



PROPOSED RESIDENTIAL DEVELOPMENT

45-45A OAKS AVENUE, DEE WHY

Traffic and Parking Assessment Report

22nd May 2024

Ref: 24020

Prepared by

Terraflow Pty Ltd
Traffic and Parking Consultants



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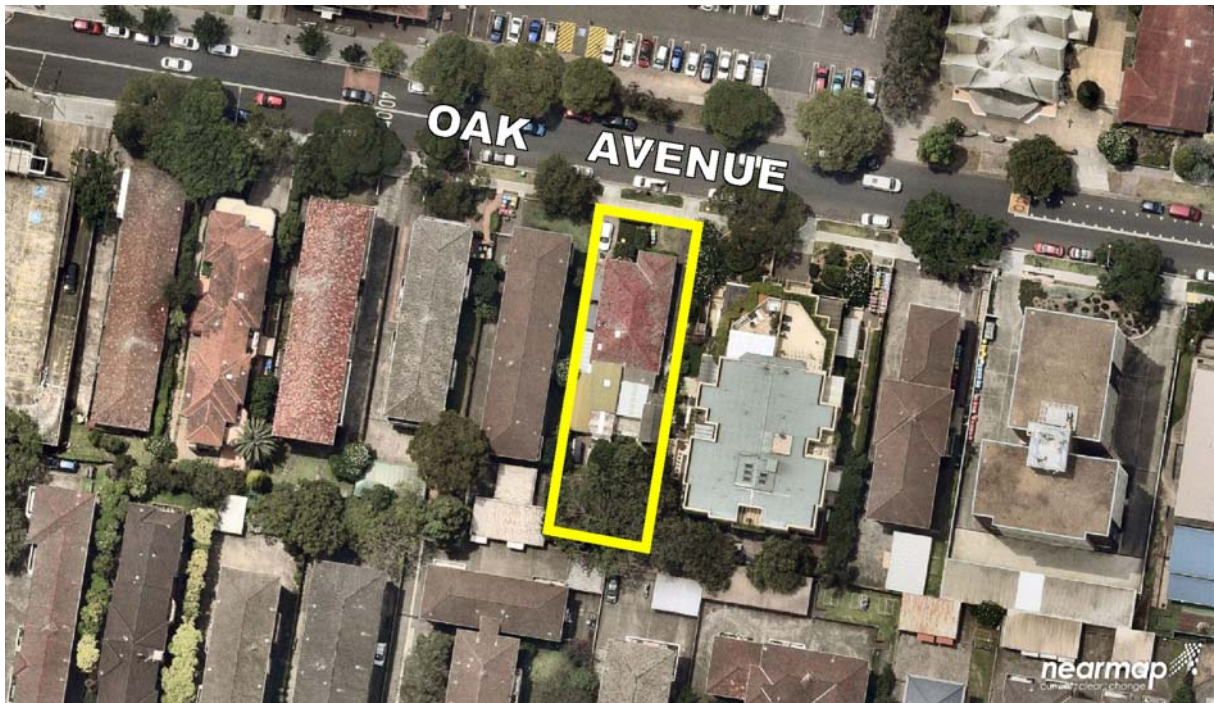
1. INTRODUCTION

This report has been prepared to accompany a Development Application (DA) to Northern Beaches Council for a proposed residential development at 45-45A Oaks Avenue, Dee Why (Figures 1 and 2).

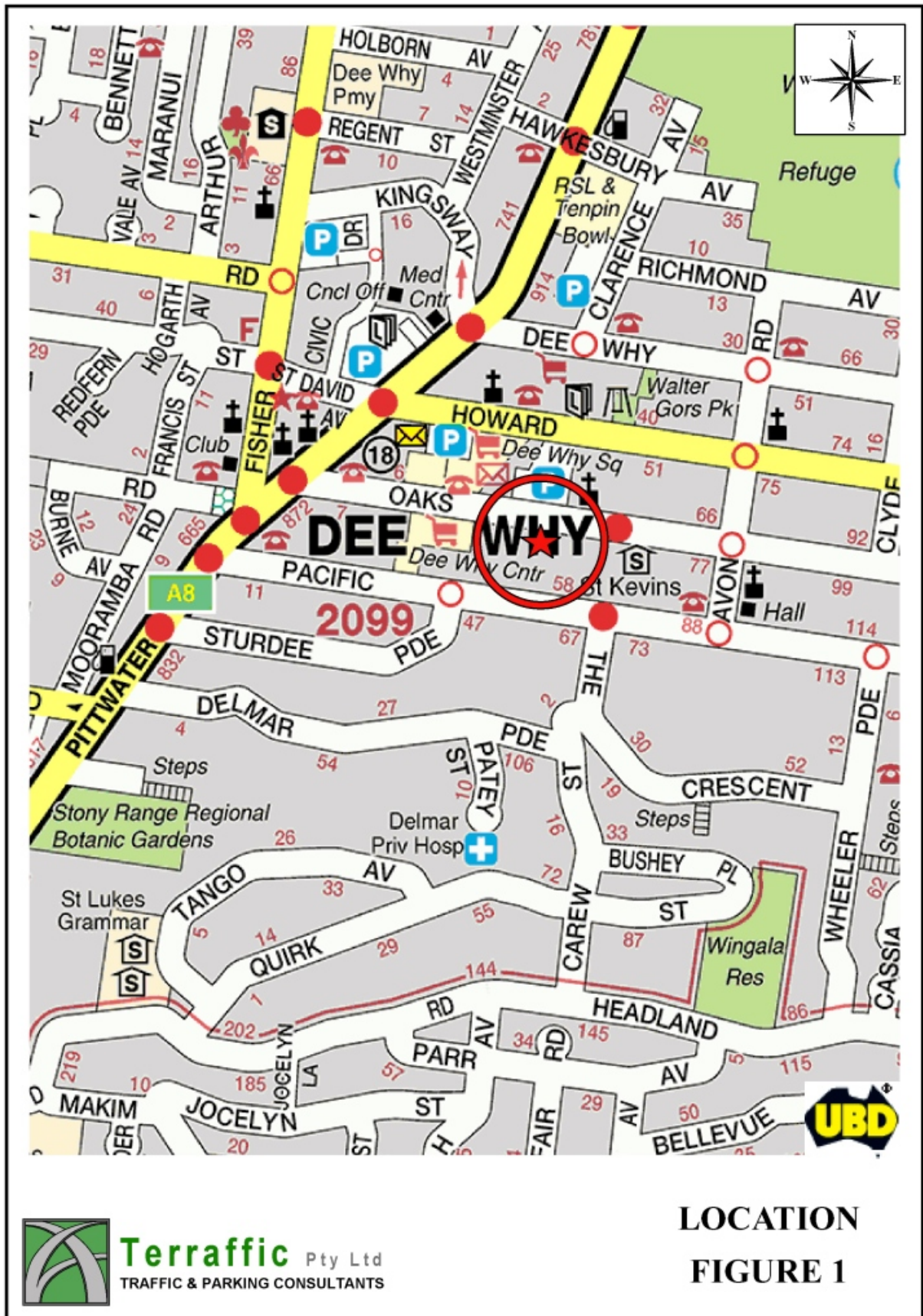
The proposed development site is located on the southern side of Oaks Avenue approximately 320m east of Pittwater. It has a total site area of 768.7m² with a frontage of 15.24m to Oaks Avenue. The development site is zoned R3 Medium Density Residential under the controls of the Warringah LEP 2011.

Existing Site Development

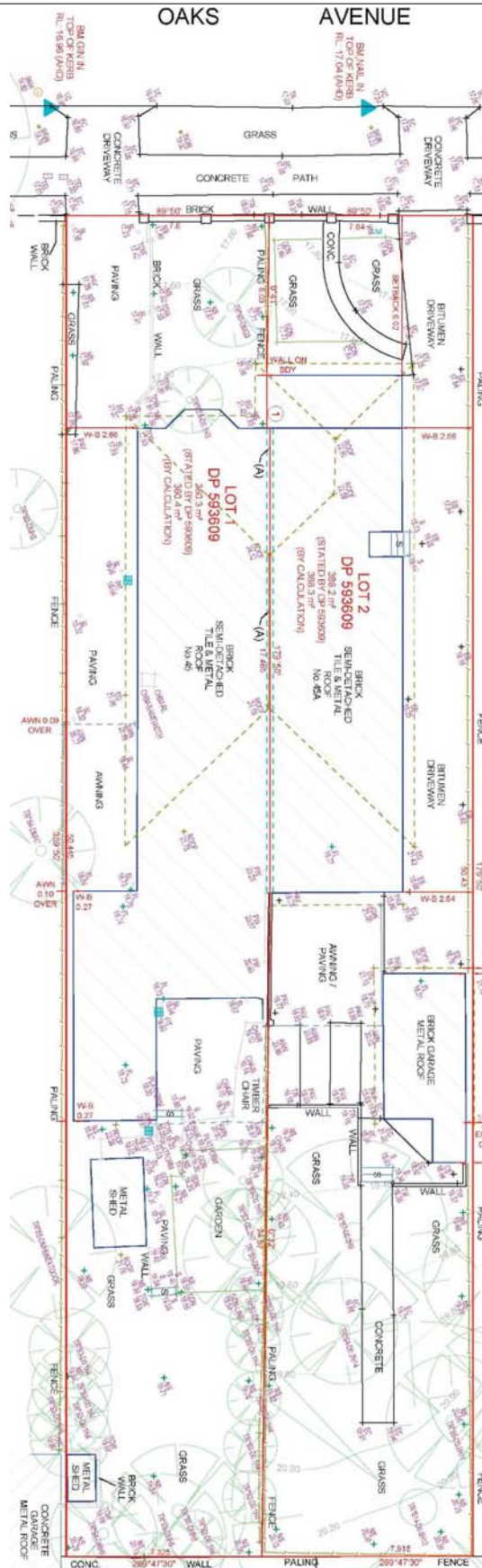
The existing site development comprises a semi-detached residential building. Each dwelling is served by off-street parking with a single width driveway serving each dwelling. An extract from the site survey is reproduced in the following pages.



Aerial photograph of the site









Proposed Development

The development proposal involves the demolition of the existing dwellings and construction of a new residential development containing 12 affordable and non-affordable units as follows:

Number of bedrooms	SEPP Affordable Units	Non-Affordable Units	Total Units
1 bedroom	0	3	3
2 bedroom	2	5	7
3 bedroom	0	2	2
Total	2	10	12

The proposed development will be served by a single level basement carpark containing a total of 11 resident only off-street parking spaces. Of those 11 spaces, 4 spaces will be within a dual width car stacker that will include a pit to enable all vehicles to have independent access to each parking space. A turntable is also proposed in the basement to facilitate forward egress by cars parking in space 1 located alongside the access ramp.

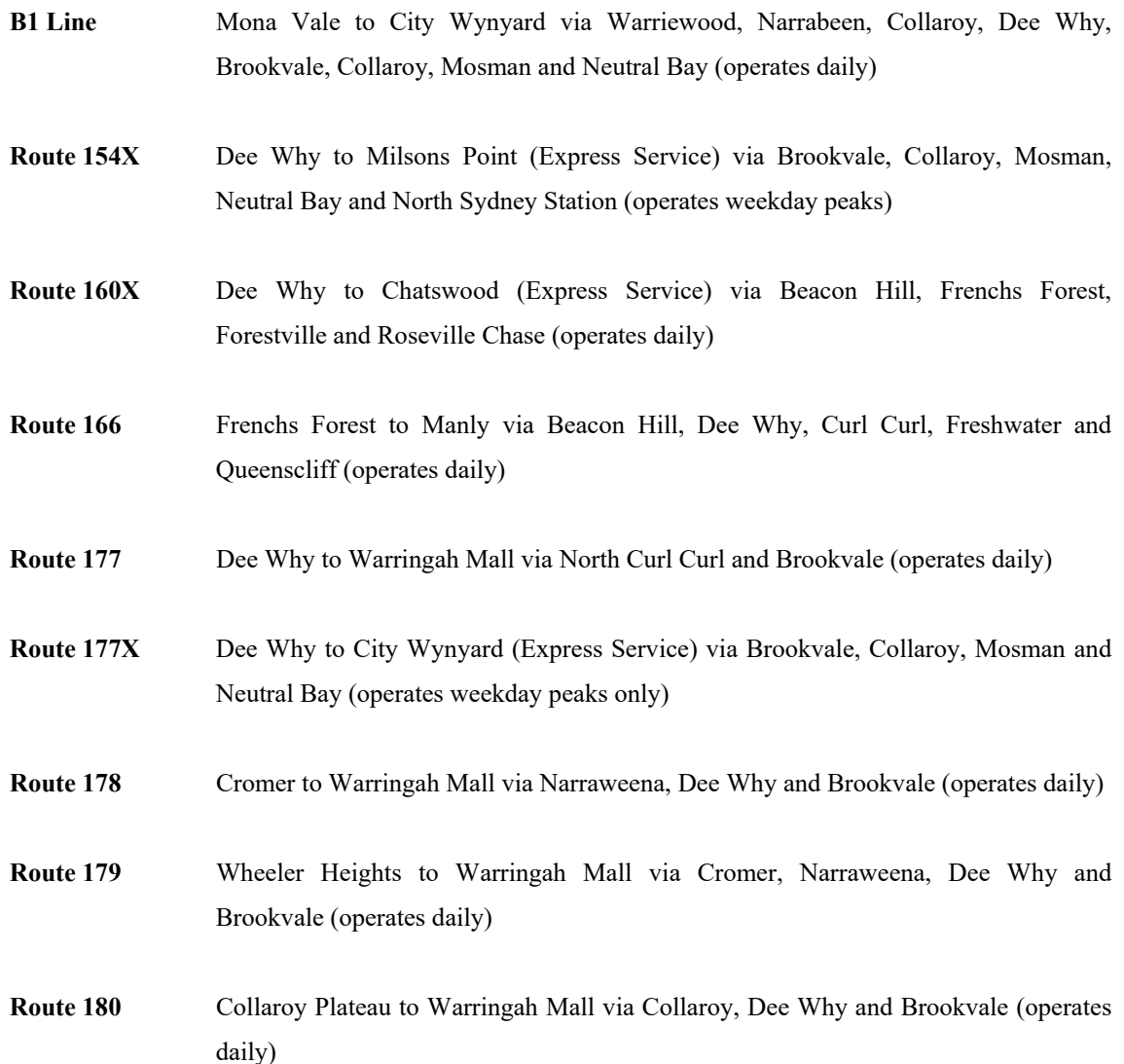
In addition to the car parking provision, the site will contain parking for 13 bicycles with 11 spaces in a secure storage area on ground level and 2 bicycle spaces in the secure basement.

Vehicular access to the carpark is via a 5.5m wide combined entry/exit driveway off Oaks Avenue located adjacent to the eastern site boundary. The access ramp narrows to a 3.0m wide single lane approximately 8m into the site.

Plans of the proposed development prepared by Mackenzie Architects International are reproduced in Appendix A.

Public Transport Accessibility

The subject site has convenient access to the following bus services that operate through Dee Why:





Route 180X	Collaroy Plateau to City Wynyard (Express Service) via Dee Why, Brookvale, Collaroy and Neutral Bay (operates weekday peaks only)
Route 181X	Narrabeen to City Wynyard (Express Service) via Collaroy, Dee Why, Brookvale, Collaroy, Mosman and Neutral Bay (operates weekday peaks only)
Route 190X	North Avalon to City Wynyard (Express Service) via Newport, Mona Vale, Narrabeen, Mosman and Neutral Bay (operates weekday peaks only)
Route 199	Palm Beach to Manly via Avalon Beach, Newport, Mona Vale, North Narrabeen, Narrabeen, Collaroy, Dee Why, North Manly and Queenscliff (operates daily)

The purpose of this report is to assess the traffic and parking implications of the proposed development.



2. PARKING ASSESSMENT

SEPP Parking Requirements

Clause 19 in Part 2/Division 1 of the State Environmental Planning Policy (Housing) 2021 specifies the following parking requirements that apply to the subject development:

19 Non-discretionary development standards—the Act, s 4.15

- (2) The following are non-discretionary development standards in relation to the residential development to which this division applies—
- (e) the following number of parking spaces for dwellings used for affordable housing—
- (i) for each dwelling containing 1 bedroom—at least 0.4 parking spaces,
 - (ii) for each dwelling containing 2 bedrooms—at least 0.5 parking spaces,
 - (iii) for each dwelling containing at least 3 bedrooms— at least 1 parking space,
- (f) the following number of parking spaces for dwellings not used for affordable housing—
- (i) for each dwelling containing 1 bedroom—at least 0.5 parking spaces,
 - (ii) for each dwelling containing 2 bedrooms—at least 1 parking space,
 - (iii) for each dwelling containing at least 3 bedrooms—at least 1.5 parking spaces

Application of that parking rate to the proposed development yields a total requirement of 11 spaces calculated as follows:

2 x 2 bedroom affordable units @ 0.5 space per unit	1.0 resident space
3 x 1 bedroom non-affordable units @ 0.5 space per unit	1.5 resident spaces
5 x 2 bedroom non-affordable units @ 1.0 space per unit	5.0 resident spaces
2 x 3 bedroom non-affordable units @ 1.5 space per unit	3.0 resident spaces
Total required	10.5 resident spaces

The proposed development satisfies the SEPP with the provision of 11 off-street parking spaces.



Carpark and Access Compliance

The basement carpark and access ramps have been designed to generally satisfy the following requirements of the Australian Standard AS/NZS2890.1-2004 – “*Off-Street Car Parking*”:

- Parking spaces are a minimum 5.4m long and 2.4m wide
- An additional 0.3m has been provided for spaces adjacent to a wall or obstruction
- A 1.0m wide blind aisle extension has been provided as per Figure 2.3 of the Standard
- The access/manoeuvring aisle satisfies the minimum width requirement of 5.8m
- Pavement cross-falls at parking spaces do not exceed 5% (1 in 20)
- The maximum gradient of the accessway for the first 6.0m into the site does not exceed 5% (1 in 20)
- Maximum ramp grades do not exceed 25% (1 in 4)
- Ramp transitions do not exceed 12.5% (1 in 8) over a distance of 2.0m at crests
- Ramp transitions do not exceed 15.0% (1 in 6.7) over a distance of 2.0m at sags
- The two-way section of the accessway on Ground Level has a minimum width of 6.1m comprising a 5.5m roadway and 2 x 300mm wide kerbs
- The one-way section of the ramp has a minimum 3.6m wide wall to wall comprising a 3.0m roadway and 2 x 300mm wide kerbs
- A minimum headroom clearance of 2.2m has been provided throughout the basement carpark
- 2.5m x 2.0m pedestrian sight line triangles have been provided on the exit side of the ramp

The disabled parking spaces have been designed in accordance with the Australian Standard AS/NZS2890.6:2009 – “*Off-street parking for people with disabilities*” as follows:

- A 5.4m long x 2.4m wide dedicated (*non-shared*) parking space
- An adjacent *shared* area that is also 5.4m long x 2.4m wide
- A minimum headroom of 2.5m above the disabled spaces
- Pavement cross-falls in disabled spaces do not exceed 2.5% (1 in 40) in any direction

Swept Path Analysis

The ability of the Australian B99 vehicle and B85 vehicle to pass at the entrance to the site has been tested using the Autodesk Vehicle Tracking software. The swept path is reproduced in Appendix B confirming that these vehicles can pass and the B99 continue forward into the site.



The swept path of the B85 vehicle accessing space 4 is also reproduced in Appendix B. As can be seen, the passenger lift that narrows the aisle width to 4.15m does not obstruct access to this car space.

Car Stacker Specifications

As noted in the Introduction of this report, the proposed development will be served by a total of 11 resident only off-street parking spaces of which 4 spaces will be within a dual width car stacker. It is proposed to install a WOHR Parklift 450 that will include a pit to enable all vehicles to have independent access to each parking space.

The double width stacker has a minimum width of 5.4m in order to comply with the requirements for double garages in the Australian Standard. In addition, the basement carpark has a headroom clearance of 4.15m which will provide a headroom clearance of approximately 2.05m on each level of the stacker. The specifications for the WOHR 450 car stacker are reproduced in Appendix C.

With regards to this height complying with the Australian Standard AS/NZS2890.1:2004, Clause B6 of Standard notes that the height of all passenger cars and station wagons (that is the B85 vehicle) is below 1.5m. Clause A5 of the Standard also notes that most vans and four-wheel drive vehicles that are currently used as passenger vehicles have a height less than 2.0m. To that end, the provision of 2.05m on each level of the stacker is acceptable.

Bicycle Parking Requirement

Clause C3(A) in Part C of the Warringah DCP nominates the following bicycle parking requirements that are applicable to the proposed development:

Residential Accommodation

- 1 bicycle space per dwelling for residents
- 1 bicycle space per 12 dwellings for visitors

Application of those parking rates to the proposed development yields a total requirement of 13 bicycle spaces calculated as follows:



12 dwellings @ 1 space per dwelling for residents	12 resident bike spaces
12 dwellings @ 1 visitor space per 12 dwellings	1 visitor bike spaces
<i>Total</i>	<i>13 bicycle spaces</i>

The proposal satisfies the DCP requirement with the provision of 13 bicycle spaces with 11 spaces in a secure storage area on ground level and 2 bicycle spaces in the secure basement. The proposed bicycle racks will be installed in accordance with the Australian Standard AS2890.3:2015 – “*Bicycle Parking*”.

In the circumstances, it can be concluded that the proposed development has no unacceptable parking implications.



3. TRAFFIC ASSESSMENT

Existing Road Network

The road hierarchy allocated to the road network in the vicinity of the site by the Roads and Maritime Services is illustrated on Figure 4 and comprises the following:

State Roads

Pittwater Road

Regional Roads

Dee Why Parade

Fisher Road

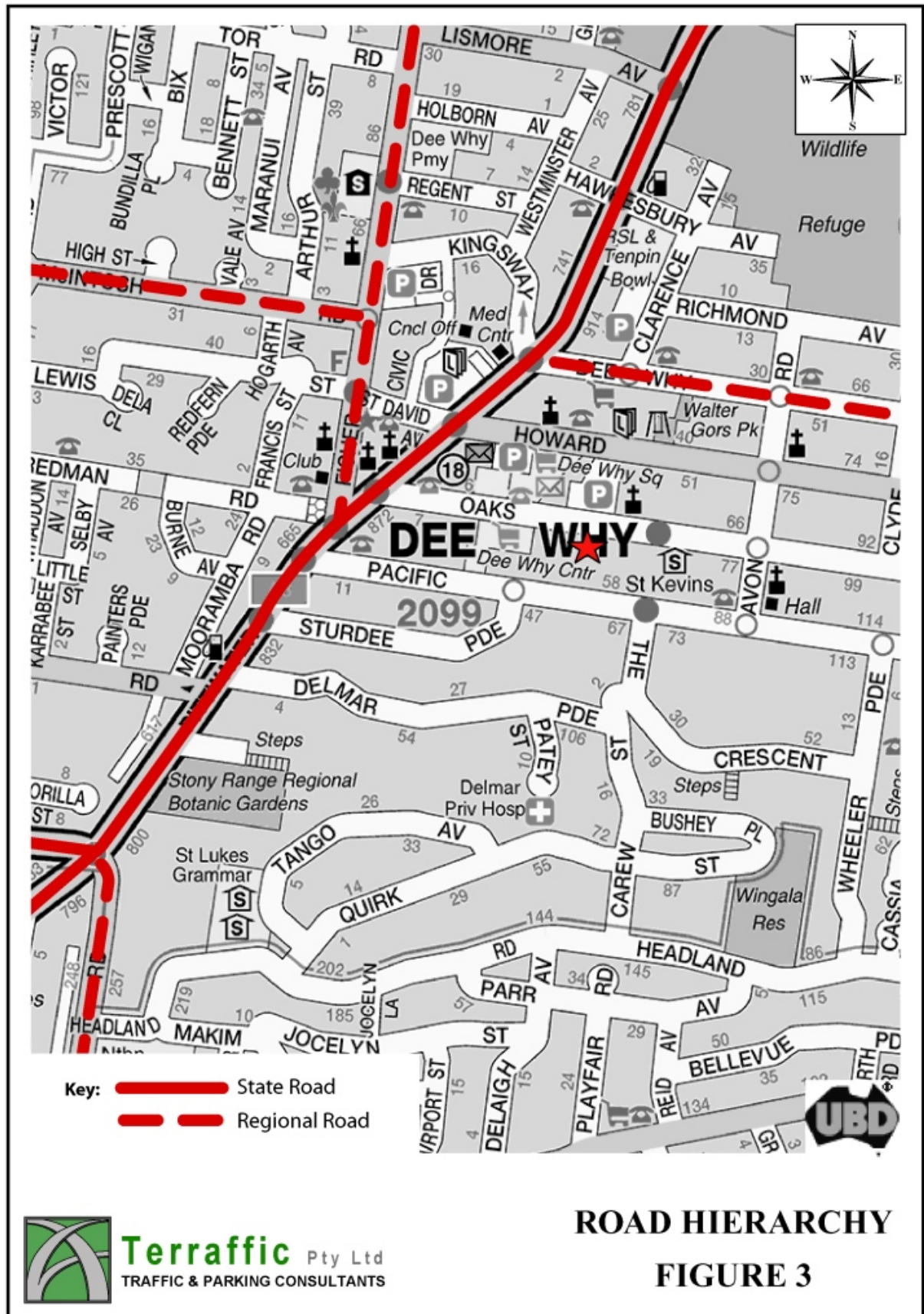
McIntosh Road

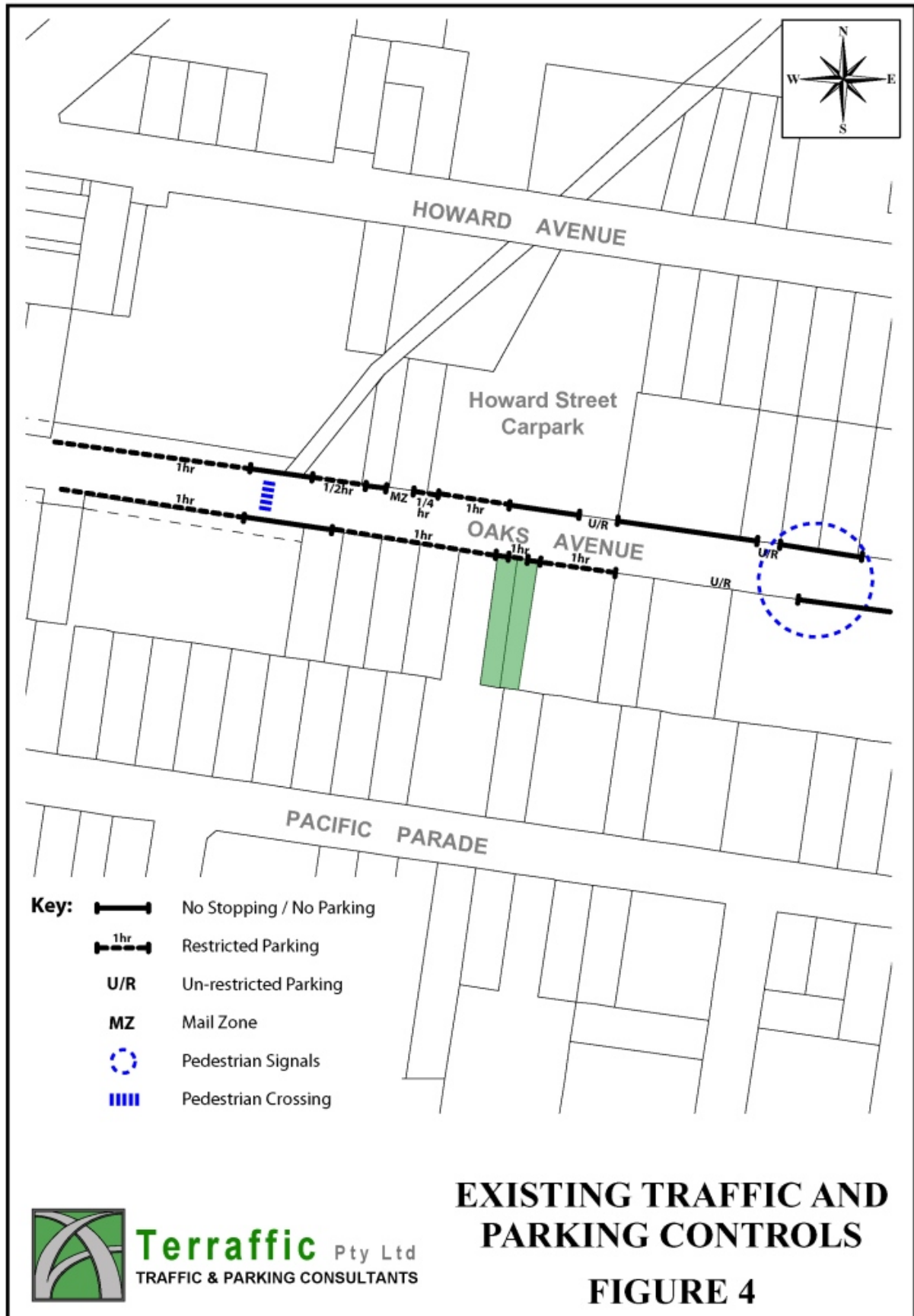
Pittwater Road is a classified *State Road* performing an arterial road function. It typically carries 6 lanes of traffic (3 lanes in each direction) separated by a central median island. Kerbside parking is generally permitted outside of the morning and afternoon Bus Lane restrictions.

Oaks Avenue is an unclassified Local Road with a primary function of providing vehicular access to properties to the east of Pittwater Road. It has a pavement width of approximately 12m and is restricted to a speed limit of 40km/h. The traffic signals at the intersection of Pittwater Road and Oaks Avenue permit right turns into Oaks Avenue however right turns onto Pittwater Road are not permitted.

The existing traffic and parking controls on the road network serving the site are illustrated on Figure 4 and include:

- The PEDESTRIAN SIGNALS to the east of the site on Oaks Avenue
- The HOWARD STREET CARPARK opposite the site
- The RESTRICTED and UNRESTRICTED PARKING along Oaks Avenue







Projected Traffic Generation Potential

An indication of the traffic generation potential of the existing and proposed development is provided by reference to the Roads and Maritime Services publication *Guide to Traffic Generating Developments, Section 3 - Landuse Traffic Generation (October 2002)*. The RMS *Guidelines* are based on extensive surveys of a wide range of land uses and nominates the following traffic generation rates which are applicable to the existing and proposed development:

Dwellings	0.85 vehicle trips per dwelling
------------------	---------------------------------

Medium Density Residential Flat Building

Smaller units (up to 2 bedrooms)	0.4-0.5 vehicle trips per unit
----------------------------------	--------------------------------

Larger units (3 or more bedrooms)	0.5-0.65 vehicle trips per unit
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Traffic Generation of EXISTING SITE Development

Application of the RMS's traffic generation rate to the existing dwellings yields a traffic generation potential in the order of 2vtph during the weekday peak periods as follows:

2 dwellings @ 0.85vtph per dwelling	2vtph
-------------------------------------	-------

Traffic Generation of PROPOSED Development

Application of the RMS's traffic generation rates to the proposed development yields a traffic generation potential in the order of 12vtph during the weekday peak periods calculated as follows:

10 x 1 and 2 bedroom units @ 0.5vtph per unit	5vtph (AM: 1 in / 4 out ; PM: 4 in / 1 out)
2 x 3 bedroom units @ 0.65vtph per unit	2vtph (AM: 0 in / 2 out ; PM: 2 in / 0 out)
Total Development	7vtph (AM: 1 in / 6 out ; PM: 6 in / 1 out)



Traffic Implications

Based on the RMS Guidelines, the proposed development will generate 5 additional vehicle movements during peak periods as follows:

Proposed Development	7vtph
Existing Development	2vtph
<i>Additional Traffic</i>	<i>5vph</i>

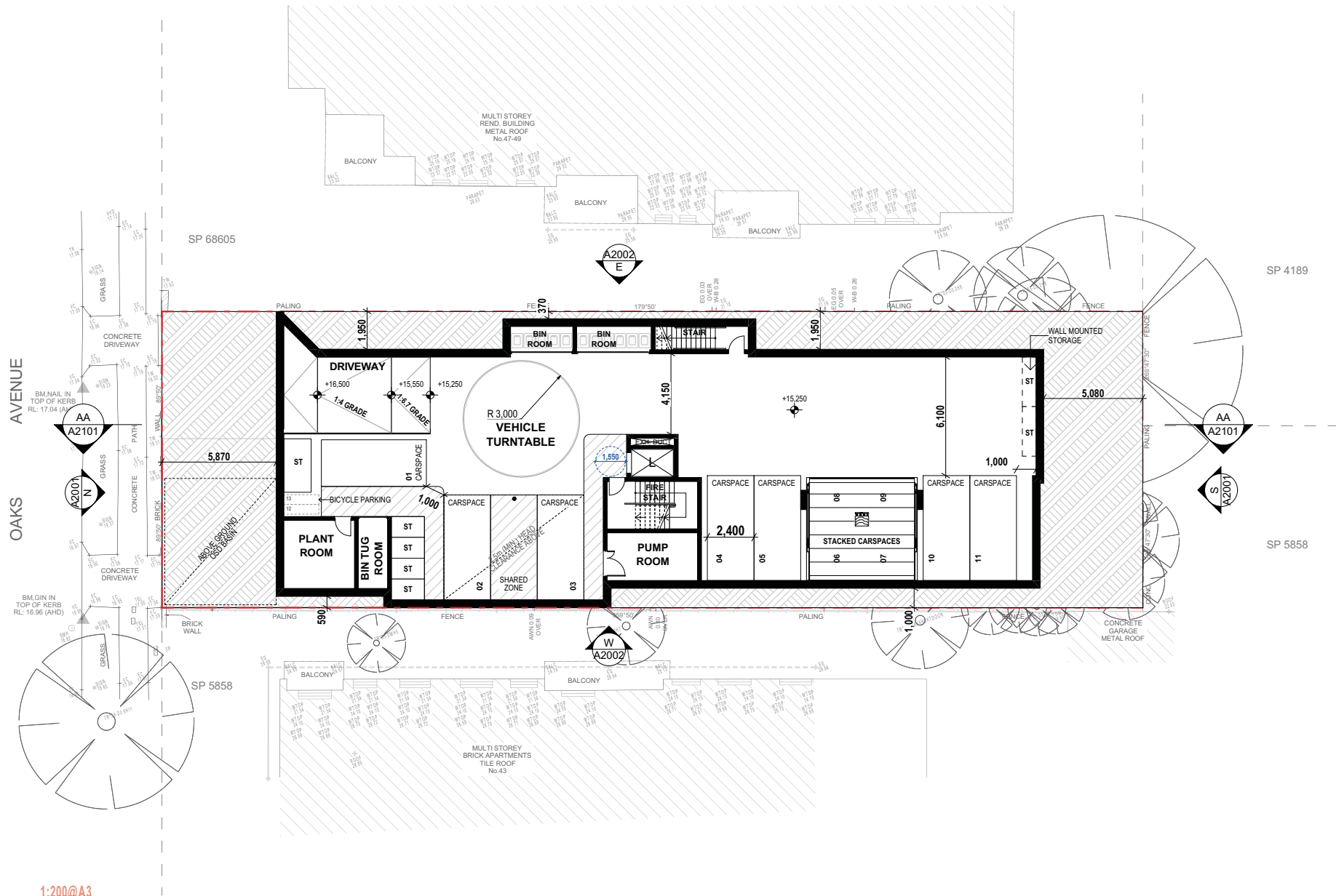
It will be readily appreciated that the additional traffic generated by the proposed development is relatively minor (5vtph) which will not have any noticeable or unacceptable effect on the road network serving the site in terms of road network capacity or traffic-related environmental effect.

In the circumstances, the proposed development will not have any unacceptable traffic implications.




APPENDIX A

PLANS OF THE PROPOSED DEVELOPMENT



SK21/05/2024/A1001 1:200@A3
45/45A OAKS AVENUE, DEE WHY 2099
PRELIMINARY BASEMENT PLAN
FOR CONSULTANT CO-ORDINATION



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Nominated Architect No.6033
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AMENDMENTS

No.	REVISION	BY	DATE
A	FINAL COORDINATION	S.K., R.I.	13.05.2024

PROJECT NORTH



MULTI RESIDENTIAL DEVELOPMENT
PROJECT
45/45A OAKS AVENUE, DEE
WHY 2099

DRAWING:
BASEMENT PLAN

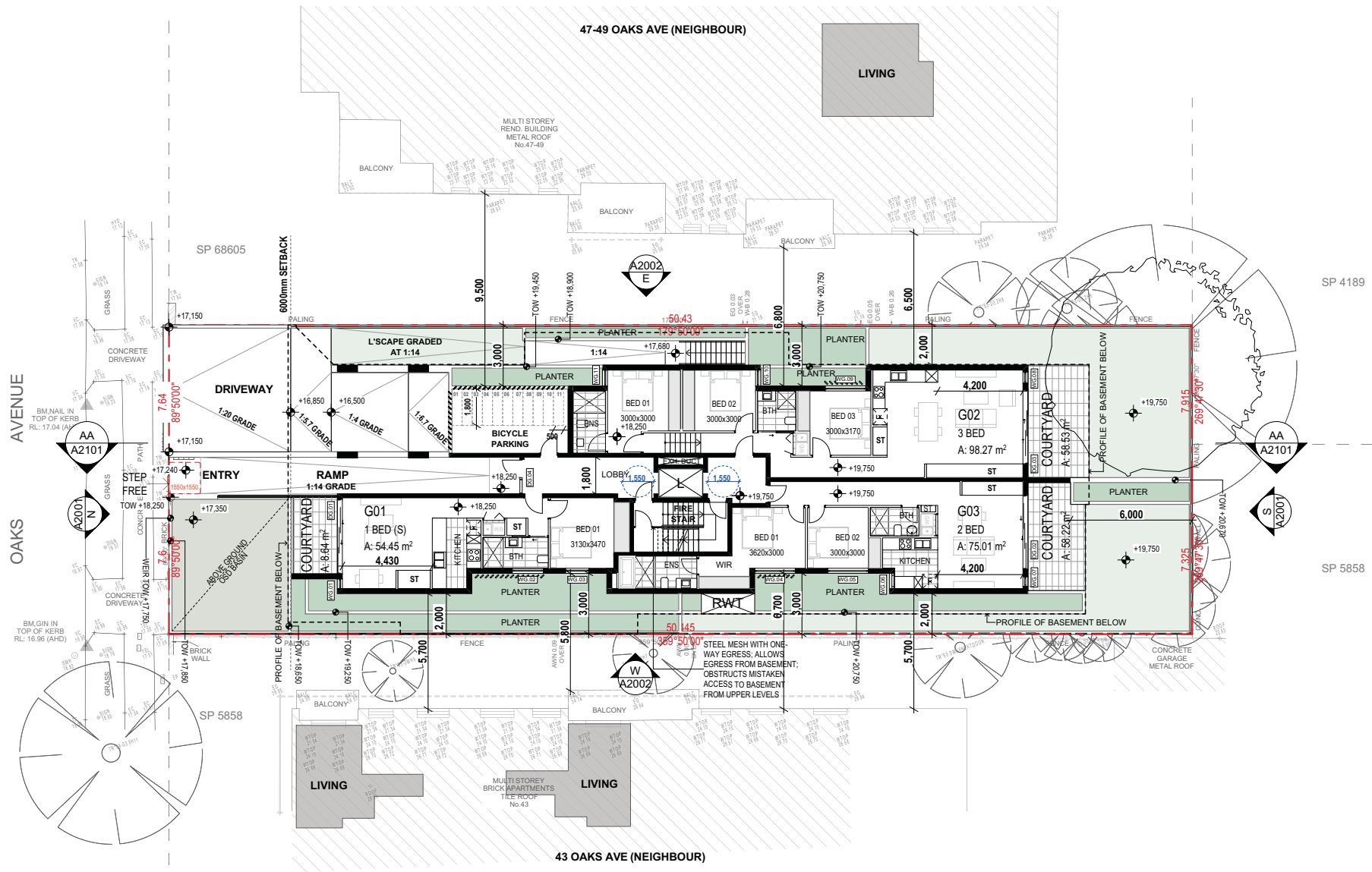
DRAWN BY
S.K., R.I.

CHECKED BY
D.M.


SCALE:
1:200@A3

DRAWING NO.:
A1001

ISSUE:
WIP



SK22/05/2024/A1002 1:200@A3
45/45A OAKS AVENUE, DEE WHY 2099
PRELIMINARY GROUND FLOOR PLAN
FOR CONSULTANT CO-ORDINATION



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AMENDMENTS		BY	DATE
No.	REVISION		
A	FINAL COORDINATION	S.K., R.I.	13.05.2024
B	FOR BASIX/NATHERS STAMPING & DA SUBMISSION	S.K., R.I.	22.05.2024

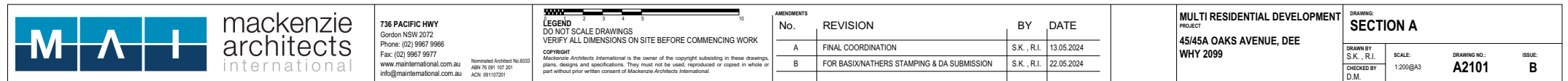
PROJECT NORTH



MULTI RESIDENTIAL DEVELOPMENT
PROJECT
45/45A OAKS AVENUE, DEE
WHY 2099

DRAWING: GROUND FLOOR PLAN

DRAWN BY S.K., R.I.	SCALE: 1:200@A3	DRAWING NO.: A1002	ISSUE: B
CHECKED BY D.M.			





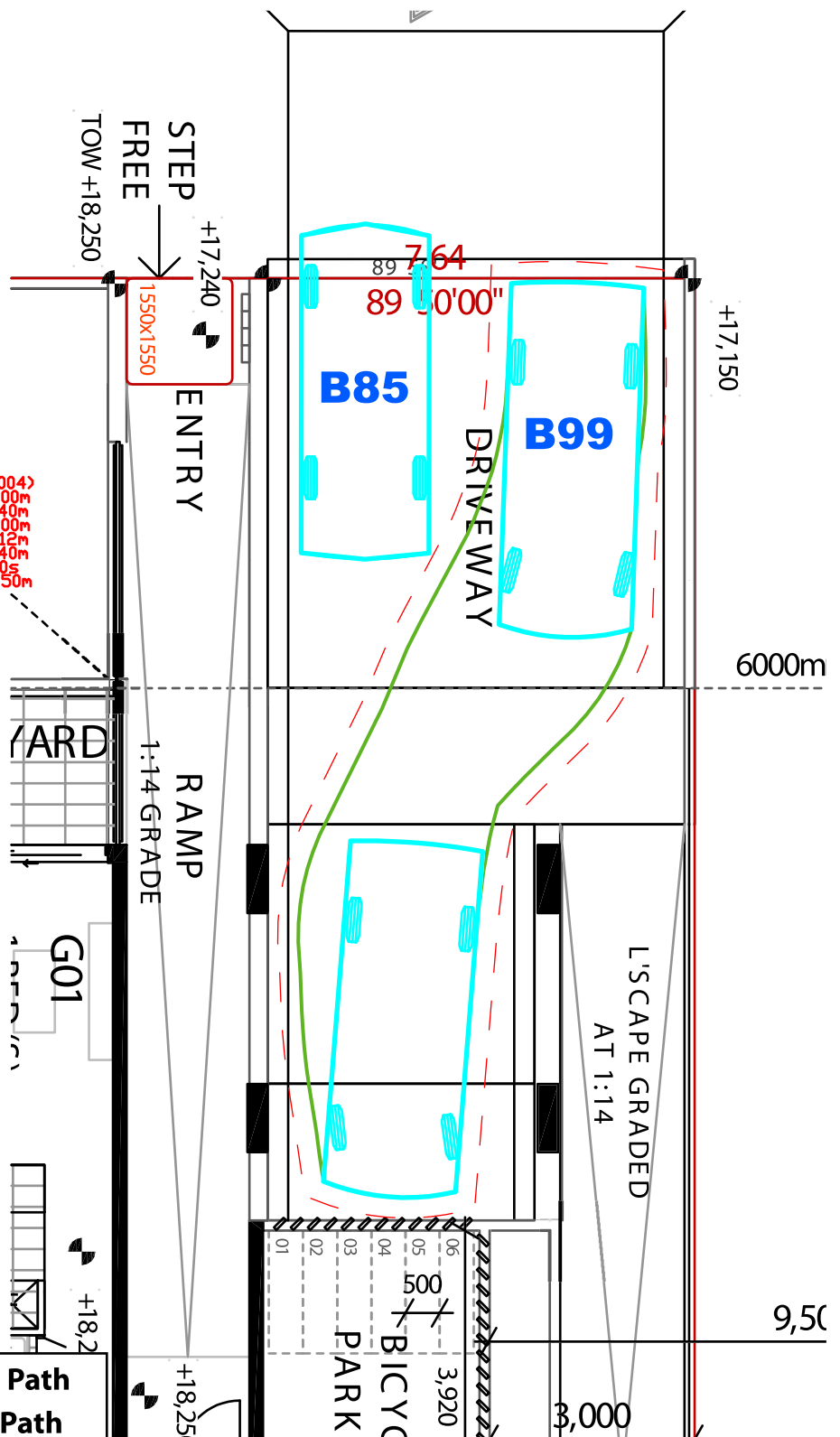
APPENDIX B

SWEPT PATH ANALYSIS

0 1 2 3 4 5 10

METRES

SCALE 1:100

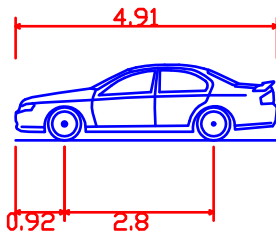
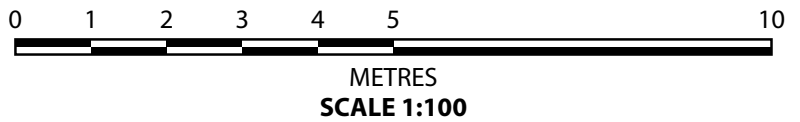


Manoeuvring Path of Australian Standard AS/NZS2890.1:2004 B99 Vehicle Entering Site and Passing an Exiting B85 Vehicle

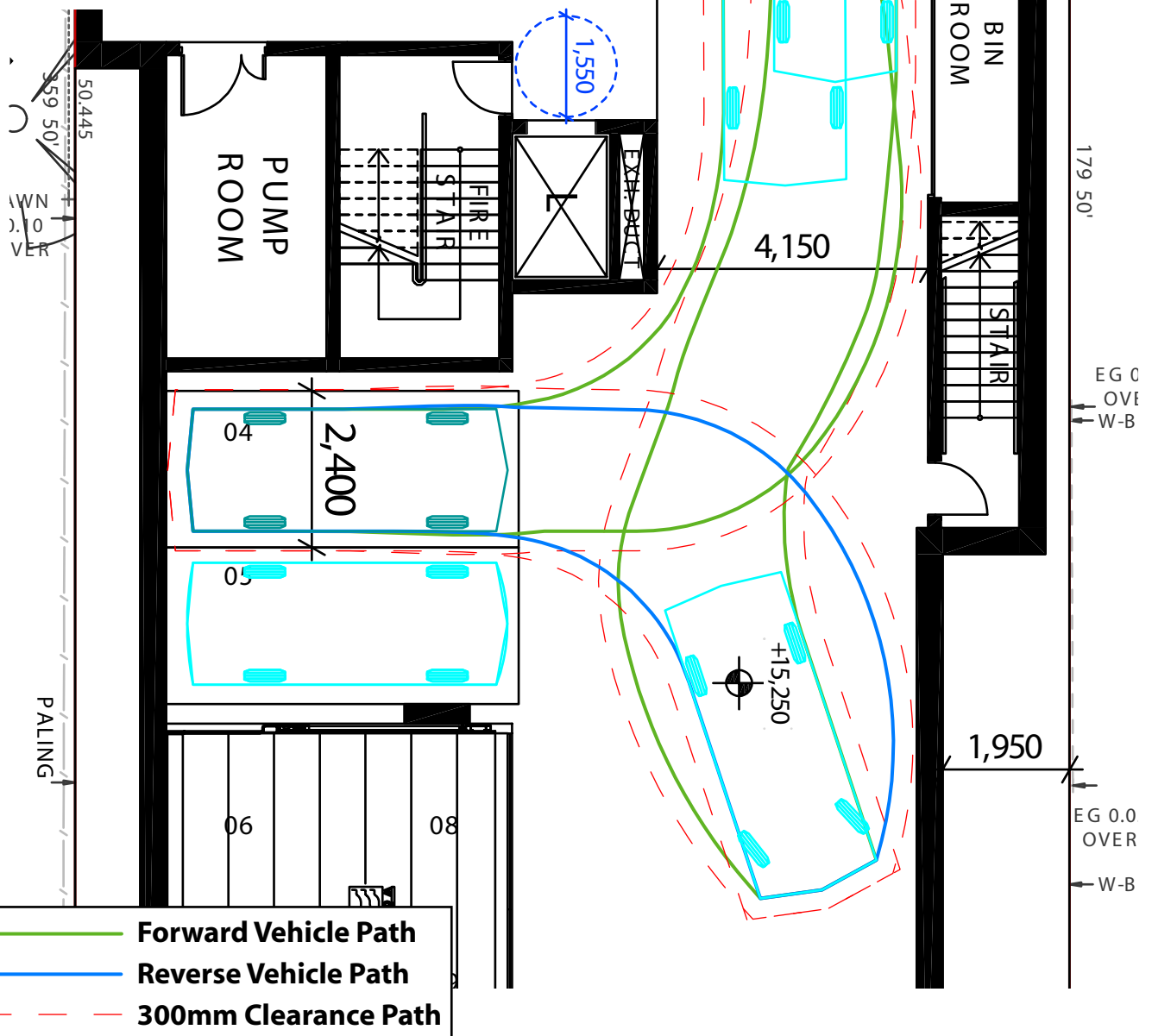


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**Path prepared using
Autodesk Vehicle Tracking**



B85 Vehicle (Realistic min radius) (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 4.00s
Curb to Curb Turning Radius 5.750m



**Manoeuvring Path of Australian
Standard AS/NZS2890.1:2004
B85 Vehicle Accessing Space 4**



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APPENDIX C

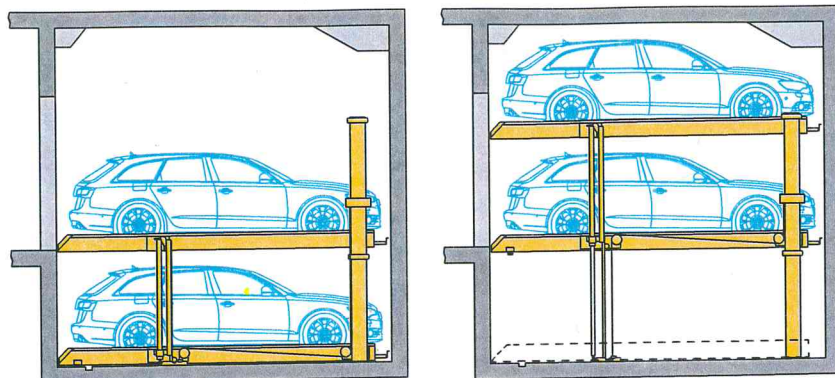
CAR STACKER SPECIFICATIONS

Data Sheet

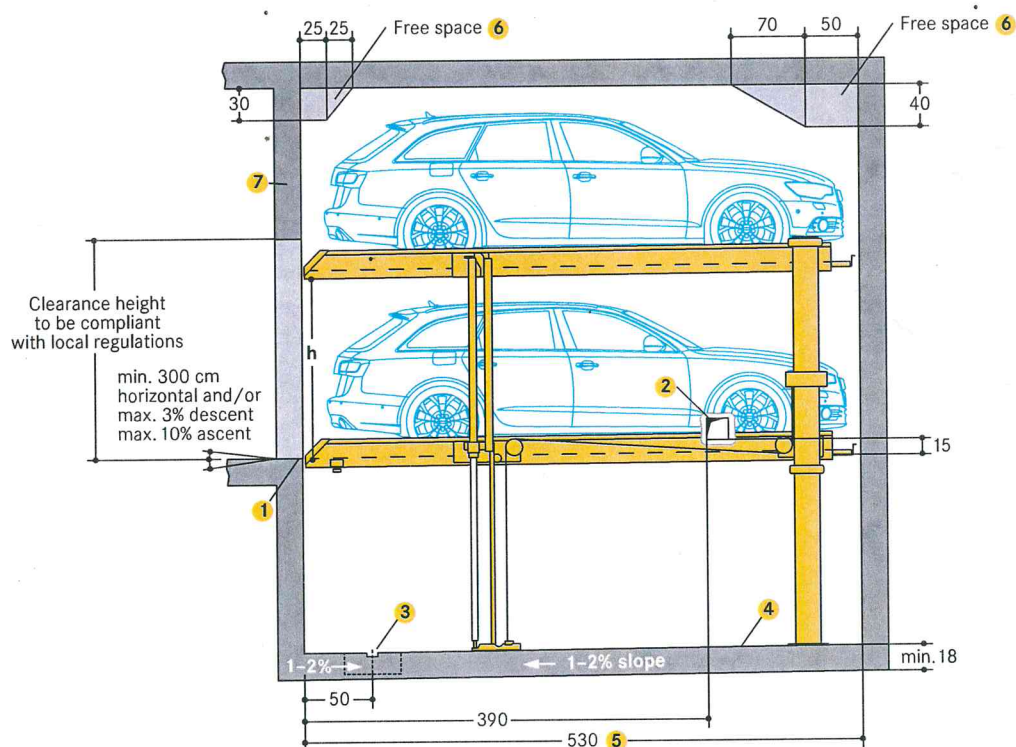
WÖHR PARKLIFT 450



- **Single units: 2 cars**
Double units: 4 cars
 - **Platform load options:**
 - max. 2000 kg, load per wheel 500 kg
 - max. 2600 kg, load per wheel 650 kg
 - **Platform slopes for drive-on:**
 - upper level: 0,5° = 1% ascent
 - lower level: 0,5° = 1% ascent
- Platform slopes help drainage



■ Length dimensions underground car park (height dimensions see page 2)

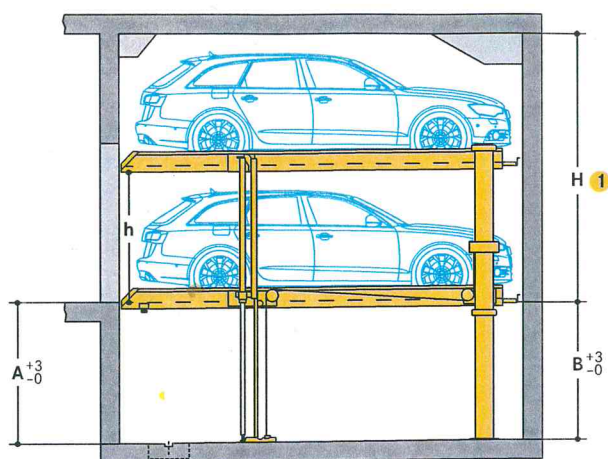


- 1 Yellow-black safety marking (performed by the customer):
 - compliant to ISO 3864, 10 cm wide, along the pit edges (see page 5 »Static calculations and construction works requirements«)
- 2 In case of intermediate walls (performed by the customer):
 - 15 x 15 cm opening for electric and hydraulic system cables and piping
 - after installation, do not close the opening
- 3 Drainage channels (performed by the customer):
 - 10 x 2 cm, with a 50 x 50 x 20 cm drainage pit
 - in case of installation of a sump pump, it is necessary to comply with the drainage pit dimensions specified by the pump manufacturer
 - above-ground garages: if there is a slope on the entrance side, a drainage channel in front of the pit edge is recommended
- 4 Channels or undercuts/concrete haunches (performed by the customer):
 - not allowed along the pit floor-to-wall joints
 - should channels or undercuts be necessary, the system width needs to be reduced or the pit needs to be wider
- 5 500 cm vehicle length = 530 cm pit length
 - for longer vehicles: vehicle length + 30 cm safety distance = pit length (pit length max. 550 cm)
- 6 Free spaces:
 - please ask WÖHR for the dimension sheets
- 7 Lintel

■ Dimensions

- all dimensions specified are the minimum, finished dimensions
- tolerances must be taken into consideration
- all dimensions are given in cm

Height dimensions Standard type

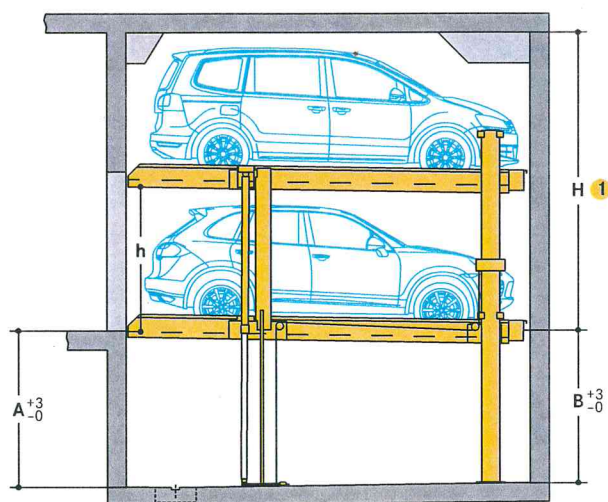


1 With an increase in headroom available, correspondingly taller cars will be able to park on the upper platform.

2 UL = upper level / LL = lower level
L = Limousine / S = Station wagon

Type	Height (H) 1	Pit depth		Vehicle height 2		Platform distance (h)
		A	B	UL	LL	
450-170	320	170	165	L+S 150	L+S 150	155
450-175	325	175	170	L+S 150	L+S 155	160
	330	175	170	L+S 155	L+S 155	160
450-180	330	180	175	L+S 150	L+S 160	165
	340	180	175	L+S 160	L+S 160	165
450-185	335	185	180	L+S 150	L+S 165	170
	350	185	180	L+S 165	L+S 165	170
450-190	340	190	185	L+S 150	L+S 170	175
	360	190	185	L+S 170	L+S 170	175
450-195	345	195	190	L+S 150	L+S 175	180
	370	195	190	L+S 175	L+S 175	180
450-200	350	200	195	L+S 150	L+S 180	185
	380	200	195	L+S 180	L+S 180	185

Height dimensions Premium type

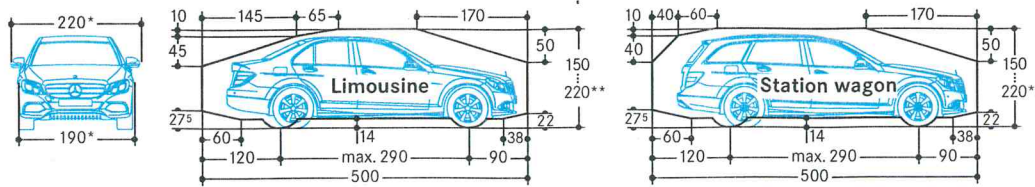


1 With an increase in headroom available, correspondingly taller cars will be able to park on the upper platform.

2 UL = upper level / LL = lower level
L = Limousine / S = Station wagon

Type	Height (H) 1	Pit depth		Vehicle height 2		Platform distance (h)
		A	B	UL	LL	
450-205	355	205	200	L+S 150	L+S 185	190
	390	205	200	L+S 185	L+S 185	190
450-210	360	210	205	L+S 150	L+S 190	195
	400	210	205	L+S 190	L+S 190	195
450-215	365	215	210	L+S 150	L+S 195	200
	410	215	210	L+S 195	L+S 195	200
450-220	370	220	215	L+S 150	L+S 200	205
	420	220	215	L+S 200	L+S 200	205
450-225	375	225	220	L+S 150	L+S 205	210
	430	225	220	L+S 205	L+S 205	210
450-230	380	230	225	L+S 150	L+S 210	215
	440	230	225	L+S 210	L+S 210	215
450-235	385	235	230	L+S 150	L+S 215	220
	450	235	230	L+S 215	L+S 215	220
450-240	390	240	235	L+S 150	L+S 220	225
	460	240	235	L+S 220	L+S 220	225

■ Clearance profile (for standard vehicles)



* for a 250 cm platform width
 ** The overall vehicle height including roof luggage rails and antenna mounts must not exceed the max. vehicle height dimensions specified

■ Width dimensions

Platform widths:

250 cm (single units), 500 cm (double units):

- for 190 cm vehicle width (without outside mirror)

260-300 cm (single units), 520-540 cm (double units):

- for vehicles wider than 190 cm (without outside mirror)

- for units with intermediate walls

- for units at the end of the driving aisle

For comfortable parking, entry and exit conditions platform widths upon 270 cm are recommended.

Reduced platform width means reduced parking comfort depending on the vehicle width, vehicle type, individual driving style, access situation of the garage.

■ Width dimensions (underground car park)

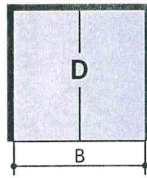
■ Intermediate walls

Single unit (2 cars)



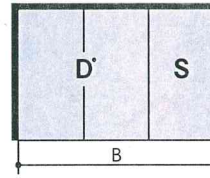
space requirements B	clear platform width
260	230
270	240
280	250
290	260
300	270
310	280
320	290
330	300

Double unit (4 cars)



space requirements B	clear platform width
490	460
510	480
530	500
550	520
570	540

Combined unit (6 cars)



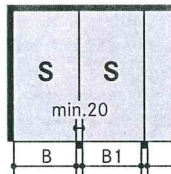
space requirements B	clear platform width
750	460+230
780	480+240
810	500+250
840	520+260
870	540+270
880	540+280
890	540+290
900	540+300

The driving aisle width must comply with local regulations

It is possible to combine different widths

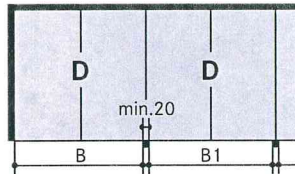
■ Columns external to the pit

Single unit (2 cars)



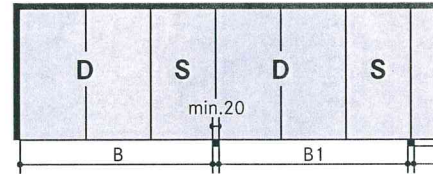
space requirements wall-column B	space requirements column-column B1	clear platform width
250	240	230
260	250	240
270	260	250
280	270	260
290	280	270
300	290	280
310	300	290
320	310	300

Double unit (4 cars)



space requirements wall-column B	space requirements column-column B1	clear platform width
480	470	460
500	490	480
520	510	500
540	530	520
560	550	540

Combined unit (6 cars)



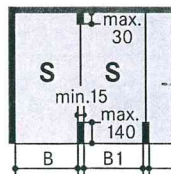
space requirements wall-column B	space requirements column-column B1	clear platform width
740	730	460+230
770	760	480+240
800	790	500+250
830	820	520+260
860	850	540+270
870	860	540+280
880	870	540+290
890	880	540+300

The driving aisle width must comply with local regulations

It is possible to combine different widths

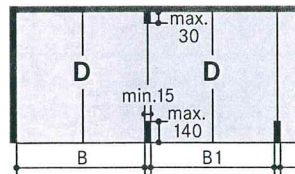
■ Columns in the pit

Single unit (2 cars)



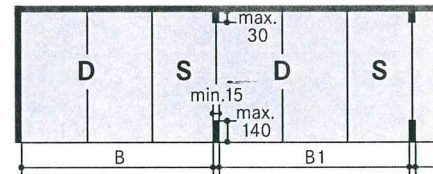
space requirements wall-column B	space requirements column-column B1	clear platform width
255	245	230
265	255	240
275	265	250
285	275	260
295	285	270
305	295	280
315	305	290
325	315	300

Double unit (4 cars)



space requirements wall-column B	space requirements column-column B1	clear platform width
485	475	460
505	495	480
525	515	500
545	535	520
565	555	540

Combined unit (6 cars)

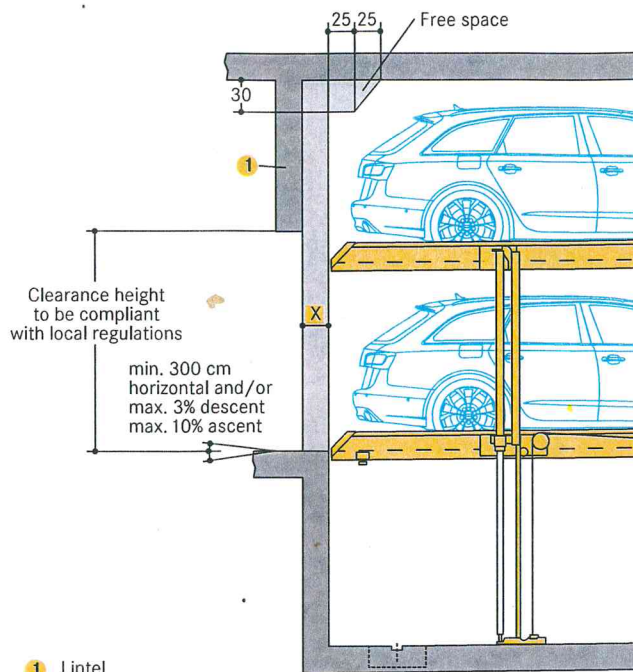


space requirements wall-column B	space requirements column-column B1	clear platform width
745	735	460+230
775	765	480+240
805	795	500+250
835	825	520+260
865	855	540+270
875	865	540+280
885	875	540+290
895	885	540+300

The driving aisle width must comply with local regulations

It is possible to combine different widths

Garages with doors

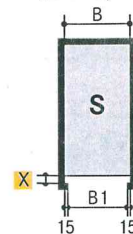


1 Lintel

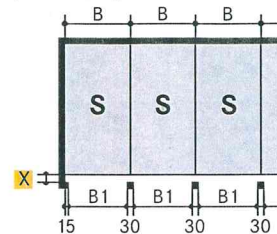
X = 10/15 cm for roller shutters

Dimension X to be defined by customer with the door supplier.

Single unit (2 cars)



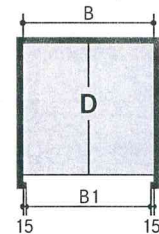
Garage rows with single doors
(2 cars each)



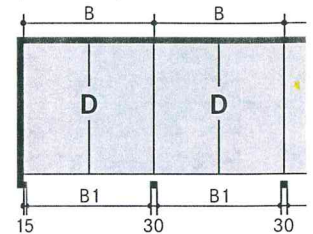
space requirements	B	B1 2	clear platform width
260	230	230	
270	240	240	
280	250	250	
290	260	260	
300	270	270	
310	280	280	
320	290	290	
330	300	300	

2 B1 = drive-in passage width

Double unit (4 cars)

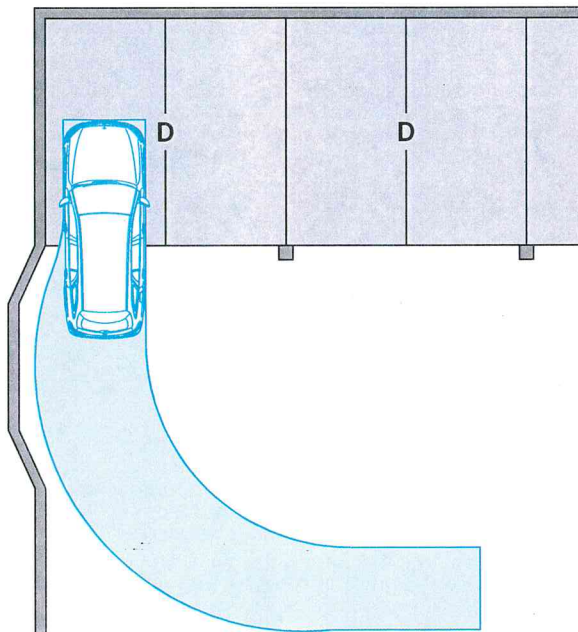


Garage rows with double doors
(4 cars each)



space requirements	B	B1 2	clear platform width
490	460	460	
510	480	480	
530	500	500	
550	520	520	
570	540	540	

Wall recess



According to GaVo for Baden-Württemberg (07.07.1997/26.01.2011):
For parking places with a 90° arrangement at the end of the driving aisle, the entrance width must be min. 275 cm.

At the end of the driving aisle, we recommend to provide a wall recess, if technically possible.