PROPOSED MIXED USE DEVELOPMENT

21 OAKS AVENUE, DEE WHY

Traffic and Parking Assessment Report

12th March 2024

Ref: 23067

Prepared by

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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 mixed use development at 21 Oaks Avenue, Dee Why (Figures 1 and 2).

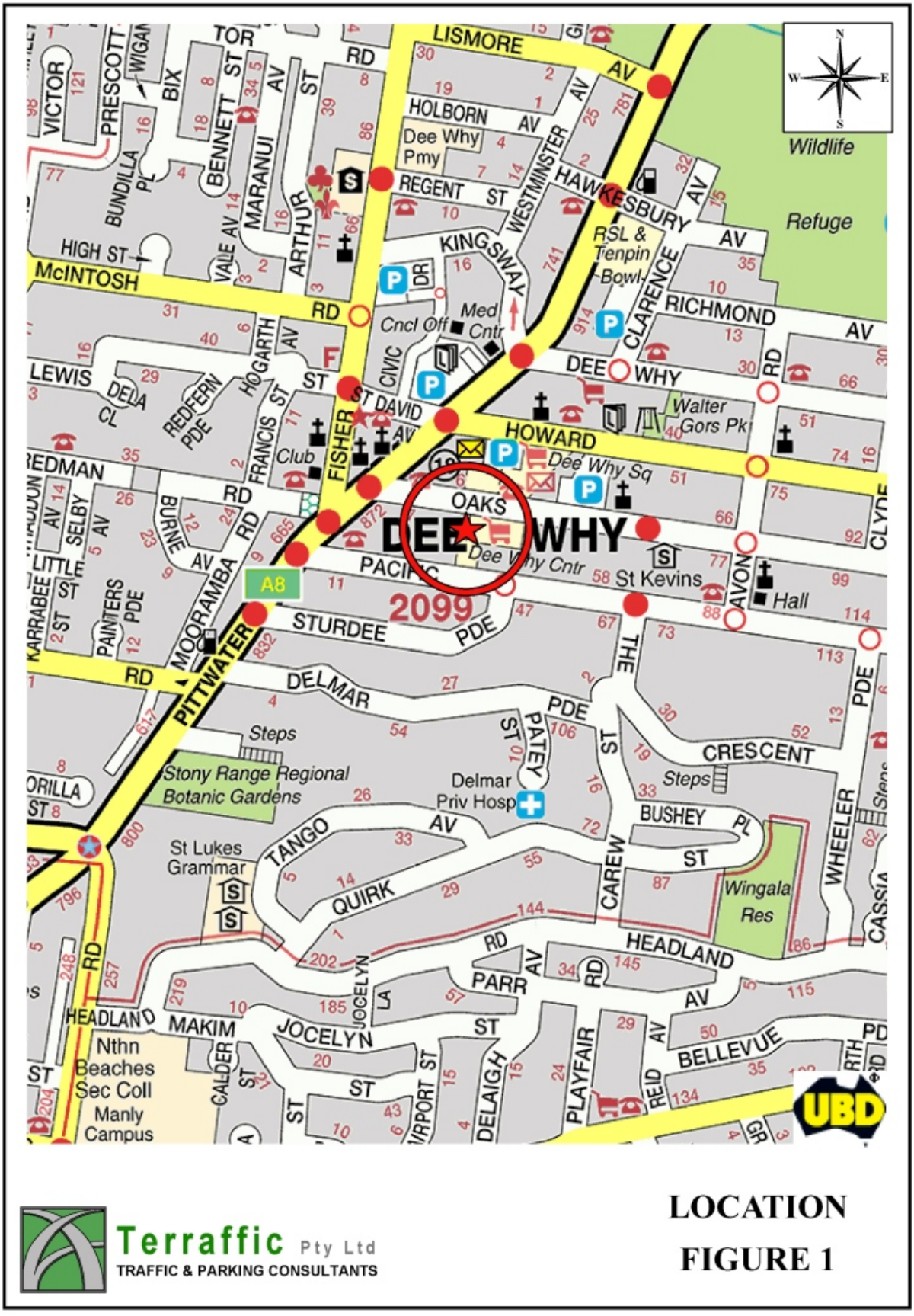
The proposed development site is located on the southern side of Oaks Avenue approximately 120m east of Pittwater. It has a total site area of 770.9m^2 with a frontage of 15.24m to Oaks Avenue. The development site is zoned B4 Mixed Use under the controls of the Warringah LEP 2011.

Existing Site Development

The existing site development comprises a commercial/retail building with a combined floor area of approximately 740m^2 comprising 350m^2 of commercial floor space and 390m^2 of retail floor space. The existing site development has no off-street parking or loading facilities.

An extract from the site survey is reproduced in the following pages.

Aerial photograph of the site



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TRAFFIC & PARKING CONSULTANTS

LOCATION

FIGURE 1


N
W
E
S
ST DAVID AVENUE
HOWARD AVENUE
PITTWATER ROAD
OAKS AVENUE
PACIFIC PARADE
Terraffic Pty Ltd
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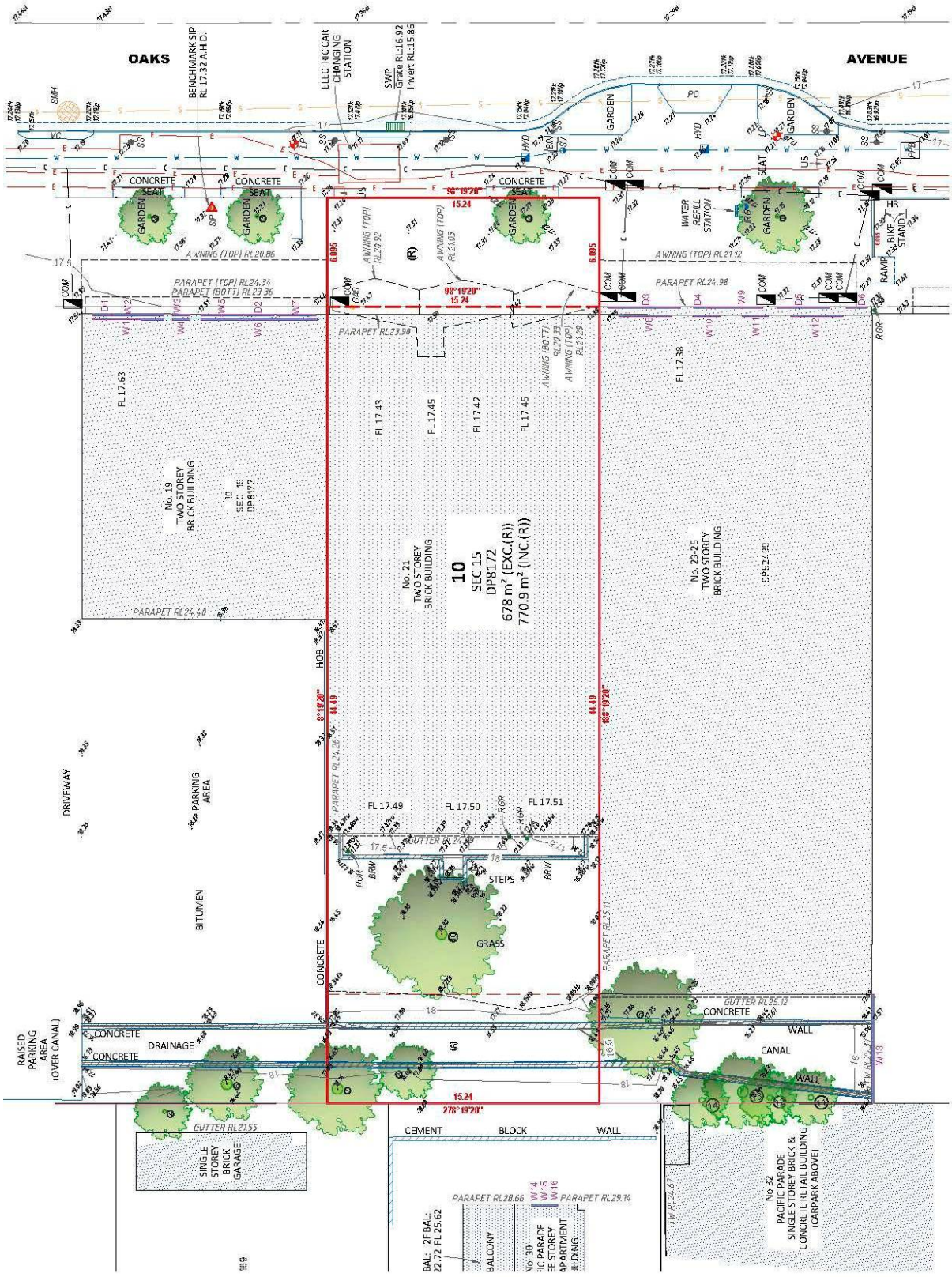
SITE
FIGURE 2



Extract from Site Survey

Proposed Development

The development proposal involves the demolition of the existing building and construction of a new mixed use building comprising a small retail shop on the ground floor, 2 x commercial offices on the first floor and 22 residential apartments on the upper levels as follows:

Retail	
Retail 1	42.00m^2
Commercial	
Commercial 1	75.00m^2
Commercial 2	81.00m^2
Total Retail	**156.00m^2**
Residential	
1 bedroom units	10
2 bedroom units	11
3 bedroom units	1
Total Units	**22**

The proposed development is served by a total of 28 off-street car parking spaces over 3 basement parking levels comprising 18 resident spaces, 4 visitor spaces, 2 retail tenant spaces and 4 commercial tenant spaces. As per the current arrangement, delivery vehicles will temporarily park in the vicinity of the site along the Oaks Avenue frontage.

The development contains 16 storage rooms on Level 1 for residents to store bicycles if necessary. In addition, there are 9 bicycle racks in the basement taking the overall bicycle parking provision to 25 bicycles.

Vehicular access to the proposed development is off Oaks Avenue via a 6m wide combined entry/exit driveway located adjacent to the western site boundary. The accessway narrows to a single lane approximately 8m into the site with the basement levels accessed by single lane ramps. Passing bays have been provided in the carpark with convex mirrors strategically installed to facilitate sight lines to oncoming vehicles.

Provision has also been made at the rear of the site for a Right of Carriageway that will connect the subject site with both neighbouring properties (ie 19 and 23 Oaks Avenue). The purpose of the ROW is to consolidate the vehicular access to all three sites and reduce the impacts on pedestrian safety and on-street parking.

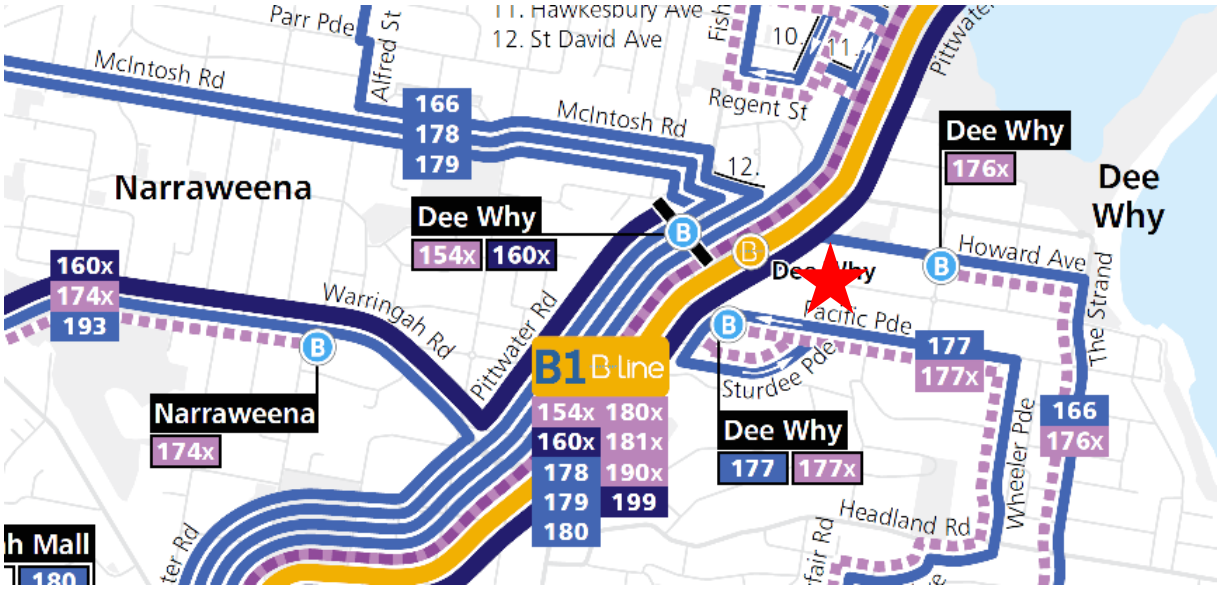
In order to satisfy the intent of the pedestrian sight line requirements in the Australian Standard AS/NZS2890.1:2004, it is proposed to install a 2.5m long fence on the footpath as per the arrangement opposite the site. As can be seen below, a metal fence has been installed at the exit to the carpark serving the Meriton Retail Precinct to restrict pedestrian movements near the site boundary.

Pedestrian fencing opposite the subject site on Oaks Avenue

Plans of the proposed development prepared by Gartner Trovato Architects are reproduced in Appendix A.

Public Transport Accessibility

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



B1 Line	Mona Vale to City Wynyard via Warriewood, Narrabeen, Collaroy, Dee Why, Brookvale, Collaroy, Mosman and Neutral Bay (operates daily)
Route 154X	Dee Why to Milsons Point (Express Service) via Brookvale, Collaroy, Mosman, Neutral Bay and North Sydney Station (operates weekday peaks)
Route 160X	Dee Why to Chatswood (Express Service) via Beacon Hill, Frenchs Forest, Forestville and Roseville Chase (operates daily)
Route 166	Frenchs Forest to Manly via Beacon Hill, Dee Why, Curl Curl, Freshwater and Queenscliff (operates daily)
Route 177	Dee Why to Warringah Mall via North Curl Curl and Brookvale (operates daily)
Route 177X	Dee Why to City Wynyard (Express Service) via Brookvale, Collaroy, Mosman and Neutral Bay (operates weekday peaks only)
Route 178	Cromer to Warringah Mall via Narraweena, Dee Why and Brookvale (operates daily)

Route 179	Wheeler Heights to Warringah Mall via Cromer, Narraweena, Dee Why and Brookvale (operates daily)
Route 180	Collaroy Plateau to Warringah Mall via Collaroy, Dee Why and Brookvale (operates daily)
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 AND SERVICING ASSESSMENT

Council DCP Parking Requirement

Appendix 1 in Part H of the Warringah Development Control Plan (amendment 21) nominates the following parking requirements that are applicable to the proposed development located within the Dee Why Town Centre:

Multi-dwelling housing, Residential flat buildings, Serviced apartments (including holiday flats), Shop-top housing (residential component)

- 0.6 space per 1 bedroom dwelling
- 0.9 spaces per 2 bedroom dwelling
- 1.4 spaces per 3 bedroom dwelling
- 1 visitor space per 5 units or part of dwellings
- 1 car share space per 25 dwellings (for properties with more than 25 dwellings) with each car share space replacing one (1) regular car parking space)

Shop (includes retail / business component of shop top housing, retail premises and neighbourhood shop)

- 1 space per 23.8 m^2 GLFA (4.2 spaces per 100 m^2 GLFA)

Office premises

- 1 space per 40m^2 GFA

Application of those parking rates to the proposed development yields a total requirement of 28 spaces calculated as follows:

Residential

10 x 1 bedroom units @ 0.6 space per dwelling	6.0 spaces
11 x 2 bedroom dwellings @ 0.9 spaces per dwelling	9.9 spaces
1 x 3 bedroom dwellings @ 1.4 spaces per dwelling	1.4 spaces
Total resident parking	*17.3 spaces (rounded to 18 spaces)*
22 dwellings @ 1 visitor space per 5 dwellings	4.4 spaces (rounded to 4 spaces)
Total	**21.7 spaces (rounded to 22 spaces)**

Retail Shop

42m^2 @ 1 space per 23.8m^2	1.8 spaces (rounded to 2 spaces)

Commercial Office

156m^2 @ 1 space per 40m^2	3.9 spaces (rounded to 4 spaces)
Total	***27.4 spaces (rounded to 28 spaces)***

The proposed development satisfies the DCP requirement with the provision of 28 off-street car parking spaces comprising 18 resident spaces, 4 visitor spaces, 2 retail tenant spaces and 4 commercial tenant spaces.

As noted in the foregoing, the existing 740m^2 of commercial/retail floor space on the site is not served by any off-street car parking or loading facilities. Based on Council's DCP parking requirements, the existing site development would generate in the order of 25 parked cars as follows:

Existing Retail

390m^2 @ 1 space per 23.8m^2	16.4 spaces (rounded to 16 spaces)

Existing Commercial Office

350m^2 @ 1 space per 40m^2	8.8 spaces (rounded to 9 spaces)
Total	***25.2 spaces (rounded to 25 spaces)***

As can be appreciated, the removal of these 25 cars that currently park on-street will have an enormous amenity effect for nearby commercial properties and local residents that do not have off-street parking.

On-Site Loading Facilities

Part C2 of the Warringah Development Control Plan notes the following with regard to on-site loading facilities:

On-site loading and unloading

6. Facilities for the loading and unloading of service, delivery and emergency vehicles are to be:
   - appropriate to the size and nature of the development;
   - screened from public view; and

- designed so that vehicles may enter and leave in a forward direction.

Table 5.1 of the RMS's *"Guide to Traffic Generating Developments"* (October 2002) specifies the following requirement for delivery and service vehicles:

Restaurants/Shops <2,000m^2 GFA	1 space per 400m^2 GFA
Commercial Office <20,000m^2 GFA	1 space per 4,000m^2 GFA

Based on the RMS Guidelines, the proposed development requires less than one-fifth of a loading space as follows:

42m^2 retail floorspace @ 1 loading bay per 400m^2 GFA	0.10 loading bay
156m^2 office floorspace @ 1 loading bay per 4000m^2 GFA	0.04 loading bay
Total requirement	**0.14 loading bay**

As per the current arrangement, delivery vehicles will temporarily park on-street in the vicinity of the site. Furthermore, the substantial decrease in the size of the retail and commercial floor space will result in less demand for loading.

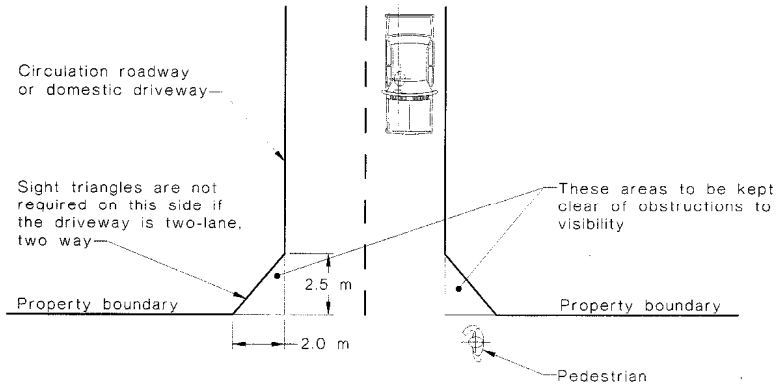
Carpark and Access Compliance

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
- 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 accessway and basement ramps are 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

As noted in the Introduction of this report, a 2.5m long metal fence will be installed on the footpath to restrict pedestrian activity near the exit driveway. The metal fence will satisfy the intent of Figure 3.3 of the Standard.



DIMENSIONS IN METRES

FIGURE 3.3 MINIMUM SIGHT LINES FOR PEDESTRIAN SAFETY

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.

Swept paths of the B99 vehicle circulating through the basement levels are also reproduced in Appendix B. As can be seen, passing bays have been provided in the carpark to facilitate

passing if required. A passing bay has been provided on the Ground Level and Basement Level 1 adjacent to the visitor parking.

As can be appreciated, passing bays are not required on the lower levels as these will be reserved for resident parking only. Residents generally exit the site in the morning peak and return in the evening therefore reducing the likelihood of passing. If necessary, a traffic signal arrangement could be provided in the resident carpark if deemed necessary by Council.

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

Business and Retail Premises

- 1 bicycle space per 200m^2 for staff
- 1 bicycle space per 600m^2 for visitors

Office Premises

- 1 bicycle space per 200m^2 for staff
- 1 bicycle space per 750m^2 for visitors over 1000m^2

Application of those parking rates to the proposed development yields a total requirement of 25 bicycle spaces calculated as follows:

Residential

22 dwellings @ 1 space per dwelling for residents	22 resident bike spaces
22 dwellings @ 1 visitor space per 12 dwellings	2 visitor bike spaces
Sub-Total	***24 bicycle spaces***

Retail Premises

42m^2 @ 1 space per 200m^2 for staff	0 staff bike spaces
42m^2 @ 1 space per 600m^2 for shoppers	0 shopper bike space

Office Premises	
$156m^2$ @ 1 space per $200m^2$ for staff	1 staff bike spaces
$156m^2$ @ 1 space per $750m^2$ for shoppers	0 visitor bike space
Total Development	***25 bicycle spaces***

As noted in the foregoing, the development contains 16 storage rooms on Level 1 for residents to store bicycles if necessary. In addition, there are 9 bicycle racks in the basement taking the overall bicycle parking provision to 25 bicycles.

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, loading or safety 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	**Regional Roads**
Pittwater Road	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.

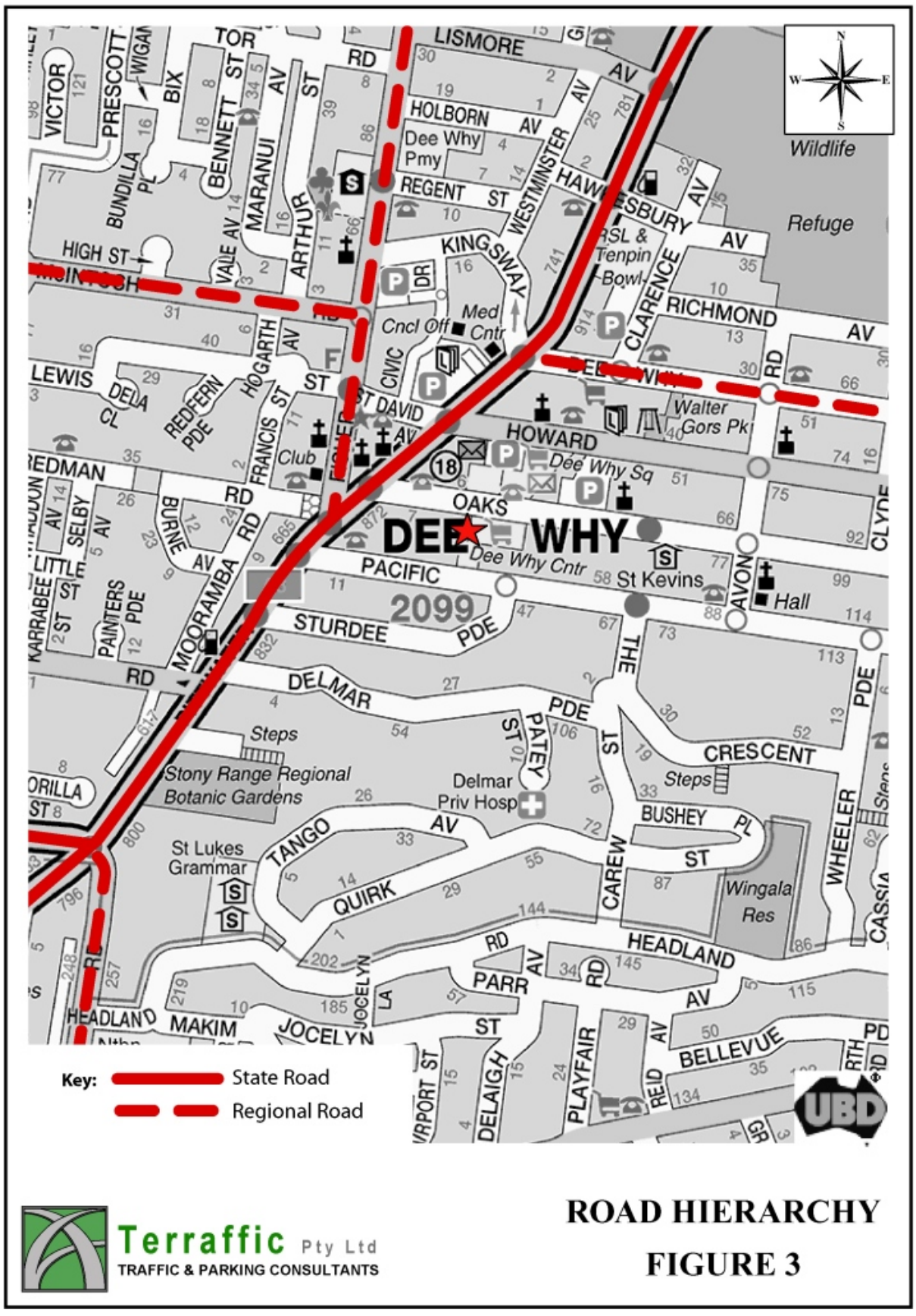
Oaks Avenue is an unclassified Local Road with a primary function of providing vehicular access to properties to the east of Pittwater Road. It has a pavement width of approximately 12m and is restricted to a speed limit of 40km/h. The traffic signals at the intersection of Pittwater Road and Oaks Avenue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

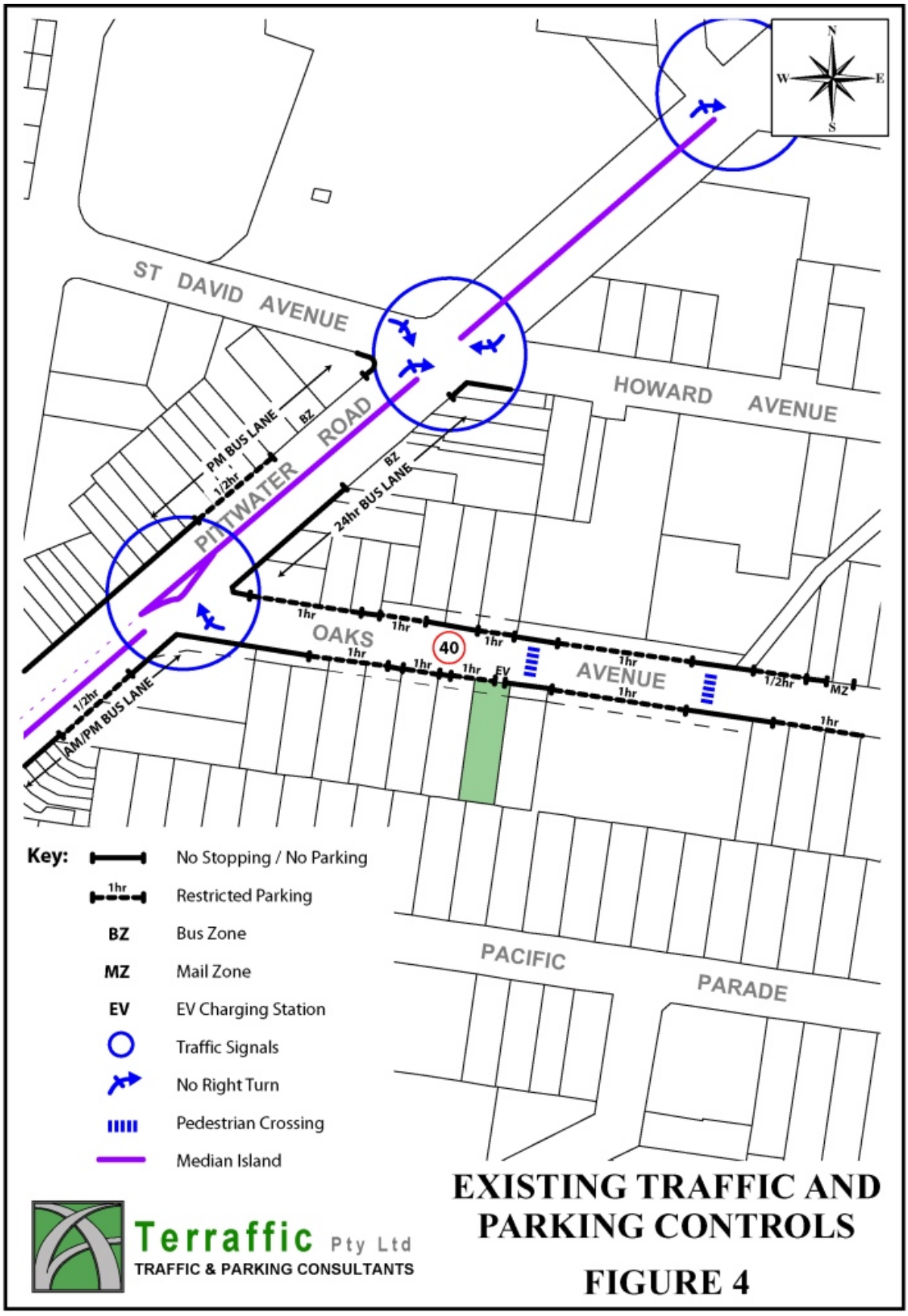
The existing traffic and parking controls on the road network serving the site are illustrated on Figure 4 and include:

- The TRAFFIC SIGNALS at the intersection of Pittwater Road/Oaks Avenue, Pittwater Road/Howard Avenue and Pittwater Road/Dee Why Parade

- The NO RIGHT TURN restrictions those traffic signals

- The RESTRICTED PARKING along Oaks Avenue


DEE WHY
LISMORE
HOLBORN
Dee Why Pmy
REGENT ST
WESTMINSTER
KINGSWAY
HIGH ST
ARTHUR
MARANUI
BENNETT ST
VALE AV
BUNDILLA PL
PRESCOTT
VICTOR
Cncl Off
Med Cntr
CIVIC
ST DAVID
HOWARD
Dee Why Sq
OAKS
Dee Why Cntr
St Kevins
Hall
Walter Gors Pk
RSL & Tenpin Bowl
Wildlife Refuge
CLARENCE
RICHMOND
AV
RD
PACIFIC
2099
STURDEE PDE
DELMAR
PDE
THE CRESCENT
AVON
CLYDE
LEWIS
DELA CL
REDFERN PDE
HOGARTH
FRANCIS ST
Club
REDMAN RD
SELBY AV
BURNE RD
LITTLE ST
PAINTERS PDE
MOORAMBA RD
Steps
Stony Range Regional Botanic Gardens
Delmar Priv Hosp
PATEY ST
TANGO AV
QUIRK
St Lukes Grammar
BUSHEY PL
CAREW ST
Wingala Res
WHEELER
HEADLAND
PARR AV
RD
JOCELYN LA
MAKIM
ST
DELAIGH ST
PLAYFAIR
REID AV
BELLEVUE
Key:
State Road
Regional Road
UBD
Terraffic Pty Ltd
TRAFFIC & PARKING CONSULTANTS
ROAD HIERARCHY
FIGURE 3


N
W
E
S
ST DAVID AVENUE
HOWARD AVENUE
PITTWATER ROAD
PM BUS LANE
1/2hr
BZ
24hr BUS LANE
BZ
OAKS AVENUE
40
1hr
EV
MZ
1/2hr
AM/PM BUS LANE
PACIFIC PARADE
Key:
No Stopping / No Parking
Restricted Parking
BZ Bus Zone
MZ Mail Zone
EV EV Charging Station
Traffic Signals
No Right Turn
Pedestrian Crossing
Median Island
Terraffic Pty Ltd
TRAFFIC & PARKING CONSULTANTS
EXISTING TRAFFIC AND PARKING CONTROLS
FIGURE 4

Existing Traffic Conditions

An indication of existing traffic conditions on the road network serving the site is provided from a count of traffic activity on Oaks Avenue at the subject site conducted between 7.00-10.00am and 3.00-6.00pm on Tuesday 7th November 2023. The survey also counted the number of pedestrians walking east and west along the site frontage.

The results of these counts of traffic activity are reproduced in Appendix C revealing that:

- the AM peak traffic period occurred between 9.00-10.00am. At that time, 436 vehicles per hour (vph) travelled past the development site comprising 139vph heading westbound towards Pittwater Road and 297vph heading eastbound.

- the PM peak traffic period occurred between 4.45-5.45pm. At that time, 582vph travelled past the development site comprising 181vph heading westbound and 401vph heading eastbound

- the AM peak pedestrian period also occurred between 9.00-10.00am. At that time, 267 pedestrians per hour (pph) travelled past the site comprising 145pph heading westbound towards Pittwater Road and 122pph heading eastbound.

- the PM peak pedestrian period occurred between 4.15-5.15pm. At that time, 190pph travelled past the development site comprising 102vph heading westbound and 88vph heading eastbound

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:

Specialty Shops / Secondary Retail	5.6 peak hour trips per 100m^2 GLFA
Office and Commercial	2 peak hour trips per 100m^2 GFA
Residential Flat Buildings (Metropolitan Sub-Regional Centre)	0.29 vehicle trips per unit

Traffic Generation of EXISTING SITE Development

Application of the RMS's traffic generation rates to the existing retail/commercial floor space yields a traffic generation potential in the order of 29vtph during the weekday peak periods as follows:

390m^2 retail @ 5.6vtph per 100m^2	22vtph
350m^2 commercial @ 2vtph per 100m^2	7vtph
Total Existing Development	**29vtph**

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:

Morning Peak Period

48m^2 retail @ 5.6vtph per 100m^2	2vtph (2 in / 0 out)
178m^2 commercial @ 2vtph per 100m^2	4vtph (4 in / 0 out)
22 units @ 0.29vtph per unit	6vtph (0 in / 6 out)
Total	***12vtph (6 in / 6 out)***

Afternoon Peak Period

48m^2 retail @ 5.6vtph per 100m^2	2vtph (0 in / 2 out)
178m^2 commercial @ 2vtph per 100m^2	4vtph (0 in / 4 out)
22 units @ 0.29vtph per unit	6vtph (6 in / 0 out)
Total	***12vtph (6 in / 6 out)***

It should be noted that the 5 of the 6 vehicle trips generated by the proposed retail and commercial will be contained on ground level. Only 1 commercial vehicle will be required to travel down to Basement 1. With the exception of this 1 commercial car space, the parking spaces in the basement are reserved for residents and their visitors. The visitors will also be contained on the upper level of Basement 1.

Traffic Implications

Based on the RMS Guidelines, the proposed development will generate 17 less vehicle movement during peak periods as follows:

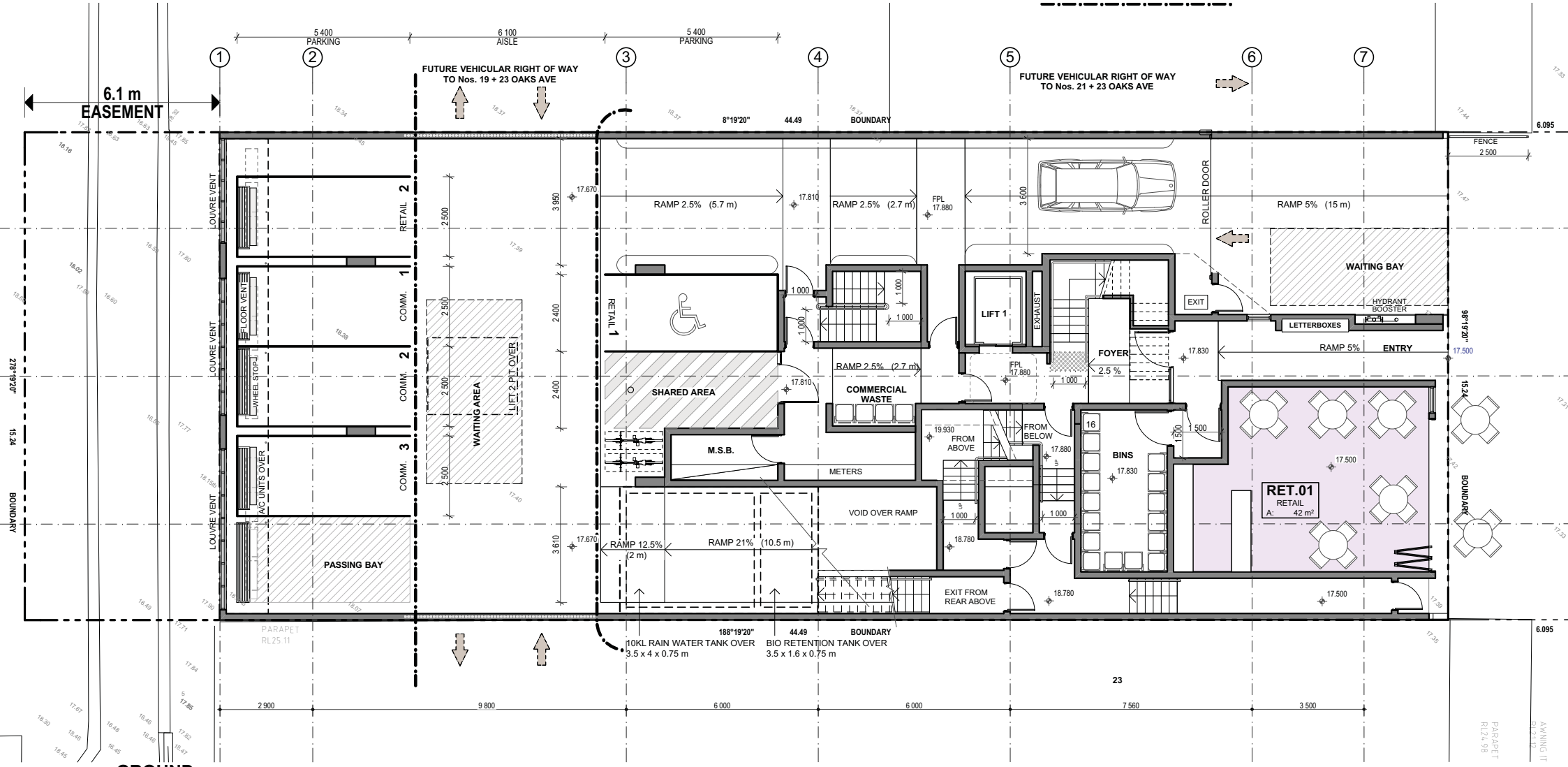
Existing Development	29vtph
Proposed Development	12vtph
Reduction in Traffic	***17vph***

In circumstances where an existing development generates more traffic than a proposed development, it can be readily appreciated that the proposal 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.

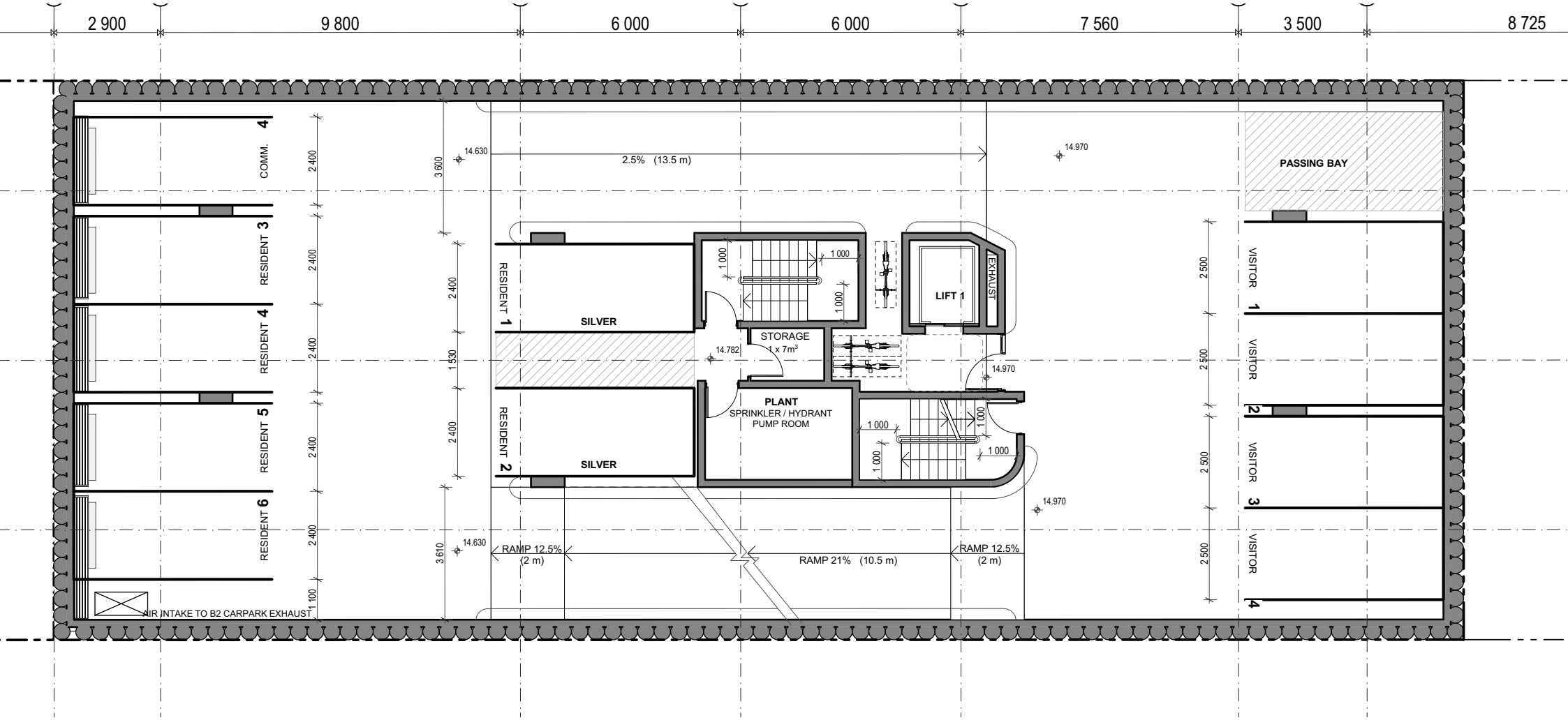
In the circumstances, the proposed development will not have any unacceptable traffic implications.

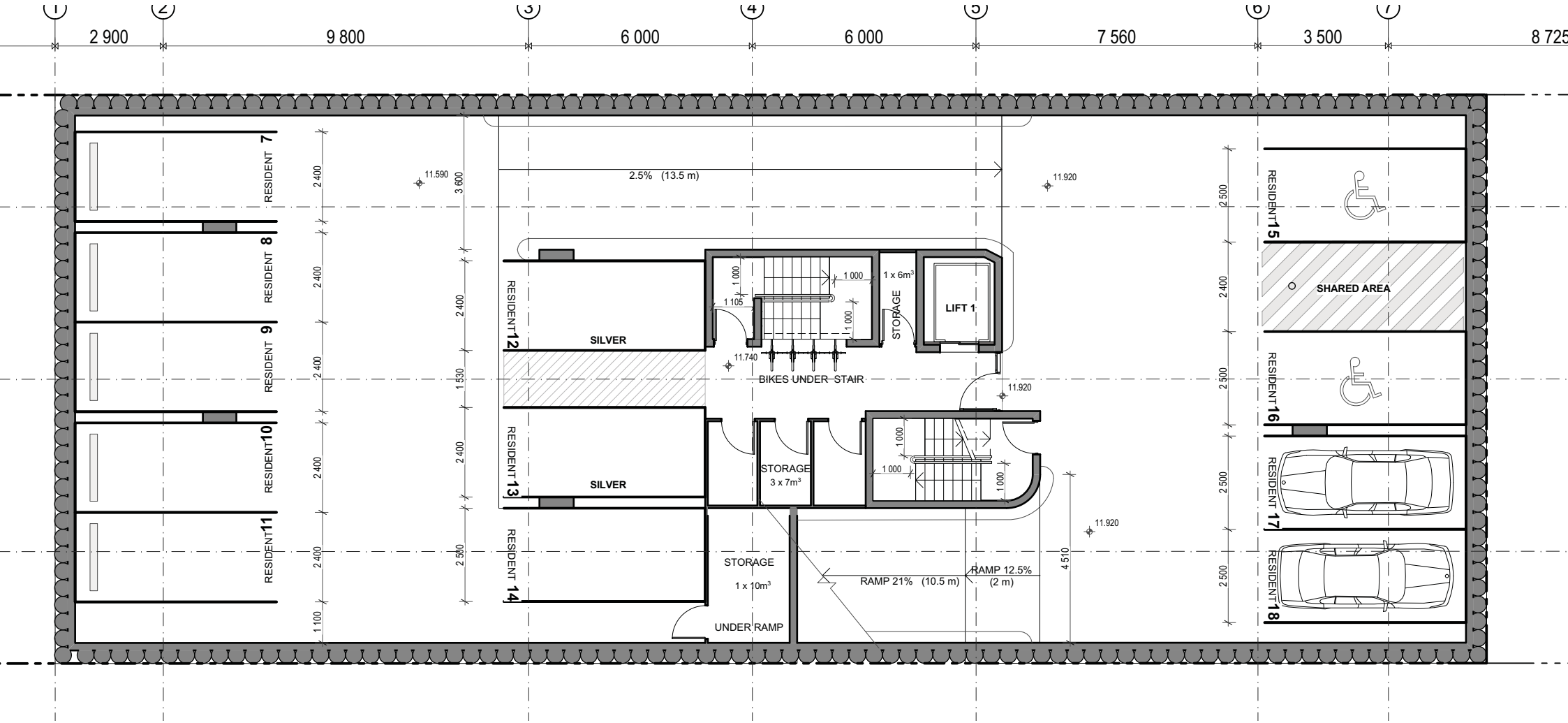
APPENDIX A

PLANS OF THE PROPOSED DEVELOPMENT



Issue Date	Rev	Change Name


2 900
9 800
6 000
6 000
7 560
3 500
8 725
COMM. 4
RESIDENT 3
RESIDENT 4
RESIDENT 5
RESIDENT 6
2 400
3 600
2 400
2 400
1 530
2 400
2 400
2 400
1 100
14.630
2.5% (13.5 m)
14.970
PASSING BAY
RESIDENT 1
SILVER
RESIDENT 2
SILVER
1 000
1 000
1 000
1 000
LIFT 1
EXHAUST
STORAGE
1 x 7m³
14.782
PLANT
SPRINKLER / HYDRANT
PUMP ROOM
1 000
1 000
1 000
1 000
14.970
14.970
VISITOR 1
VISITOR 2
VISITOR 3
VISITOR 4
2 500
2 500
2 500
2 500
3 610
14.630
RAMP 12.5%
(2 m)
RAMP 21% (10.5 m)
RAMP 12.5%
(2 m)
AIR INTAKE TO B2 CARPARK EXHAUST


1
2
3
4
5
6
7
2 900
9 800
6 000
6 000
7 560
3 500
8 725
RESIDENT 7
RESIDENT 8
RESIDENT 9
RESIDENT 10
RESIDENT 11
RESIDENT 12
RESIDENT 13
RESIDENT 14
RESIDENT 15
RESIDENT 16
RESIDENT 17
RESIDENT 18
SILVER
SILVER
SHARED AREA
LIFT 1
STORAGE
1 x 6m³
STORAGE
3 x 7m³
STORAGE
1 x 10m³
UNDER RAMP
BIKES UNDER STAIR
RAMP 21% (10.5 m)
RAMP 12.5%
(2 m)
2.5% (13.5 m)
11.590
11.740
11.920
11.920
11.920
2 400
3 600
2 400
2 400
1 530
2 400
2 400
2 500
1 100
2 500
2 400
2 400
2 500
2 500
4 510
1 000
1 000
1 105
1 000
1 000
1 000
1 000

APPENDIX B

SWEPT PATH ANALYSIS

Path prepared using
Autodesk Vehicle Tracking

0 2 4 6 8 10 20

METRES

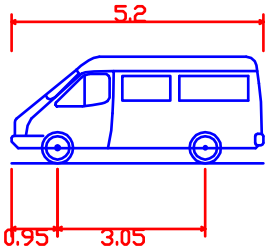
SCALE 1:200

Departing vehicle pulls into passing bay if a car has entered the site

Convex mirror

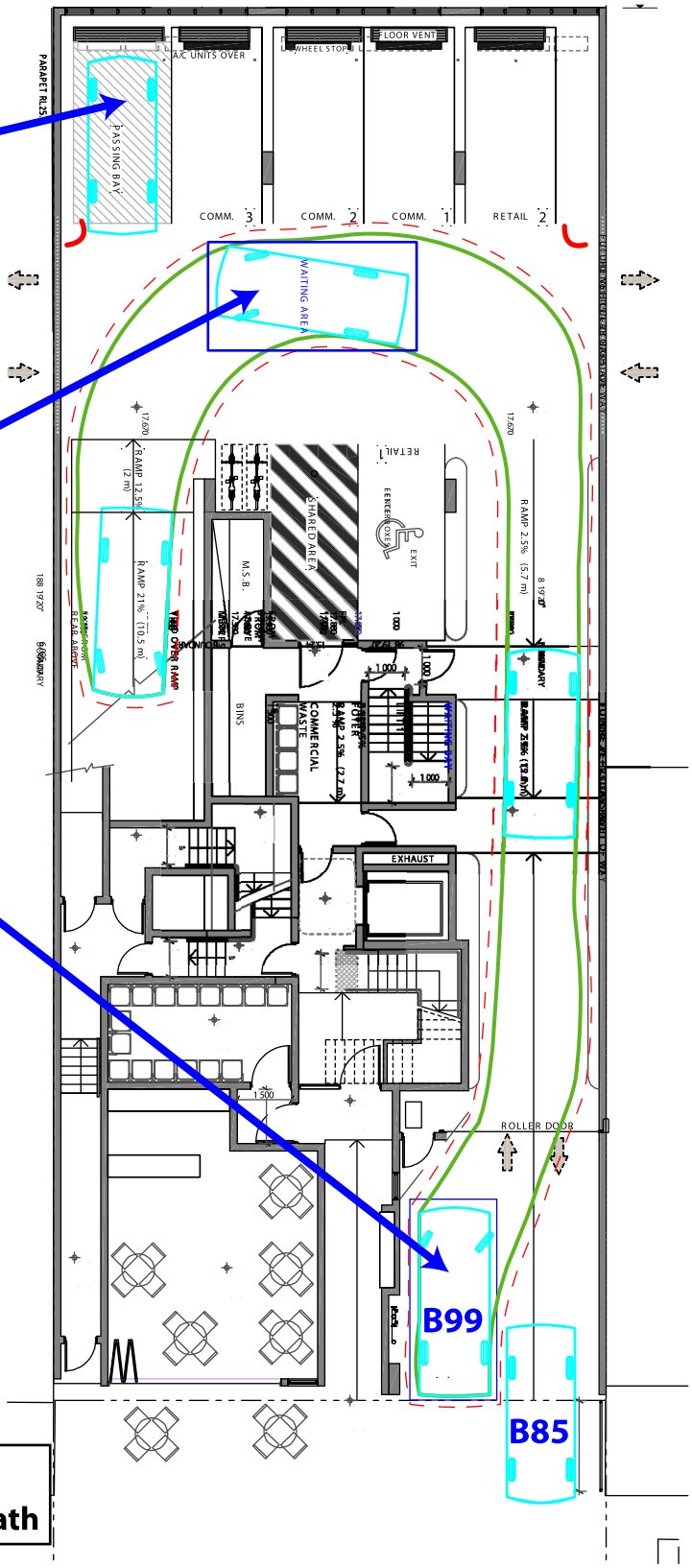
Car stops in waiting bay if a vehicle is departing the basement

B99 waits for B85 vehicle to exit site before heading into the site



B99 Vehicle (Realistic min radius) (2004)

Overall Length	5.200m
Overall Width	1.940m
Overall Body Height	2.200m
Min Body Ground Clearance	0.312m
Track Width	1.840m
Lock to Lock Time	4.00s
Curb to Curb Turning Radius	6.250m



Vehicle Path

300mm Clearance Path

Manoeuvring Path of Australian Standard AS/NZS2890.1:2004 B99 Vehicle Entering Site On Ground Level

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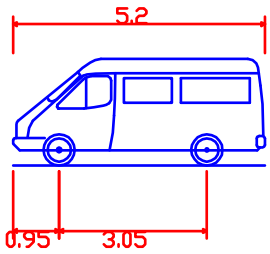
Path prepared using
Autodesk Vehicle Tracking

0 2 4 6 8 10 20

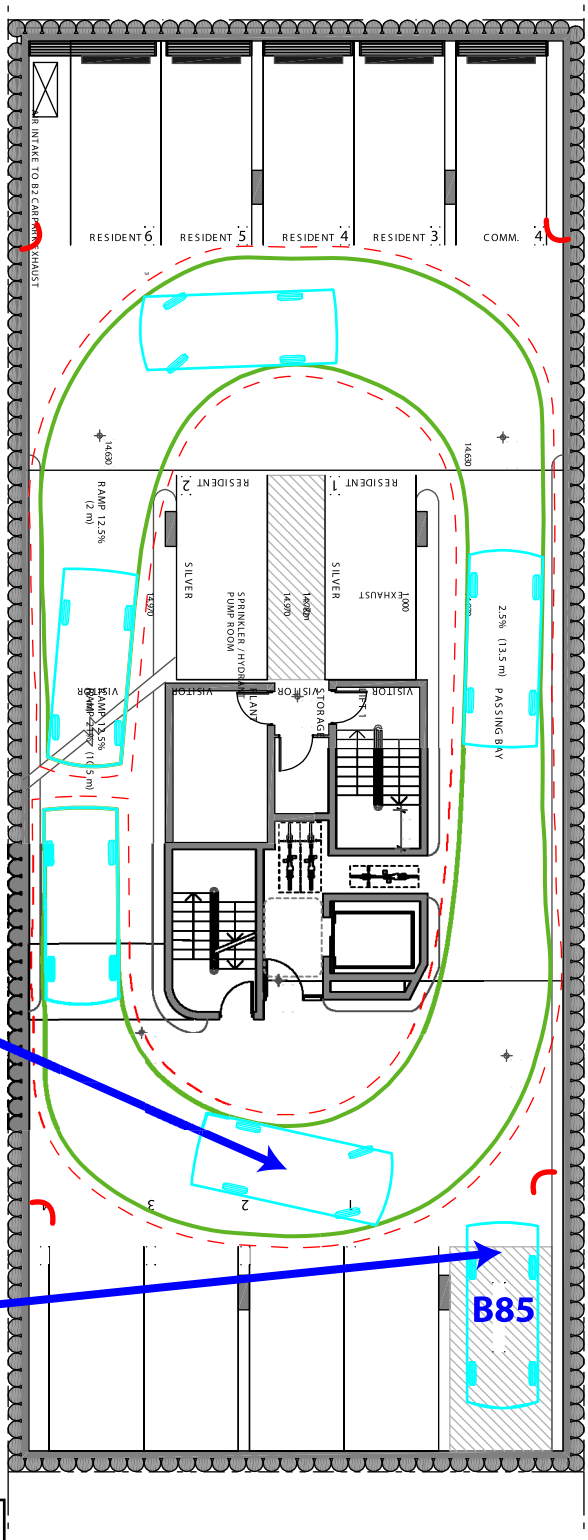
METRES

SCALE 1:200

Convex mirror



B99 Vehicle (Realistic min radius) (2004)	
Overall Length	5.200m
Overall Width	1.940m
Overall Body Height	2.200m
Min Body Ground Clearance	0.312m
Track Width	1.840m
Lock to Lock Time	4.00s
Curb to Curb Turning Radius	6.250m



Car stops in aisle
if a vehicle is departing
the basement

Departing vehicle
pulls into passing bay if
a car is entering basement

Vehicle Path

300mm Clearance Path

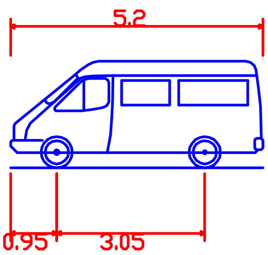
Manoeuvring Path of Australian Standard AS/NZS2890.1:2004 B99 Vehicle Entering Basement Level 1

Terraffic Pty Ltd
TRAFFIC & PARKING CONSULTANTS

Path prepared using Autodesk Vehicle Tracking

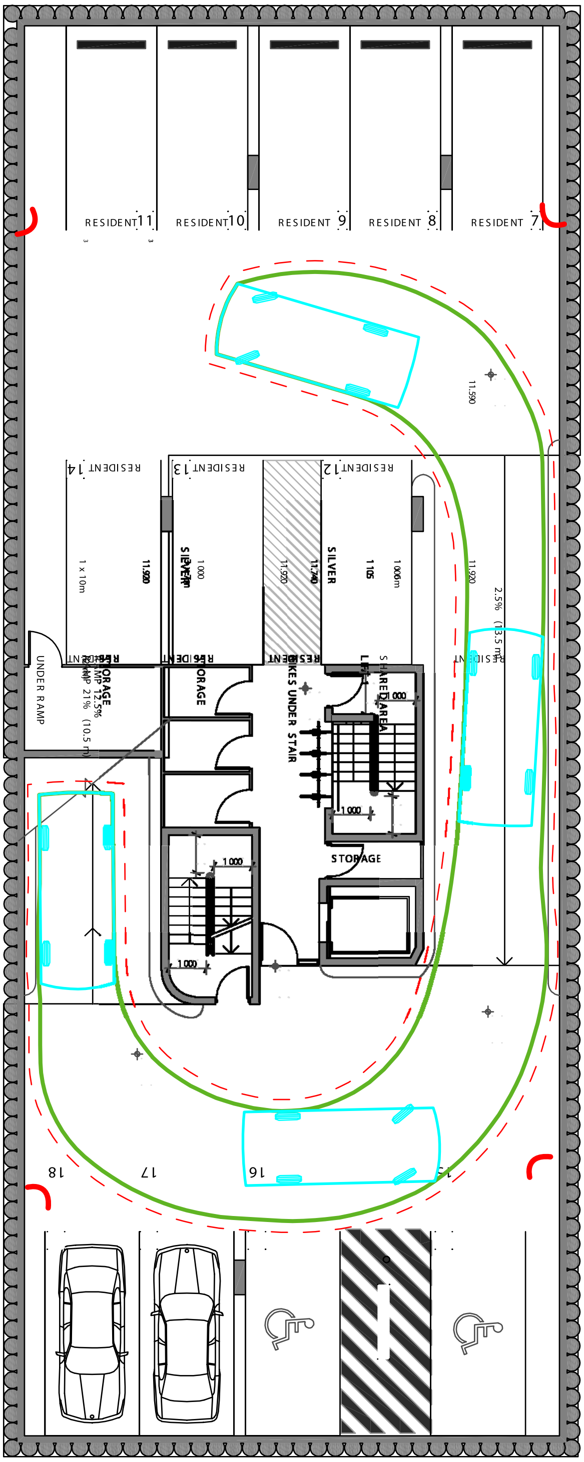
0 2 4 6 8 10 20
METRES
SCALE 1:200

Convex mirror



B99 Vehicle (Realistic min radius) (2004)

Overall Length	5.200m
Overall Width	1.940m
Overall Body Height	2.200m
Min Body Ground Clearance	0.312m
Track Width	1.840m
Lock to Lock Time	4.00s
Curb to Curb Turning Radius	6.250m



Vehicle Path
300mm Clearance Path

Manoeuvring Path of Australian Standard AS/NZS2890.1:2004 B99 Vehicle Entering Basement Level 2

Terraffic Pty Ltd
TRAFFIC & PARKING CONSULTANTS

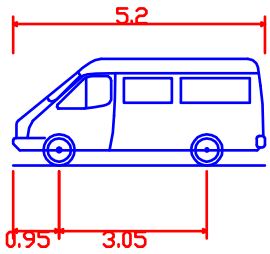
Path prepared using
Autodesk Vehicle Tracking

0 2 4 6 8 10 20

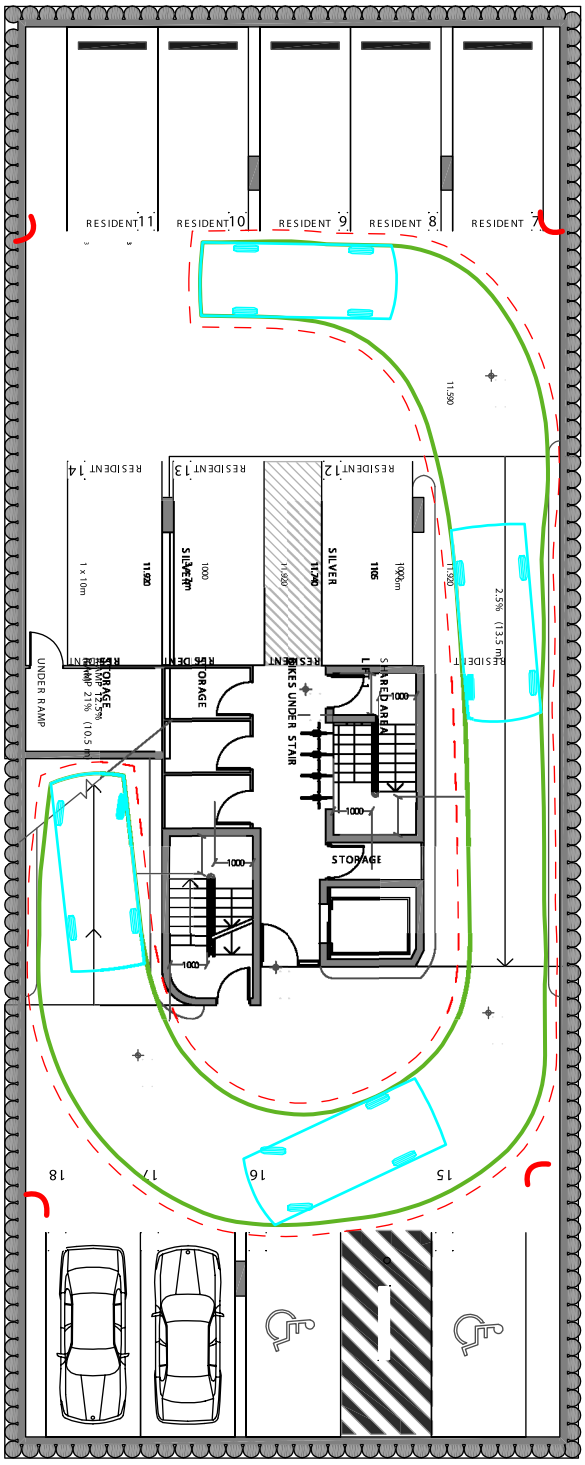
METRES

SCALE 1:200

Convex mirror



B99 Vehicle (Realistic min radius) (2004)	
Overall Length	5.200m
Overall Width	1.940m
Overall Body Height	2.200m
Min Body Ground Clearance	0.312m
Track Width	1.840m
Lock to Lock Time	4.00s
Curb to Curb Turning Radius	6.250m



Vehicle Path

300mm Clearance Path

Manoeuvring Path of Australian Standard AS/NZS2890.1:2004 B99 Vehicle Exiting Basement Level 2

Terraffic Pty Ltd
TRAFFIC & PARKING CONSULTANTS

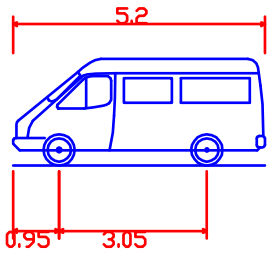
Path prepared using
Autodesk Vehicle Tracking

0 2 4 6 8 10 20

METRES

SCALE 1:200

Convex mirror



B99 Vehicle (Realistic min radius) (2004)	
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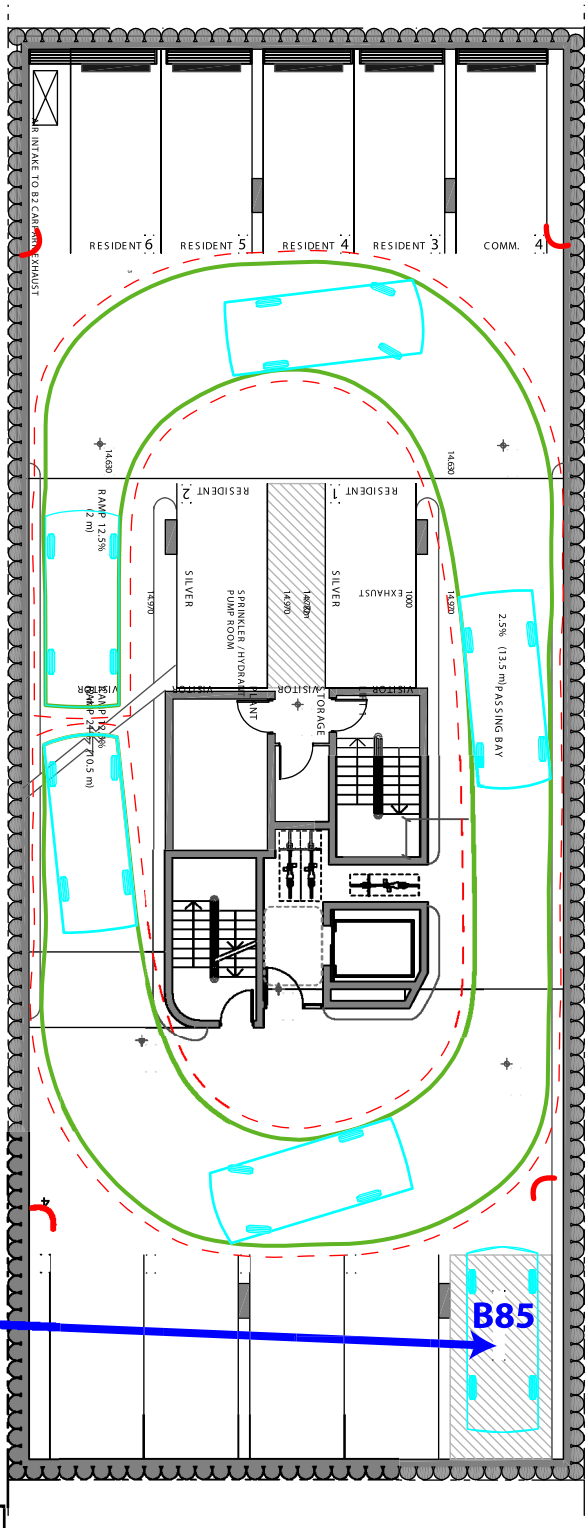

The entering vehicle can reverse into the passing bay if a car is exiting the lower basement

Vehicle Path

300mm Clearance Path

Manoeuvring Path of Australian Standard AS/NZS2890.1:2004 B99 Vehicle Exiting Basement Level 1

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APPENDIX C

TRAFFIC COUNT DATA

TRANS TRAFFIC SURVEY
trafficsurvey.com.au

TURNING MOVEMENT SURVEY

21 Oaks Ave, Dee Why

GPS *-33.753663, 151.287080*

Date:	Tue 07-11-23
Weather:	Fine
Suburban:	Dee Why
Customer:	Terraffic

Survey Period	AM:	7:00 AM-10:00 AM
	PM:	12:00 AM-3:00 AM

All Vehicles

Time		WB	EB	Hourly Total	
Period Start	Period End			Hour	Peak
7:00	7:15	20	49		
7:15	7:30	18	49		
7:30	7:45	30	56		
7:45	8:00	28	61	311	
8:00	8:15	22	59	323	
8:15	8:30	31	51	338	
8:30	8:45	36	72	360	
8:45	9:00	26	51	348	
9:00	9:15	37	75	379	Peak Period
9:15	9:30	32	68	397	
9:30	9:45	34	75	398	
9:45	10:00	36	79	436	
15:00	15:15	28	70		
15:15	15:30	54	81		
15:30	15:45	30	84		
15:45	16:00	38	86	471	
16:00	16:15	28	92	493	
16:15	16:30	51	85	494	
16:30	16:45	38	82	500	
16:45	17:00	42	104	522	Peak Period
17:00	17:15	40	87	529	
17:15	17:30	49	99	541	
17:30	17:45	50	111	582	
17:45	18:00	66	76	578	

Pedestrians Crossing

Time		South Side		Hourly Total	
Period Start	Period End	Westbound	Eastbound	Hour	Peak
7:00	7:15	18	7		
7:15	7:30	15	14		
7:30	7:45	35	20		
7:45	8:00	37	13	159	
8:00	8:15	20	20	174	
8:15	8:30	38	31	214	
8:30	8:45	27	23	209	
8:45	9:00	31	22	212	
9:00	9:15	35	27	234	Peak Period
9:15	9:30	33	22	220	
9:30	9:45	41	34	245	
9:45	10:00	36	39	267	
15:00	15:15	19	17		
15:15	15:30	35	13		
15:30	15:45	19	17		
15:45	16:00	20	16	156	
16:00	16:15	24	25	169	
16:15	16:30	31	18	170	Peak Period
16:30	16:45	21	18	173	
16:45	17:00	29	21	187	
17:00	17:15	21	31	190	
17:15	17:30	29	15	185	
17:30	17:45	32	10	188	
17:45	18:00	23	9	170	