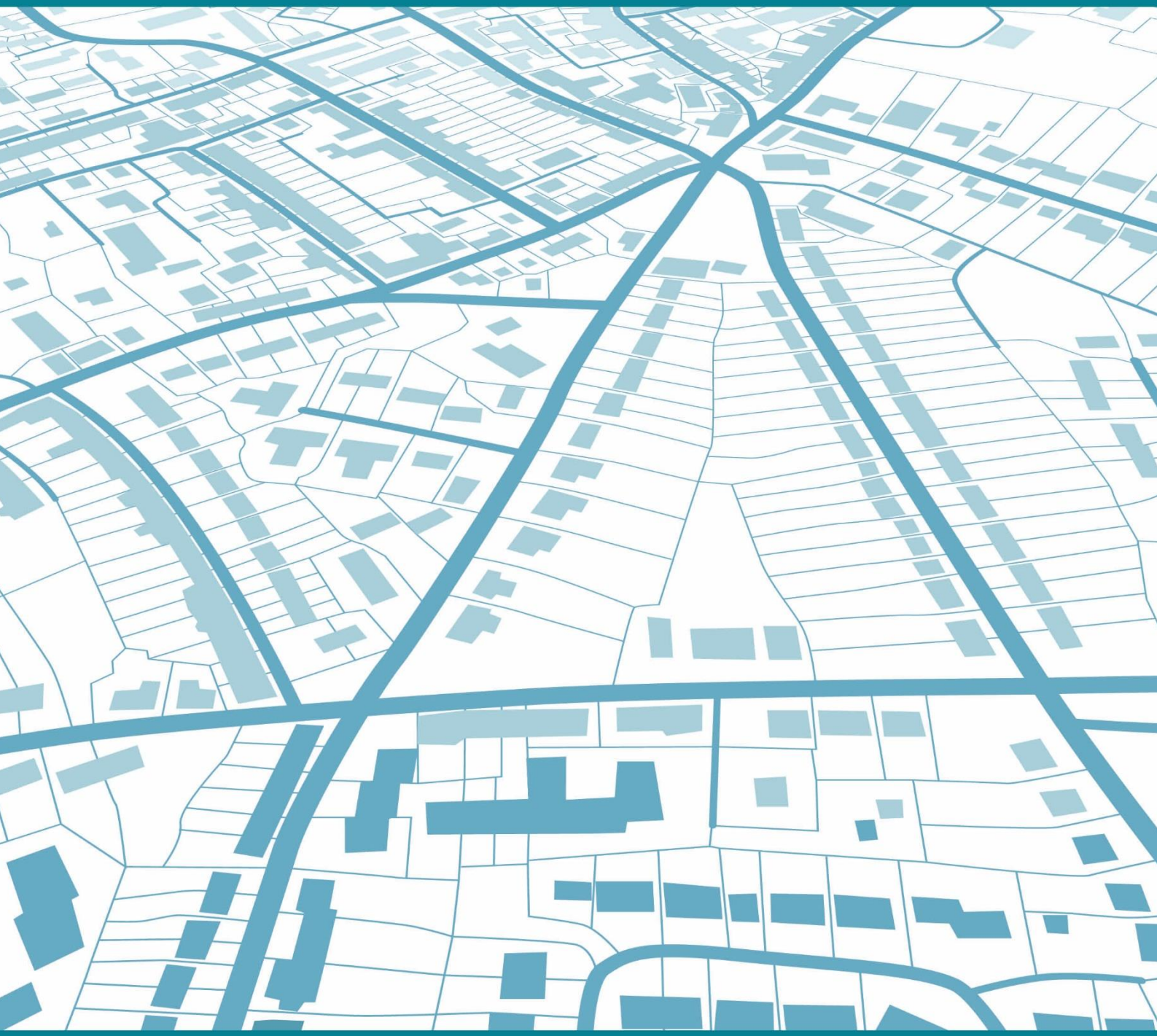
TRANSPORT AND TRAFFIC PLANNING ASSOCIATES
Established 1994

Suite 502, Level 5, 282 Victoria Avenue
Chatswood NSW 2067
T (02) 9411 5660 | F (02) 9904 6622
E info@ttpa.com.au | ttpa.com.au



Planning Proposal for Residential Development

252-254 New South Head Road, Edgecliff

Traffic and Parking Impact Assessment

Ref: 19222
Date: March 2020
Issue: C

Table of Contents

List of Figures

List of Appendices

1.0 Introduction

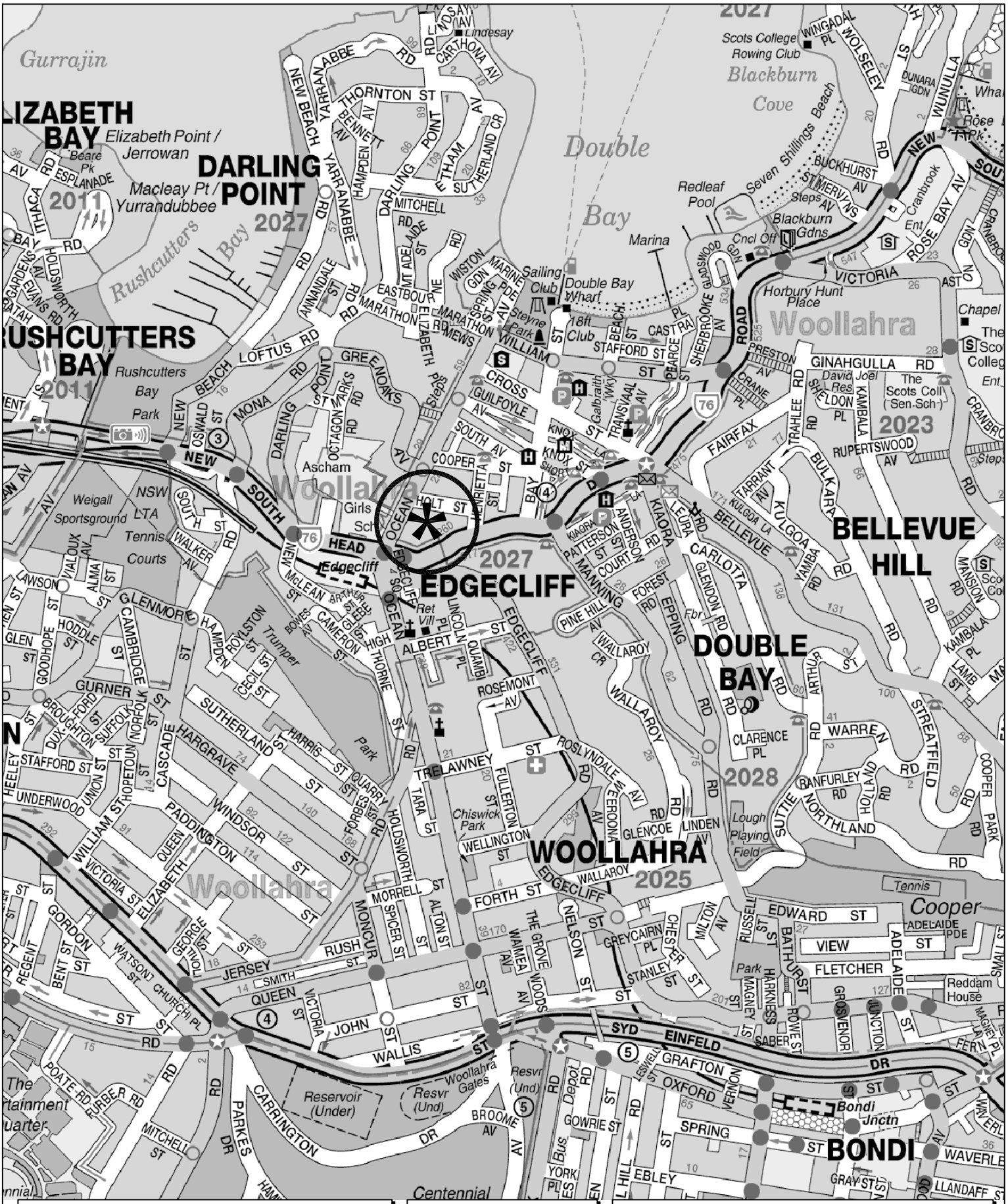
This report has been prepared to accompany a Planning Proposal to Woollahra Council to permit an envisaged residential apartment development at 252 – 254 New South Head Road, Edgecliff (Figure 1).

The site is located in convenient proximity to Edgecliff Railway Station/Retail Centre and directly on principal bus routes to/from the City and Bondi Junction providing an ideal location for residential apartment living.

It is envisaged that subject to the approval of the Planning Proposal a new 8 level building with 33 residential apartments would be constructed on the site.

The purpose of this report is to:

- describe the site and the envisaged development scheme
- describe the existing road network, traffic and transport circumstances
- assess the adequacy of the envisaged parking provision
- assess the potential traffic implications
- assess the suitability of the envisaged vehicle access, internal circulation and servicing arrangements



LEGEND

LOCATION

FIG 1

2.0 Planning Proposal

2.1 Site, Context and Existing Circumstances

The site (Figure 2) is SP11702 being an irregular shaped allotment occupying an area of some 934.9m^2. The site has a frontage of some 19 metres to New South Head Road and the site levels fall away towards the north.

The site is adjoined to the north, east and west by multi-level 'flats' buildings while there is a new residential apartment building to the south with commercial and retail uses extending along New South Head Road to the west. The other landuses in the area display a mixture of urban uses including:

- Ascham Girls School on the western side of Ocean Street
- the Edgecliff Centre with significant public parking provision on the southern side of New South Head Road just to the west
- the Edgecliff Railway Station and bus interchange which is integrated with the Edgecliff Centre immediately to the west
- the Double Bay Centre located a short distance to the east
- the surrounding residential uses including large apartment buildings.

There is an existing older style 4 level residential flats building on the site with no vehicle access or on-site parking.

2.2 Envisaged Development

It is envisaged that the existing building will be demolished and the site excavated to construct a new 7 level building incorporating 2 levels of carparking and comprising:

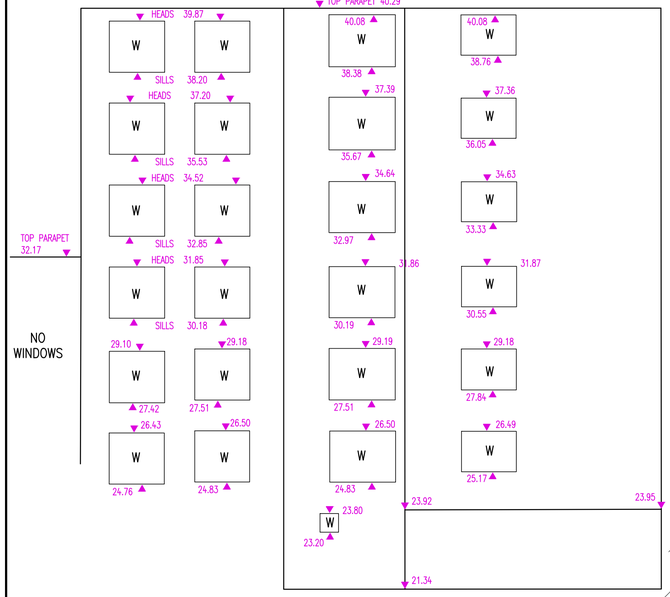
14 x Studio Apartments
13 x One-Bed Apartments
6 x Two-Bed Apartments
Total 33 Apartments

LEGEND

N

SITE

FIG 2



EASTERN ELEVATION

No 250 NEW SOUTH HEAD ROAD

SP 2303

No 260
MULTI STOREY
BRICK RESIDENTIAL UNIT BUILDING

SP 11702

No 252-254
4 STOREY
BRICK RESIDENTIAL UNIT BUILDING

SEE SHEETS 2-3 FOR DETAILS
SEE SHEET 4 FOR ELEVATIONS

SP 4585

No 250
MULTI STOREY
BRICK RESIDENTIAL UNIT BUILDING

SP 21222

No 256
4 STOREY BRICK
RESIDENTIAL UNIT BUILDING

104°
41°
50°
26.315
20°
9.145
23°
17°
20°
30.65
23°
15°
362°
16.095
53°
10°
BALCONIES
302°
18.95
52°
CONCRETE DRIVEWAY
CONCRETE
19.05
39°
PATH
63°
20°
NEW SOUTH HEAD ROAD

BM CUT TK
RL 30.06 (AHD)

TRUE NORTH
M.G.A. NORTH

SITE AREA 934.9m²

SUBJECT LAND AFFECTED BY COVENANT A117355

M.G.A. COORDINATES

BOUNDARY COR	EASTING	NORTHING
1	337 134.120	6249 864.166
2	337 117.063	6249 855.682

ISSUE	DATE	AMENDMENT	BY
2	17.05.17	MOVE TO MGA COORDINATES	MA/PH

TYPICAL NOTES:

1. ORIGIN OF LEVELS SSM 25024, RL 38.087 (AHD)
2. BEARINGS ARE ON MGA NORTH
3. NO BOUNDARY SURVEY HAS BEEN UNDERTAKEN.
4. BEARINGS & DISTANCES HAVE BEEN COMPILED FROM TITLE AND/OR DEED INFORMATION SUPPLIED BY DEPARTMENT OF LANDS NSW.
5. RELATIONSHIP OF IMPROVEMENTS AND DETAIL TO BOUNDARIES IS DIAGRAMMATIC ONLY AND SPECIFIC DETAILS, IF CRITICAL, WILL REQUIRE FURTHER SURVEY.
6. SERVICES SHOWN ARE BASED ON VISIBLE SURFACE INDICATORS EVIDENT AT THE DATE OF SURVEY AND THE RELEVANT SERVICE DIAGRAMS OF THE VARIOUS AUTHORITIES. ALL SERVICE MUST BE VERIFIED ON SITE PRIOR TO ANY WORK BEING UNDERTAKEN. LINKER SURVEYING PTY LTD BEAR NO RESPONSIBILITY FOR THE ACCURACY OR COMPLETENESS OF THE SERVICES SHOWN HEREON.
7. RIDGE, EAVE & GUTTER HEIGHTS HAVE BEEN OBTAINED BY AN INDIRECT METHOD AND ARE ACCURATE FOR PLANNING PURPOSES ONLY.
8. ADJOINING BUILDINGS AND DWELLINGS HAVE BEEN PLOTTED FOR DIAGRAMMATIC PURPOSES ONLY AND SPECIFIC DETAILS, IF CRITICAL, WILL REQUIRE FURTHER SURVEY.
9. THE DIAMETER (ø), SPREAD (S) & HEIGHT (H) OF EACH TREE IS INDICATIVE ONLY AND SPECIFIC DETAILS, IF CRITICAL, WILL REQUIRE FURTHER SURVEY.

LEGEND OF TYPICAL CODES

AE	ARCHITECTURAL EMBELLISHMENT	MUD	METAL LID
AP	ALIGNMENT PIN	NS	NATURAL SURFACE
AWN	AWNING	OCC	OCCUPATION
BALC	BALCONY	OPT	OPTUS PIT
BAWN	BOTTOM OF AWNING	PC	PRAM CROSSING
BB	BOTTOM OF BANK	PED	PEDESTRIAN CROSSING
BCH	BOTTOM OF CHIMNEY	PERG	PERGOLA
BD	BOTTOM OF DOOR	PM	PERMANENT MARK
BDY	BOUNDARY	PP	POWER POLE
BF	BOTTOM OF FENCE	ROK	ROCK
BHR	BOTTOM OF HANDRAIL	RLWY	RAILWAY
BIT	BITUMEN	RM	REFERENCE MARK
BK	BOTTOM OF KERB	RR	ROOF RIDGE
BLD	BUILDING	RSN	CONCRETE NAIL
BM	BENCH MARK	SEW	SEWER
BOL	BOLLARD	SHR	SHRUB
BR	BOTTOM OF ROCK	SIP	SEWER INSPECTION PIT
BRK	BRICK	SLH	SEWER LAMP HOLE
BRW	BOTTOM OF RETAINING WALL	SMH	SEWER MANHOLE
BS	BOTTOM OF STEPS	SP	SIGN POST
BW	BOTTOM OF WALL	SSM	STATE SURVEY MARK
BWIN	BOTTOM OF WINDOW	SV	STOP VALVE
CHIM	CHIMNEY	SW	STORM WATER
CL	CENTRELINE	TARCH	TOP OF ARCH
CLID	CONCRETE LID	TAWN	TOP OF AWNING
COL	COLUMN	TB	TOP OF BANK
COM	COMMUNICATIONS PIT	TBK	TELSTRA BOX
CONC	CONCRETE	TCH	TOP OF CHIMNEY
CPT	CARPORT	TD	TOP OF DOOR
D	DOOR	TEL	TELSTRA PIT
DD	DISH DRAIN	TELP	TELSTRA PILLAR
DH	DRILL HOLE	TF	TOP OF FENCE
DHW	DRILL HOLE & WINGS	TG	TOP OF GUTTER
DWY	DRIVEWAY	THR	TOP OF HANDRAIL
EB	EDGE OF BITUMEN	TI	TRAFFIC ISLAND
EBOX	ELECTRICITY BOX	TK	TOP OF KERB
EC	EDGE OF CONCRETE	TL	TRAFFIC LIGHT
ED	EDGE OF DOOR	TP	TOP OF PARAPET
EG	EDGE OF GARDEN	TR	TREE
ELEC	ELECTRICITY PIT	TRF	TOP OF ROOF
ELP	LIGHT POLE	TRK	TOP OF ROCK
EP	EDGE OF PATH	TRW	TOP OF RETAINING WALL
ER	EDGE OF ROAD	TS	TOP OF STEPS
FCE	FENCE	TW	TOP OF WALL
FL	FLOOR LEVEL	TWIN	TOP OF WINDOW
FFL	FINISHED FLOOR LEVEL	US	UNDERSIDE
FP	FENCE POST	UAWN	UNDERSIDE OF AWNING
GD	GLASS DOOR	UKS	UNKNOWN SERVICE
GL	GROUND LEVEL	USB	UNDERSIDE OF BEAM
GM	GAS METER	USC	UNDERSIDE OF CEILING
HPG	HIGH POWERED GAS	USE	UNDERSIDE OF EAVE
HR	HANDRAIL	USG	UNDERSIDE OF GUTTER
HYD	HYDRANT	V	VENT
IL	INVERT LEVEL	VER	VERANDAH
K	KERB	VC	VEHICLE CROSSING
LIN	LINTEL	W	WINDOW
LP	LAMP POST	WM	WATER METER
MH	MANHOLE		

LEGEND OF TYPICAL SERVICES

C	COMMUNICATIONS CABLE	RW	RECYCLED WATER
CSWP	CERAMIC STORMWATER PIPE	RM	RISING MAIN
E	UNDERGROUND ELECTRICITY CABLES	RMS	ROADS & MARITIME SERVICES
AE AO	UNDERGROUND ELECTRICITY & OPTUS CABLES	S	SEWER
FS	FIRE SERVICE	SO	SEWER OUTFALL
G	GAS LINE	ST	SHARED TRENCH
GE	GAS LINE & ELECTRICITY CABLES	SW	STORM WATER
NBN	NATIONAL BROAD BAND CABLES	SW CK	STORMWATER CREEK
NG	NATURAL GAS LINE	T	TELSTRA CABLES
OH	OVERHEAD CABLES	TG	TELSTRA & GAS CABLES
OPT	OPTUS CABLE	U	UNKNOWN SERVICE
PE	PRIVATE ELECTRICITY	VG	VODUS CABLES
PS	PRIVATE SEWER	VF	VERIZON CABLES
PW	PRIVATE WATER	W	WATER SUPPLY
		WM	WATER MAIN

1. ALL UNDERGROUND SERVICE INFORMATION INCLUSIVE OF GENERAL POSITION AND SURFACE COVER DEPTHS NOTED ON THE PLAN ARE APPROXIMATELY ONLY.
2. ALL UNDERGROUND SERVICE INFORMATION HAS BEEN COMPILED FROM SERVICE AUTHORITY PLANS PROVIDED BY THE AUTHORITIES.
3. THE LOCATION OF SERVICES BETWEEN SURVEYED POINTS (AS INDICATED) HAVE BEEN SHOWN DIAGRAMMATICALLY ONLY USING THE SERVICE DIAGRAMS AS PROVIDED. THE EXACT LOCATION OF THESE SERVICES BETWEEN THE SURVEYED POINTS MUST BE VERIFIED PRIOR TO ANY EXCAVATION OR PILING. NO WARRANTY IS GIVEN AGAINST THE POSSIBILITY OF THE EXISTENCE OF FURTHER UNCHARTED SERVICES.
4. ALL CONTRACTORS, TRADESMEN, BUILDING & PROJECT CONSULTANTS MUST CONTACT THE VARIOUS AUTHORITIES, IN ACCORDANCE WITH STANDARD "DIAL BEFORE YOU DIG" PROCEDURES PRIOR TO UNDERTAKING ANY WORKS WITHIN THE VICINITY OF THE SERVICE LINES TO VERIFY THE POSITION OF THE SERVICE LINES.

REDUCTION RATIO 1 : 100

0 1 2 3 4 5 6 7 8 9 10

LENGTHS ARE IN METRES

CLIENT: HOVM DEVELOPMENTS

TITLE No: SP 11702	REF: 170409
DATUM: A.H.D.	ISSUE: 2
DATE OF SURVEY: 13.04.17	ISSUE DATE: 02.05.17
SURVEYOR: JN	SHEET SIZE: A1
DRAFTER: DW	SHEET 1 OF 4 SHEETS

PLAN OF DETAIL & LEVELS AND ELEVATIONS AT No 252-254 NEW SOUTH HEAD ROAD DOUBLE BAY

LINKER SURVEYING
veris A Veris Company
Suite 301, Level 3, 55 Holt Street
Surry Hills NSW 2012
PO Box 1807
Strawberry Hills NSW 2012
t: (02) 9212 4655
f: (02) 9212 5254
email: reception@linkersurveying.com.au
web site: www.linkersurveying.com.au

X:\17.JOBS\170409 NO252-254 NEW SOUTH HEAD RD\DETAIL\170409-DETAIL_SW01604_LOCSELEV.DWG

It is envisaged that 6 parking spaces would be provided with access on the New South Head Road frontage at the western site boundary.

Details of the envisaged development are provided on the concept plans prepared by Antoniades Architects which accompany the Planning Proposal and are reproduced in part in Appendix A.

3.0 Road Network and Traffic Conditions

3.1 Road Network

The road network servicing the site (Figure 3) comprises:

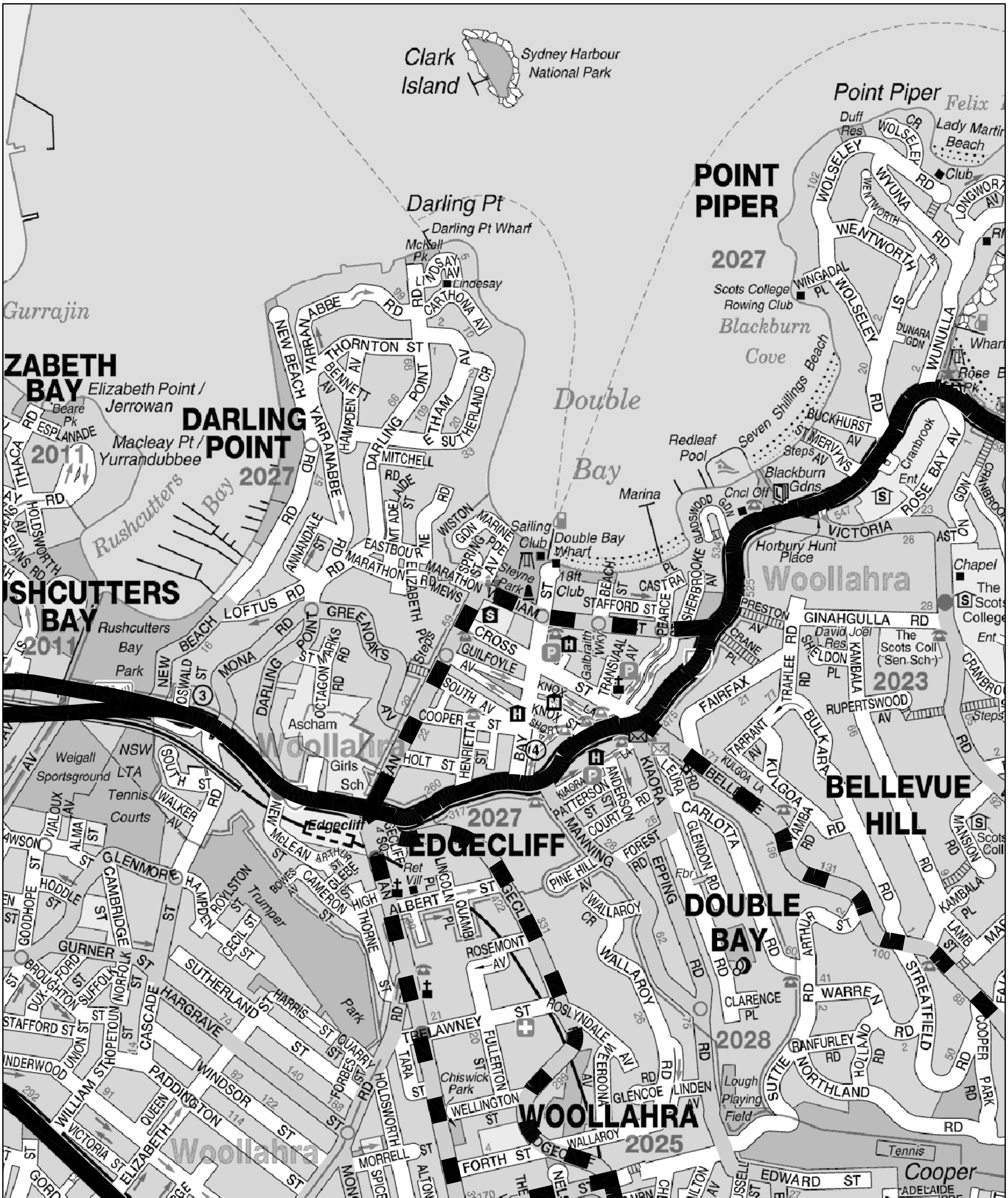
- *New South Head Road* – a State Road and arterial route linking between the Eastern Suburbs and the City
- *Ocean Street/William Street* – a Regional Road and important collector route linking between New South Head Road and Oxford Street
- *Cross Street, Bellevue Road and Manning Road* – collector routes
- *New Beach Road, Mona Road, Darling Point Road and Greenoaks Avenue* – collector routes providing access to the Darling Point peninsula

New South Head Road has 5 traffic lanes at the site frontage (3 WB & 2 EB) with a curvilinear alignment.

3.2 Traffic Controls

The existing traffic controls on the road system (also shown on Figure 3) include:

- the traffic signals at the intersections along New South Head Road at the Ocean Street and Manning Road intersections
- the NO RIGHT TURN restrictions at the New South Head Road, and Ocean Street intersections including the right turn movements out of Ocean Street and Ocean Avenue
- the parking CLEARWAY, BUS ZONE and NO STANDING restrictions along New South Head Road



LEGEND

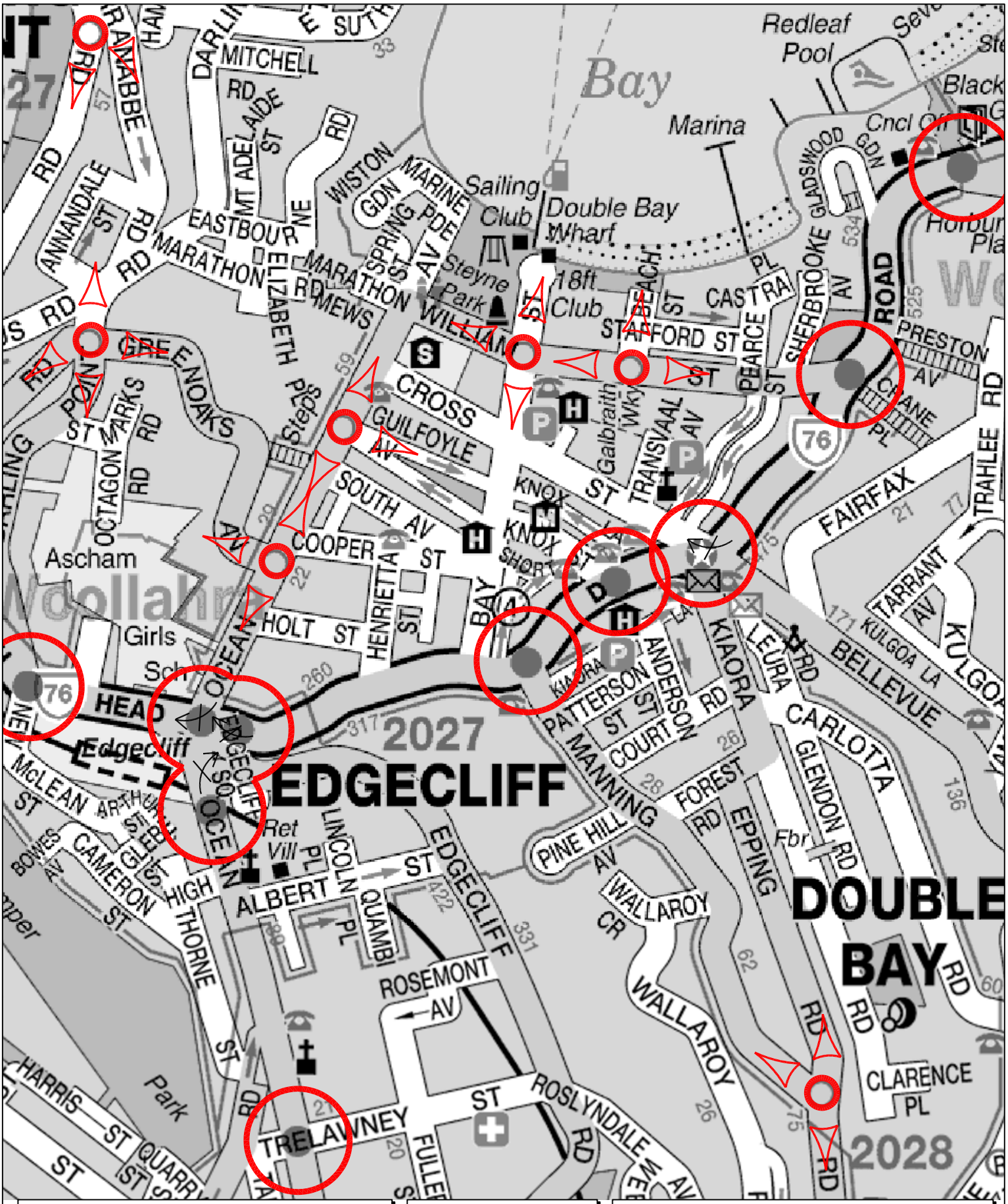
ARTERIAL

SUB-ARTERIAL

COLLECTOR

ROAD NETWORK

FIG 3



LEGEND

- TRAFFIC SIGNAL CONTROL
- ROUNDABOUT
- RESTRICTED TURNING MOVEMENT

TRAFFIC CONTROLS

FIG 4

- the NO STANDING restrictions on Ocean Street/Ocean Avenue extending to the north and south of New South Head Road
- the roundabouts along Ocean Avenue at the Greenoaks Avenue and Guilfoyle Avenue intersections

3.3 Traffic Conditions

An indication of the traffic conditions in the vicinity of the site is provided by data published by the RMS and surveys undertaken as part of this study. The RMS data is expressed in terms of Annual Average Daily Traffic (AADT) and the recorded volumes in the vicinity of the site are:

	AADT
New South Head Road at Bay Street	37,055
Ocean Street south of Edgecliff Road	30,731

The operational performance of intersections in the area is relatively satisfactory in the context of the capacity constraints that exist during the peak periods on the arterial road system. However, the operation of the numerous traffic signal controls along New South Head Road act to create regular gaps in the traffic flows to facilitate traffic movements at the uncontrolled intersections and access driveways.

3.4 Transport Services

The site is well served by public transport services with Edgecliff Railway Station on the Eastern Suburbs Line being located some 200 metres to the west within the Edgecliff Centre development. High frequency bus services operate along New South Head Road linking to the Metropolitan bus/rail system accessed through the City. Some eight Sydney Buses services operate along New South Head Road while the regular routes also operate along the Ocean Street to/from Bondi Junction. The development site accordingly has excellent access to public transport services.

4.0 Parking

The Woollahra Council Residential DCP 2003 specifies a maximum parking provision for residential apartments within 400 metres of a railway station of:

Studio	-	0.5 space
One-Bed	-	1.0 space
Two-Bed	-	1.5 space
Visitors	-	0.25 space per apartment

Application of this criteria to the envisaged development scheme would indicate a maximum allowance of:

14 x studio	7.0 spaces
13 x One-Bed	13.0 spaces
6 x Two-Bed	9.0 spaces
Visitors	8.25 spaces (8)
Total:	**37 spaces**

The site is very conveniently located to rail and bus services as well as the public parking stations, shopping, entertainment and employment facilities at Edgecliff and Double Bay. There have been a number of residential apartment developments in the area, including the adjoining site, which have been granted dispensation for a reduced parking provision.

Council's DCP (Section E1.9.1) makes provision for 1 car share space to replace a maximum of 4 regular carparking spaces. However, there have been precedents in the Land and Environment Court where it was found that 1 car share parking space equated to the provision of 10 to 12 private parking spaces.

It might be possible to excavate additional basement levels to provide more parking spaces, however, this would not be environmentally responsible. Council's DCP states that where it is proposed to provide less parking than that specified, it must be demonstrated that this will not create significant additional demand for on-street parking

in the surrounding streets. In this case, this will not occur because of the 2 Hour Authorised Residents excepted restrictions in the local streets and CLEAR WAY/NO STOPPING restrictions in New South Head Road. Residents of the envisaged development will be prohibited from obtaining a Resident Parking Permit.

It would be proposed to provide 6 parking spaces in the envisaged development allocated as:

4 resident spaces
2 car share spaces.

In addition, it would be proposed to provide 1 motorcycle space (L3) and 38 bicycle spaces (L2).

5.0 Traffic

The TfNSW Development Guidelines specify a traffic generation criteria in relation to residential apartments located within walking distance of a railway station of:

AM Peak	0.19 vtph per apartment
PM Peak	0.15 vtph per apartment

However, this criteria is derived from surveys of apartments which have 1 – 2 off street parking spaces. In view of the envisaged provision of only 6 parking spaces, it is assessed that the envisaged development will only generate a maximum of some 3 vtph during the peak periods.

This very minor level of traffic generation will not result in any adverse traffic implications with entering and exiting cars taking advantage of the gaps in the New South Head Road traffic flows resultant to the operation of the nearby traffic signals.

6.0 Access, Internal Circulation and Servicing

6.1 Access

It is proposed to provide a 6m wide combined ingress/egress driveway on the New South Head Road frontage which reflects the existing adjoining driveway. The design of the proposed driveway will comply with the requirements of AS2890.1 and it will accommodate all vehicles requiring to access the site.

6.2 Internal Circulation

The design of the carpark complies with the requirements of AS2890.1 and the generous 7.5m central aisle will provide for cars to manoeuvre readily. Details of the turning path assessment indicating satisfactory provision are provided in Appendix B.

6.3 Servicing

Refuse will be removed from the street by Council's normal garbage collection service. The occasional needs of service vehicles will be accommodated on-street as is the normal circumstance with residential developments of this nature.

7.0 Conclusion

This report documents an assessment of the potential traffic and parking implications of an envisaged residential apartment development at Edgecliff.

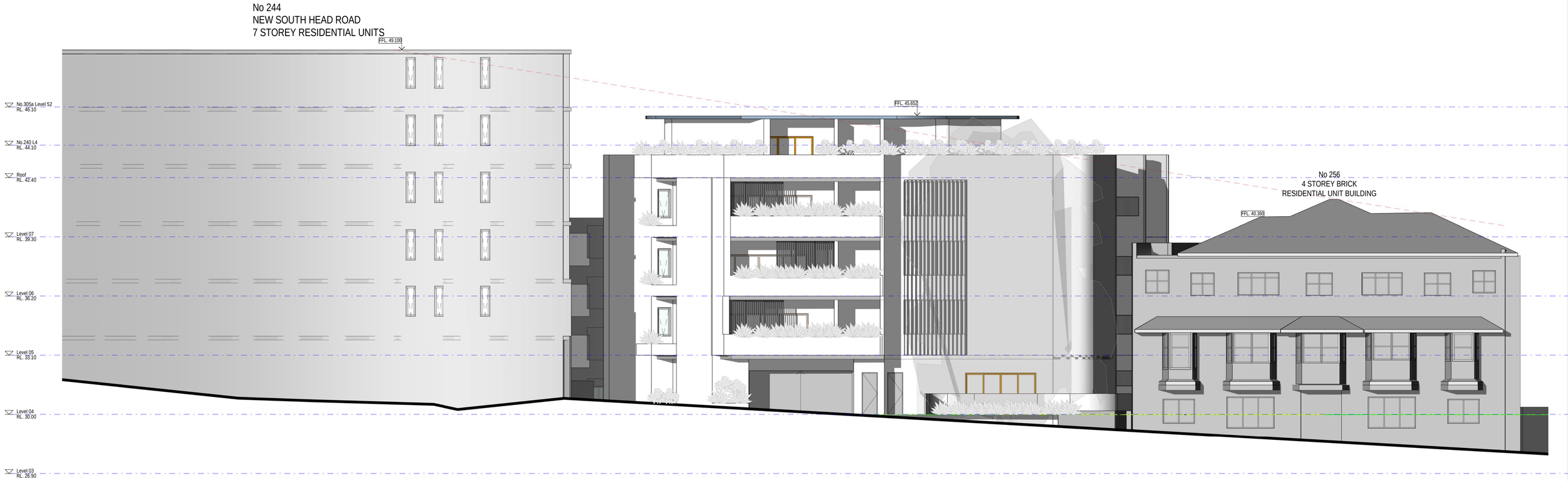
The site is very well serviced by rail and bus services while shopping and restaurant/entertainment venues are available within easy walking distance. Employment, entertainment and other retail facilities in the City and Bondi Junction etc are easily accessed by the public transport services. Assessment of the development scheme concludes that the proposal will:

- provide suitable and adequate parking on-site reflecting the special circumstances

- not present any unsatisfactory traffic capacity, safety or environmental related implications

Appendix A

Concept Plans



REV	DESCRIPTION	BY	DATE
1	Issued for Information	AZ	31.10.2019
2	Issued for Information	AZ	07.11.2019

PROJECT PHASE
PLANNING PROPOSAL

STATUS
PRELIMINARY

PROJECT NO.
AA.YLD.1904

PROJECT
252 New South Head Road

ADDRESS
252-254 New South Head Road, Edgecliff, NSW

CLIENT
Penoh Capital Land Pty Ltd

DRAWING NO.
DA5.02

REVISION
2

DRAWN BY
AZ

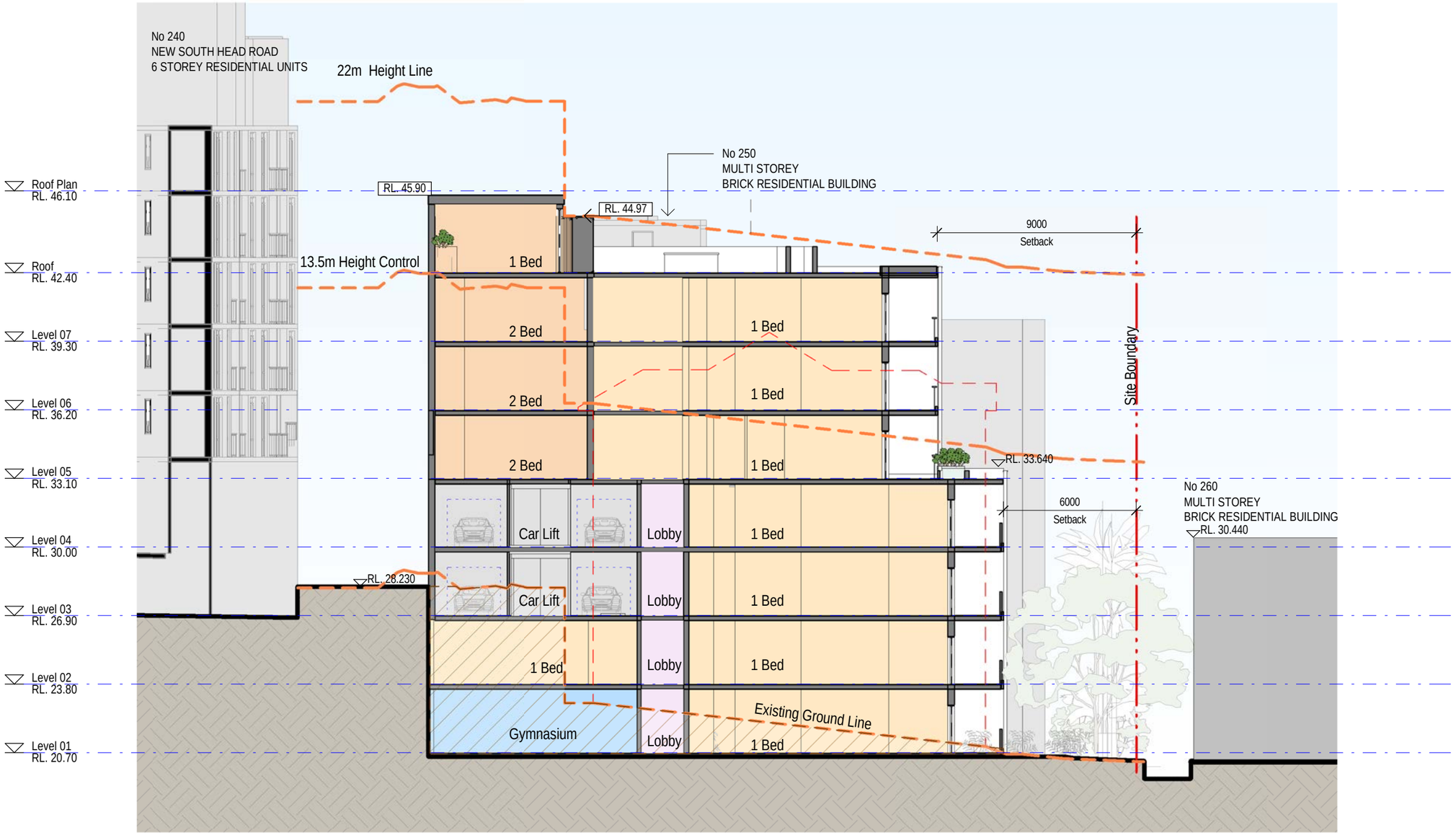
CHECKED BY
DM

SCALE
1 : 100 @A1
0m 2 4 5m
Scale 1:100

DRAWING SERIES
Elevations

DRAWING TITLE
South East Elevation

ANTONIADES ARCHITECTS
www.antoniades.com.au
ACN 129 731 559
Nominated Architect: Andreas Antoniades
NSW Registration 7954



Legend

- Existing Building
- Existing Tree
- Existing Jacaranda Tree
- Proposed Tree

Legend

- Existing Building
- Existing Tree
- Existing Jacaranda Tree
- Proposed Tree

Legend

- Existing Building
- Existing Tree
- Existing Jacaranda Tree
- Proposed Tree

Legend

Legend:

Existing Building

Property Boundary

Exsting Building Footprin

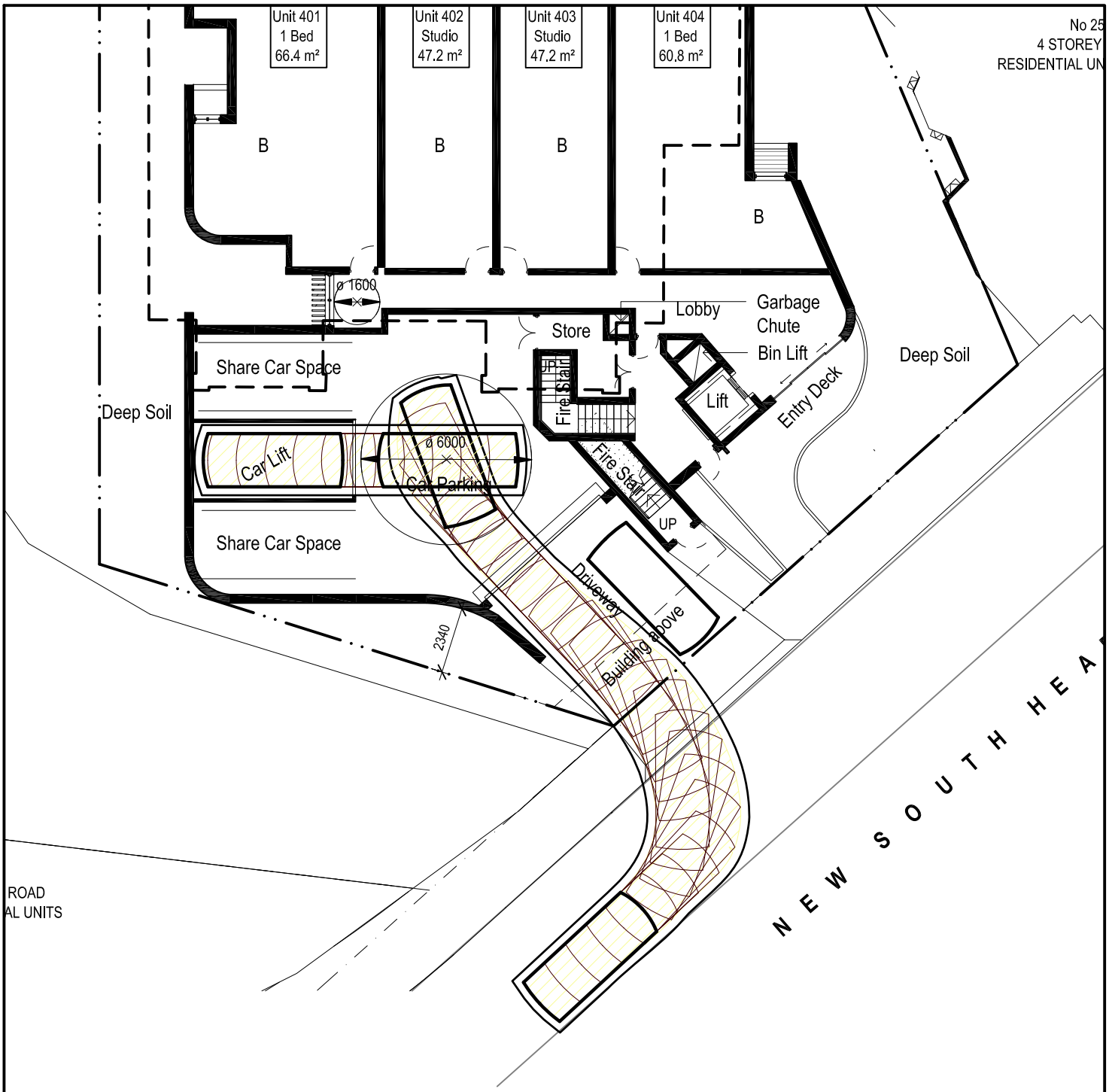
Existing Tree

Existing Jacaranda Tree

Proposed Tree

Appendix B

Turning Path Assessment



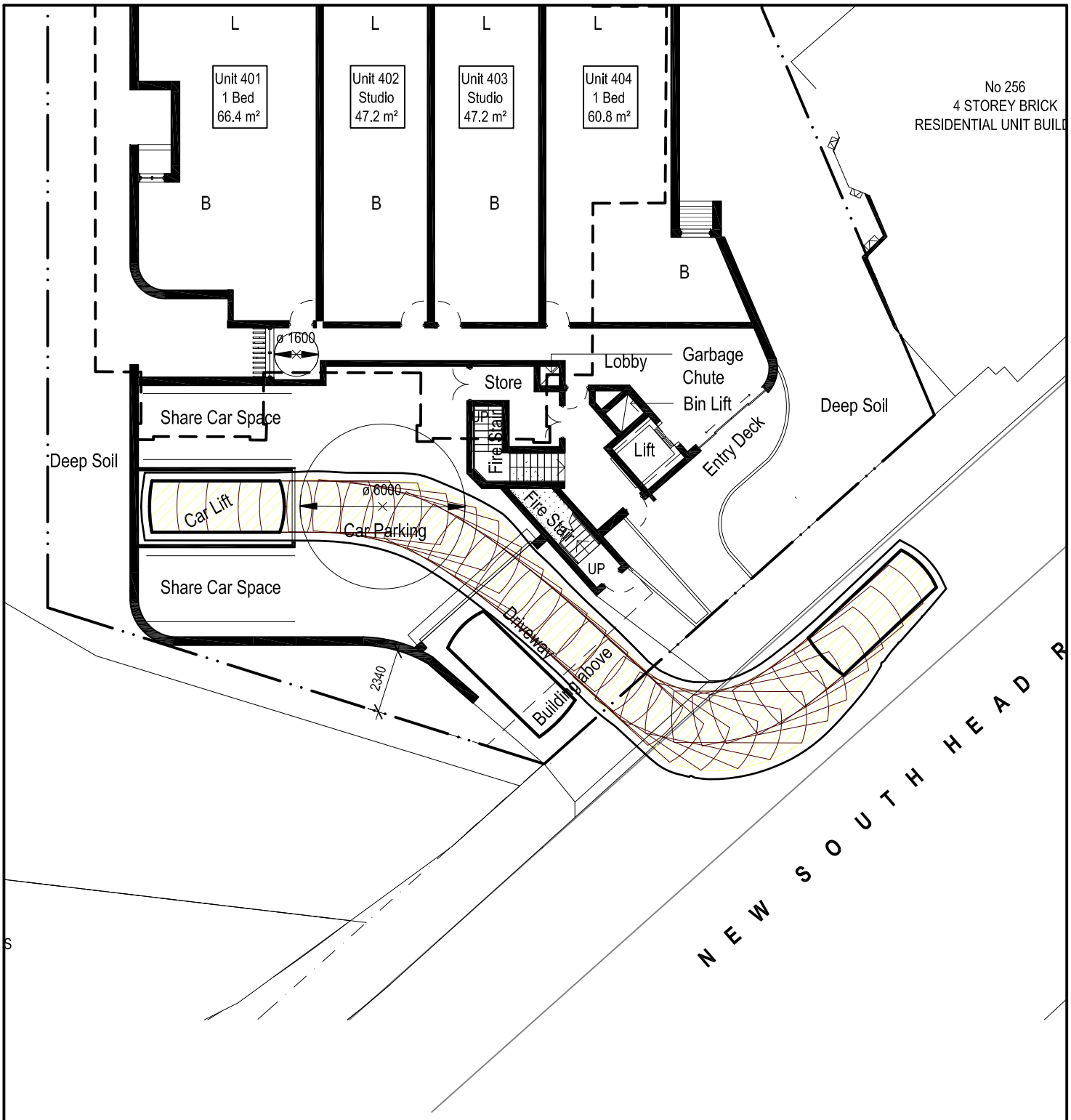
LEGEND

This drawing has been prepared using vehicle modelling computer software AutoTrack V5.00a in conjunction with AutoCAD 2013. The vehicle used is based upon vehicle data provided by Austroads and incorporates a reasonable degree of tolerance. However, it is not possible to account for all vehicle types/characteristics and/or driver ability.

N

SWEPT PATH ANALYSIS OF AN 85th PERCENTILE VEHICLE ENTERING THE LIFT

SP 1

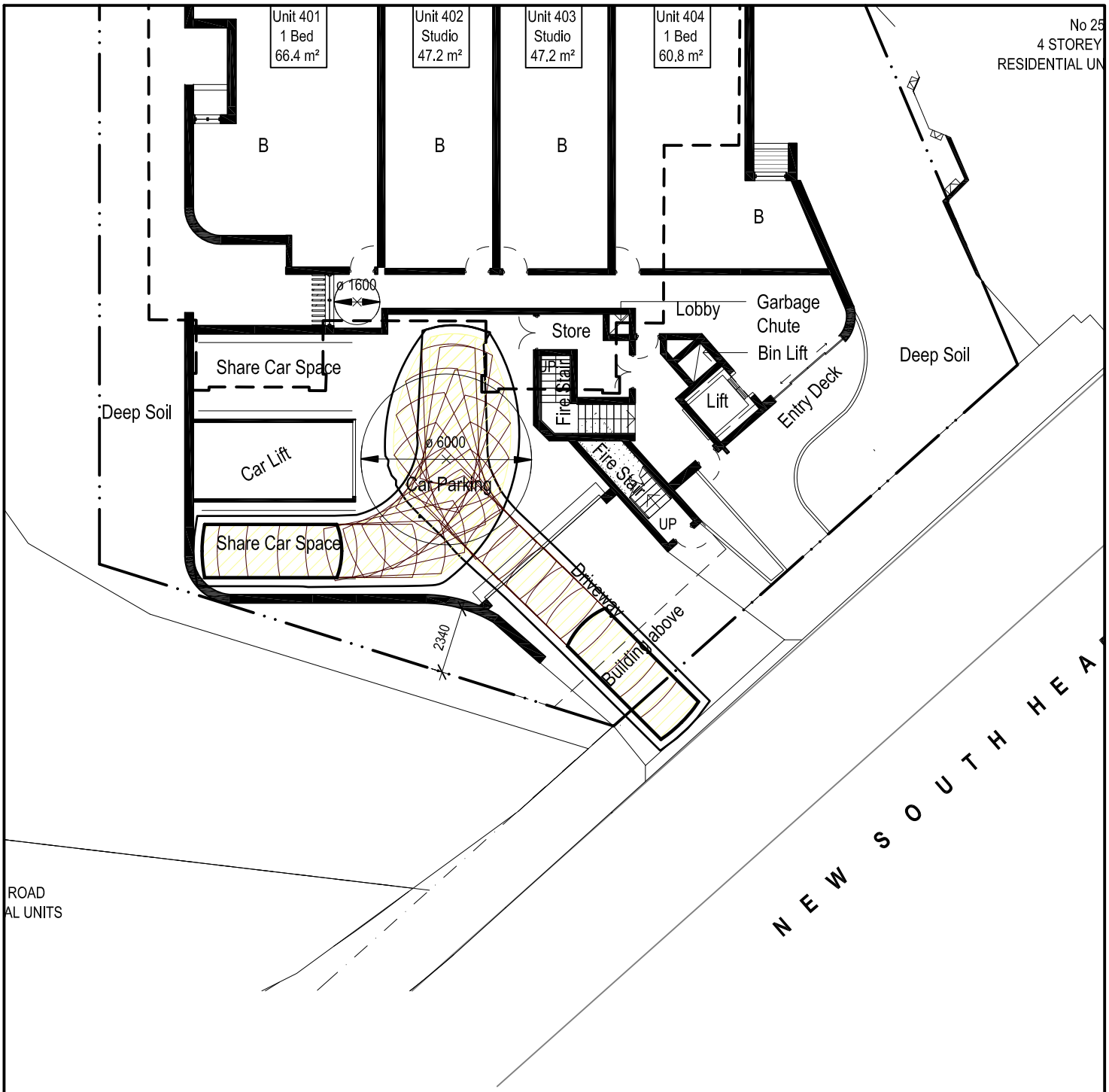


LEGEND

This drawing has been prepared using vehicle modelling computer software AutoTrack V5.00a in conjunction with AutoCAD 2013. The vehicle used is based upon vehicle data provided by Austroads and incorporates a reasonable degree of tolerance. However, it is not possible to account for all vehicle types/characteristics and/or driver ability.

SWEPT PATH ANALYSIS OF AN 85th PERCENTILE VEHICLE EXITING THE LIFT

SP 2



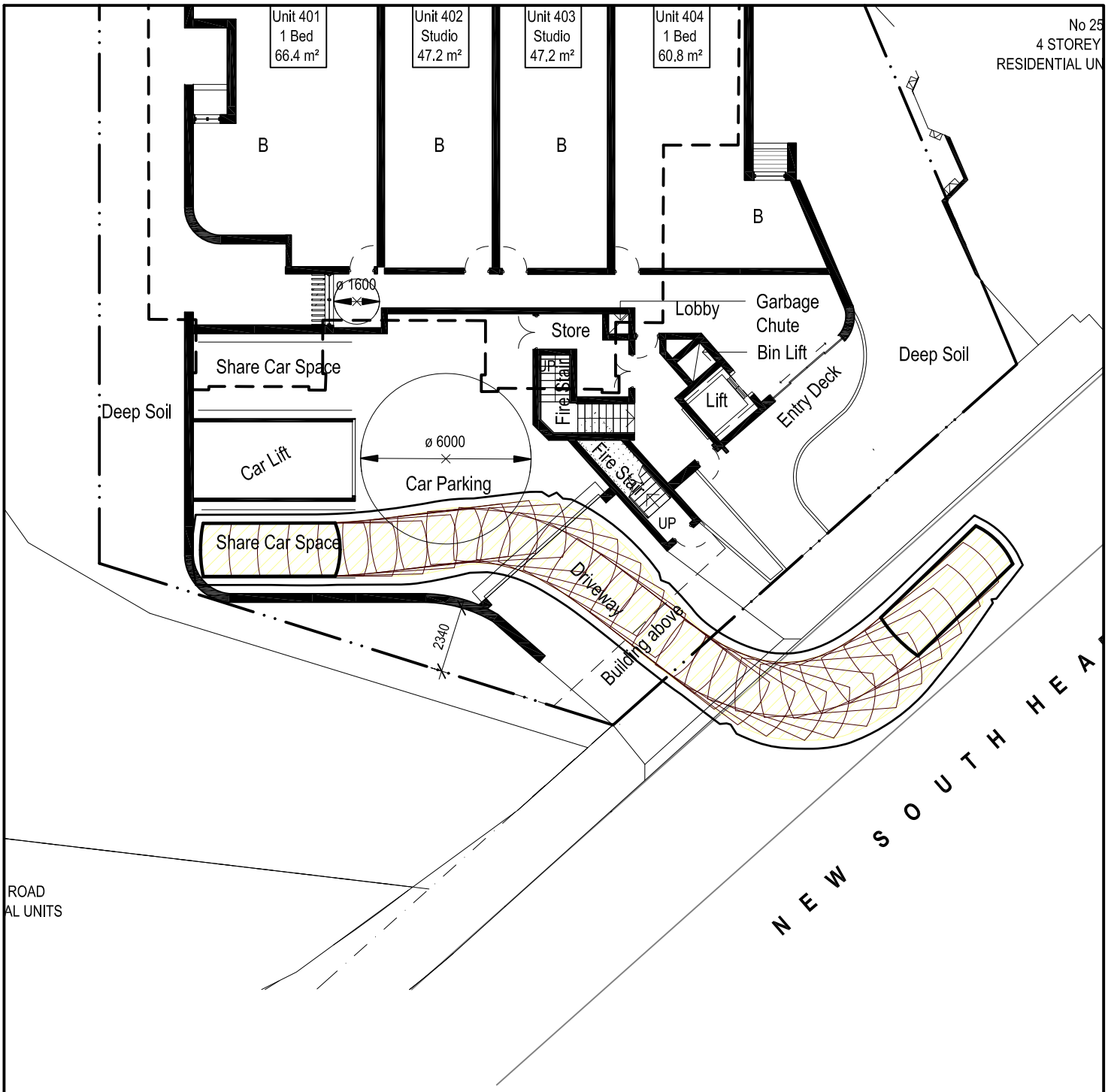
LEGEND

This drawing has been prepared using vehicle modelling computer software AutoTrack V5.00a in conjunction with AutoCAD 2013. The vehicle used is based upon vehicle data provided by Austroads and incorporates a reasonable degree of tolerance. However, it is not possible to account for all vehicle types/characteristics and/or driver ability.

N

SWEPT PATH ANALYSIS OF AN 85th PERCENTILE VEHICLE ENTERING THE SITE

SP 3



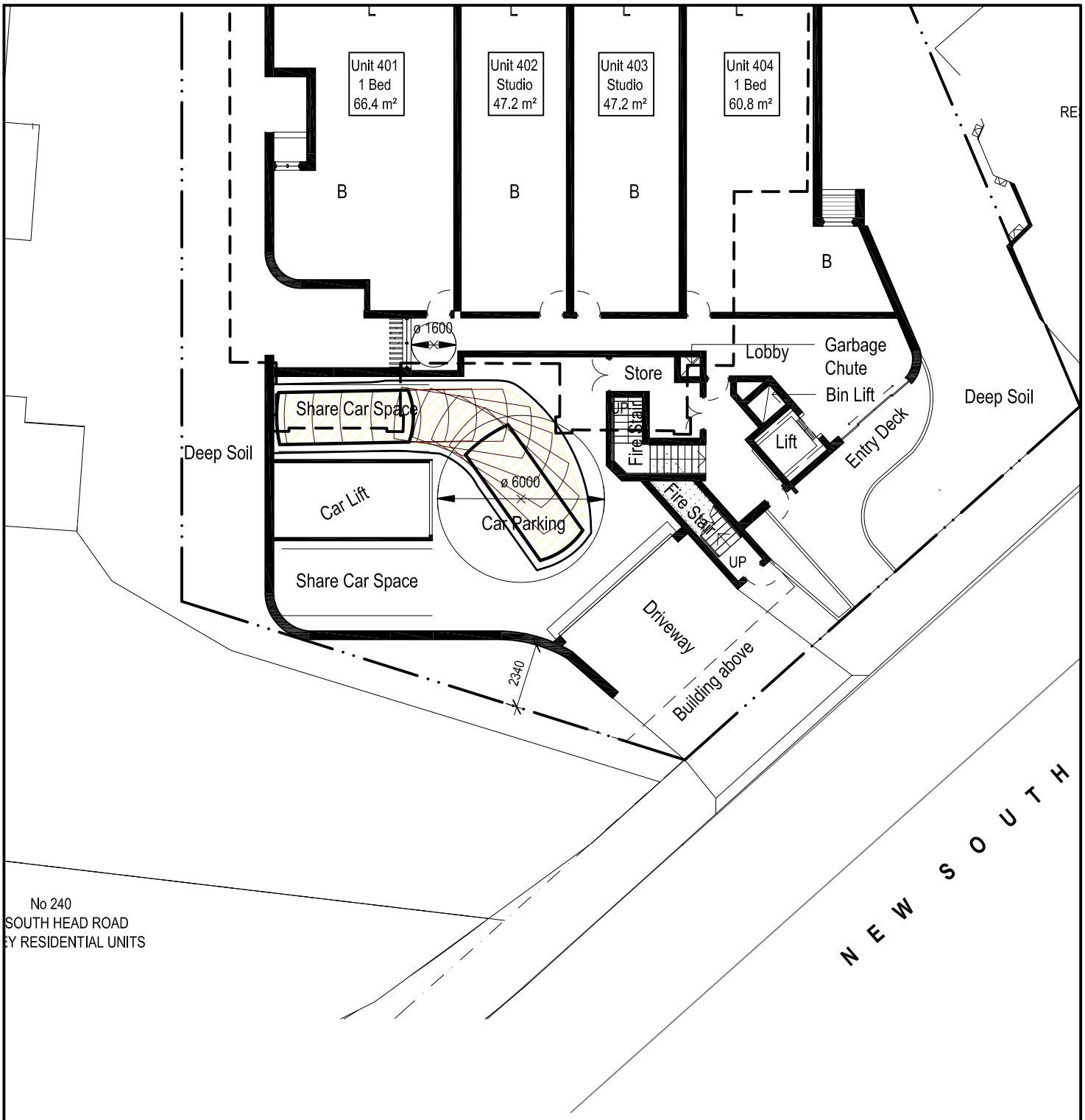
LEGEND

This drawing has been prepared using vehicle modelling computer software AutoTrack V5.00a in conjunction with AutoCAD 2013. The vehicle used is based upon vehicle data provided by Austroads and incorporates a reasonable degree of tolerance. However, it is not possible to account for all vehicle types/characteristics and/or driver ability.

N

SWEPT PATH ANALYSIS OF AN 85th PERCENTILE VEHICLE EXITING THE SITE

SP 4

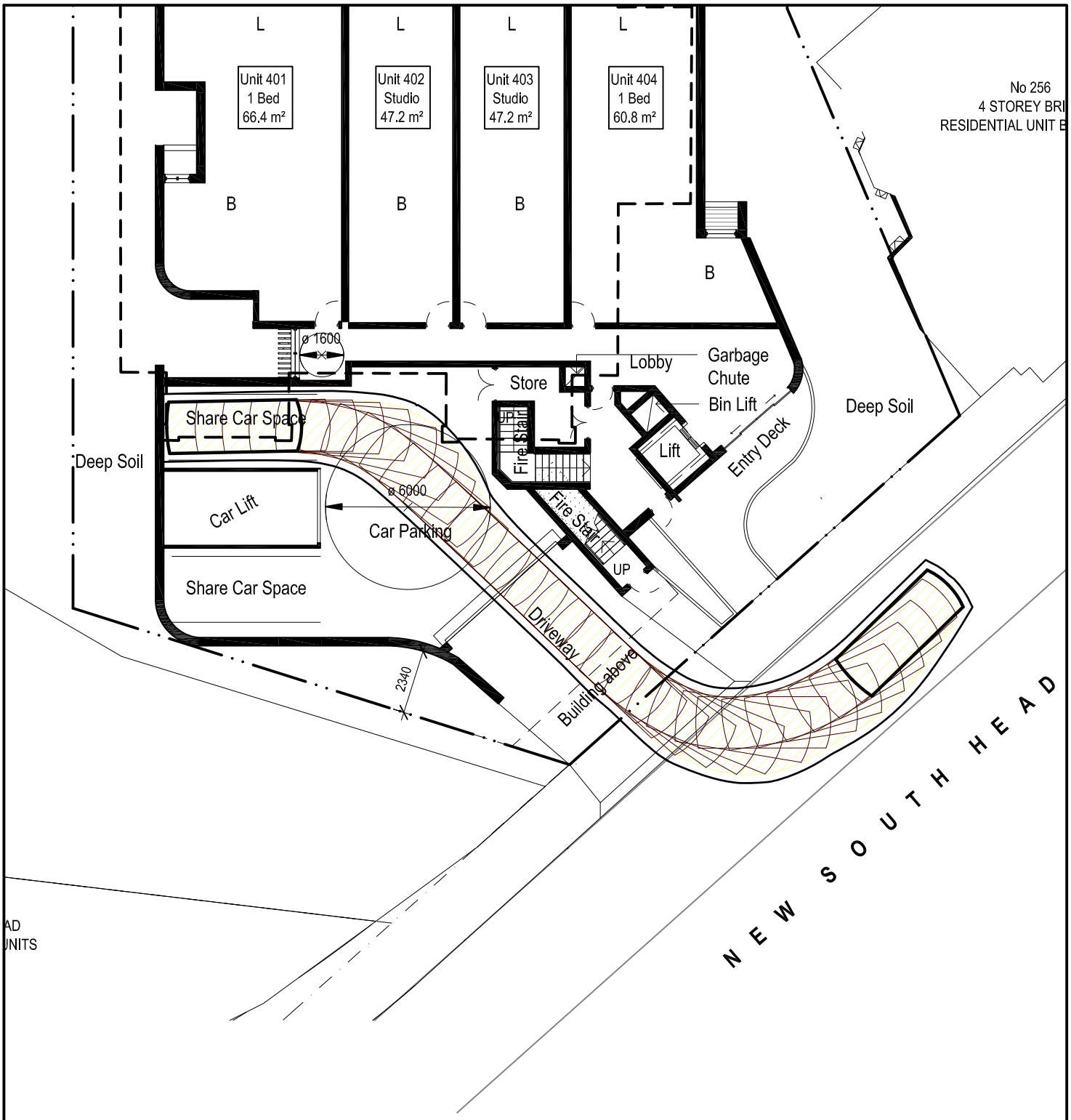


LEGEND

This drawing has been prepared using vehicle modelling computer software AutoTrack V5.00a in conjunction with AutoCAD 2013. The vehicle used is based upon vehicle data provided by Austroads and incorporates a reasonable degree of tolerance. However, it is not possible to account for all vehicle types/characteristics and/or driver ability.

SWEPT PATH ANALYSIS OF AN 85th PERCENTILE VEHICLE ENTERING THE SITE

SP 5



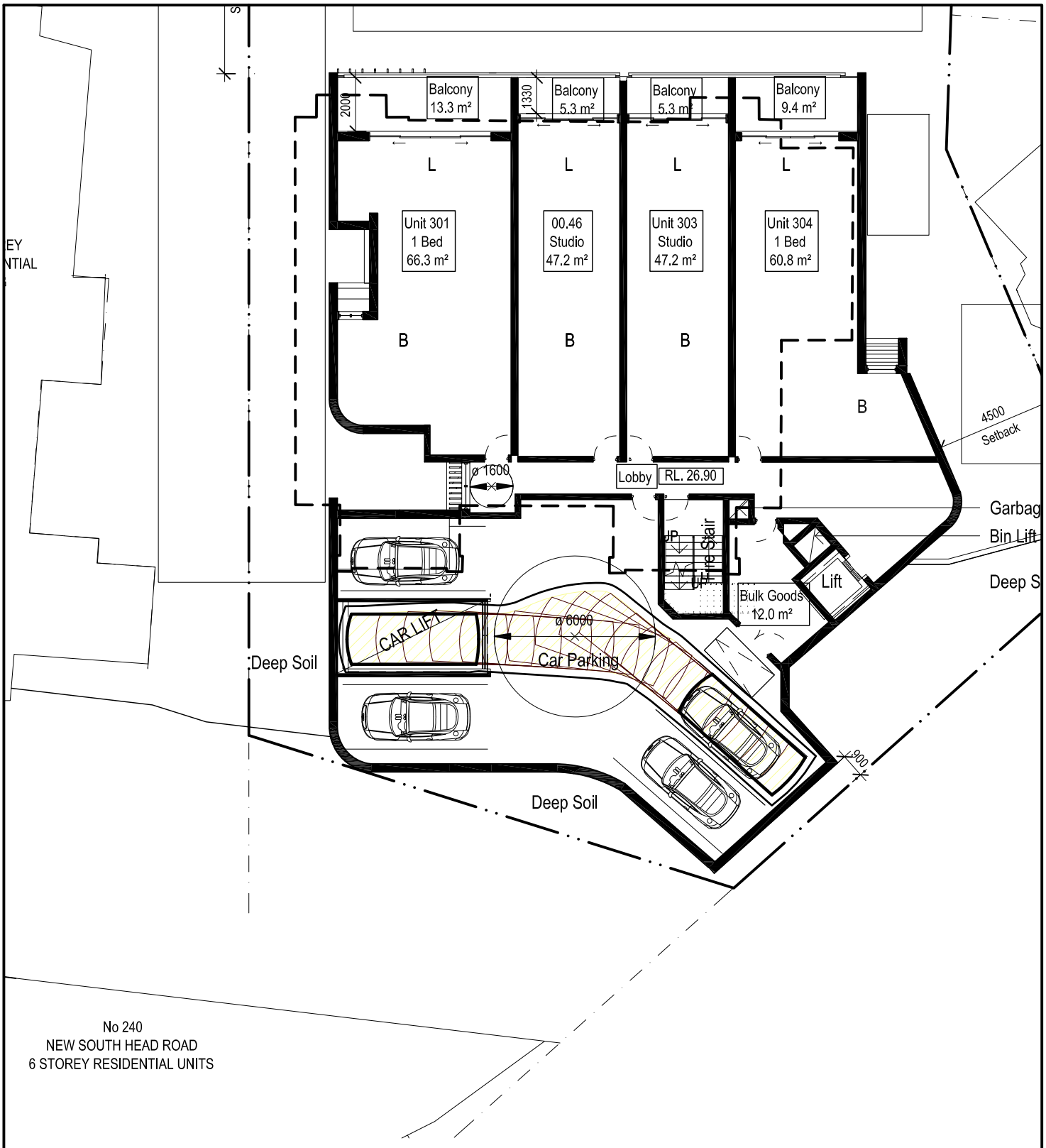
LEGEND

This drawing has been prepared using vehicle modelling computer software AutoTrack V5.00a in conjunction with AutoCAD 2013. The vehicle used is based upon vehicle data provided by Austroads and incorporates a reasonable degree of tolerance. However, it is not possible to account for all vehicle types/characteristics and/or driver ability.

N

SWEPT PATH ANALYSIS OF AN 85th PERCENTILE VEHICLE EXITING THE SITE

SP 6

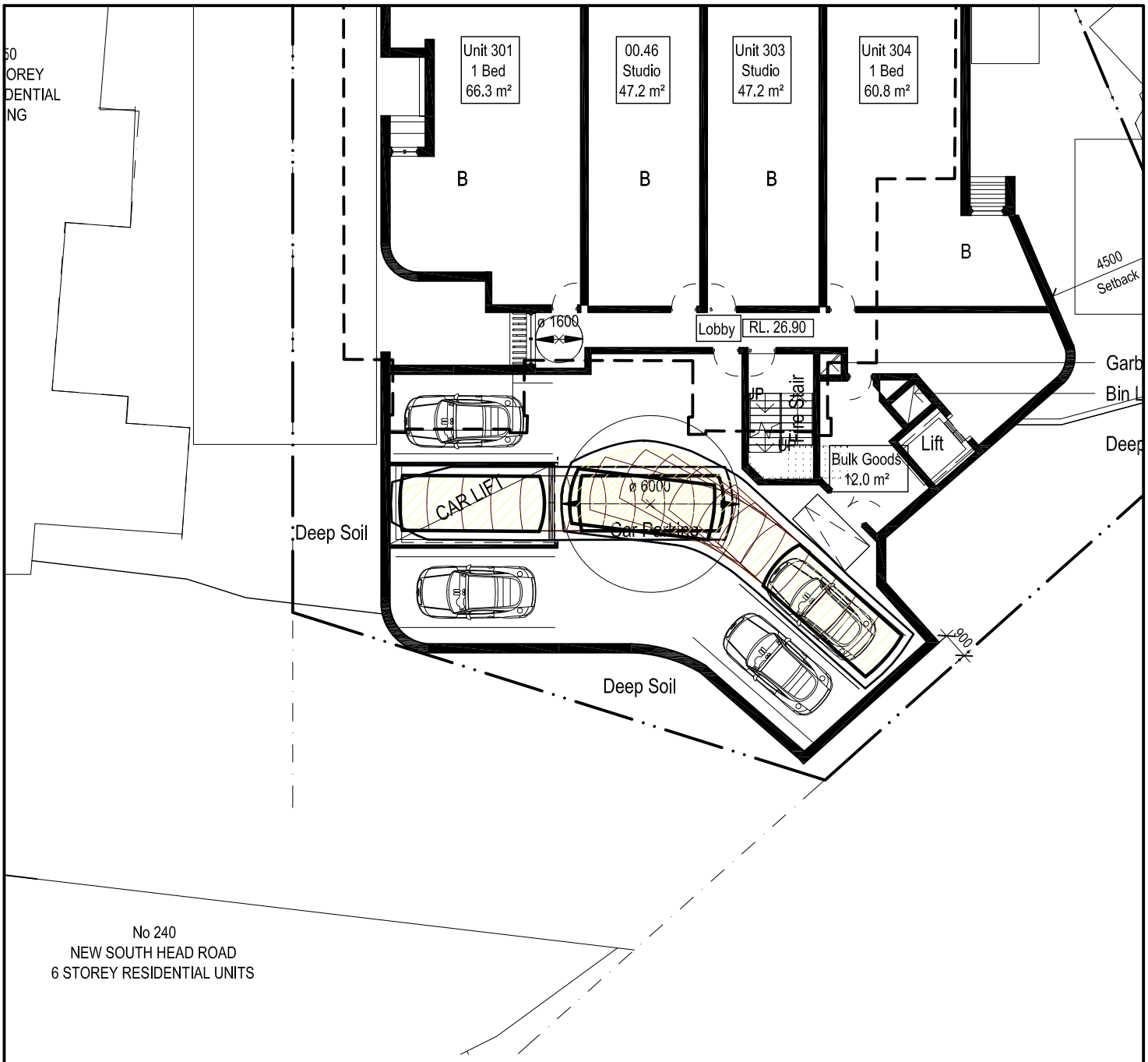


LEGEND

This drawing has been prepared using vehicle modelling computer software AutoTrack V5.00a in conjunction with AutoCAD 2013. The vehicle used is based upon vehicle data provided by Austroads and incorporates a reasonable degree of tolerance. However, it is not possible to account for all vehicle types/characteristics and/or driver ability.

SWEPT PATH ANALYSIS OF AN 85th PERCENTILE VEHICLE ENTERING THE SITE

SP 7

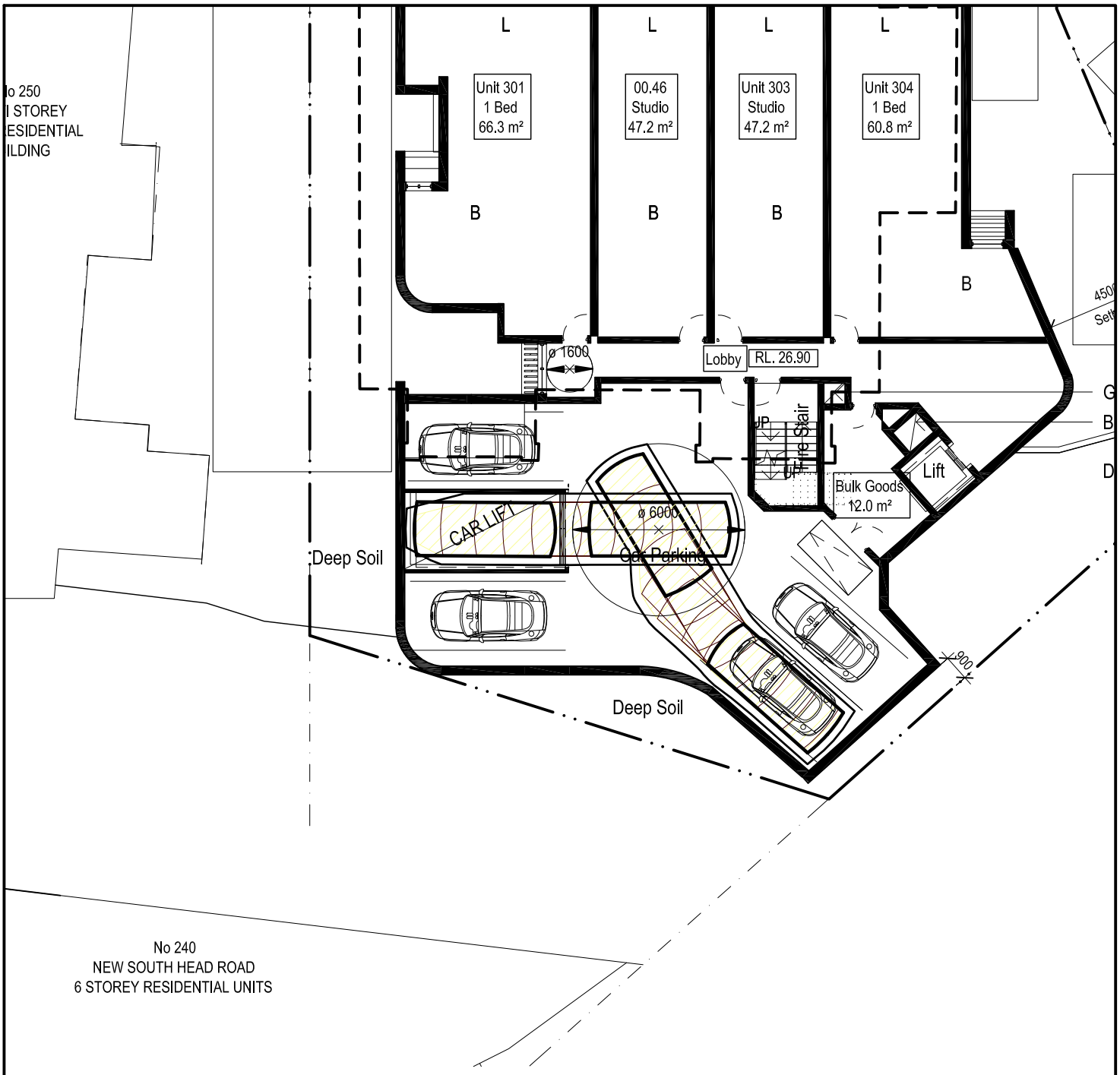


LEGEND

This drawing has been prepared using vehicle modelling computer software AutoTrack V5.00a in conjunction with AutoCAD 2013. The vehicle used is based upon vehicle data provided by Austroads and incorporates a reasonable degree of tolerance. However, it is not possible to account for all vehicle types/characteristics and/or driver ability.

SWEPT PATH ANALYSIS OF AN 85th PERCENTILE VEHICLE EXITING THE SITE

SP 8

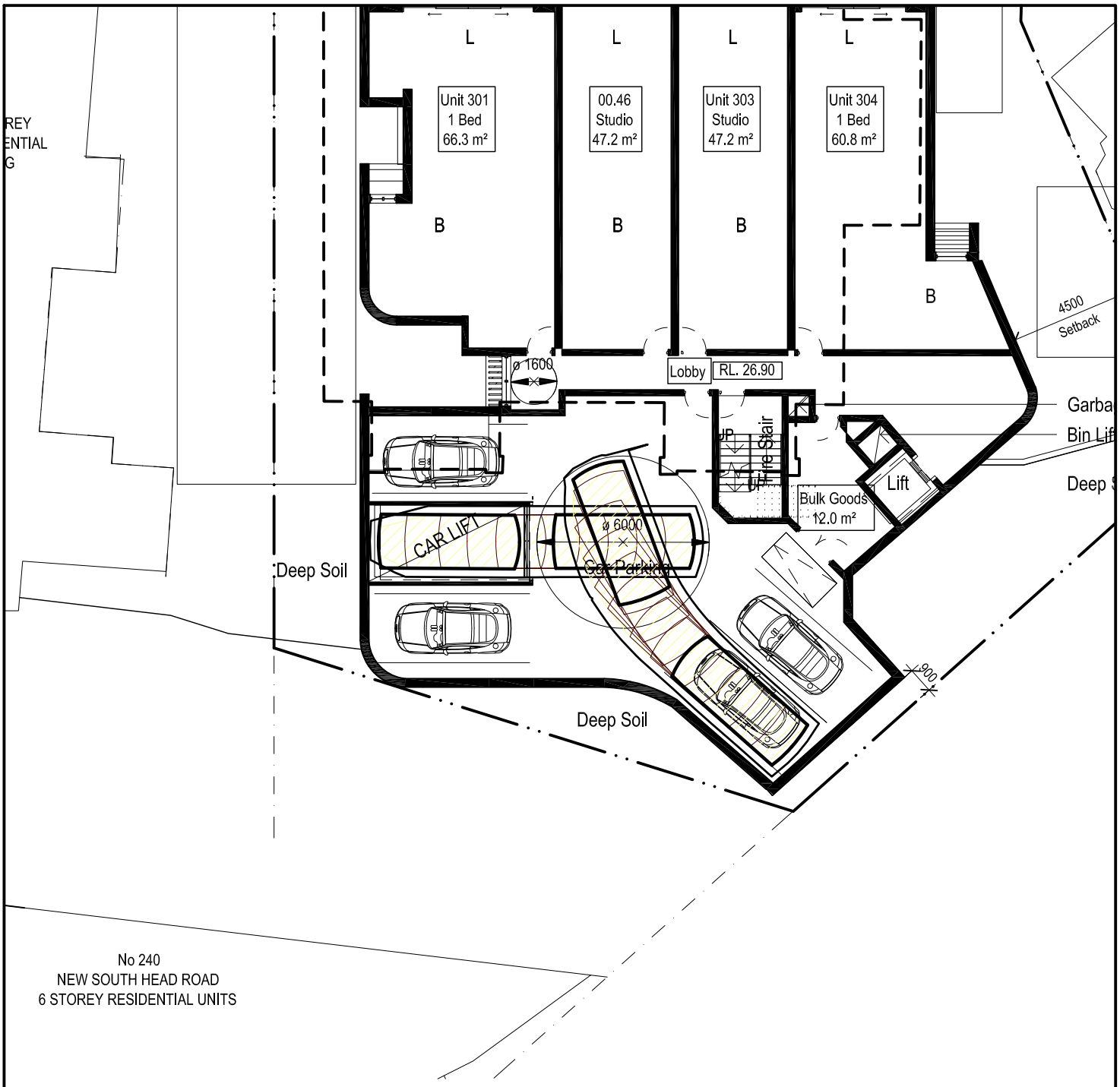


LEGEND

This drawing has been prepared using vehicle modelling computer software AutoTrack V5.00a in conjunction with AutoCAD 2013. The vehicle used is based upon vehicle data provided by Austroads and incorporates a reasonable degree of tolerance. However, it is not possible to account for all vehicle types/characteristics and/or driver ability.

SWEPT PATH ANALYSIS OF AN 85th PERCENTILE VEHICLE ENTERING THE SITE

SP 9



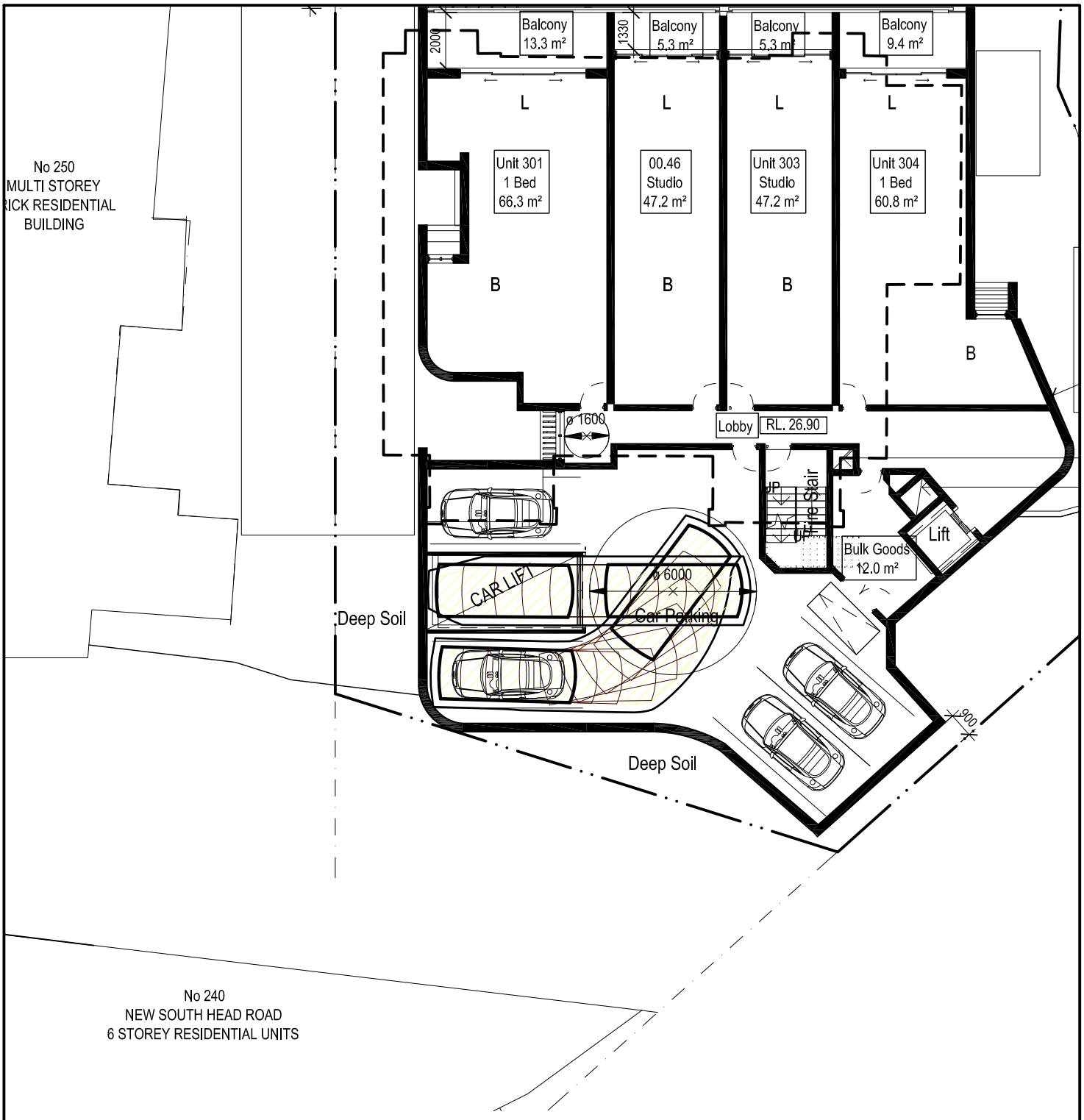
LEGEND

This drawing has been prepared using vehicle modelling computer software AutoTrack V5.00a in conjunction with AutoCAD 2013. The vehicle used is based upon vehicle data provided by Austroads and incorporates a reasonable degree of tolerance. However, it is not possible to account for all vehicle types/characteristics and/or driver ability.

N

SWEPT PATH ANALYSIS OF AN 85th PERCENTILE VEHICLE EXITING THE SITE

SP 10



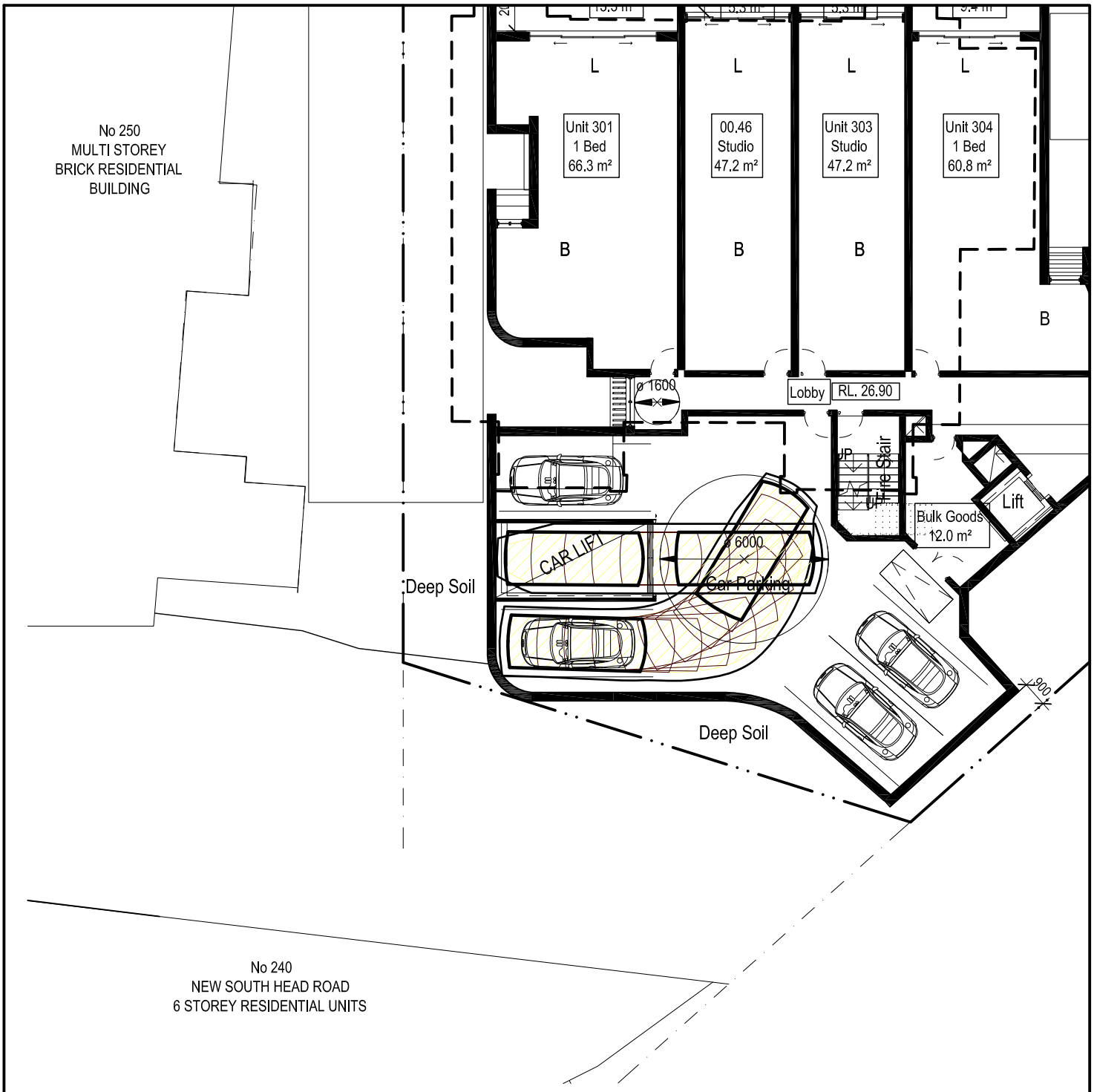
LEGEND

This drawing has been prepared using vehicle modelling computer software AutoTrack V5.00a in conjunction with AutoCAD 2013. The vehicle used is based upon vehicle data provided by Austroads and incorporates a reasonable degree of tolerance. However, it is not possible to account for all vehicle types/characteristics and/or driver ability.

N

SWEPT PATH ANALYSIS OF AN 85th PERCENTILE VEHICLE ENTERING THE SITE

SP 11

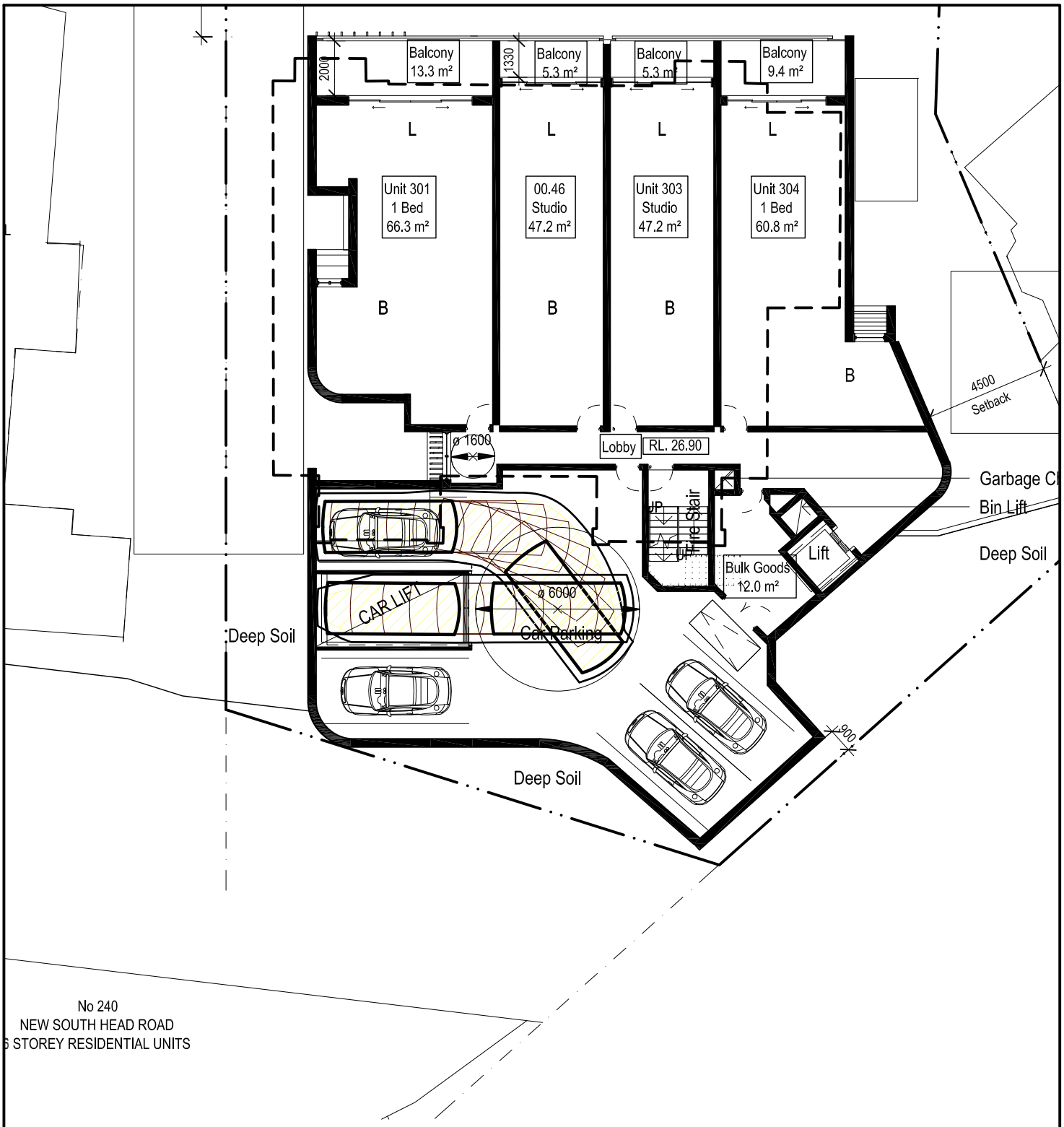


LEGEND

This drawing has been prepared using vehicle modelling computer software AutoTrack V5.00a in conjunction with AutoCAD 2013. The vehicle used is based upon vehicle data provided by Austroads and incorporates a reasonable degree of tolerance. However, it is not possible to account for all vehicle types/characteristics and/or driver ability.

SWEPT PATH ANALYSIS OF AN 85th PERCENTILE VEHICLE EXITING THE SITE

SP 12



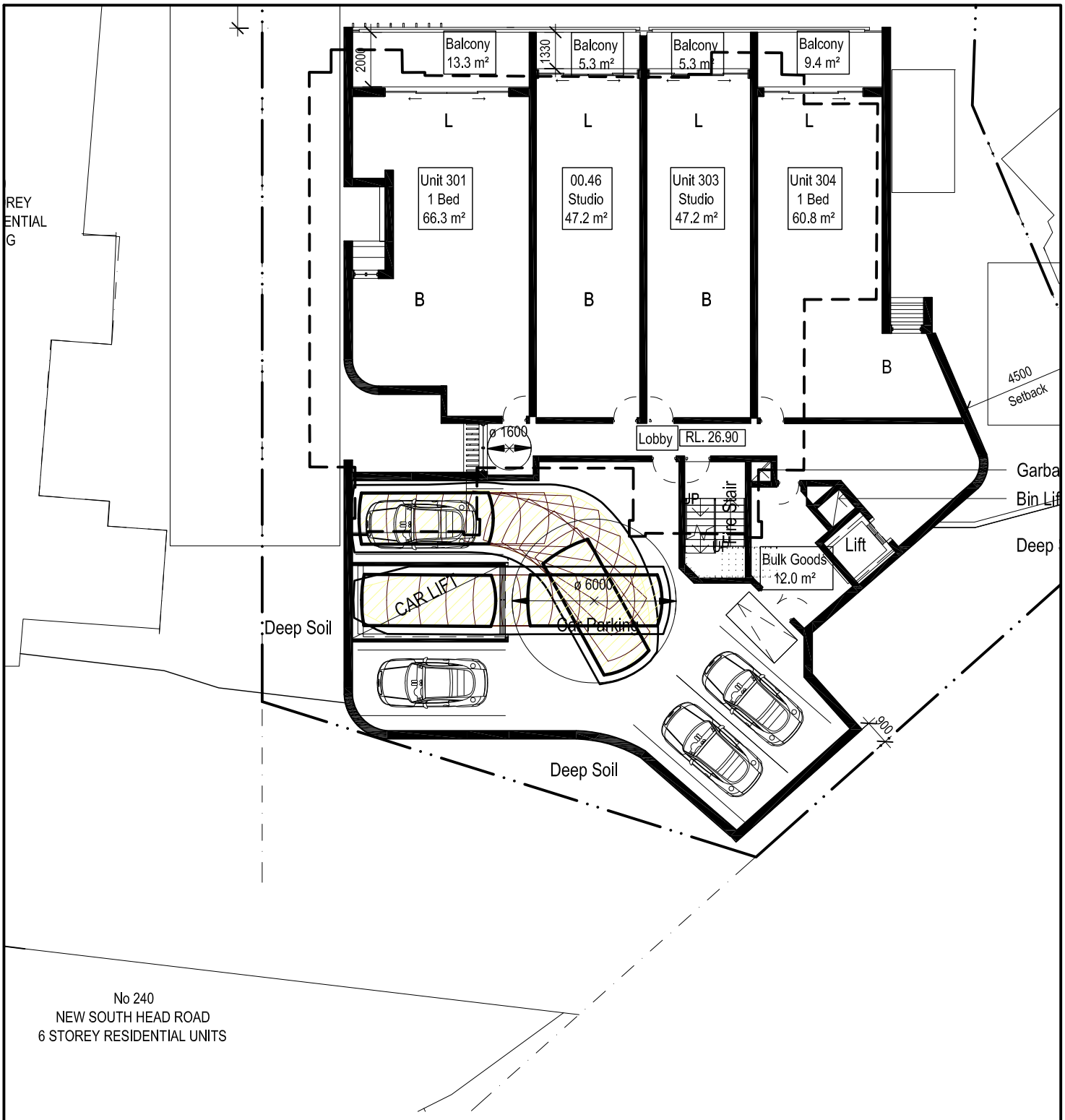
LEGEND

This drawing has been prepared using vehicle modelling computer software AutoTrack V5.00a in conjunction with AutoCAD 2013. The vehicle used is based upon vehicle data provided by Austroads and incorporates a reasonable degree of tolerance. However, it is not possible to account for all vehicle types/characteristics and/or driver ability.

N

SWEPT PATH ANALYSIS OF AN 85th PERCENTILE VEHICLE ENTERING THE SITE

SP 13



LEGEND

This drawing has been prepared using vehicle modelling computer software AutoTrack V5.00a in conjunction with AutoCAD 2013. The vehicle used is based upon vehicle data provided by Austroads and incorporates a reasonable degree of tolerance. However, it is not possible to account for all vehicle types/characteristics and/or driver ability.

SWEPT PATH ANALYSIS OF AN 85th PERCENTILE VEHICLE EXITING THE SITE

SP 14