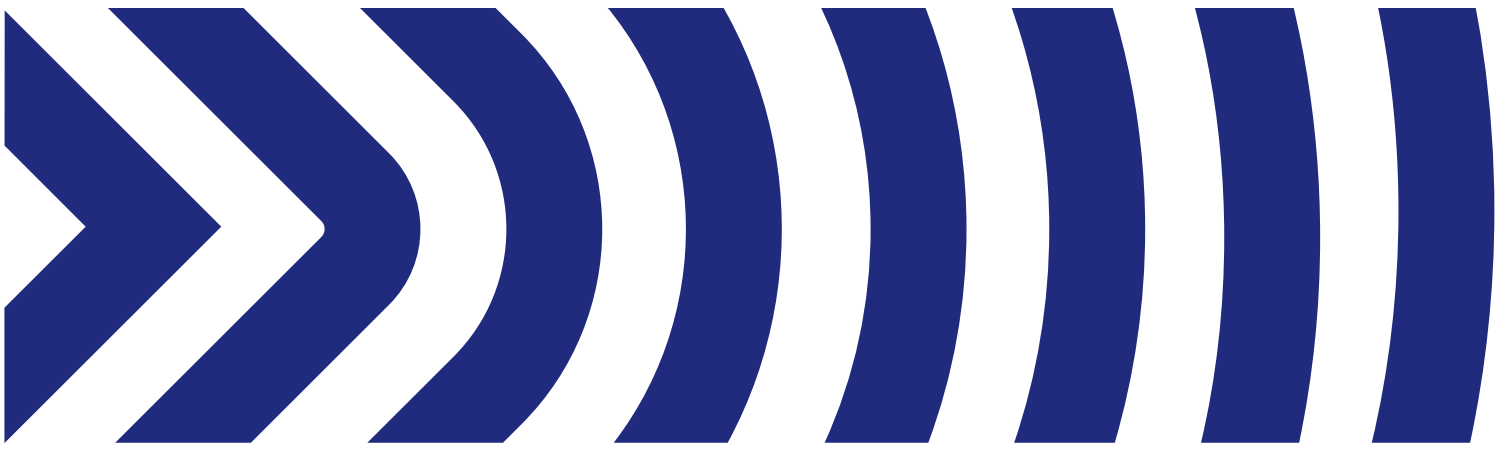
1959-1963 Dandenong Road, Clayton		Restriction	Capacity Min - Max	Monday 3rd August, 2020 11am
ON-STREET CARPARKING				
Map Ref.	DANDENONG ROAD (SERVICE ROAD)			
	North-east Side			
A	Stockdale Avenue to Marshall Avenue	No Stopping	-	0
		1/2P 8am-6pm Mon-Fri	10	0
		No Stopping	-	0
B	Marshall Avenue to WB #1959 (SS)	No Stopping	-	0
		1/2P 8am-6pm Mon-Fri	4	0
	WB #1959 (SS) to Beddoe Avenue (EB #1963 (SS))	1/2P 8am-6pm Mon-Fri	8	0
		No Stopping	-	0
C	Beddoe Avenue to Wellington Road	No Stopping	-	0
South-west Side				
D	Stockdale Avenue to Wellington Road	No Stopping	-	0
DANDENONG ROAD (SERVICE ROAD)			Capacity	22 - 22
			Total Number of Cars Parked	0
			Total Number of Vacant Spaces	22
			Percentage Occupancy	0%
Map Ref.	BEDDOE AVENUE			
	East Side			
E	Dandenong Road (Service Road) to SB #70	No Stopping	-	0
		1/2P 8am-6pm Mon-Fri	9	0
	SB #70 to MB #62	1/2P 8am-6pm Mon-Fri	9	2
	MB #62 to SB #54	1/2P 8am-6pm Mon-Fri	13	0
West Side				
F	NB #55-57 to SB #61	Permit Zone 8am-6pm Mon-Fri	8	0
	SB #61 to SB #69	Permit Zone 8am-6pm Mon-Fri	8	0
	SB #69 to NB #75 (SS)	Permit Zone 8am-6pm Mon-Fri	4	0
	NB #75 (SS) to Dandenong Service Road (SB #1963 (SS))	Permit Zone 8am-6pm Mon-Fri	1	0
		No Stopping	-	0
BEDDOE AVENUE			Capacity	31 - 31
			Total Number of Cars Parked	2
			Total Number of Vacant Spaces	29
			Percentage Occupancy	6%

Surveyed By: Dimitri. Economou

Survey Dates & Times: See below

1959-1963 Dandenong Road, Clayton		Restriction	Capacity Min - Max	Monday 3rd August, 2020 11am
Map Ref.	MARSHALL AVENUE			
	East Side			
G	Dandenong Road (Service Road) to SB #68	No Stopping	-	0
		1/2P 8am-6pm Mon-Fri	9	1
West Side				
H	NB #69 to Dandenong Road (Service Road)	1/2P 8am-6pm Mon-Fri	8	0
		No Stopping	-	0
MARSHALL AVENUE			Capacity	17 - 17
			Total Number of Cars Parked	1
			Total Number of Vacant Spaces	16
			Percentage Occupancy	6%
SUMMARY => ON-STREET CARPARKING				
Car Parking Supply			70 - 70	70
Total Number of Cars Parked				3
Total Number of Vacant Spaces				67
Percentage Occupancy				4%
Note: Public parking includes spaces that are available to the general public and excludes 'No Stopping', 'Loading Zones' and 'No Parking' areas, etc., during the relevant enforcement periods				
LEGEND: Public Parking Not available to the general public Not Available, illegally parked cars included in analysis No Stopping/ Other No Parking			   	

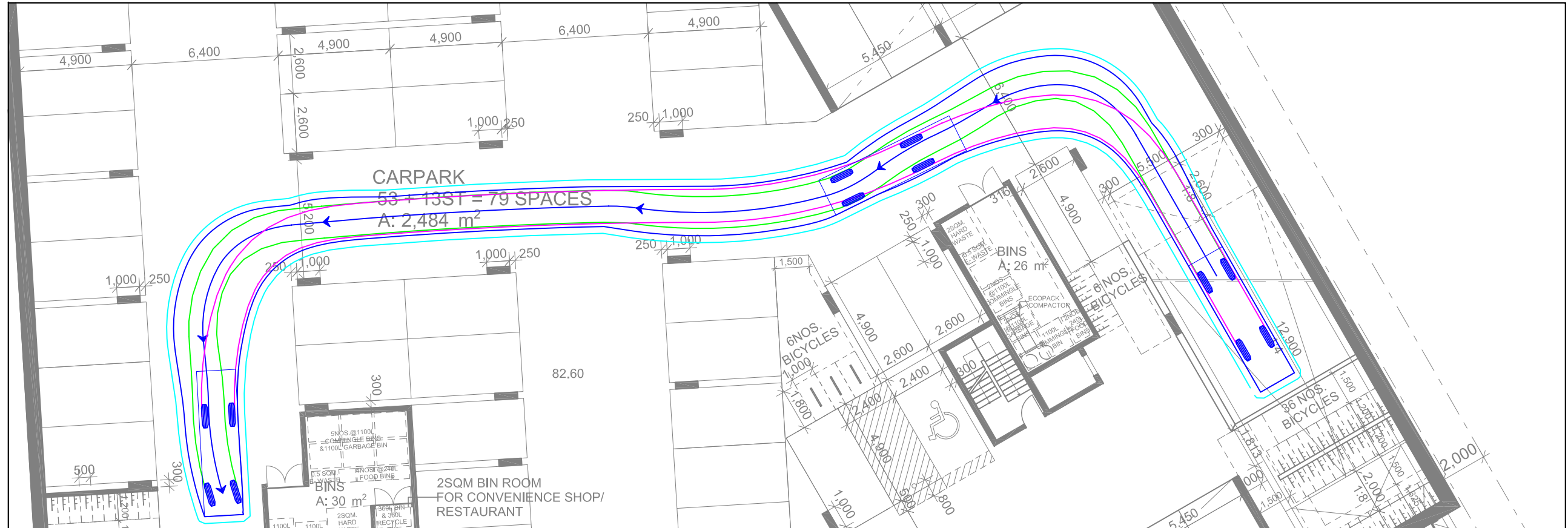
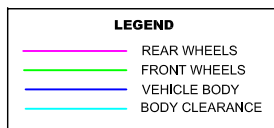
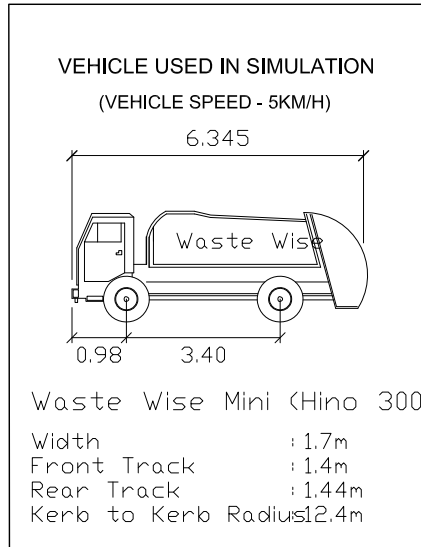




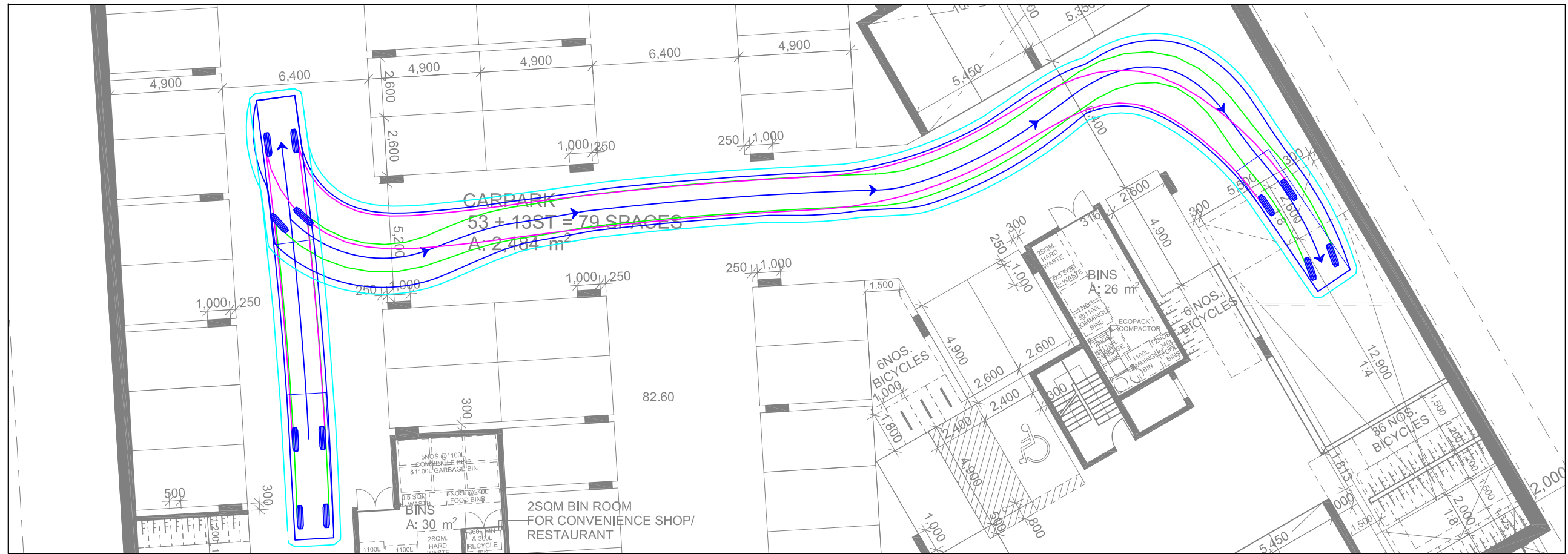
Appendix C

Swept Path Diagrams

6.4M WASTE WISE MINI - INGRESS



6.4M WASTE WISE MINI - INGRESS



PRELIMINARY ONLY
NOT FOR CONSTRUCTION

REV.	REVISION NOTES	REVISION DATE

GENERAL NOTES:
BASE INFORMATION FROM: TP.2.1 BASEMENT PLAN_1BASEMENT1.dwg
DRAWINGS BY: Metaxas Architects - dated 11/05/2021

DESIGNED BY:
D. ECONOMOU 13 MAY 2021

CHECKED BY:
J. STONE 13 MAY 2021

FILE NAME:
G26548-01B

ISSUE:
B

Traffix Group

Level 28, 458 Collins Street
MELBOURNE VICTORIA 3000
TEL: (03) 9822-2888

1959-1963 DANDENONG ROAD & 75 BEDDOE AVENUE, CLAYTON

6.4M WASTE WISE MINI SWEEP PATHS
PROPOSED STUDENT ACCOMMODATION

SCALE: 1:200 (A3)

SHEET NO.: 01/04

DRAWING NO.: G26548

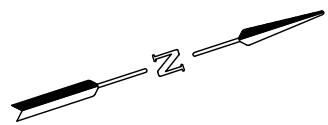
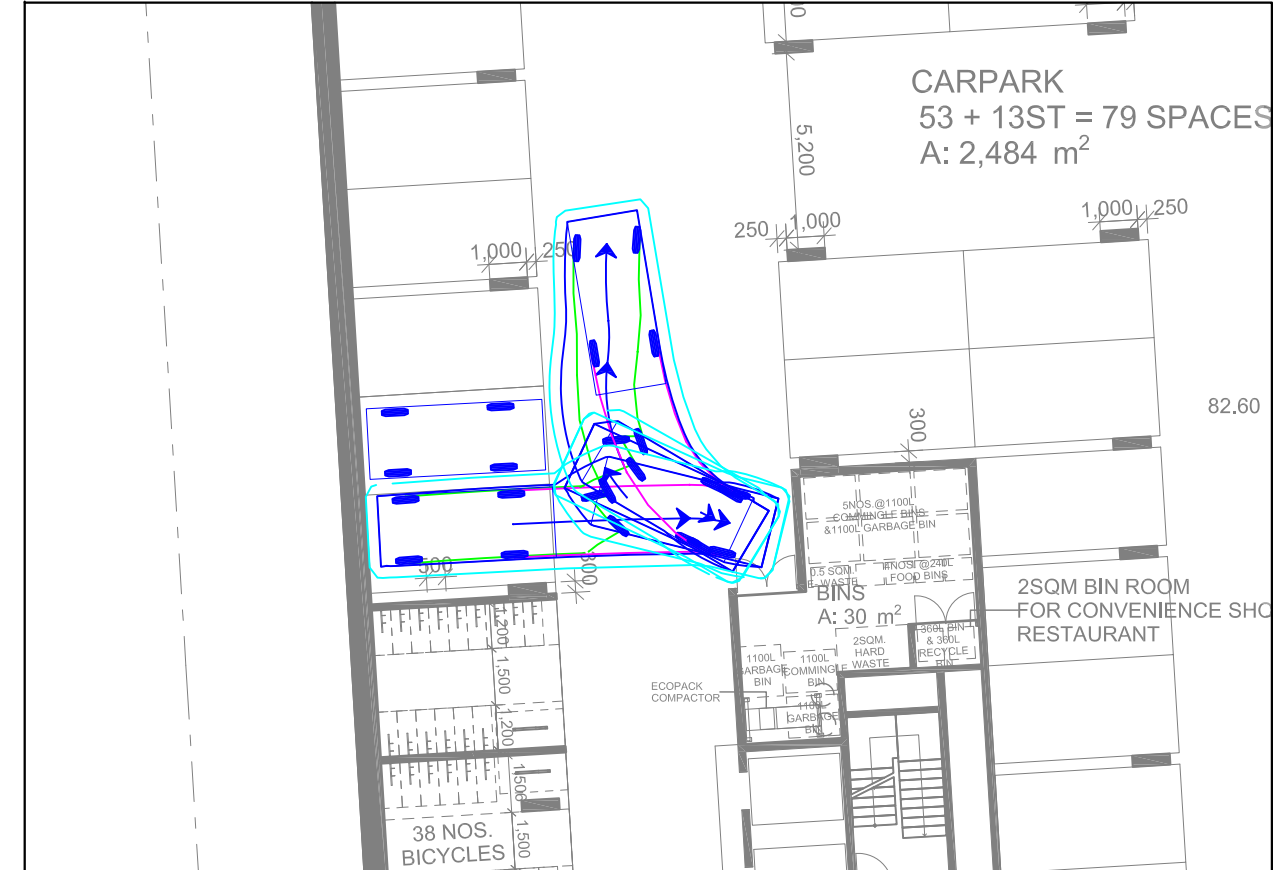
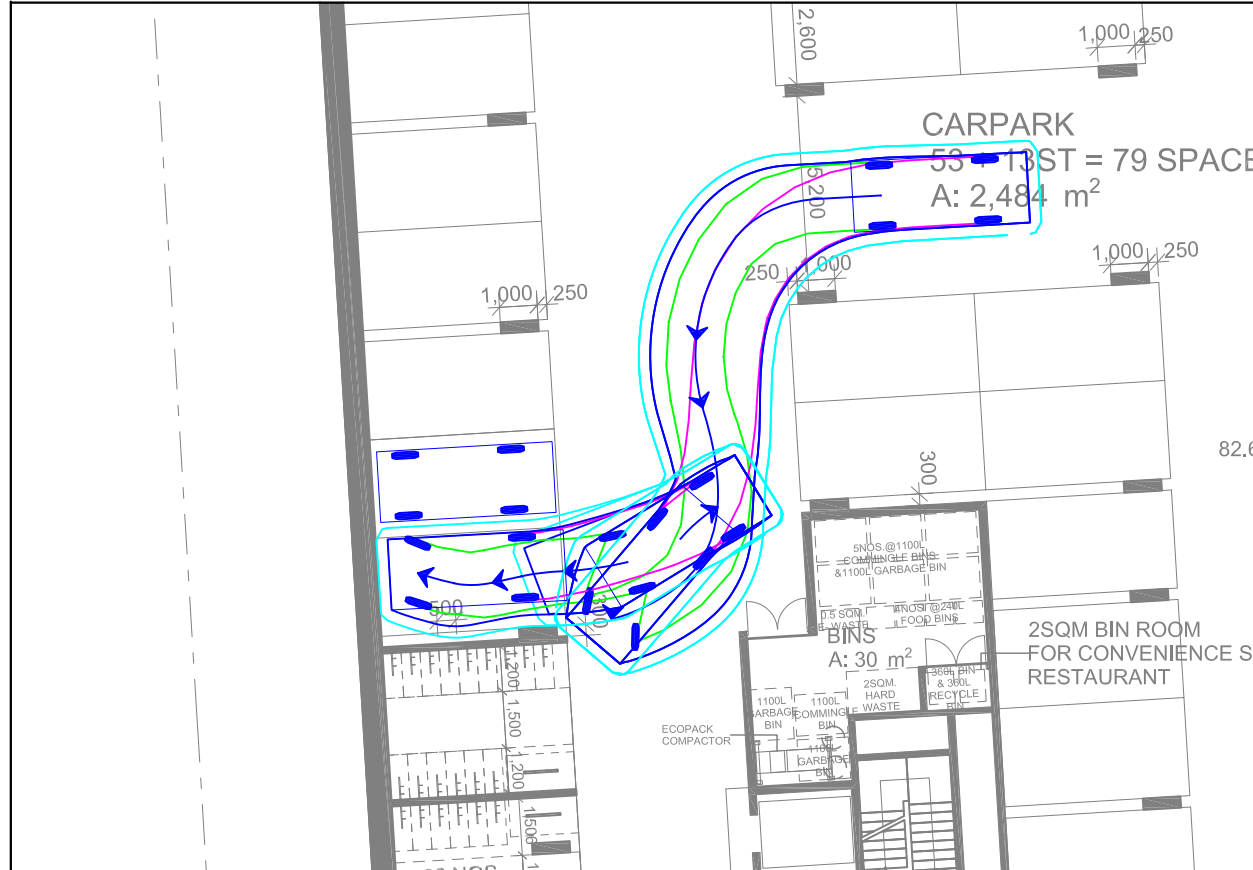
STANDARD CAR SPACE 3 - INGRESS

STANDARD CAR SPACE 3 - EGRESS

VEHICLE USED IN SIMULATION
(VEHICLE SPEED - 5KM/H)

LEGEND

- REAR WHEELS
- FRONT WHEELS
- VEHICLE BODY
- BODY CLEARANCE



PRELIMINARY ONLY
NOT FOR CONSTRUCTION

REV.	REVISION NOTES	REVISION DATE	GENERAL NOTES: BASE INFORMATION FROM: TP.2.1 BASEMENT PLAN_1BASEMENT1.dwg DRAWINGS BY: Metaxas Architects - dated 11/05/2021	DESIGNED BY: D. ECONOMOU 13 MAY 2021	 <small>Level 28, 459 Collins Street MELBOURNE VICTORIA 3000 TEL : (03) 9822-2888</small>	1959-1963 DANDENONG ROAD & 75 BEDDOE AVENUE, CLAYTON B85 DESIGN CAR SWEEP PATHS PROPOSED STUDENT ACCOMMODATION
				CHECKED BY: J. STONE 13 MAY 2021		
				FILE NAME: G26548-01B		
				SCALE: 1:200 (A3)		SHEET NO.: 04/04
						DRAWING NO.: G26548



Appendix D

Klaus Multibase 2072i Stacker Specifications



PRODUCT DATA

DIMENSIONS, TECHNICAL INFORMATION AND PERFORMANCE SPECIFICATION

multibase 2072i



Table of contents

Explanation of symbols.....	2	Access incline.....	8
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Dimensions and tolerances.....	2	CE conformity.....	9
Overview of building configuration.....	3	Electrical installation.....	10
Vehicle data.....	3	Technical information.....	11
Overview of system types and ceiling heights.....	4	Performance specification.....	12
Width dimensions.....	5	Services to be provided by the customer.....	13
Width dimension with door.....	5	Subject to technical changes.....	13
Width dimension without door.....	6		
Loading schedule.....	7		

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).



Disabled parking space
Parking for persons with restricted mobility possible (see "Disabled parking space", page 11)



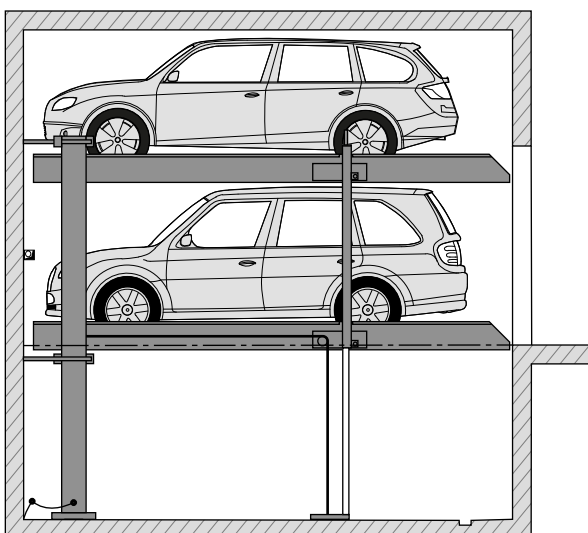
The systems provided are consistent with DIN EN 14010 and the EC Machinery Directive 2006/42/EC.



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

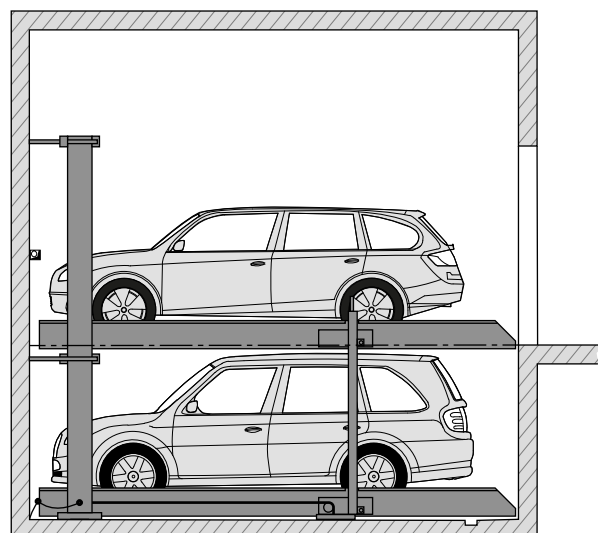
Parking positions

Lower parking space



The lower vehicle can park in or leave the parking space.

Upper parking space



The upper vehicle can park in or leave the parking space.

Dimensions and tolerances

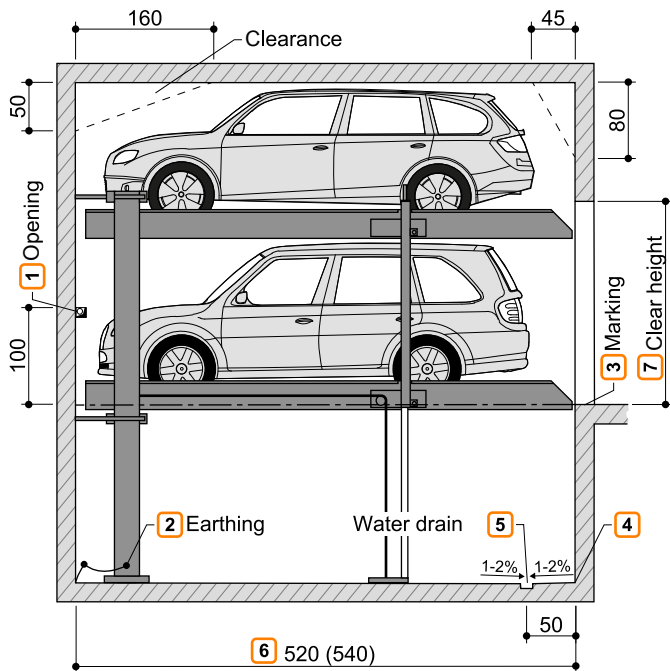


All dimensions and minimum final dimensions.
Tolerance for dimensions +3/-0. Dimensions in cm.

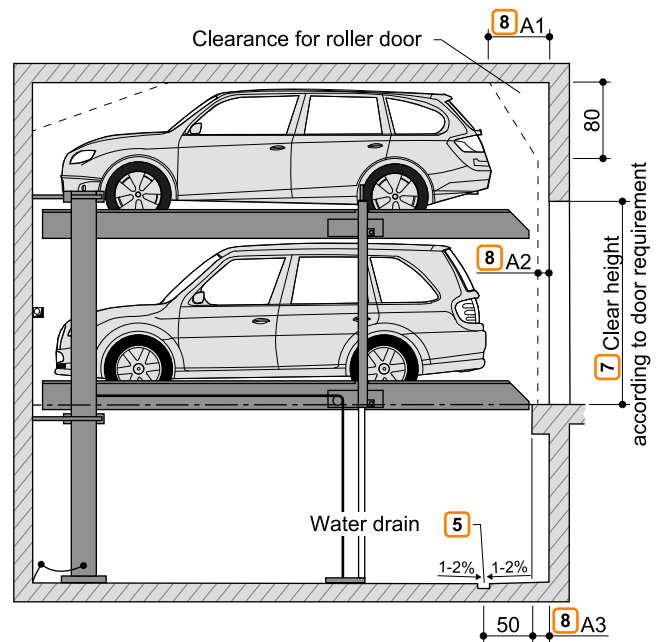
In order to adhere to the minimum final dimensions, the tolerances in accordance with the German Construction Tendering and Contract Regulations [VOB], Part C (DIN 18330 and 18331) and DIN 18202 must also be taken into account.

Overview of building configuration

Building configuration without door



Building configuration with door



- 1 If there are dividing walls: Wall opening 10 x 10 cm.
- 2 Equipotential bonding from foundation earth connection to system (to be provided by the customer).
- 3 In accordance with DIN EN 14010, the customer must provide 10 cm wide, yellow/black marking in accordance with DIN ISO 3864 in the access area along the edge of the pit to identify the hazard area. (see "Loading schedule", page 7).
- 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 Slope with water collection channel (see "Drainage", page 13).
- 6 ■ 520 cm for vehicles up to 5.0 m long
■ 540 cm for vehicles up to 5.2 m long
Shorter versions are possible on request - observe local regulations on parking space lengths.
We recommend a pit length of 540 cm. for comfortable use of your parking space and increasingly longer vehicles.
- 7 Clear height in accordance with local regulations. Maximum vehicle height + 10 cm.
- 8 Dimensions A1, A2 and A3 must be agreed on-site with the door manufacturer.

Vehicle data

Version

SP (single platform) = 2 vehicles
DP (double platform) = 4 vehicles

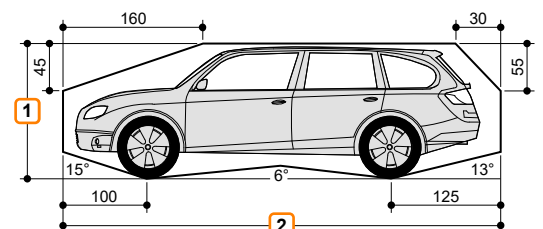
Parking options

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

	SP			DP	
Weight	2000 kg	2600 kg	3000 kg	2000 kg	2600 kg
Wheel load	500 kg	650 kg	750 kg	500 kg	650 kg

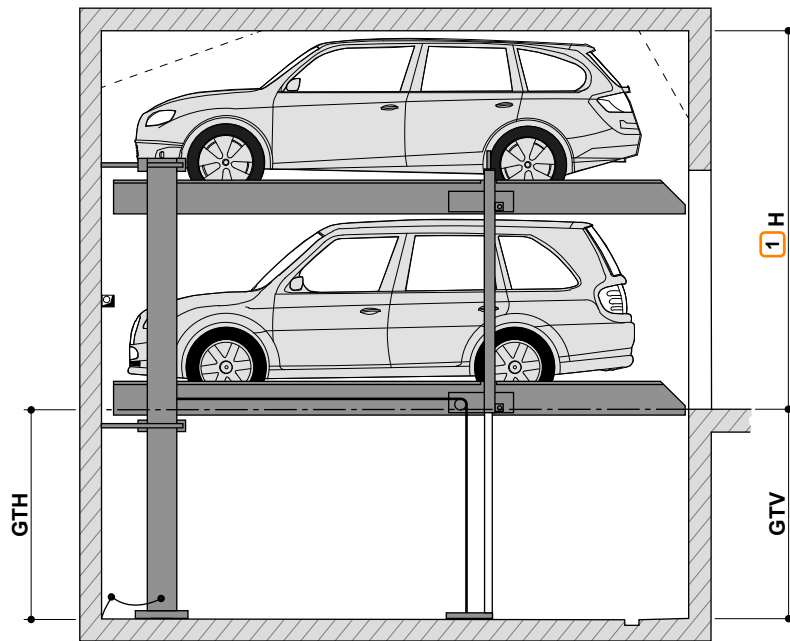
- 1 Vehicle height (see "Overview of system types and ceiling heights", page 4)
- 2 Vehicle length (see "Overview of building configuration", page 3)

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
GTV: Pit depth, front
GTH: Pit depth, rear

1 If the ceiling is higher, correspondingly higher vehicles can be parked on the top.

Type	GTH	GTV	Vehicle height, lower	Vehicle height, upper													
				150	155	160	165	170	175	180	185	190	195	200	205	210	215
2072i-165	165	170	150	320	325	330	335	340	345	350	355	360	365	370	375	380	385
2072i-170	170	175	155	325	330	335	340	345	350	355	360	365	370	375	380	385	390
2072i-175	175	180	160	330	335	340	345	350	355	360	365	370	375	380	385	390	395
2072i-180	180	185	165	335	340	345	350	355	360	365	370	375	380	385	390	395	400
2072i-185	185	190	170	340	345	350	355	360	365	370	375	380	385	390	395	400	405
2072i-190	190	195	175	345	350	355	360	365	370	375	380	385	390	395	400	405	410
2072i-195	195	200	180	350	355	360	365	370	375	380	385	390	395	400	405	410	415
2072i-205	205	210	190	360	365	370	375	380	385	390	395	400	405	410	415	420	425
2072i-215	215	220	200	370	375	380	385	390	395	400	405	410	415	420	425	430	435
2072i-220	220	225	205	375	380	385	390	395	400	405	410	415	420	425	430	435	440
2072i-230	230	235	215	385	390	395	400	405	410	415	420	425	430	435	440	445	450

H - Ceiling height

Example configuration



Example: Vehicle height, lower 160 cm and vehicle height, upper 190 cm.
Type: 2072i - 175
Ceiling height: 370 cm

Type	GTH	GTV	Vehicle height, lower	Vehicle height, upper													
				150	155	160	165	170	175	180	185	190	195	200	205	210	215
2072i-165	165	170	150	320	325	330	335	340	345	350	355	360	365	370	375	380	385
2072i-170	170	175	155	325	330	335	340	345	350	355	360	365	370	375	380	385	390
2072i-175	175	180	160	330	335	340	345	350	355	360	365	370	375	380	385	390	395
2072i-180	180	185	165	335	340	345	350	355	360	365	370	375	380	385	390	395	400

H

Width dimensions

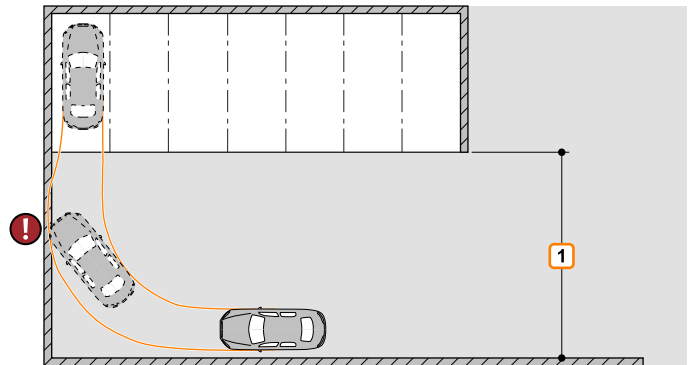


We recommend platform widths of minimum 250 cm and driving lane widths of 650 cm in order that vehicles can comfortably access the Multiparking system and enter and leave without difficulty.

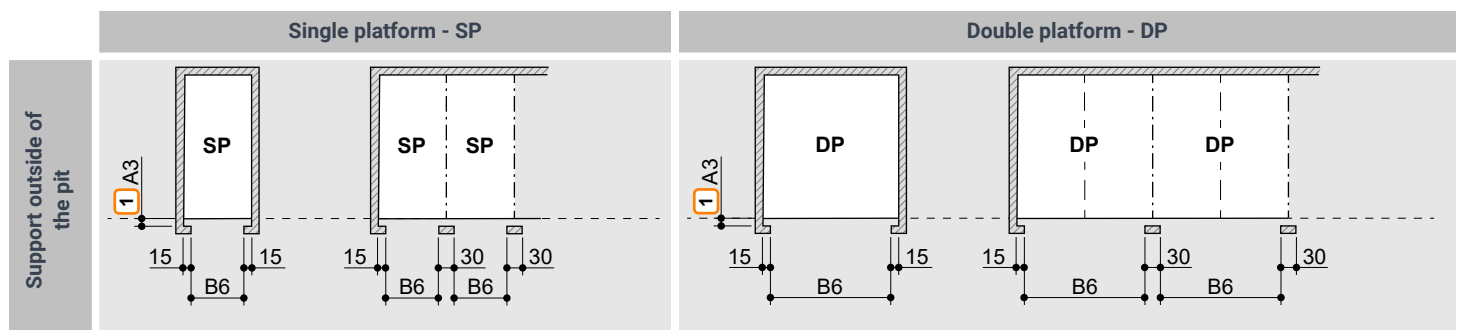
Narrower platforms may impede parking according to the following criteria.

- Driving lane width
- Entrance conditions
- Vehicle dimensions

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



Width dimension with door



	Clear platform width	Passage width B6
SP	230	230
	240	240
	250	250
	260	260
	270	270
	350 2	350

	Clear platform width	Passage width B6
DP	460	460
	470	470
	480	480
	490	490
	500	500
	510	510
	520	520
	530	530
	540	540

- 1 Door section (dimension A3 must be agreed on-site with the door manufacturer). With lateral closing doors, coordination between the door manufacturer and KLAUS Multiparking is required.

- 2 Disabled parking space version

Width dimension without door

	Single platform - SP	Double platform - DP	Example combination			
Dividing walls						
Support in the pit						
Support outside of the pit						
	Clear platform width	Dividing walls	Support in the pit		Support outside of the pit	
		B1	B2	B3	B4	B5
SP	230	260	255	245	250	240
	240	270	265	255	260	250
	250	280	275	265	270	260
	260	290	285	275	280	270
	270	300	295	285	290	280
	350 ¹	380	375	365	370	360
DP	460	490	485	475	480	470
	470	500	495	485	490	480
	480	510	505	495	500	490
	490	520	515	505	510	500
	500	530	525	515	520	510
	510	540	535	525	530	520
	520	550	545	535	540	530
	530	560	555	545	550	540
540	570	565	555	560	550	
Combination	230 + 460	750	745	735	740	730
	240 + 470	770	765	755	760	750
	250 + 480	790	785	775	780	770
	250 + 500	810	805	795	800	790
	270 + 500	830	825	815	820	810
	270 + 510	840	835	825	830	820
	270 + 520	850	845	835	840	830
	270 + 530	860	855	845	850	840
270 + 540	870	865	855	860	850	

¹ Disabled parking space version

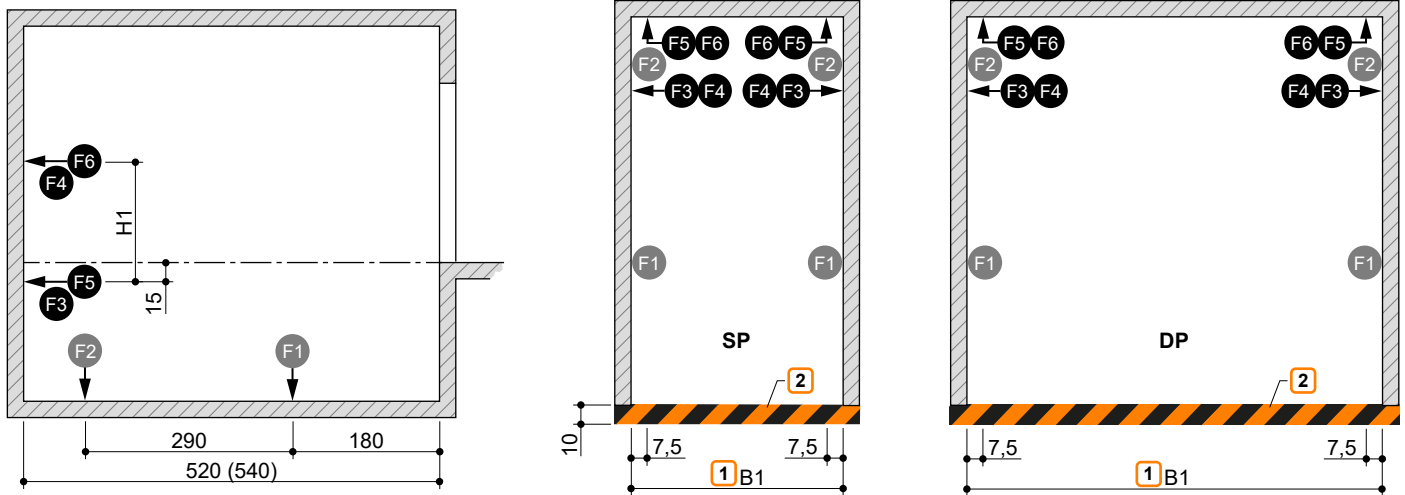
Loading schedule



The systems are dowelled into the ground. The depth of the boreholes in the floor plate is approximately 15 cm, and approximately 12 cm in the walls.

The floor plate and walls below entrance level must be from concrete (concrete quality min. C20/25).

The dimensions for the bearing points have been rounded. If the precise figures are required, please consult KLAUS Multiparking.



1 Width dimension B1 (see "Width dimension without door", page 6)

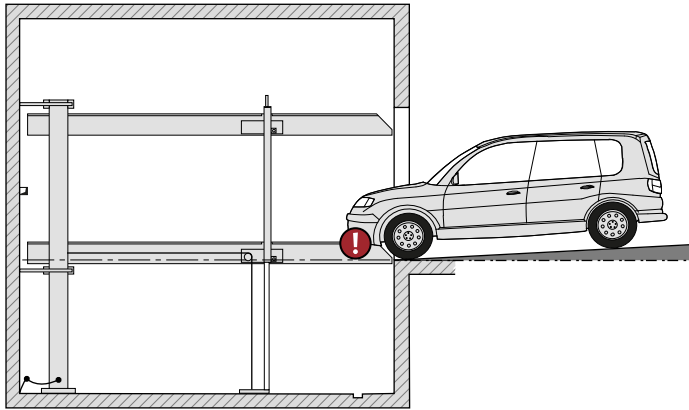
2 Marking in accordance with DIN ISO 3864 (illustration colour not consistent with DIN ISO 3864)

Parking space load	F1	F2	F3	F4	F5	F6	Type	H1
SP	2000 kg	+ 33.2 kN	+ 12.5 kN	± 1.3 kN	± 0.7 kN	+ 4.4 kN	2072i-165	195
		- 5.4 kN				- 2.5 kN		2072i-170
	2600 kg	+ 40.7 kN	+ 15.1 kN	± 1.6 kN	± 0.9 kN	+ 5.5 kN	2072i-175	205
		- 6.6 kN				- 3.1 kN		2072i-180
	3000 kg	+ 45.7 kN	+ 16.9 kN	± 1.9 kN	± 1.0 kN	+ 6.3 kN	2072i-185	215
	- 7.4 kN				- 3.5 kN	2072i-190	220	
DP	2000 kg	+ 60.8 kN	+ 20.6 kN	± 2.4 kN	± 3.1 kN	+ 6.0 kN	2072i-195	225
		- 9.2 kN				- 4.4 kN		2072i-205
	2600 kg	+ 73.9 kN	+ 25.2 kN	± 3.1 kN	± 3.9 kN	+ 7.4 kN	2072i-215	245
		- 11.2 kN				- 5.4 kN		2072i-220
							2072i-230	260

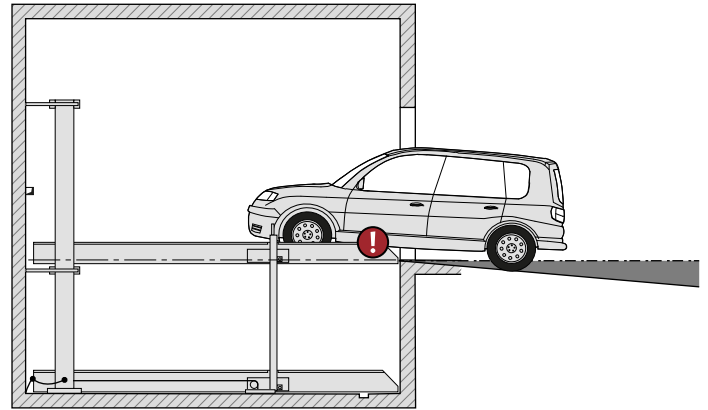
Access incline



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.



max. 3% slope

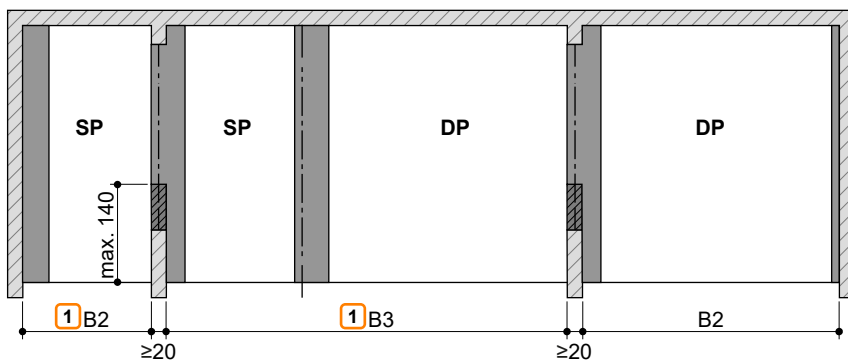
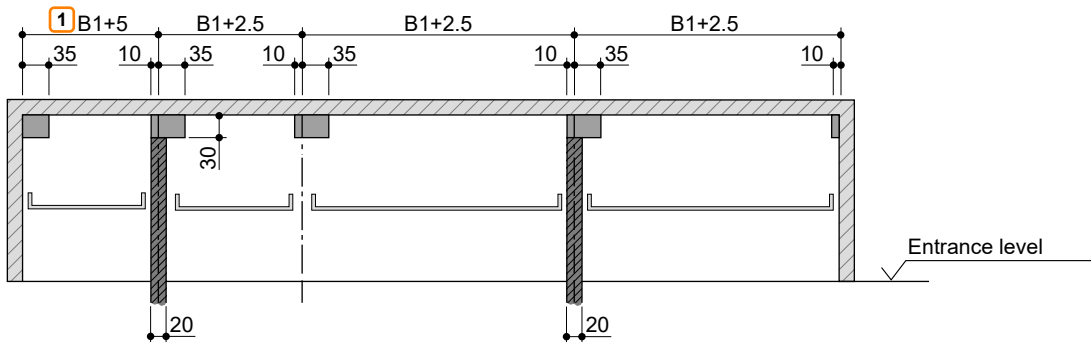


max. 10% gradient

Clearance for installations



These clearances apply to vehicles parked forwards only, with exit on the left. The clearances must be adjusted for vehicles with exit on the right or parked in reverse.



① Dimensions B1, B2 and B3 (see "Width dimension without door", page 6)

- Clearance for lengthways cable routing
- Clearance for vertical pipes, air ducts, etc.