PROPOSED MIXED USE DEVELOPMENT

21 ADDISON STREET, SHELLHARBOUR

Traffic and Parking Assessment Report and Construction Traffic Management Plan

21st November 2024

Ref: 24035

Prepared by

Terraffic Pty Ltd
Traffic and Parking Consultants

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1. INTRODUCTION

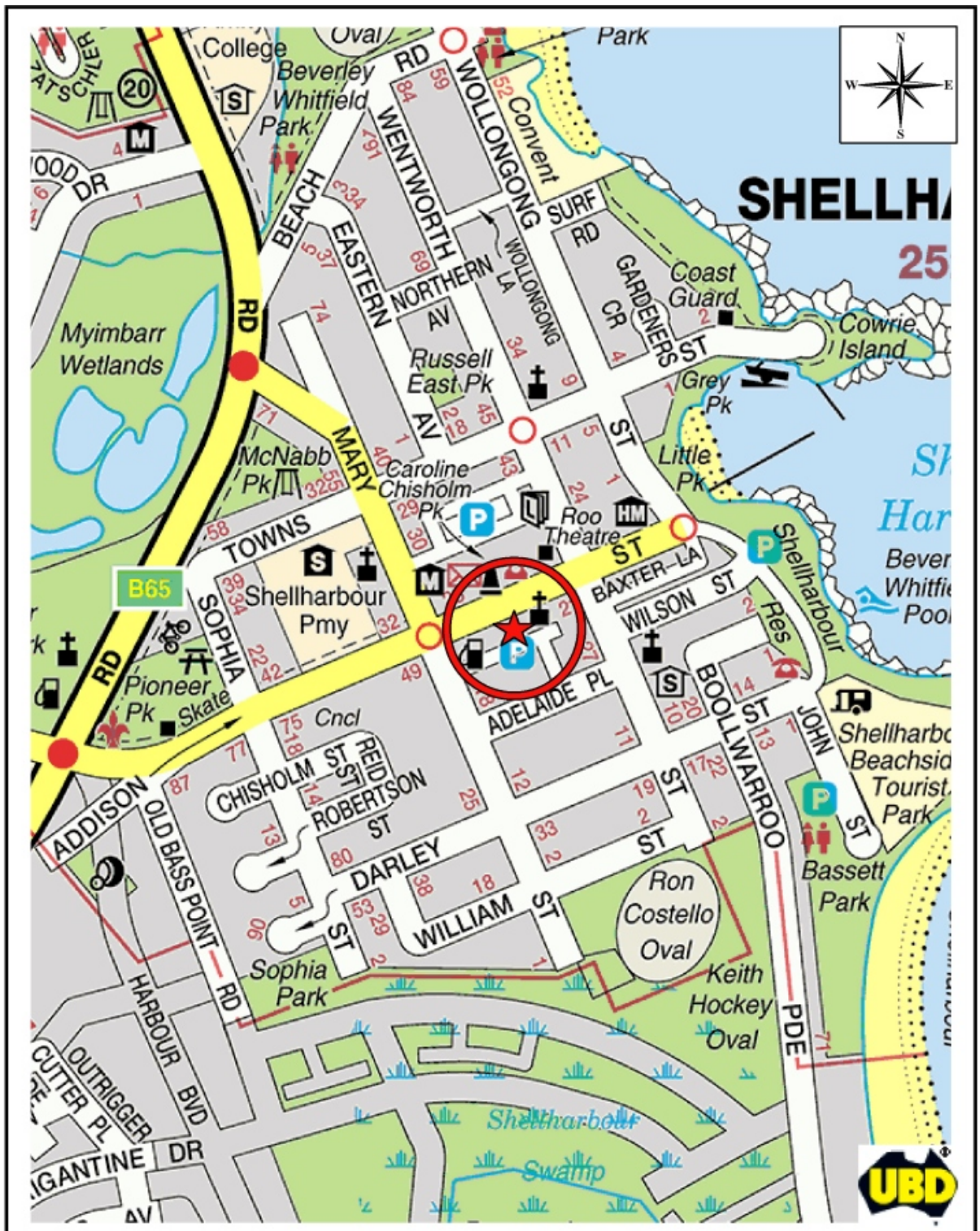
This report has been prepared to accompany a Development Application (DA) to Shellharbour City Council for a proposed mixed use development at 27 Addison Street, Shellharbour (Figures 1 and 2).

The proposed development site is located on the southern side of Addison Street approximately 80m west of Wentworth Street. It has a total site area of approximately 590m^2 with frontages of 13.72m to Addison Street and the Council carpark at the rear of the site. The development site is zoned E1 Local Centre under the controls of the Shellharbour LEP 2013.

Existing Site Development

The existing site development comprises a retail building with a floor area of approximately 80m^2 and a 2 bedroom residence. The shop is served by a single car space with access to Addison Street while the residence is served by a double garage that gains access to the rear Council carpark. The existing shop has no off-street loading facilities and relies on the on-street LOADING ZONES in the vicinity of the site.

Aerial photograph of the site



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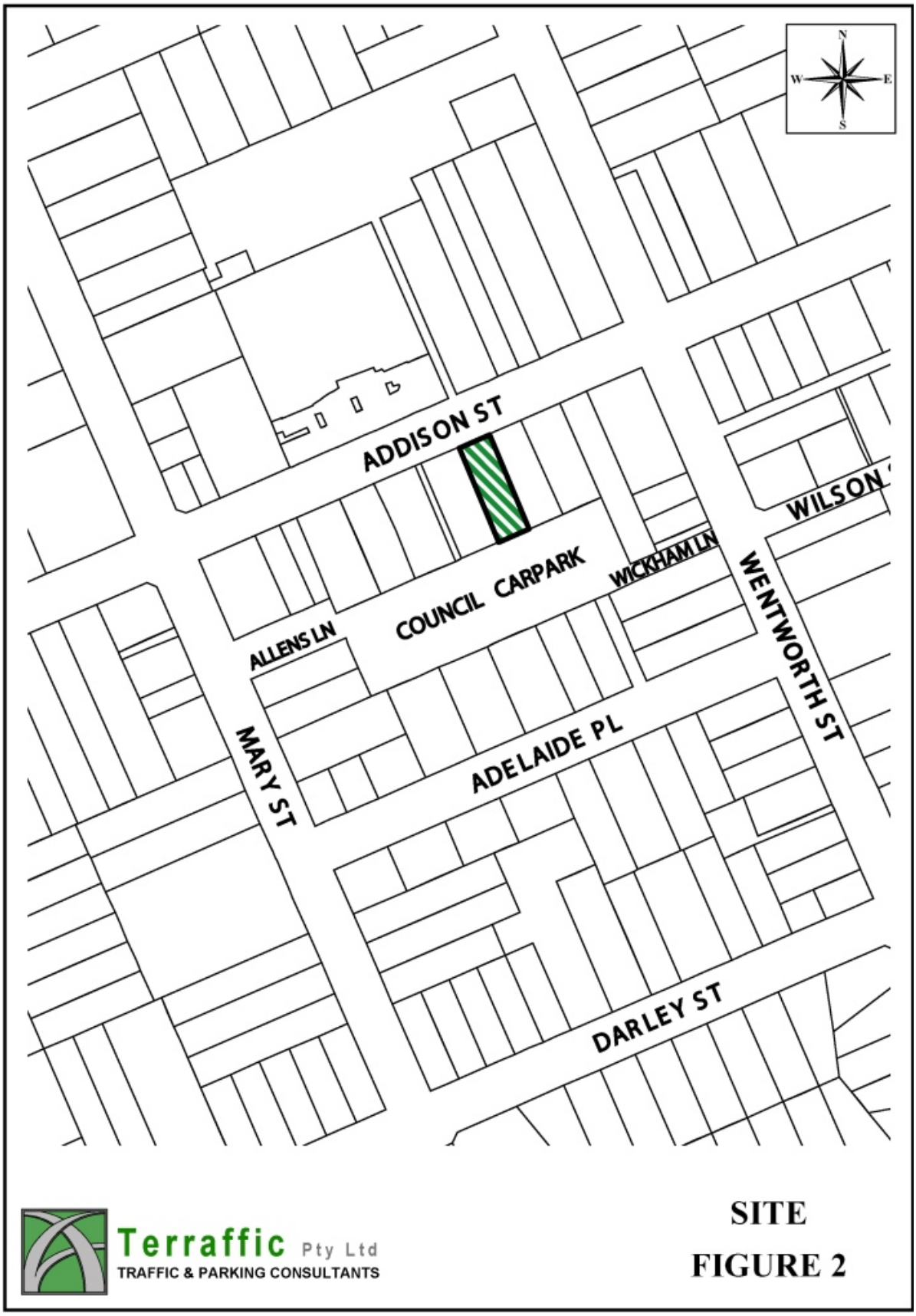
LOCATION

FIGURE 1


N
W
E
S
ADDISON ST
WILSON
COUNCIL CARPARK
WICKHAM LN
ALLENS LN
WENTWORTH ST
MARY ST
ADELAIDE PL
DARLEY ST
Terraffic Pty Ltd
TRAFFIC & PARKING CONSULTANTS
SITE
FIGURE 2

Proposed Development

The development proposal involves the demolition of the existing development and construction of a new mixed use building comprising a 70m^2 retail shop on the ground floor facing Addison Street and 9 residential apartments comprising 6 x 2 bedroom units and 3 x 3 bedroom units.

The proposed development is served by a total of 18 off-street car parking spaces over 3 basement parking levels comprising 14 resident spaces and 4 resident visitor parking spaces. The proposal does not intend on providing off-street car parking for commercial tenants who are likely to utilise the un-restricted public carpark at the rear of the site. Subject to Council approval, this may require a Section 7.11 contribution for 2 parking spaces.

As per the current arrangement, delivery vehicles will temporarily park in the vicinity of the site along Addison Street or the signposted LOADING ZONES in the area. Waste collection will be carried out on-site by private waste collectors using Small Rigid Vehicles.

The existing access driveway to Addison Street will be closed and reconstructed to Council specifications. As can be appreciated, the closure of this footpath crossing will enhance pedestrian safety along the site frontage.

Vehicular access to the proposed development is off the rear Council carpark via a 5.0m wide combined entry/exit driveway located 1.8m from the eastern site boundary. Single lane access ramps connect the parking areas with traffic signals provided in the carpark to facilitate the movement of passing traffic. The 4 visitor parking spaces are located on the ground level thus removing the need for visitors to use the traffic signals. Only residents accessing the lower basement levels will use the traffic light system.

As is common practice, the traffic signals will give priority to entering vehicles. When departing the basement, the driver will utilise a remote control to turn the light red for entering traffic. Should a vehicle enter when the light is red, they will be able to pull into a designated waiting bay on the ground level. Once the vehicle departs, the light will turn green and the resident can enter.

As will be discussed in Chapter 3, the residential component of the development will only generate approximately 5 vehicle trips per hour during peak periods. This equates to approximately 1 vehicle movement every 12 minutes with traffic generally departing the site in the morning and returning in the evening. As can be appreciated, the traffic generation is quite low and can be comfortably controlled by the traffic signals.

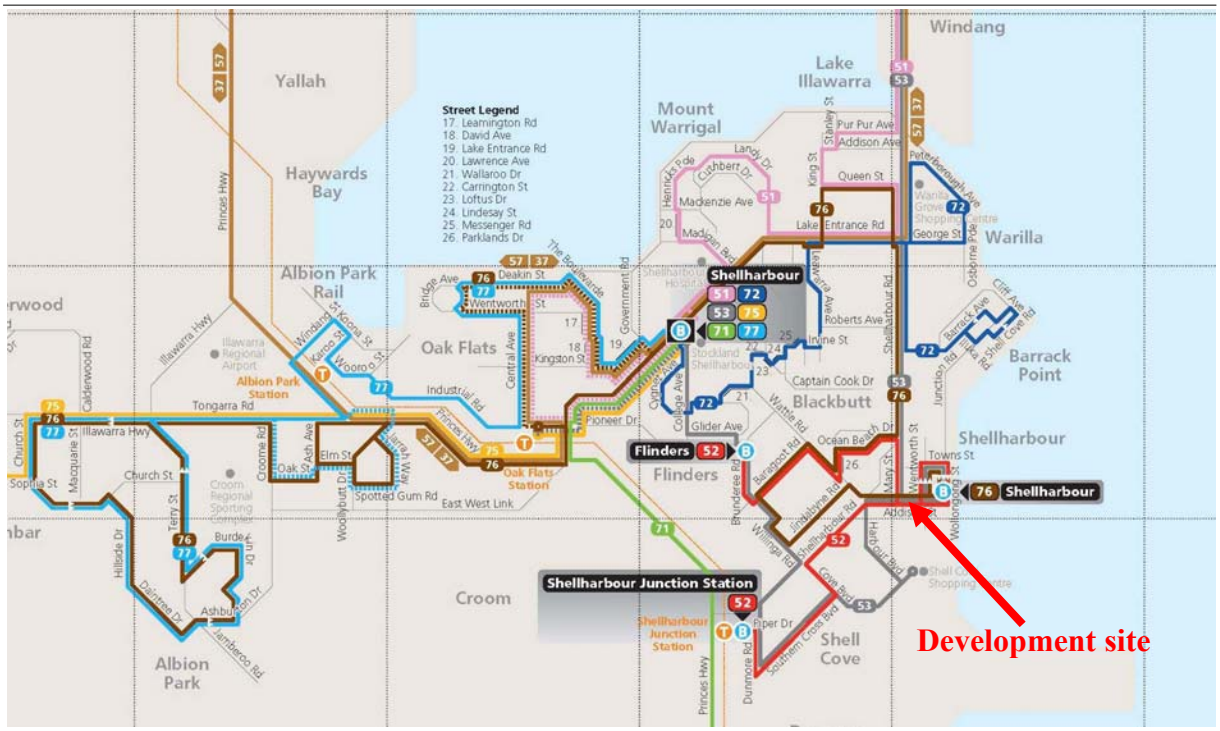
Plans of the proposed development prepared by Couvaras Architects are reproduced in Appendix A.

Public Transport Accessibility

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

Route 52	Flinders to Shellharbour Junction (operates weekday peaks only)
Route 53	Shellharbour City Centre to Wollongong Station via Shell Cove, Shellharbour, Warilla, Windang, Primbee and Warrawong (service operates daily)
Route 76	Shellharbour Village to Albion Park (loop service) via Oaks Flats Station and Albion Park Rail (service operates daily)

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



Extract from Premier Illawarra Network Map

2. PARKING ASSESSMENT

Council DCP Parking Requirement

Table 13.1 in Chapter 13 of the Shellharbour Development Control Plan (December 2017) nominates the following parking requirements that are applicable to the proposed development:

Multi-dwelling housing and Shop-top housing (residential component)

- 1 space per 1 bedroom dwelling
- 1.5 spaces per 2+ bedroom dwelling
- 0.25 visitor space per 1 bedroom unit
- 0.5 visitor space per 2+ bedroom unit

Retail Shop

- 1 space per 35 m^2 GFA

Where the amount of parking required is not a whole number, the number of spaces will be rounded up to the nearest whole number. For example, where the car parking requirement has been calculated at 9.3 spaces, the required number of spaces is 10 spaces.

Application of those parking rates to the proposed development yields a total requirement of 20 spaces calculated as follows:

Residential Parking	
9 x 2 and 3 bedroom units @ 1.5 resident spaces per dwelling	13.5 resident spaces
9 x 2 and 3 bedroom units @ 0.5 visitor space per dwelling	4.5 visitor spaces
Total	**18.0 spaces**
Retail Shop	
70m^2 @ 1 space per 35m^2	2.0 spaces
Combined Total	***20.0 spaces***

The proposed development provides a total of 18 off-street parking spaces comprising 14 resident spaces and 4 visitor spaces. As can be seen, the proposal satisfies the residential requirement however there is a shortfall of 2 retail spaces when calculated in accordance with

the DCP. Subject to Council approval, this may require a Section 7.11 contribution for 2 parking spaces.

As noted in the foregoing, it is envisaged that the retail tenants will utilise the 98 space un-restricted public carpark at the rear of the site. A series of aerial photographs from June 2023 to June 2024 are reproduced in Appendix B showing that there is ample spare capacity in the carpark to accommodate the 2 staff cars generated by the proposed development.

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 access 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 one-way 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

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

Swept paths of the B85 vehicle circulating through the basement levels are reproduced in Appendix C. As can be seen, traffic lights will be installed throughout the basement to facilitate passing if required.

Waste Collection

As noted in the Introduction of this report, waste will be collected on-site by a private collection company outside of the morning peak period when traffic generated by the proposal is minimal. The waste truck will be similar to the Australian Standard 6.4m long Small Rigid Vehicle (SRV).

The specifications for the Garwood Miner Hino 300 Series truck and swept path of the SRV accessing the site and loading in the rear section of the basement carpark are reproduced in Appendix D. As can be seen, this vehicle will enter the basement in a forward direction, collect the waste in the rear section of the carpark and depart in a forward direction.

Photograph of the Veolia Miner Truck

Access Driveway Width

Vehicular access to the proposed development is off the rear public carpark via a 5.0m wide combined entry/exit driveway. The width of the proposed access driveway complies with the following criteria for a *"Category 1"* driveway as described Tables 3.1 and 3.2 of AS/NZS2890.1:2004:

1. The parking facilities are classified "*Class 1*" for long-term parking (refer to Table 1.1)
2. The development has less than 25 spaces
3. The development site is located on a Local Road

A copy of Tables 3.1 and 3.2 are reproduced in the following pages.

Reference to Table 3.2 reveals that *"Category 1"* access driveways can have a combined entry and exit width of between 3.0m and 5.5m. With a minimum width of 5.0m, the proposed access driveway off the rear carpark clearly satisfies the requirements of the Standard.

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

TABLE 3.1

SELECTION OF ACCESS FACILITY CATEGORY

Class of parking facility (see Table 1.1)	Frontage road type	Access facility category				
		Number of parking spaces (Note 1)				
		<25	25 to 100	101 to 300	301 to 600	>600
1,1A	Arterial	1	2	3	4	5
	Local	1	1	2	3	4
2	Arterial	2	2	3	4	5
	Local	1	2	3	4	4
3,3A	Arterial	2	3	4	4	5
	Local	1	2	3	4	4

NOTES:

1 When a car park has multiple access points, each access should be designed for the number of parking spaces effectively served by that access.

2 This Table does not imply that certain types of development are necessarily suitable for location on any particular frontage road type. In particular, access to arterial roads should be limited as far as practicable, and in some circumstances it may be preferable to allow left-turn-only movements into and out of the access driveway.

TABLE 3.2

ACCESS DRIVEWAY WIDTHS

metres

Category	Entry width	Exit width	Separation of driveways
1	3.0 to 5.5	(Combined) (see Note)	N/A
2	6.0 to 9.0	(Combined) (see Note)	N/A
3	6.0	4.0 to 6.0	1 to 3
4	6.0 to 8.0	6.0 to 8.0	1 to 3
5	To be provided as an intersection, not an access driveway, see Clause 3.1.1.		

NOTE: Driveways are normally combined, but if separate, both entry and exit widths should be 3.0 m min.

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 3 and comprises the following:

State Roads	**Regional Roads**
Shellharbour Road	nil

Shellharbour 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. It connects the Princes Highway to the south with Windang Road and Kemblawarra to the north.

Addison Street is an unclassified Local Road performing a collector road function. It has a pavement width of approximately 13m and is restricted to a speed limit of 30km/h from Wollongong Street to Mary Street.

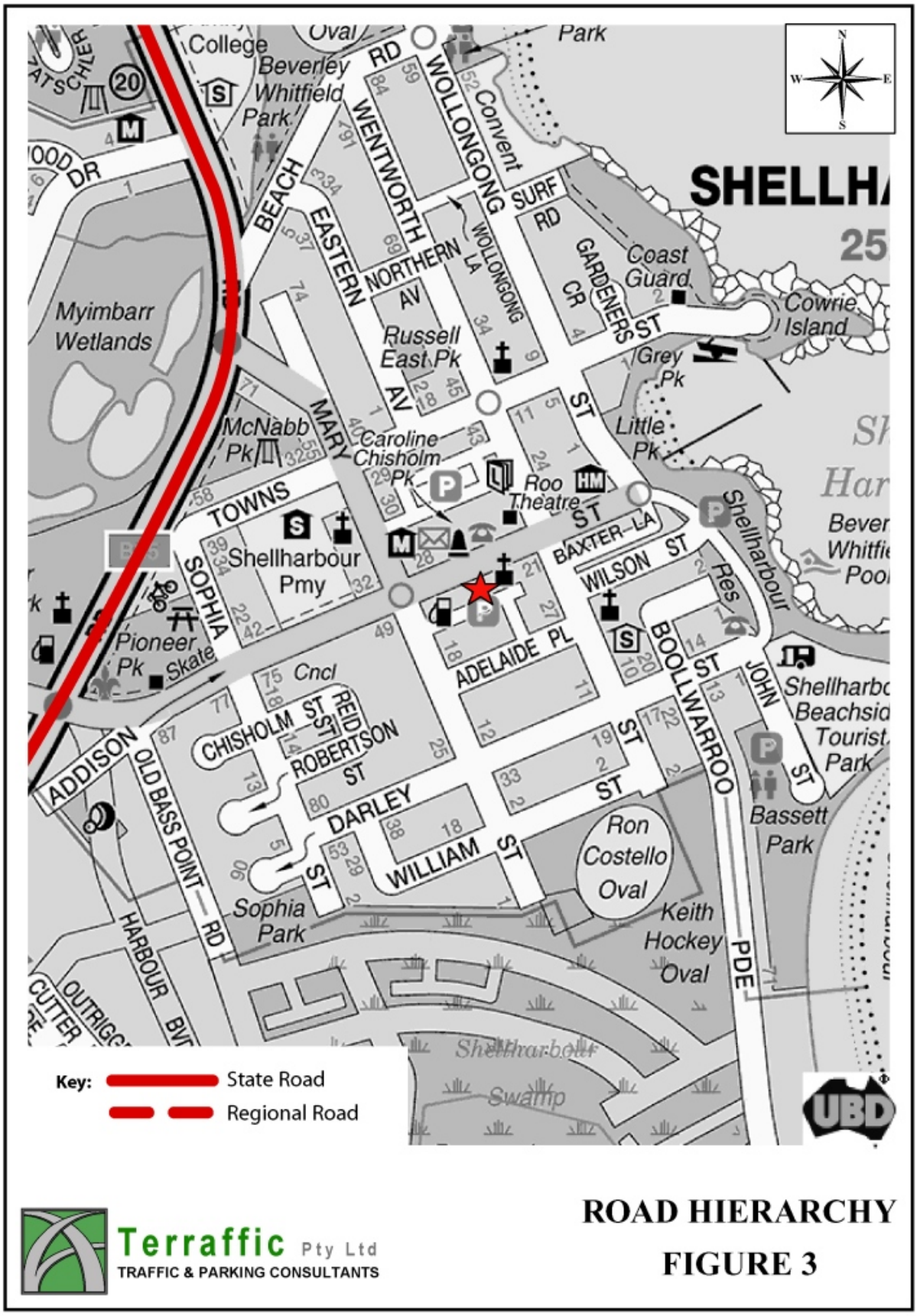
The existing traffic and parking controls on the road network serving the site are illustrated on Figure 4 and include:

- The ROUNDABOUTS at the intersection of Addison Street/Mary Street and Addison Street/Wentworth Street

- The PEDESTRIAN CROSSING on Addison Street outside the subject site

- The 1 HOUR RESTRICTED PARKING and LOADING ZONE along Addison Street

- The PUBLIC CARPARK at the rear of the site that gains access to Mary Street and Wentworth Street



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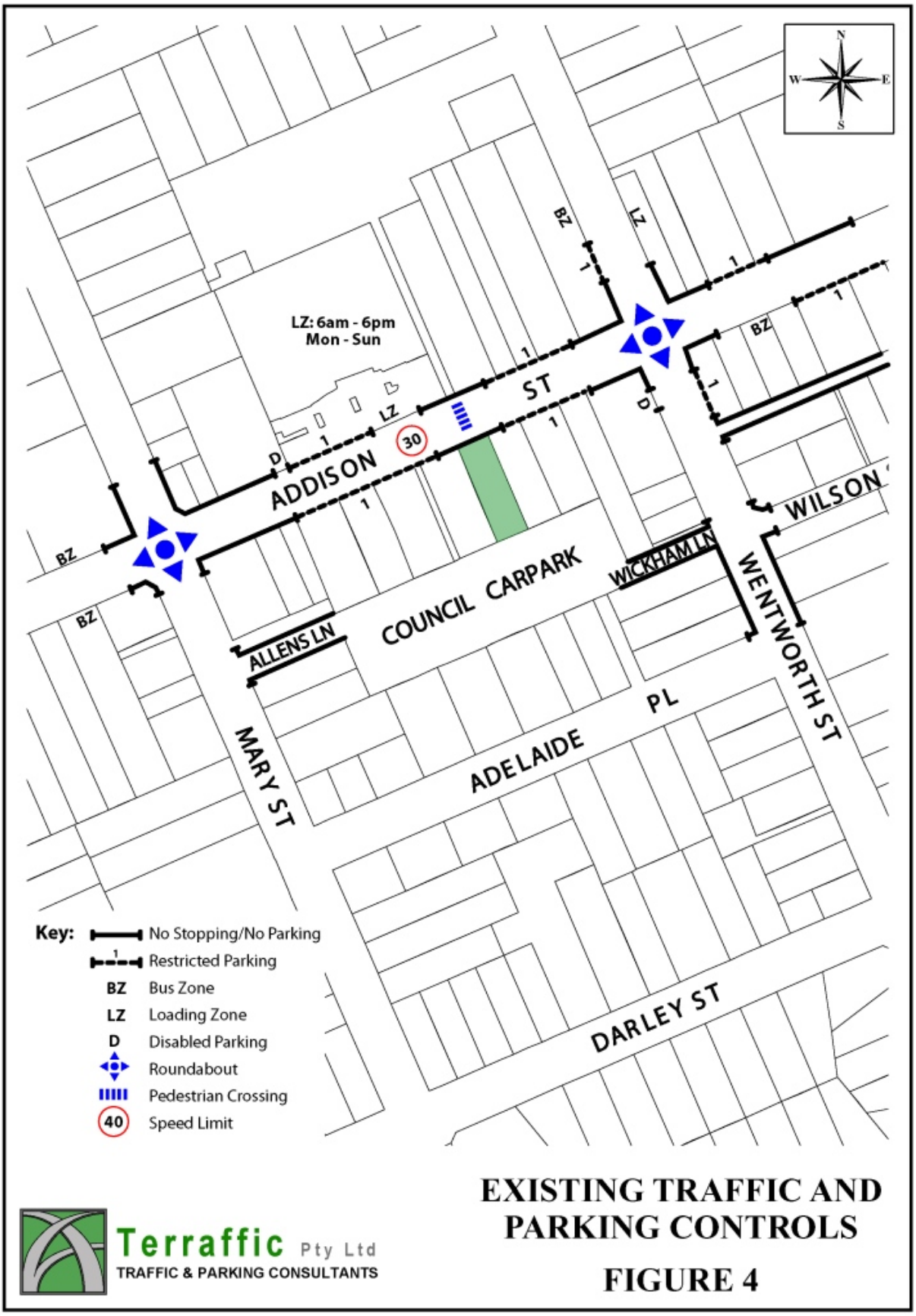
ROAD HIERARCHY

FIGURE 3


N
W
E
S
LZ: 6am - 6pm
Mon - Sun
BZ
LZ
1
ADDISON ST
30
D
WILSON
BZ
COUNCIL CARPARK
ALLENS LN
WICKHAM LN
WENTWORTH ST
MARY ST
ADELAIDE PL
DARLEY ST
Key:
No Stopping/No Parking
Restricted Parking
BZ Bus Zone
LZ Loading Zone
D Disabled Parking
Roundabout
Pedestrian Crossing
40 Speed Limit
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EXISTING TRAFFIC AND PARKING CONTROLS
FIGURE 4

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

Medium Density Residential

Smaller units (up to 2 bedrooms)	0.5 vehicle trips per unit
Larger units (up to 3 bedrooms)	0.65 vehicle trips per unit

Dwelling Houses

1 peak hour vehicle trip per dwelling

Traffic Generation of <u>EXISTING SITE</u> 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 6vtph during the weekday peak periods as follows:

80m^2 retail @ 5.6vtph per 100m^2	5vtph
1 dwelling @ 1vtph per dwelling	1vtph
Total Existing Development	**6vtph**

Traffic Generation of <u>PROPOSED</u> Development

Application of the RMS's traffic generation rates to the proposed development yields a traffic generation potential in the order of 9vtph during the weekday peak periods calculated as follows:

70m^2 retail @ 5.6vtph per 100m^2	4vtph
6 x 2 bedroom units @ 0.5vtph per unit	3vtph
3 x 3 bedroom units @ 0.65vtph per unit	2vtph
Total	***9vtph***

It should be noted that the 4 vehicle trips generated by the proposed retail will be off-site as there are no on-site retail parking spaces. To that end, the only traffic accessing the basement will be the residential component of the development.

The resident traffic will generally depart during the morning peak and return during the evening peak. Instances of vehicles passing in the basement will be quite remote, notwithstanding, the traffic signals in the basement will facilitate passing when the need arises.

Traffic Implications

Based on the RMS Guidelines, the proposed development will generate 3 additional vehicle movements during peak periods as follows:

Proposed Development	9vtph
Existing Development	6vtph
Additional Traffic	***3vtph***

It will be readily appreciated that the additional traffic generated by the proposed development is relatively minor (3vtph) 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.

4. CONSTRUCTION TRAFFIC MANAGEMENT PLAN

Construction Program

Depending on weather conditions, the duration of the construction program is to be approximately 14 months as follows:

Construction Program

Stage	Work	Approximate Duration of Work
1	Demolition/ site establishment	2 weeks
2	Earth Works	6 weeks
3	Construction	12 months

Subject to Council approval, all work on site (including demolition and earth works) must only occur between 7am and 5pm Monday to Saturday. No work is to be undertaken on Sundays or public holidays.

Site Access and Loading Arrangements

Prior to site works, a class A hoarding will be installed across the site frontages and where necessary along the side boundaries.

In order to optimise pedestrian safety on Addison Street, construction vehicles will access the site via the existing access driveway located off the rear carpark. A 6.0m wide gate with inward swinging doors will be installed to secure the construction site.

It is anticipated that 8.8m long rigid trucks (MRV's) will access the site during the demolition and excavation phases. These vehicles will enter and exit the site in a forward direction. The swept path of the Australian Standard AS2890.2:2018 Medium Rigid Vehicle (MRV) accessing the site is reproduced in Appendix E.

At this stage it appears that a WORK ZONE will be required in the rear carpark for the construction phase. An application for a WORKS ZONE will be made to Council by the Site Manager when required.

Pedestrian Safety

As noted above, a Type "A" hoarding will be erected along the frontage of the site to protect pedestrians walking along Addison Street. An inward swinging gate will be installed at the existing vehicle crossing off the rear carpark to be access by trucks during the demolition and excavation phases.

A certified traffic controller will be positioned at the access driveway to ensure pedestrian and vehicle safety is optimised when trucks enter and exit the site or when deliveries are made during the construction phase.

Construction Vehicle Activity

Stage 1 **Demolition / Site Establishment**

Approximately 300m^3 of material will be removed from the site during the demolition phase. Based on an average capacity of approximately 15m^3 for a medium rigid truck, this process will involve approximately 20 truck loads over a 2 week period. It is unlikely that more than 2 trucks will access the site on a given day during the demolition phase of the construction.

Stage 2 **Earth Works**

A total of approximately 2,000m^3 of material will be extracted from the site. Based on an average capacity of approximately 15m^3 for a medium rigid truck, this process will involve approximately 130 truck loads over the 6 week period. This equates to approximately 5 trucks to the site per day.

Stage 3 Construction and Fit-out

Vehicular activity during the construction phase can vary from the occasional delivery of machinery, to the concentrated delivery of concrete during a major pour. Depending on the size of the pour, it is possible to generate up to 15 concrete trucks per day to the site.

At no time will cement trucks queue in the public carpark as drivers will be radioed to the site from the batching plant when required.

Construction Truck Routes

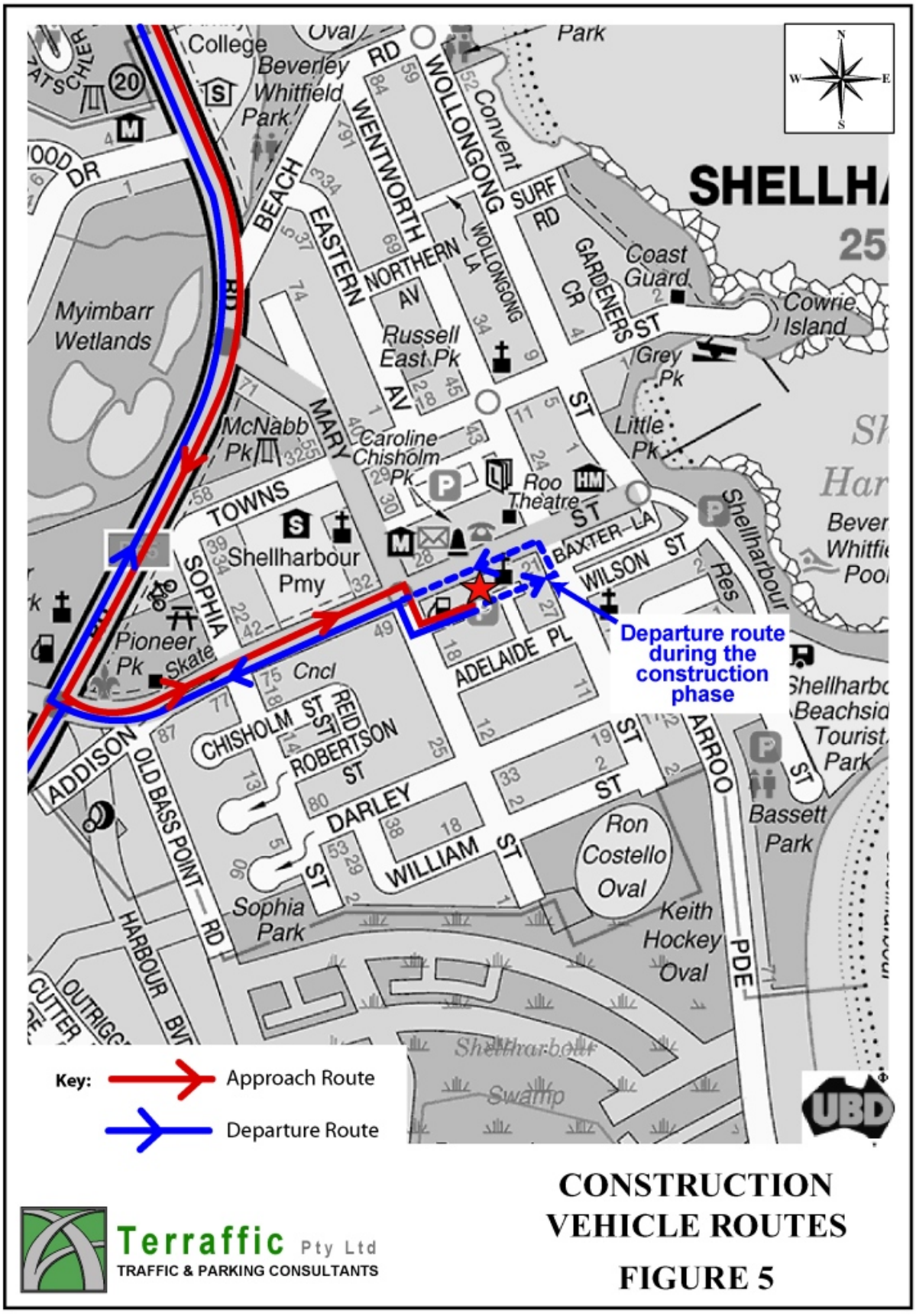
As noted in the foregoing, the development site has convenient access to the higher order road network. During the demolition and excavation stages, all construction vehicles will approach and depart the site via the Shellharbour Road / Addison Road intersection.

During the construction phase, the delivery vehicles will approach the WORKS ZONE in the carpark as per the previous stages. When departing, they will continue in a forward direction to Wentworth Street before heading back to the Shellharbour Road / Addison Road intersection. It should be noted that these vehicles are similar in size to Council's waste collection vehicles that currently negotiate the intersections involved.

The routes for construction vehicles are illustrated on Figure 5.

Tradesmen Vehicle Parking

Due to its convenience, it is likely that employees and tradespersons will park in the rear public carpark until the basement carpark is constructed.


Departure route during the construction phase
Key:
Approach Route
Departure Route
Terraffic Pty Ltd
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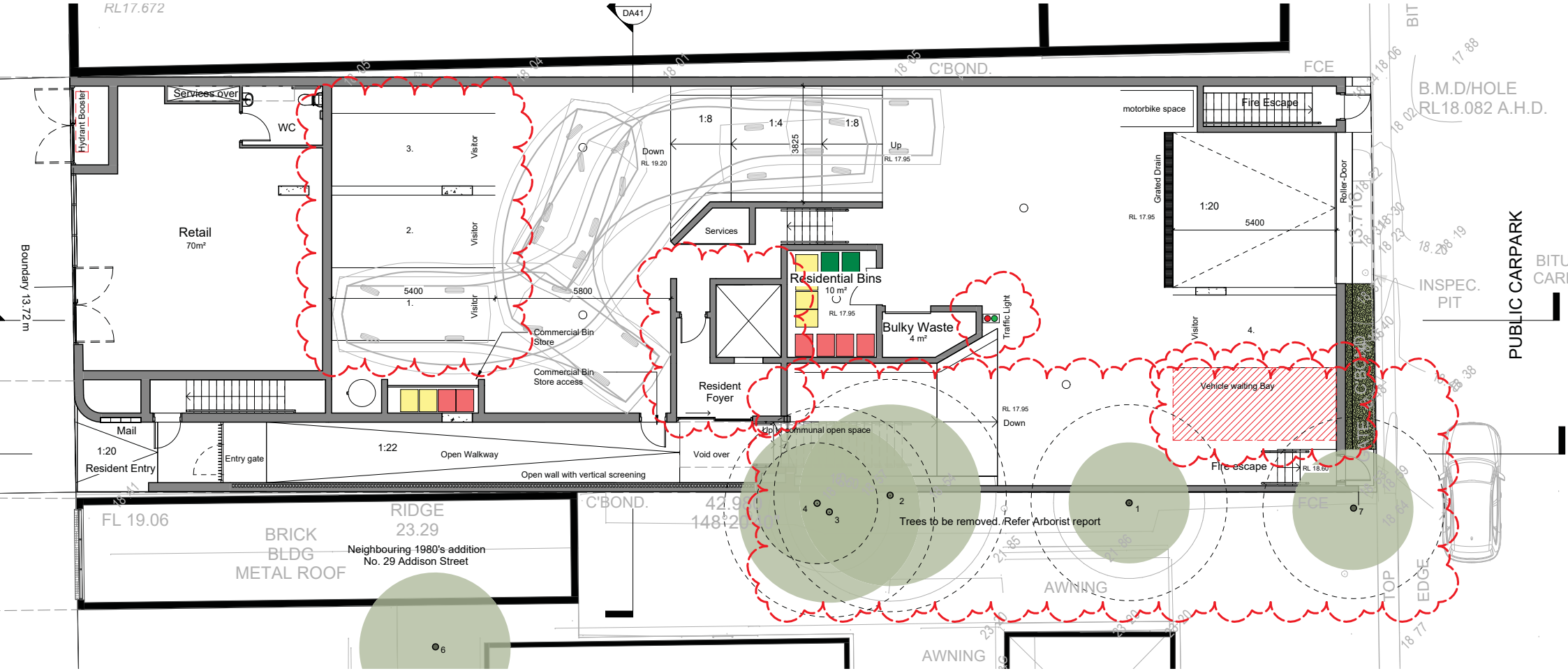
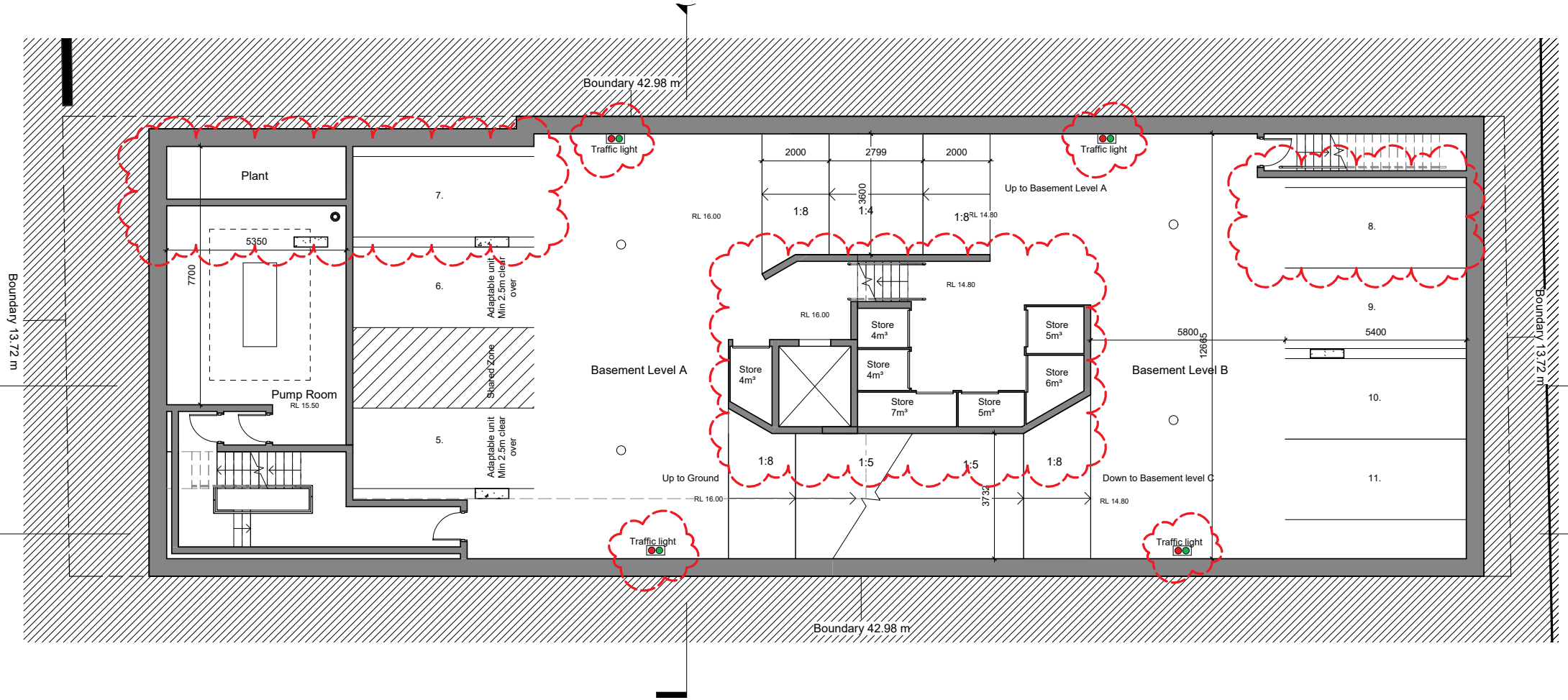
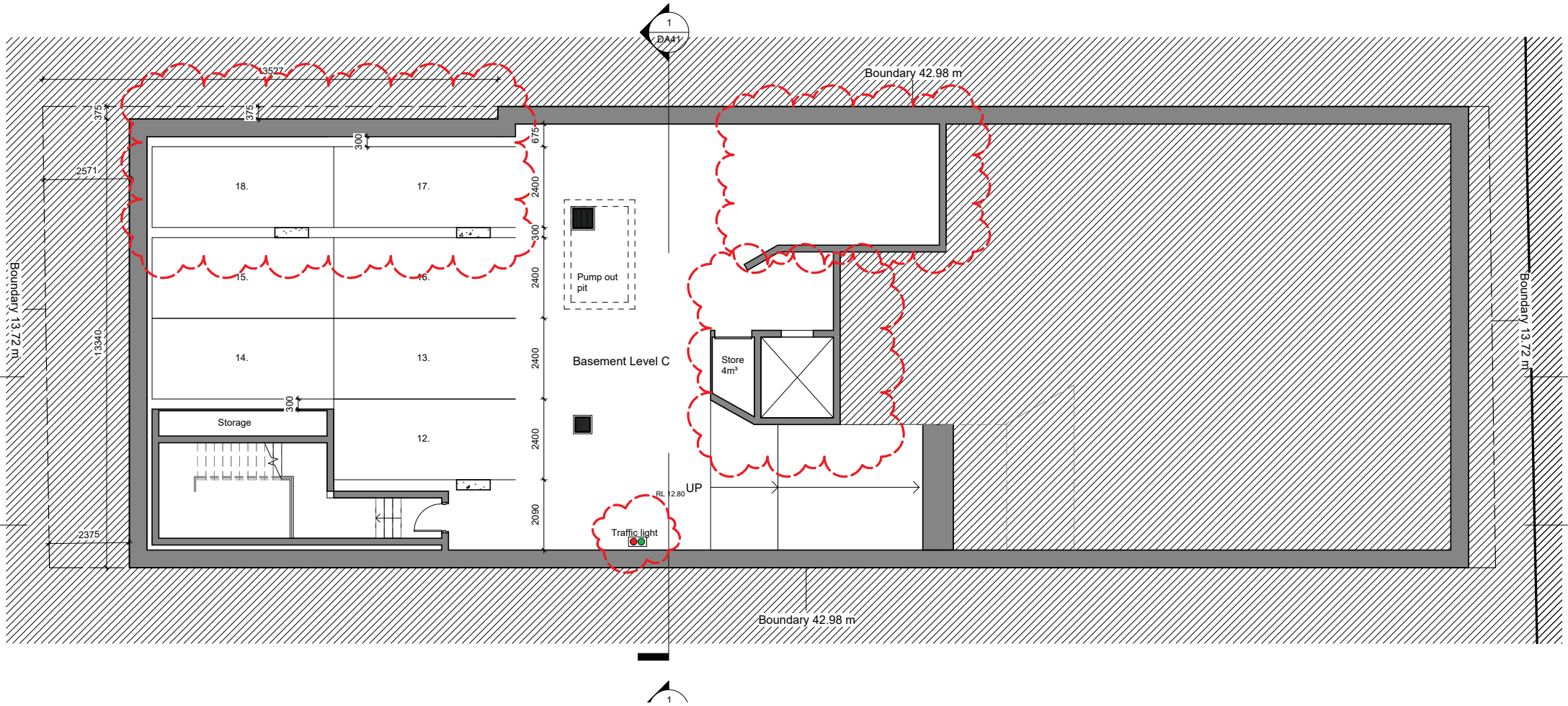
CONSTRUCTION VEHICLE ROUTES
FIGURE 5

APPENDIX A

PLANS OF THE PROPOSED DEVELOPMENT


RL17.672
DA41
C'BOND.
FCE
B.M.D/HOLE
RL18.082 A.H.D.
BIT
Services over
Hydrant Booster
WC
Retail
70m²
Boundary 13.72 m
3.
2.
1.
Visitor
5400
5800
Down
RL 19.20
1:8
1:4
3825
Up
RL 17.95
Services
Residential Bins
10 m²
RL 17.95
Bulky Waste
4 m²
Traffic Light
Commercial Bin
Store
Commercial Bin
Store access
Resident
Foyer
Mail
1:20
Resident Entry
Entry gate
1:22
Open Walkway
Open wall with vertical screening
Void over
Up to communal open space
RL 17.95
Down
motorbike space
Fire Escape
Grated Drain
RL 17.95
1:20
5400
Roller-Door
Visitor
4.
Vehicle waiting Bay
Fire escape
RL 18.60
INSPEC.
PIT
PUBLIC CARPARK
FL 19.06
BRICK
BLDG
METAL ROOF
RIDGE
23.29
Neighbouring 1980's addition
No. 29 Addison Street
Trees to be removed. /Refer Arborist report
AWNING
AWNING
TOP
EDGE
1
2
3
4
6
7

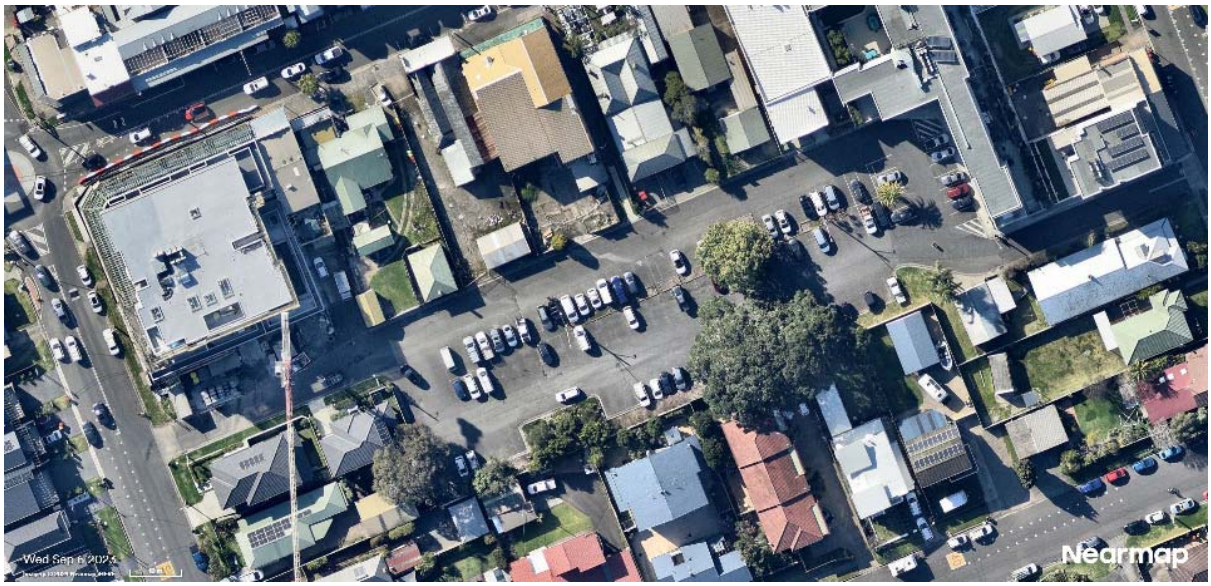

Boundary 42.98 m
Boundary 13.72 m
Boundary 13.72 m
Boundary 42.98 m
Traffic light
Traffic light
Traffic light
Traffic light
Plant
5350
7700
Pump Room
RL 15.50
7.
6.
5.
Adaptable unit
Min 2.5m clear
over
Adaptable unit
Min 2.5m clear
over
Shared Zone
Basement Level A
2000
2799
2000
3600
1:8
1:4
1:8
RL 16.00
RL 14.80
RL 14.80
RL 16.00
Up to Basement Level A
Store
4m³
Store
4m³
Store
4m³
Store
7m³
Store
5m³
Store
5m³
Store
6m³
1:8
1:5
1:5
1:8
Up to Ground
RL 16.00
3732
RL 14.80
Down to Basement level C
Basement Level B
5800
12665
5400
8.
9.
10.
11.


1
DA41
Boundary 42.98 m
Boundary 13.72 m
Boundary 13.72 m
Boundary 42.98 m
3527
375
375
2571
13340
2375
300
675
2400
300
2400
2400
2400
2090
18.
17.
15.
16.
14.
13.
12.
Storage
300
Pump out pit
Basement Level C
Store 4m³
RL 12.80
UP
Traffic light
1

APPENDIX B

AERIAL PHOTOGRAPHS

Aerial photograph taken Thursday 15th June 2023



Aerial photograph taken Wednesday 6th September 2023

Aerial photograph taken Saturday 21st October 2023

Aerial photograph taken Tuesday 5th December 2023

Aerial photograph taken Saturday 30th March 2024

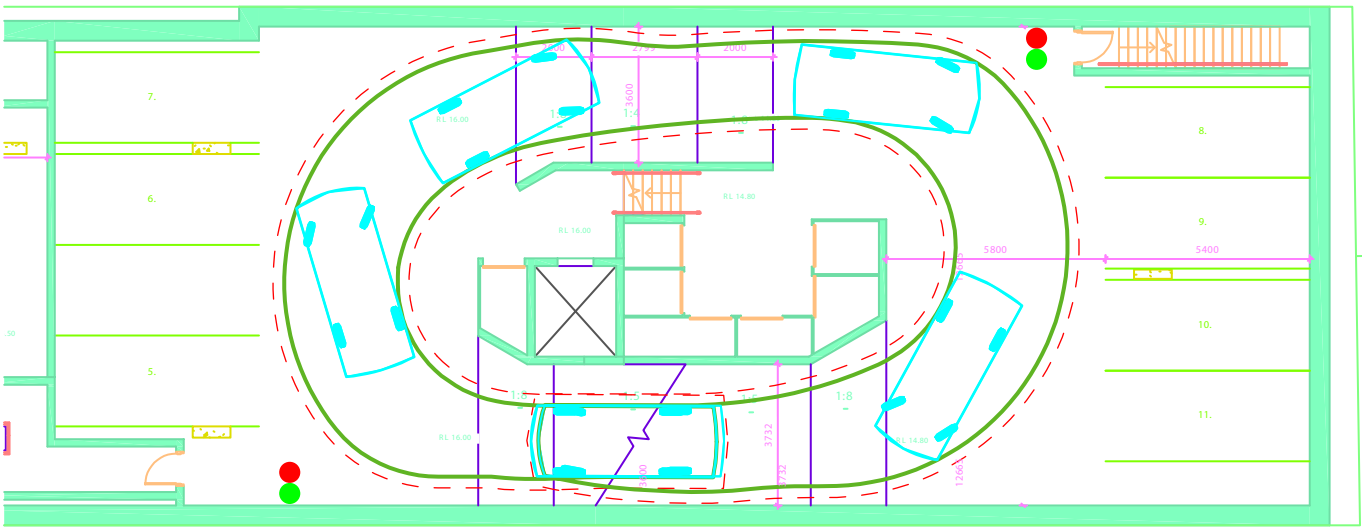
Aerial photograph taken Thursday 20th June 2024

APPENDIX C

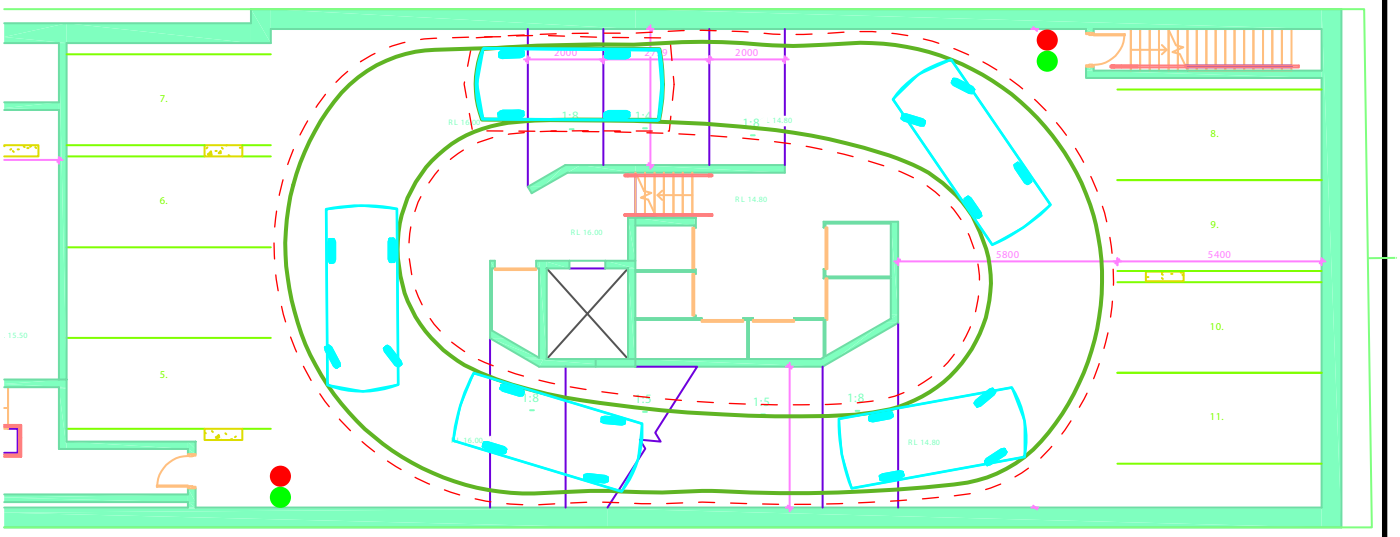
B85 VEHICLE SWEPT PATH ANALYSIS

Path prepared using
Autodesk Vehicle Tracking

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



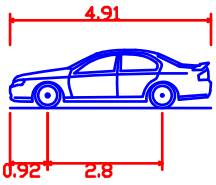
Entry Path



Exit Path

Traffic Signal

Forward Vehicle Path
Reverse Vehicle Path
300mm Clearance Path



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

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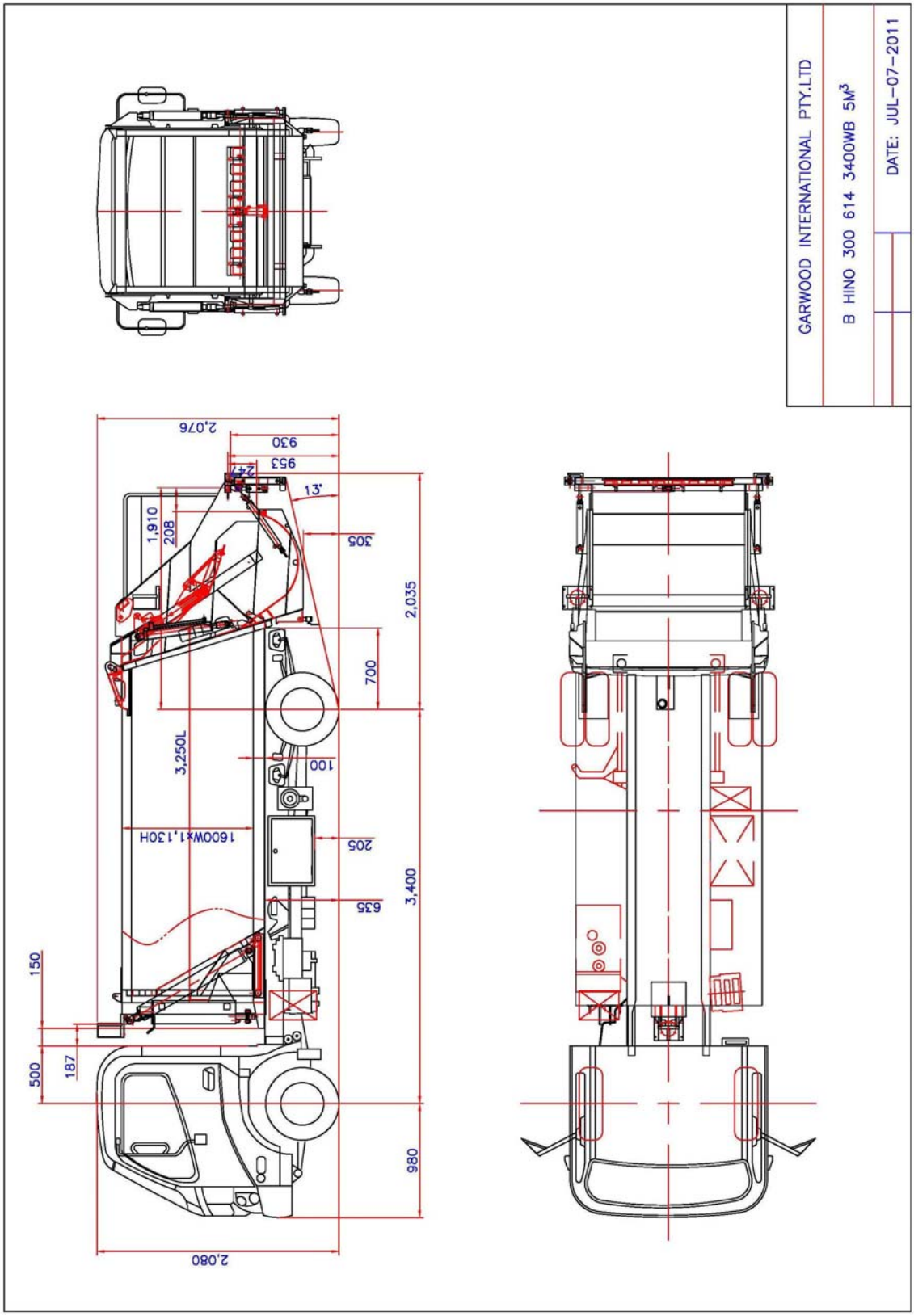
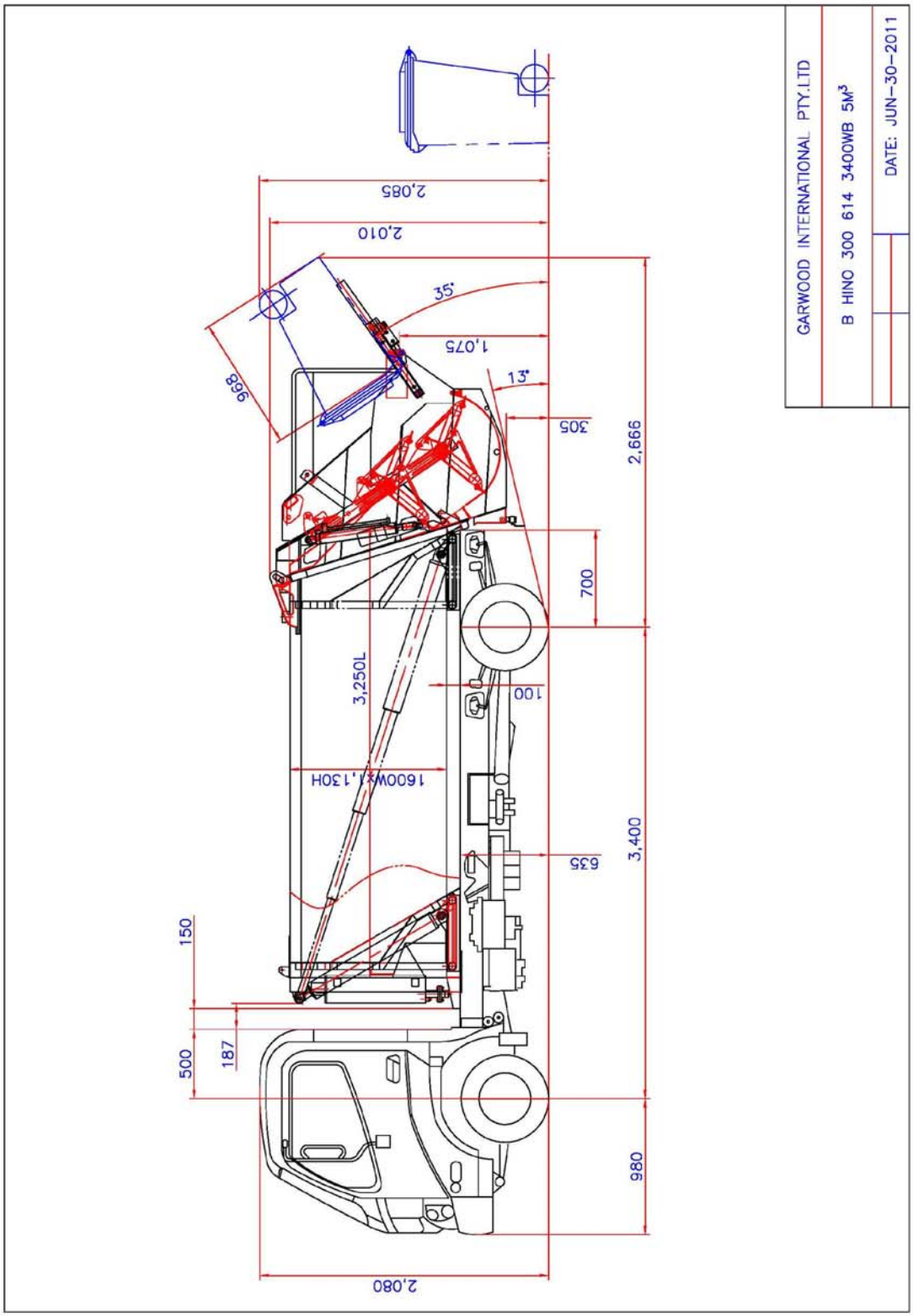
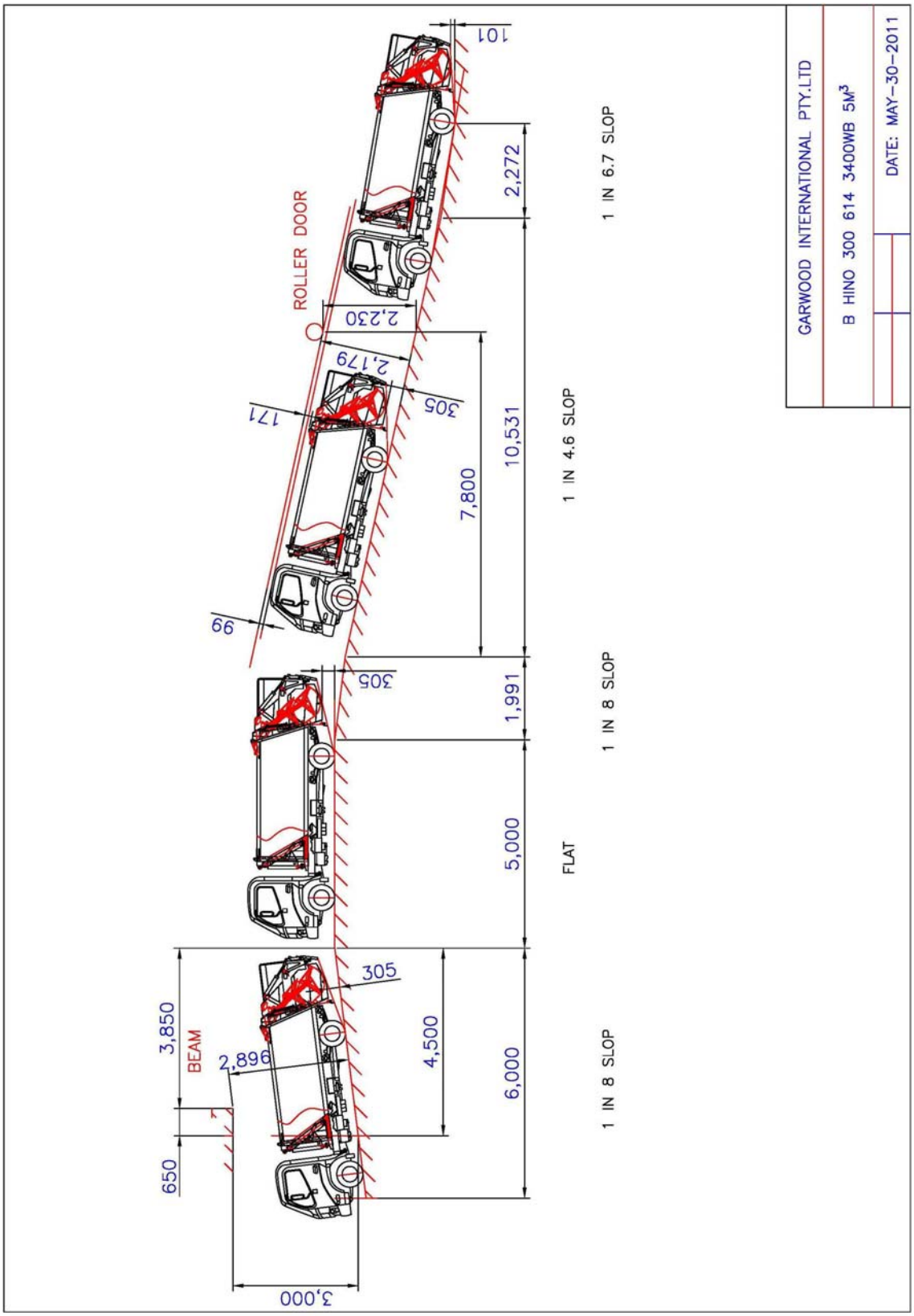
Manoeuvring Path of Australian Standard AS/NZS2890.1:2004 B85 Vehicle Circulating in Basement

APPENDIX D

WASTE TRUCK SPECIFICATIONS AND SWEPT PATH

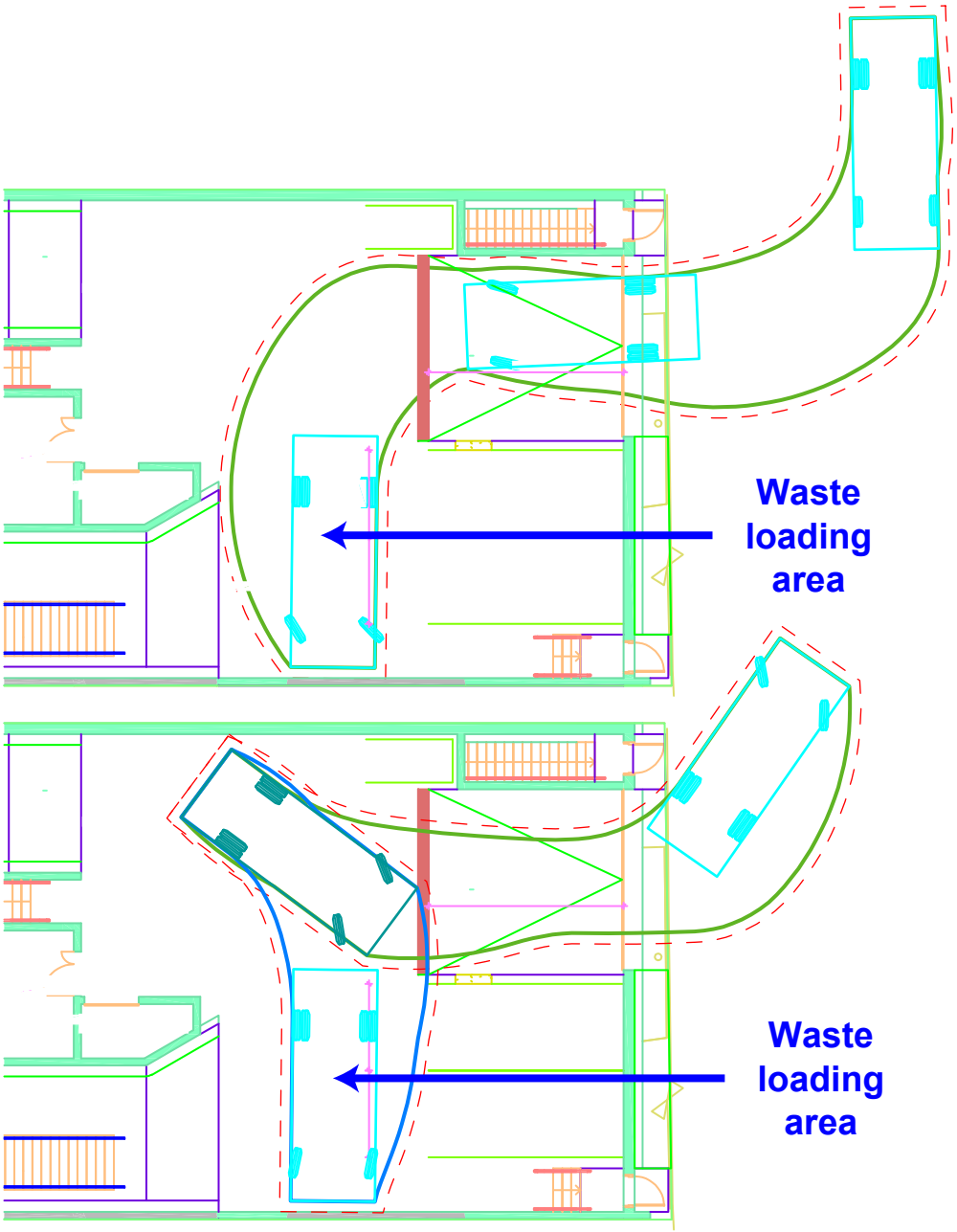

GARWOOD INTERNATIONAL PTY.LTD
B HINO 300 614 3400WB 5M³
DATE: JUL-07-2011
2,076
930
953
242
13°
1,910
208
305
2,035
700
3,250L
100
1600W×1,130H
205
635
3,400
150
500
187
980
2,080


GARWOOD INTERNATIONAL PTY.LTD
B HINO 300 614 3400WB 5M³
DATE: JUN-30-2011
2,085
2,010
35°
1,075
668
13°
305
2,666
700
100
3,250L
1600W x 1,130H
635
3,400
150
500
187
980
2,080

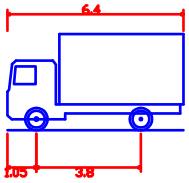

GARWOOD INTERNATIONAL PTY.LTD
B HINO 300 614 3400WB 5M3
DATE: MAY-30-2011
ROLLER DOOR
BEAM
1 IN 6.7 SLOP
1 IN 4.6 SLOP
1 IN 8 SLOP
FLAT
1 IN 8 SLOP
101
2,272
2,230
2,179
305
171
99
7,800
10,531
305
1,991
5,000
305
3,850
2,896
4,500
6,000
650
3,000

Path prepared using
Autodesk Vehicle Tracking

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



Forward Vehicle Path
Reverse Vehicle Path
300mm Clearance Path



SRV - Small Rigid Vehicle

Overall Length	6.400m
Overall Width	2.330m
Overall Body Height	3.500m
Min Body Ground Clearance	0.398m
Track Width	2.330m
Lock to Lock Time	4.00s
Curb to Curb Turning Radius	7.100m

Manoeuvring Path of Australian Standard AS2890.2:2018 6.4m Small Rigid Vehicle (SRV) Accessing Loading Area

Terraffic Pty Ltd
TRAFFIC & PARKING CONSULTANTS

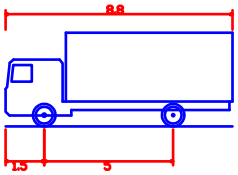
APPENDIX E

MRV SWEPT PATH DURING EARLY WORKS

Path prepared using
Autodesk Vehicle Tracking

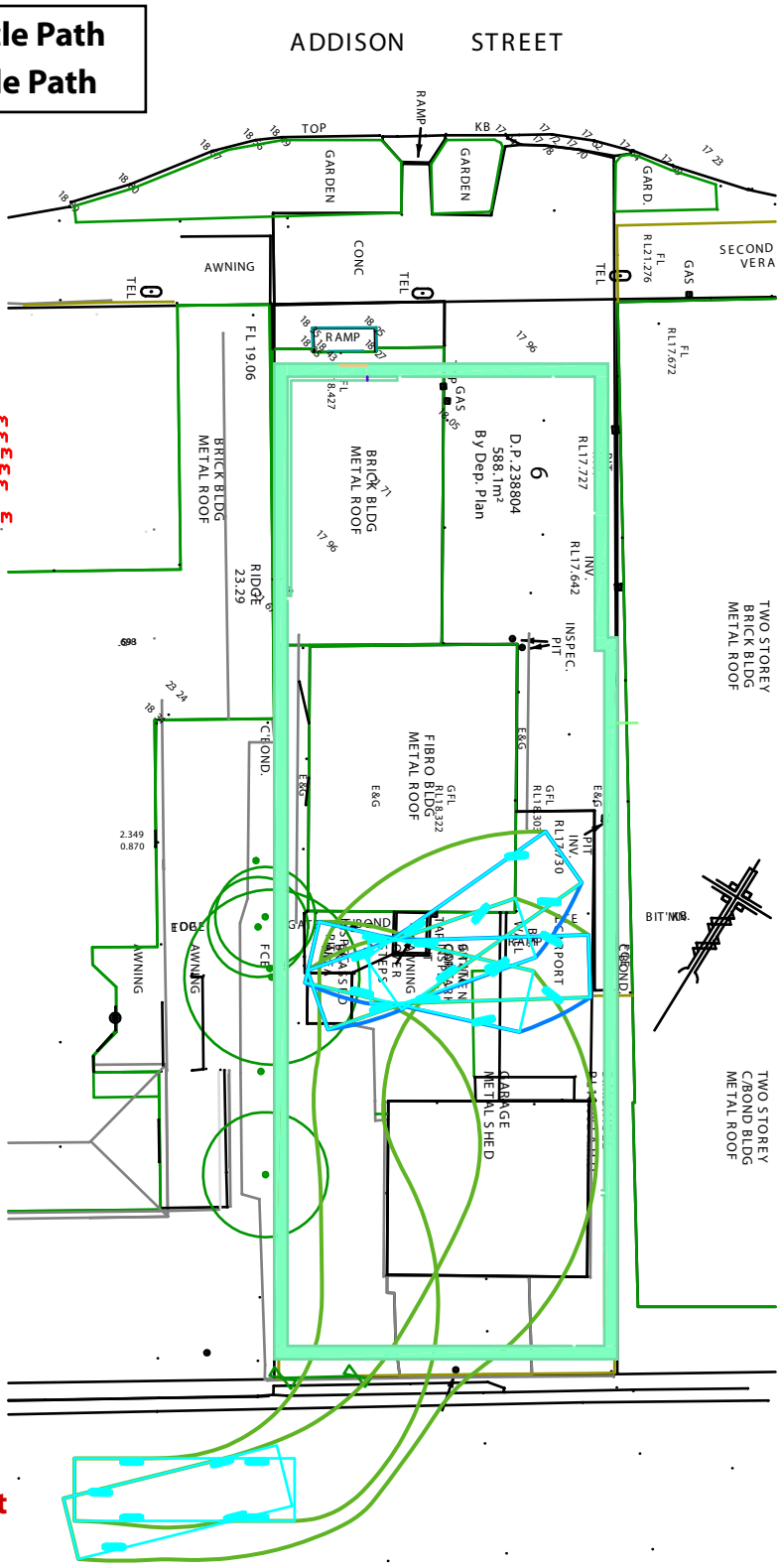
0 2 4 6 8 10 20
METRES
SCALE 1:300

Forward Vehicle Path
Reverse Vehicle Path



MRV - Medium Rigid Vehicle

Overall Length	8.800m
Overall Width	2.500m
Overall Body Height	3.633m
Min Body Ground Clearance	0.428m
Track Width	2.500m
Lock to Lock Time	4.00s
Curb to Curb Turning Radius	10.000m



Approach and depart via Mary Street

Manoeuvring Path of Australian Standard AS2890.2:2018 8.8m Medium Rigid Vehicle (MRV) Accessing Construction Site

Terraffic Pty Ltd
TRAFFIC & PARKING CONSULTANTS