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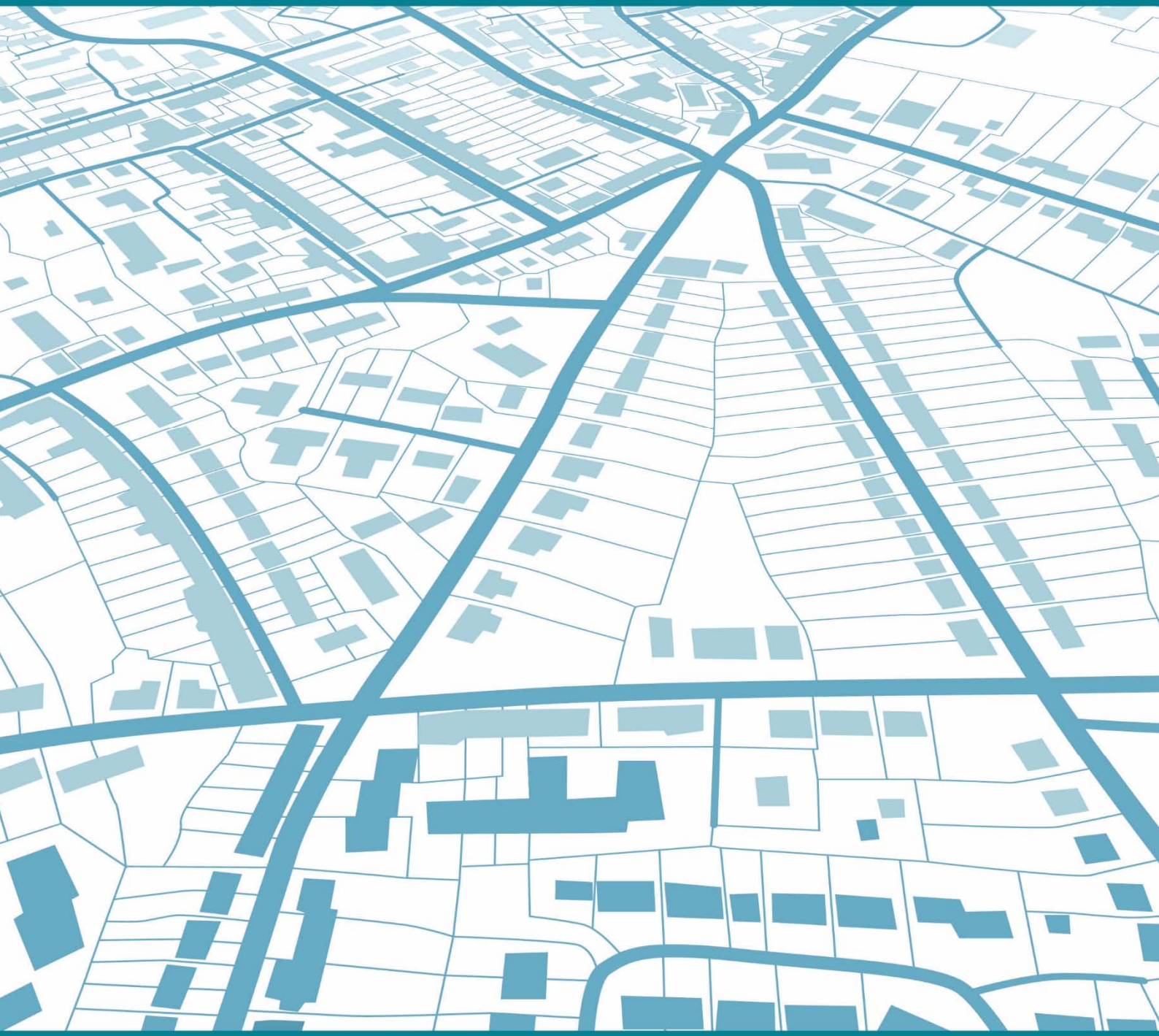

Alterations & Additions for Proposed Mixed Use Development

21 Whistler Street, Manly

Traffic and Parking Assessment

Ref: 110/2018
Date: February 2020
Issue: B

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1.0 Introduction

This report has been prepared to accompany a Development Application to Northern Beaches Council for proposed alterations and additions for a residential apartment based mixed use development at 21 Whistler Street, Manly (Figure 1).

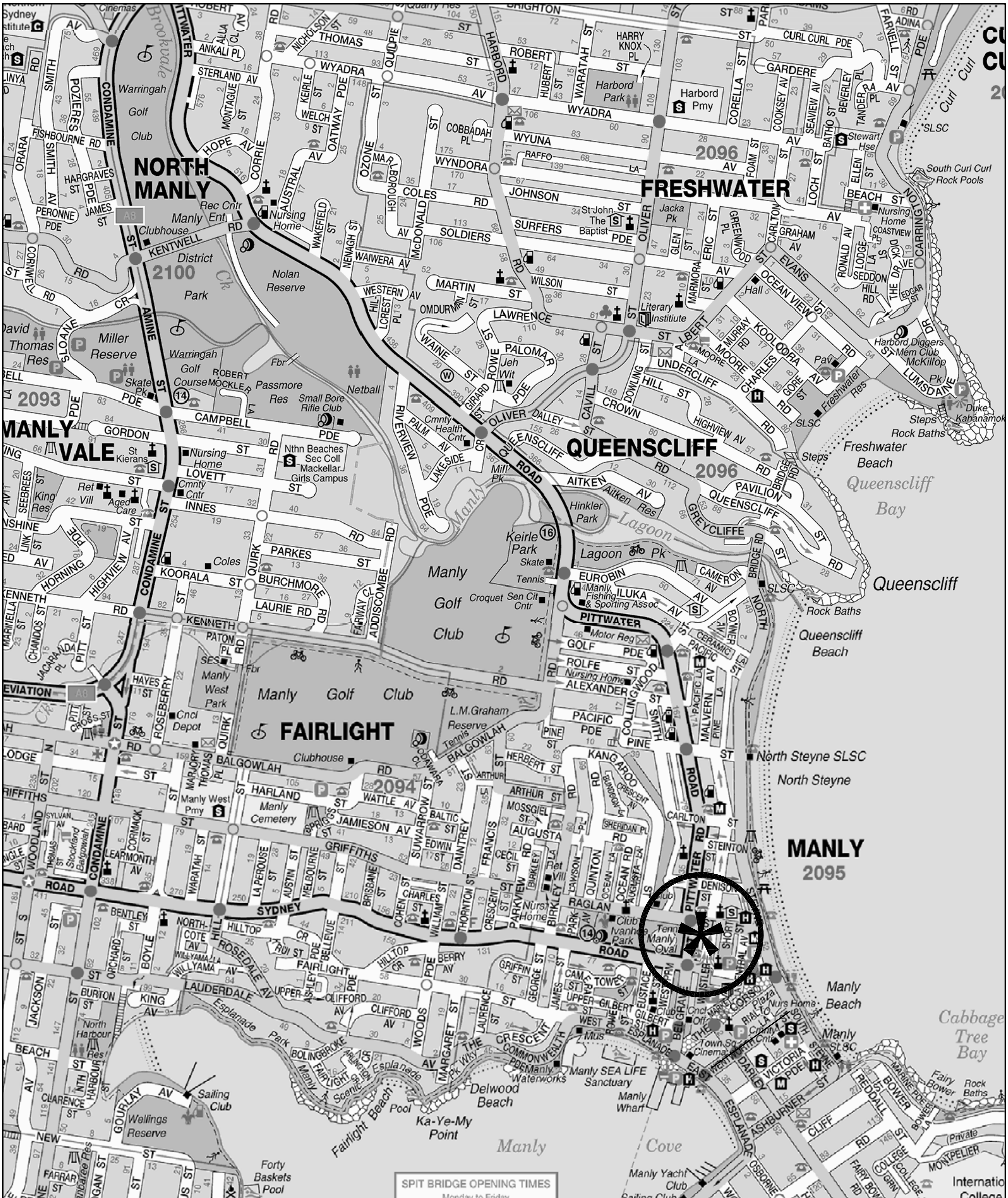
Manly is a very popular and scenic location which benefits from good public transport services and a vibrant commercial centre. The high demand for new residential apartments in the area has resulted in an ongoing process of redeveloping under-utilised sites.

The proposed development scheme involves major alterations and additions to an existing residential cottage and comprises:

- 8 apartments
- 2 retail tenancies
- basement carparking with car lift access

The purpose of this report is to:

* describe the site, its context and proposed development scheme
* describe the existing road network and conditions on that network
* assess the adequacy of the proposed on-site parking provision
* assess the proposed vehicle access and the potential traffic implications
* assess the proposed internal circulation and servicing arrangements



LEGEND

LOCATION

FIG 1

2.0 Proposed Development Scheme

2.1 Site, Context and Existing Use

The site (Figure 2) is Lot B in DP 368451 which occupies square shaped area of some 277m². The site has a frontage of some 17.75m to the eastern side of Whistler Street located within the Manly Commercial Centre. The surrounding uses comprise:

* the small retail buildings which adjoin to the north and south
* the commercial buildings and multi-level public car park on the eastern side of Whistler Street
* the mixed retail and commercial uses which extend along Belgrave Street
* the main commercial 'strip' along The Corso to the south
* the Ferry Wharf and Bus Interchange located to the south

There is an existing older style residential cottage on the site at present.

2.2 Proposed Development

It is proposed to demolish the existing buildings and excavate the site to provide for basement parking and a level building platform. New 5-level building will be constructed comprising:

8 x Two-Bedroom Apartments
2 x Ground level retail units (156m^2)

A total of 13 parking spaces will be provided in the basement level with access by car lift and a new driveway on the Whistler Street frontage.

Details of the proposed development are provided on the architectural drawings prepared by Wolski Coppin Architecture which accompany the Development Application and are reproduced in parts in Appendix A.

LEGEND

N

SITE

FIG 2

3.0 Road Network and Traffic Conditions

3.1 Road Network

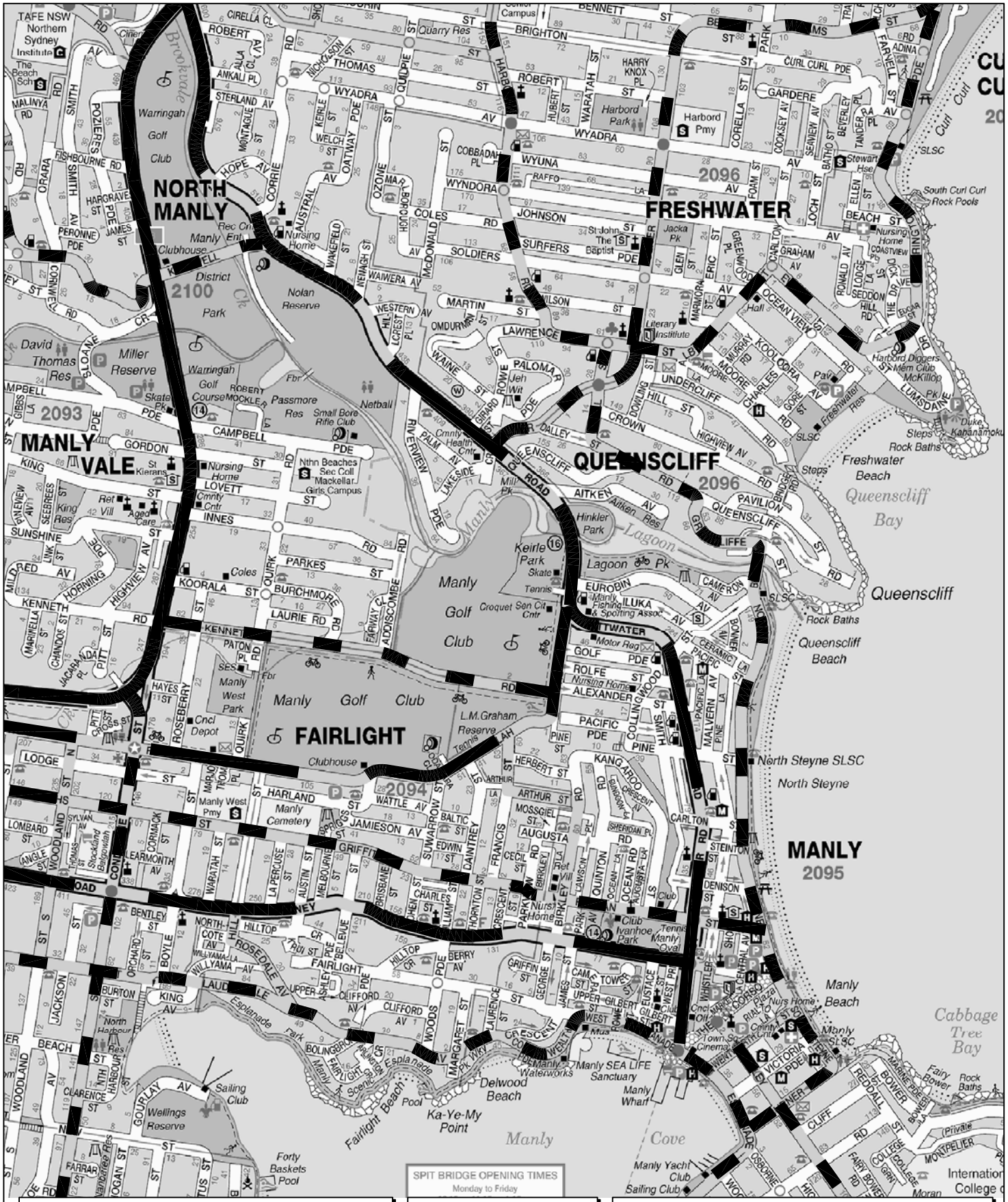
The road network serving the site (Figure 3) comprises:

* *Pittwater Road / Belgrave Street* – a State Road and arterial route linking between Manly and Mona Vale
* *Sydney Road* – a State Road and sub-arterial road route linking between Manly and Balgowlah (local road east of Belgrave Street)
* *North Steyne / South Steyne* – a Regional Road and part of a collector route connecting between Manly and Queenscliffe
* *Whistler Street* – a local access road

3.2 Traffic Controls

The existing traffic controls, which have been applied to the road system serving the site, (Figure 4) comprise:

* the traffic signals on Belgrave Street/Pittwater Road at the:
    - Raglan Street intersection
    - Sydney Road intersection
    - Gilbert Street intersection
    - East Esplanade intersection
* the ONE WAY northerly traffic flow on Whistler Street
* the 1P restrictions along Whistler Street in the vicinity of the site



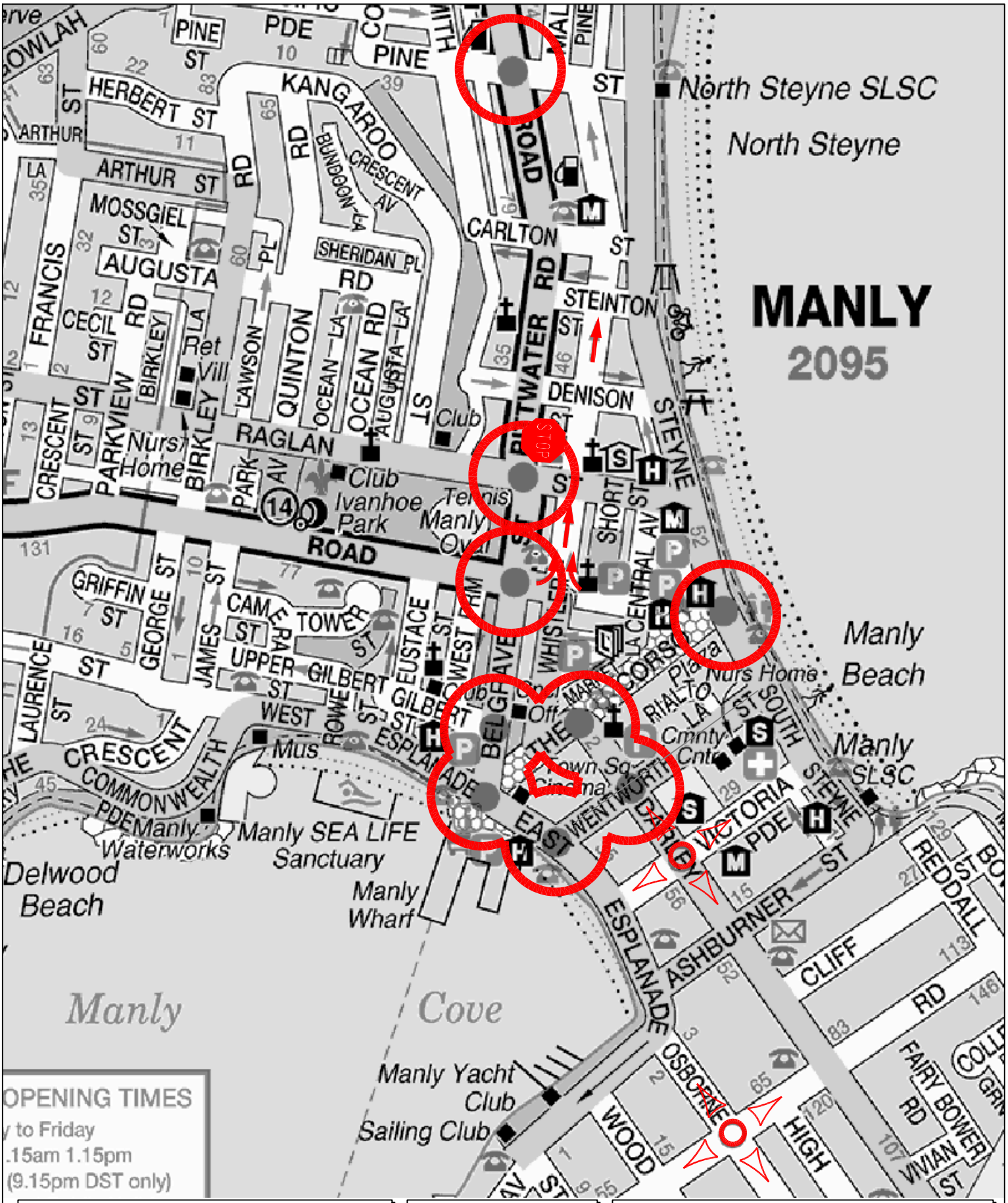
LEGEND

- ARTERIAL
- SUB-ARTERIAL
- COLLECTOR

N

ROAD NETWORK

FIG 3



LEGEND

- TRAFFIC SIGNAL CONTROL
- ROUNDABOUT
- RESTRICTED TURNING MOVEMENT

N

TRAFFIC CONTROLS

FIG 4

3.3 Traffic Conditions

An indication of the traffic conditions on the road system serving the site is provided by the data published by RMS. The data is expressed in terms of Annual Average Daily Traffic (AADT) and the most recent recorded volumes are provided in the following:

Location	AADT
Pittwater Road (W of Raglan St)	15,371
Sydney Road (W of Pittwater Rd)	16,523

The traffic movements along Whistler Street adjacent to the site are only some 150 vph during the AM and PM peak periods.

Traffic conditions in the vicinity of the site are generally satisfactory with a high level of control provided by the numerous traffic signals which provide for vehicle access and pedestrian crossing movements.

3.4 Transport Services

There are convenient public transport services in the vicinity of the site including bus and ferry services (Appendix B details). These frequent high capacity services provide connections to the City, the rail network, other bus services and the surrounding residential areas. It is apparent that the site is conveniently located to take advantage of those frequent high capacity transport services.

4.0 Access and Traffic

4.1 Access

Vehicle access to / from the basement will involve a car lift which will be programmed to automatically “revert” to and “wait” at the ground level to facilitate ingressing car access. If a car approaches to enter while an egress movement is occurring (a small LED warning sign will be displayed externally), the ingressing car will enter and be able to wait in the designated waiting bay located behind the car lift while the egressing car travels to the ground level.

The proposed system replicates that adopted for a development scheme for 138/139 North Steyne, Manly (see Appendix C details) and details of this arrangement are elaborated further in the following section. The ability for egressing drivers to sight pedestrians walking along the frontage footway will be assisted by small mirrors mounted under the proposed awning. If considered necessary a flashing warning light system could also be provided.

A vehicle waiting bay is provided behind the car lift to accommodate an ingress vehicle while the lift transports an egress vehicle from the basement. In a detailed step-by-step manner it is advised by lift manufacturer ‘Safe Tech’ that the system will be set up to operate as follows:

1. By default, the car lift dwells on the ground level to receive ingress vehicles.
2. When called by a resident in the basement, the car lift travels down, thus leaving an opening allowing any ingress vehicle to access the car lift’s waiting area via the roof of the lift during this time.
3. Once the lift detects no vehicle activity on the ground level (i.e. vehicle above the lift accessing the waiting bay) it shuts the lift door and transport the egress vehicle to the ground level.
4. When arrived at the ground level the street-fronting lift door will be opened.

5. The egress vehicle will exit onto the street.

6. The waiting bay lift door will now be opened while the street-fronting door shuts concurrently

7. The ingress vehicle will reverse into the lift to be transported down to the basement

While the above arrangement accommodates opposing traffic flows appropriately, it is nevertheless noted that the parking spaces are of residential nature only. There will be minimal opposing traffic flows during the peak periods and as such it is not anticipated that the lift operation would impede on the Whistler Street traffic movements.

4.2 Traffic

RMS have released updated traffic generation data for high density apartments however, this is for sites in convenient proximity to railway stations.

Having regard for the earlier RMS criteria for “high density” residential developments, the following assessment is made:

Proposed 8 apartments @ 0.29 vtph 2 – 3 vtph

Thus, the projected peak traffic generation is only some 2-3 vtph and the potential impact of this on the access driveway and the surrounding road system will be entirely imperceptible.

5.0 Parking

Council's DCP specifies a parking provision in relation to the proposed development as follows:

Residential

0.6 resident space per studio/1 bed; plus
1 resident space per 2 bed apartment; plus
2 resident spaces per 2 bed apartment; plus
0.16 visitor parking space for each dwelling

Retail 1 space per 40m^2 GFA

Application of these criteria to the proposed development would indicate the following:

8 x Two-bedroom apartments	8 spaces
Visitors (8 apartments)	1.3 (2) spaces
Retail (156m^2)	4 spaces
Total:	**14 spaces**

It is proposed to provide 13 spaces (with a contribution for 1 space) including 1 accessible space in the basement along with provision for bicycles in the resident stores which comply with Class 1 locker dimensions. The primary parking system is entirely independent and accommodates 11 spaces. It operates with a 'puzzle-like' arrangement, allowing vehicles to be moved vertically and horizontally within the system to 'receive' or 'present' vehicles to users (see details provided in Appendix D). The remaining 2 spaces are provided in the form of a conventional stacker.

It is apparent that the proposed parking provision will satisfy the demands of the proposed development and will not result in any on-street overflow.

6.0 Internal Circulation and Servicing

Internal Circulation

The design of the access aisle and circulation area within the carpark will comply with the requirements of AS2890.1. The arrangements, which include an appropriately located turntable, reflect the site constraints, however, it is demonstrated that there will be quite adequate provision for manoeuvring as indicated on the turning path assessment in Appendix E.

Servicing

Refuse will be removed from the street by Council services while any small service vehicles (e.g. service personnel) will be able to park in the adjacent public car park. Any occasional delivery vehicle requirements will be satisfied by the available on-street parking as is normal for small developments of this nature. In particular, it is noted that there are 2 sign-posted “Loading Bays” some 20m south of the site at Whistler Street.

7.0 Council Issues

Council in its assessment raised the following access and circulation issues which are subsequently responded to in the following:

6. Car Parking System

Under constrained circumstance, whether it is a conventional stacker system or an integrated system, such as that proposed here, would make no difference in terms of waiting times. The perceived added benefit of a conventional stacker, in Council's description, is only realised if residents of different car stackers could concurrently park/unpark their vehicles in the carpark. However, the constraints presented in this carpark would naturally preclude that from occurring, that is, no 2 vehicles can park/unpark their cars concurrently in a convenient/safe manner if their spaces are independent of each other, quite apparently due to the limited available manoeuvring area. In fact, if residents attempt to 'squeeze' their way in while their neighbour is parking/unparking their car, the resulting outcome could be a safety hazard. In my assessment of the appropriateness of this proposed arrangement, I take into consideration (1) the traffic generation, which is very low in this context, (2) the likelihood of conflicting traffic flow, which is also low given its residential nature, (3) the site circumstances, which is constrained in this context. On balance, it is my view that the proposed arrangement would operate in a reasonably safe manner that is unlikely to result in undesirable crash/incident amongst users. On the street level, I am also of the view that because there will be minimal conflicting movement, coupled with the one-way north only traffic restriction on Whistler Street, that any traffic implications to Whistler Street as a result of this lift operation will not be undue.

7. Loading Facilities

The site is constrained and the retail component comprises only 2 small units of some 180m^2 GFA. It is not pragmatic to provide dedicated loading facility for retail units of this scale and nature. The need for loading access can be readily satisfied by the 2 signposted Loading Zone spaces some 20m south of the site at Whistler Street.

8. Passing/Waiting Bay

A waiting vehicle will not impede the traffic flow at Whistler Street because it will be waiting/stopping momentarily on the kerbside lane, not the traffic lane.

9. Sight Lines

To overcome concerns relating to sight lines, convex mirrors could be installed on the northern and southern corners of the lift to enable pedestrian sight lines. Further, if necessary, low-profile flashing LED lights could be provided on the lift doors to heighten pedestrian awareness as the lift door opens.

8.0 Conclusion

Assessment of the proposed mixed use development at Manly has concluded that:

* there will not be any adverse traffic / safety implications

* the proposed parking provision will be adequate and compliant with Council's code

* the waiting bay provided with the car lift satisfactorily accommodate the need of a waiting vehicle such that reliance on Whistler Street is not necessary

* the proposed vehicle access, internal circulation and servicing arrangements will be suitable and appropriate

Appendix A

Development Plans

(BELGRAVE ST.)

SINGLE STOREY WITH ROOF TERRACE (AWNING OVER)

SINGLE STOREY BRICK (METAL ROOF)

No.39 (BELGRAVE ST.) TWO STOREY BRICK COMMERCIAL & UNIT BUILDING (TILE ROOF)

No.33 (BELGRAVE ST.) THREE STOREY REND COMMERCIAL & UNIT BUILDING (METAL ROOF)

BB

5,700

50 CLEARANCE

5,600 PLATFORM LENGTH

50 CLEARANCE

90°08'00"

15.87

BIKE RACKS

3,000

SHARED SPACE

STACKER

STACKERS WITHOUT LIP THIS SIDE

5,500

TURNTABLE

BULKY GOODS

CAR LIFT - SAFETECH (VEHICLE HOIST DOUBLE SCISSOR)

WALL ON TRAY

170 CLEARANCE

2,800 PLATFORM WIDTH

3,140

170 CLEARANCE

PUMP WELL & PUMPS TO HYDRAULIC ENG DETAILS

1,450

5,000

4,790

7,595

200

5,500

STACKER (TREND VARIO 4300-200)

35.04 m²

2,400 PLATFORM WIDTH

17,755

EXTENT OF EXIST. COTTAGE OVER TO BE KEPT SHOWN SHADED

SW PIT TO HYDRAULIC ENG DETAILS

1,450

6,429

13,131

5,000

ELEC CPD

RETAIL STORAGE

STORAGE

MB

EXTENT OF TRAY

LEDGE OF SHAFT

181° 27' 00"

1°18'00"

271°05' 00"

15.81

A

A1

AA

B

B1

C

STREET

WHISTLER

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NOTES:

FIGURED DIMENSIONS ARE TO BE TAKEN IN PREFERENCE TO SCALED DIMENSIONS.

THE CONTRACTOR IS TO CHECK AND VERIFY FIGURED DIMENSIONS PRIOR TO ANY COMMENCEMENT OF WORK ON SITE.

REVISIONS:

DATE	REV	DESCRIPTION

PROJECT TITLE:

RESIDENTIAL DEVELOPMENT & ALTERATIONS & ADDITIONS TO EXISTING COTTAGE

21 WHISTLER ST MANLY

CLIENT:

Urban Partners

DRAWING TITLE:

BASEMENT

DRAWING No: **DA01**

PROJECT No: 21806

REVISION:

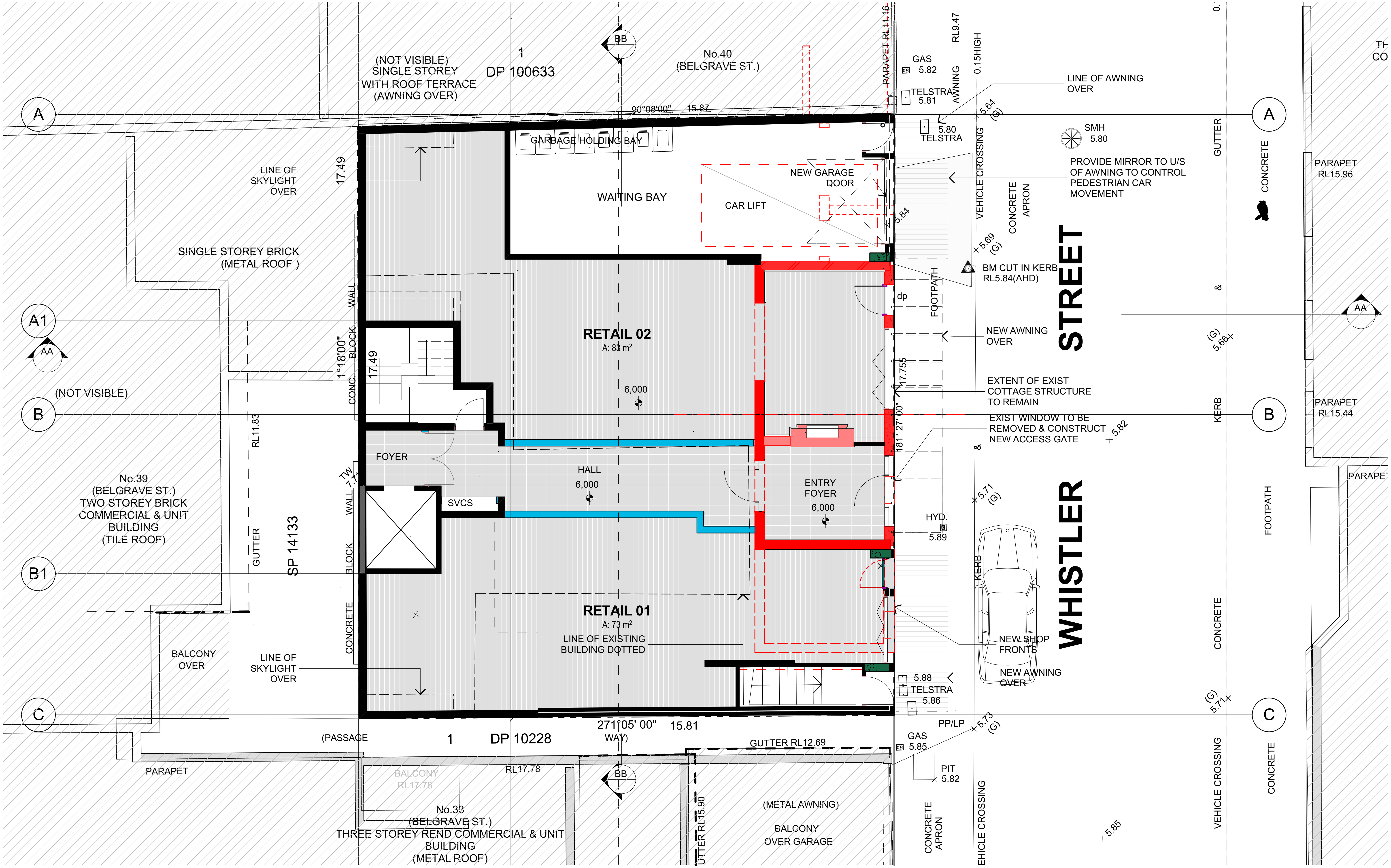
SCALE: 1:100 @ A3

DATE: 7/02/2020

NORTH POINT: N

BIM Server: BIMSRV01 - BIM Server 20/21806 21 Whistler Street Manly with Heritage 5 11 19

PLOT DATE: 7/02/2020



(NOT VISIBLE)
SINGLE STOREY
WITH ROOF TERRACE
(AWNING OVER)
1
DP 100633
No.40
(BELGRAVE ST.)
90°08'00" 15.87
PARAPET RL11.16
GAS 5.82
TELSTRA 5.81
AWNING
RL9.47
0.15HIGH
LINE OF AWNING OVER
5.64 (G)
5.80 TELSTRA
SMH 5.80
GUTTER
CONCRETE
PARAPET RL15.96
GARBAGE HOLDING BAY
LINE OF SKYLIGHT OVER
17.49
WAITING BAY
NEW GARAGE DOOR
CAR LIFT
5.84
PROVIDE MIRROR TO U/S OF AWNING TO CONTROL PEDESTRIAN CAR MOVEMENT
VEHICLE CROSSING
CONCRETE APRON
5.69 (G)
SINGLE STOREY BRICK (METAL ROOF)
BM CUT IN KERB RL5.84(AHD)
FOOTPATH
STREET
dp
WALL
BLOCK
CONC
1°18'00"
RETAIL 02
A: 83 m²
6,000
NEW AWNING OVER
(G) 5.66
17.755
EXTENT OF EXIST COTTAGE STRUCTURE TO REMAIN
(NOT VISIBLE)
RL11.83
181° 27' 00"
EXIST WINDOW TO BE REMOVED & CONSTRUCT NEW ACCESS GATE
5.82
KERB
PARAPET RL15.44
FOYER
HALL
6,000
TW
WALL 7.1
No.39
(BELGRAVE ST.)
TWO STOREY BRICK COMMERCIAL & UNIT BUILDING
(TILE ROOF)
SVCS
ENTRY FOYER
6,000
HYD. 5.89
5.71 (G)
PARAPET
FOOTPATH
GUTTER
SP 14133
WHISTLER
RETAIL 01
A: 73 m²
LINE OF EXISTING BUILDING DOTTED
CONCRETE
BALCONY OVER
LINE OF SKYLIGHT OVER
NEW SHOP FRONTS
NEW AWNING OVER
5.88 TELSTRA 5.86
(G) 5.71
271°05' 00" 15.81
PP/LP
5.73 (G)
(PASSAGE WAY)
1
DP 10228
GUTTER RL12.69
GAS 5.85
PARAPET
BALCONY RL17.78
RL17.78
PIT 5.82
No.33
(BELGRAVE ST.)
THREE STOREY REND COMMERCIAL & UNIT BUILDING
(METAL ROOF)
GUTTER RL15.90
(METAL AWNING)
BALCONY OVER GARAGE
CONCRETE APRON
VEHICLE CROSSING
5.85
VEHICLE CROSSING
CONCRETE
A
A1
B
B1
C
AA
BB

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DATE	REV	DESCRIPTION

PROJECT TITLE: RESIDENTIAL DEVELOPMENT & ALTERATIONS & ADDITIONS TO EXISTING COTTAGE

21 WHISTLER ST MANLY

CLIENT: **Urban Partners**

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DRAWING TITLE: GROUND

DRAWING No: **DA02**

PROJECT No: 21806

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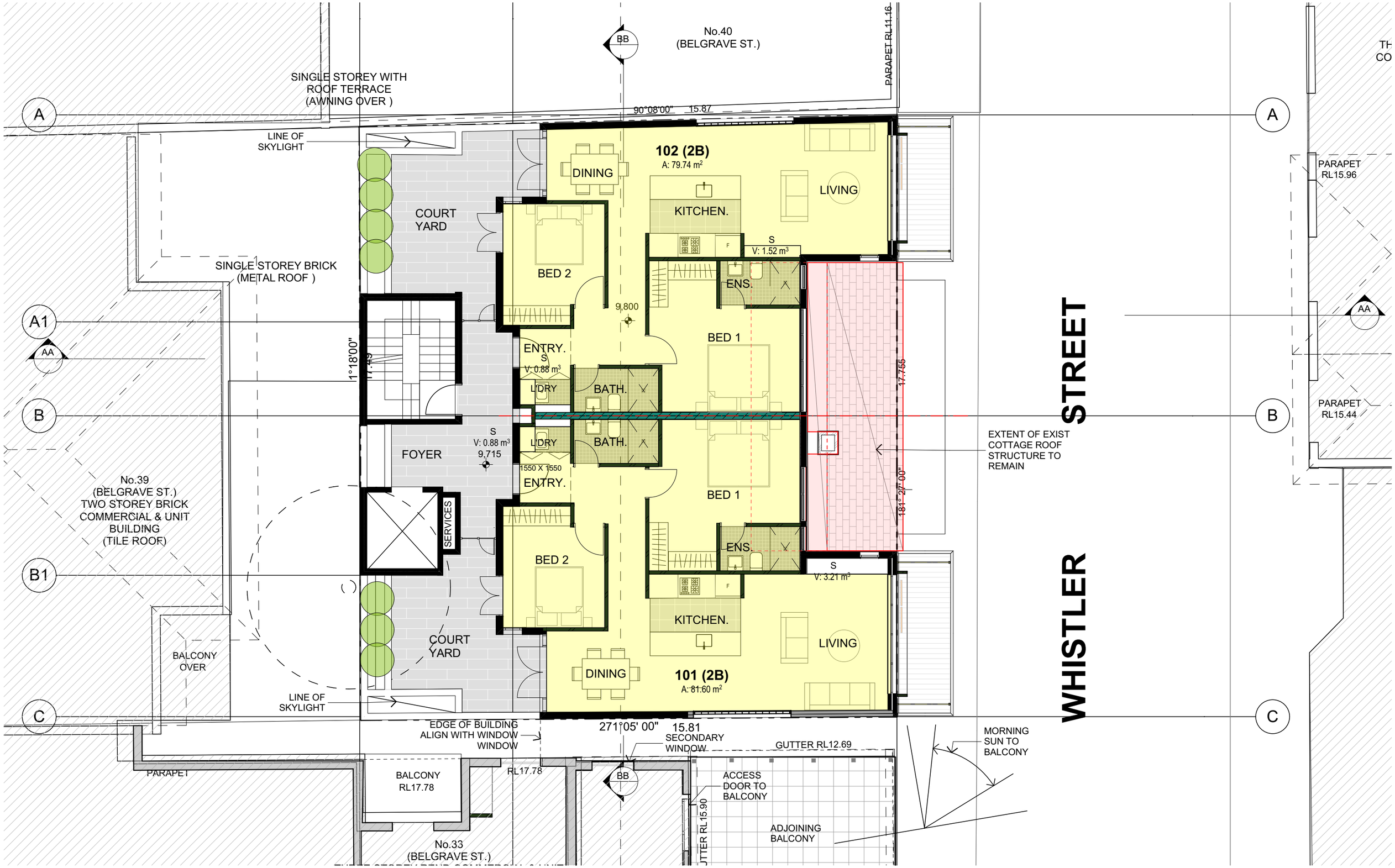

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REVISIONS:

DATE	REV	DESCRIPTION

PROJECT TITLE:

RESIDENTIAL DEVELOPMENT & ALTERATIONS & ADDITIONS TO EXISTING COTTAGE

21 WHISTLER ST MANLY

CLIENT:

Urban Partners

ARCHITECT:

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DRAWING TITLE:

LEVEL 1

DRAWING No: **DA03**

PROJECT No: 21806

REVISION:

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DATE: 13/12/2019

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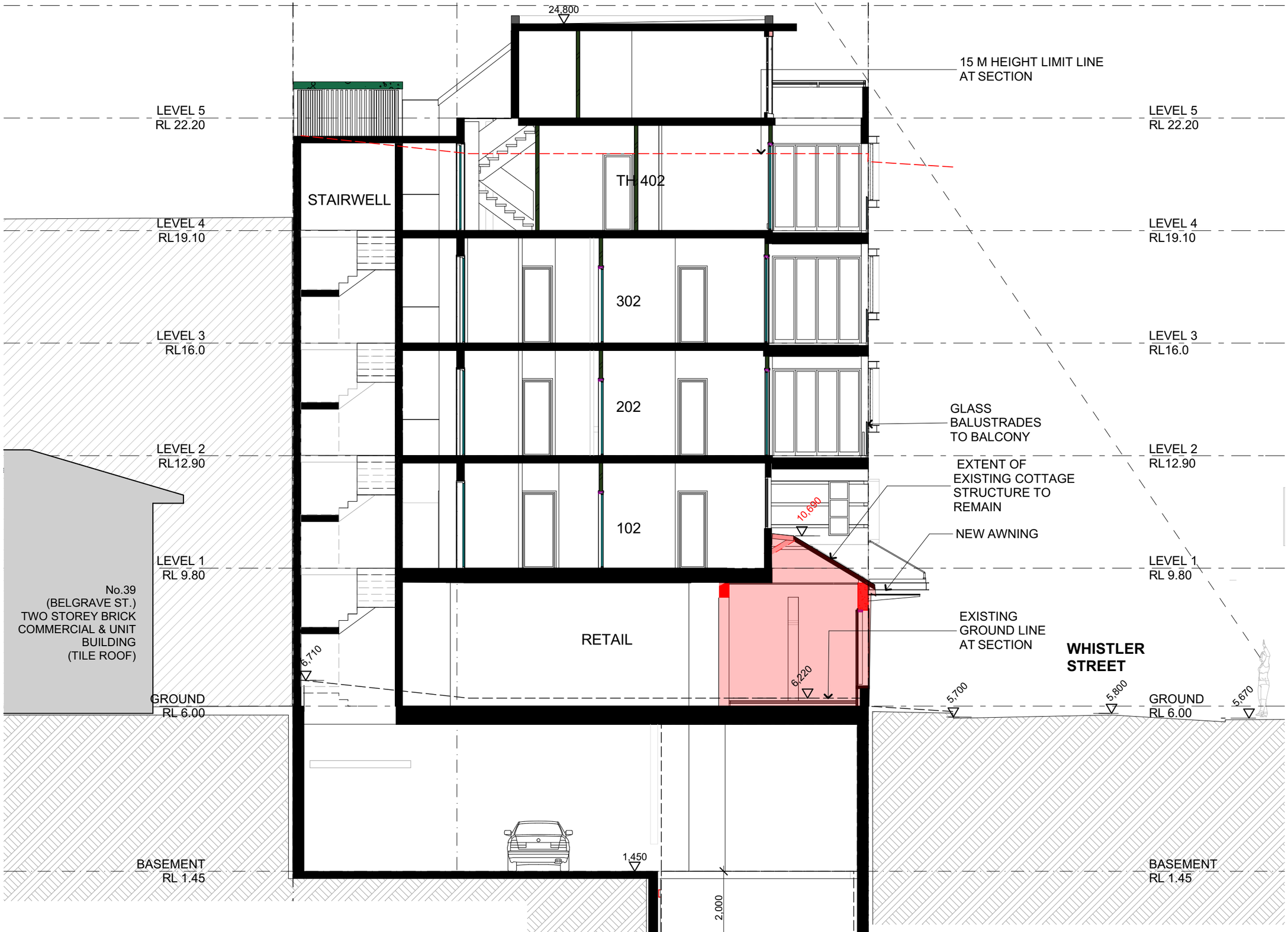
PLOT DATE: 7/02/2020



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REVISIONS:

DATE	REV	DESCRIPTION

PROJECT TITLE:

RESIDENTIAL DEVELOPMENT & ALTERATIONS & ADDITIONS TO EXISTING COTTAGE

21 WHISTLER ST MANLY

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DRAWING TITLE: SECTION AA

DRAWING No: **DA08**

PROJECT No: 21806

REVISION:

NORTH POINT:

SCALE: 1:100 @ A3

DATE: 13/12/2019

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PLOT DATE: 7/02/2020

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DATE	REV	DESCRIPTION

PROJECT TITLE:

RESIDENTIAL DEVELOPMENT & ALTERATIONS & ADDITIONS TO EXISTING COTTAGE

21 WHISTLER ST MANLY

CLIENT:

Urban Partners

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DRAWING TITLE:

EAST ELEVATION

DRAWING No: **DA10**

PROJECT No: 21806

REVISION:

NORTH POINT:

SCALE: 1:100 @ A3

DATE: 13/12/2019

BIM Server: BIMSRV01 - BIM Server 20/21806 21 Whistler Street Manly with Heritage 5 11 19

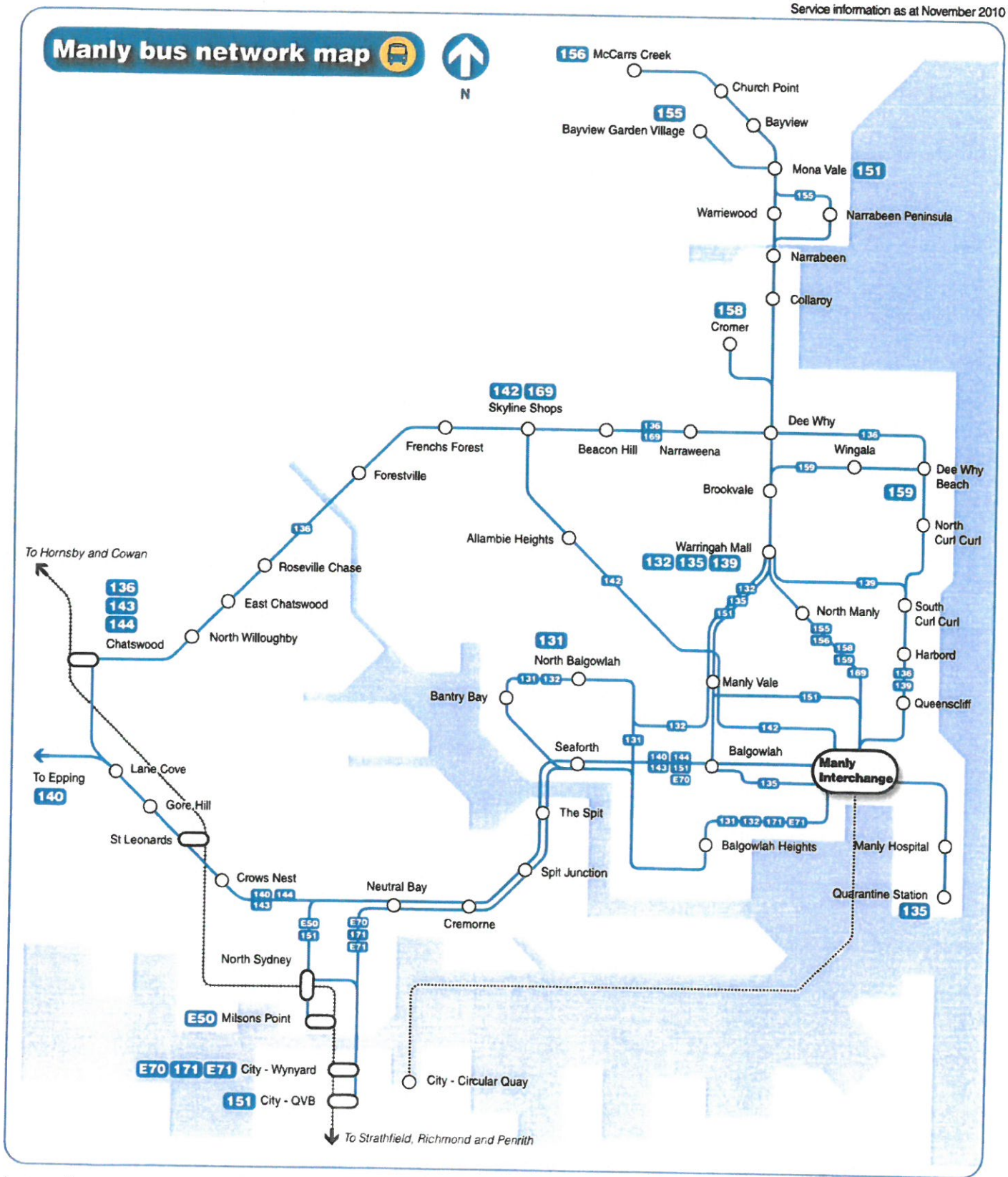
PLOT DATE: 7/02/2020

Appendix B

Transport Services

Service information as at November 2010

Manly bus network map

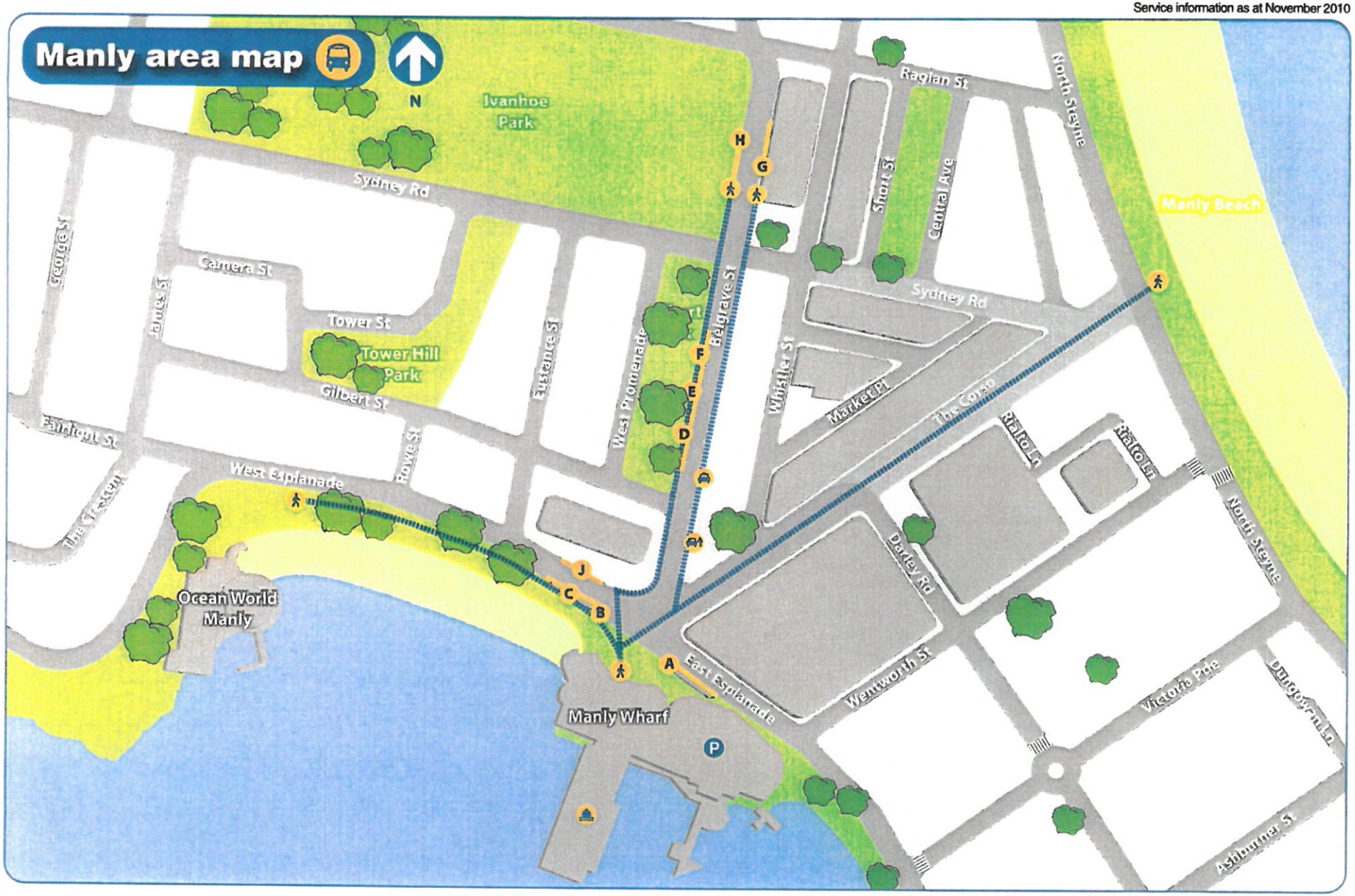


Legend

- Sydney Buses routes
- Ferry
- Rail line
- Railway station
- Bus route/suburb
- Bus/Rail interchange

Diagrammatic Map - Not to Scale

Service information as at November 2010



Legend

- A Bus stand
- P Parking
- Kiss and ride
- Ferry Wharf
- Walking Route
- Bus zone
- Taxi rank

Service information as at November 2010

Bus services at Manly

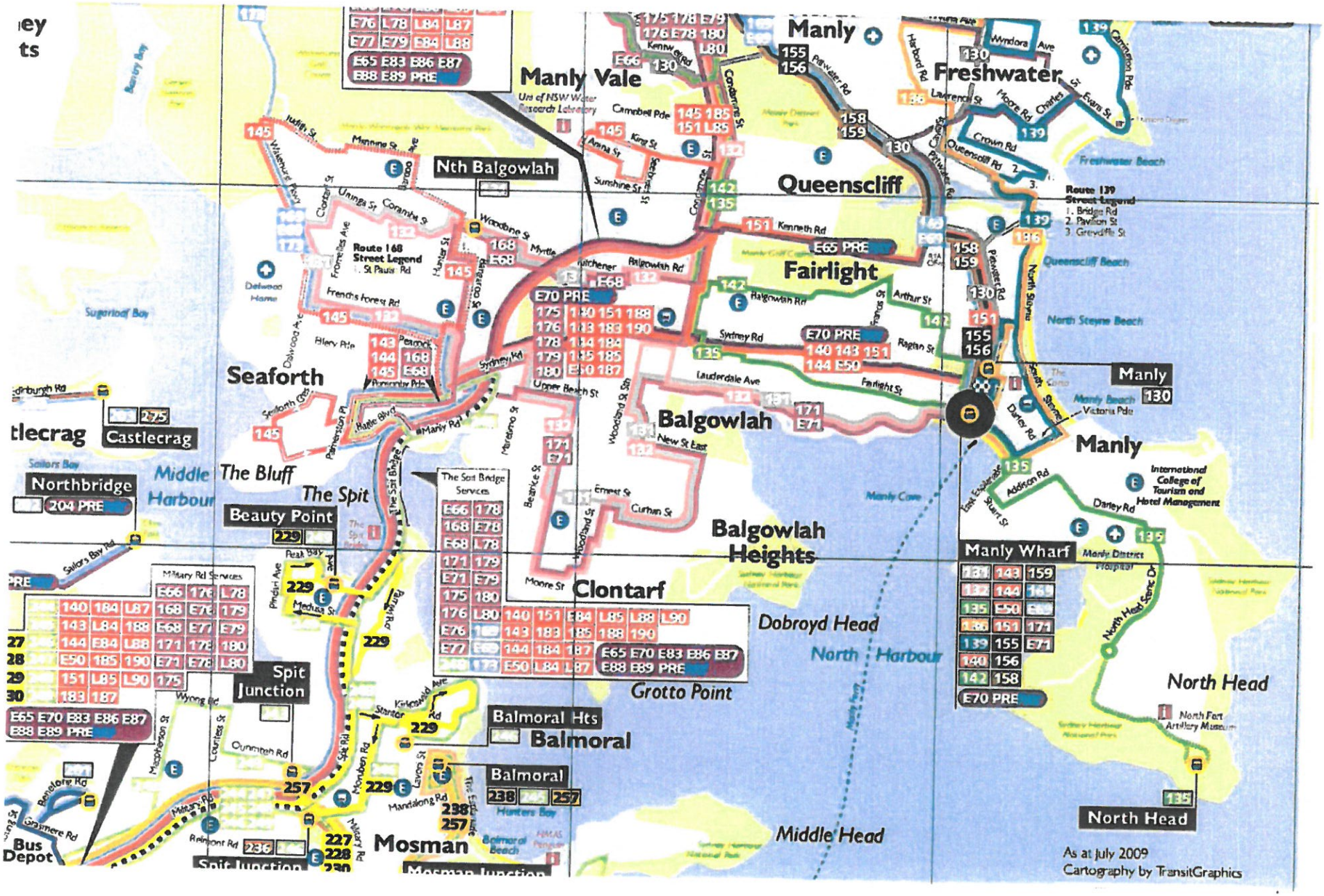
Bus departure information

Please use this listing to find your bus number, route destination and bus stand.
Refer to the Interchange Map to find the bus stand location.

Bus Stand	Route Number	Bus Route Destination
A	135	Warringah Mall via Balgowlah & Manly Vale
A	136	Chatswood via Curl Curl, Narraweena & Frenchs Forest
A	139	Warringah Mall via Harbord & South Curl Curl
B	155	Bayview Garden Village via Dee Why & Mona Vale
B	156	McCarrs Creek via Dee Why & Mona Vale
B	158	Cromer via Dee Why
B	159	Dee Why via Wingala
B	169	Narraweena via Dee Why
C	131	North Balgowlah via Balgowlah Heights
C	132	Warringah Mall via Balgowlah Hts & North Balgowlah
C	171/E71	City - Wynyard via Balgowlah Heights
D	143	Chatswood via Neutral Bay & St Leonards
D	144	Chatswood via Neutral Bay & RNS Hospital
E	140	Epping via Neutral Bay (Limited Stops)
E	142	Skyline Shops via Balgowlah & Allambie Heights
E	E50	Milsons Point (Express)
F	E70	City - Wynyard (Express)
G	151	City - QVB via Neutral Bay & North Sydney
H	151	Mona Vale via Manly Vale & Dee Why
J	135	Quarantine Station via Manly Hospital

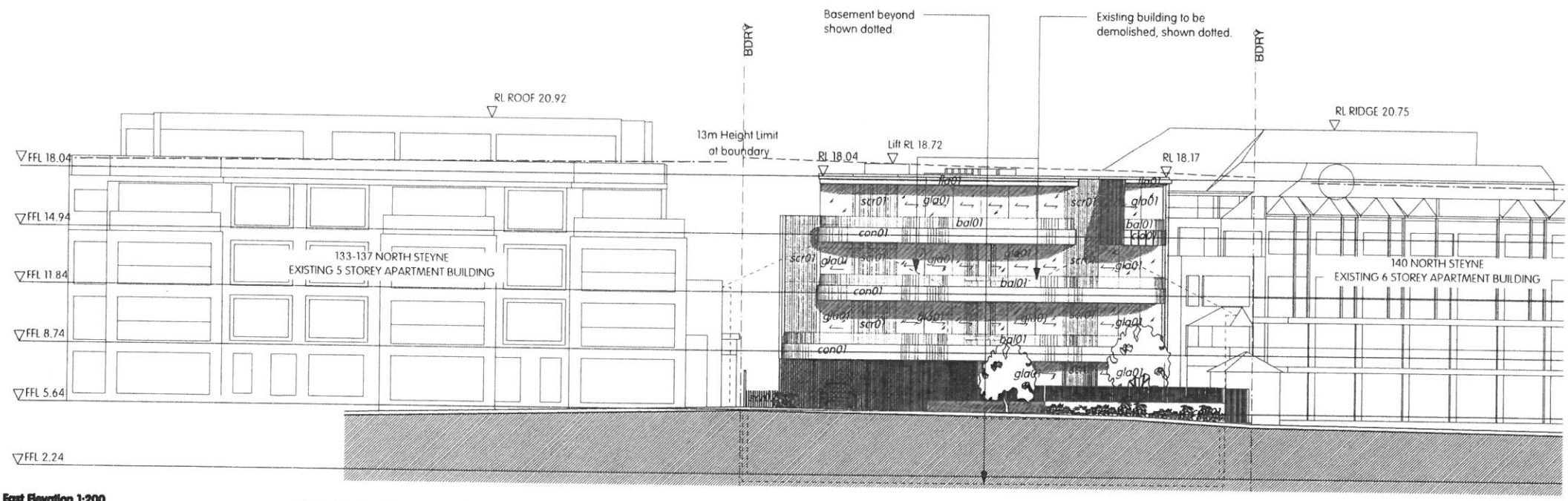
Bus Operator Legend

Sydney Buses

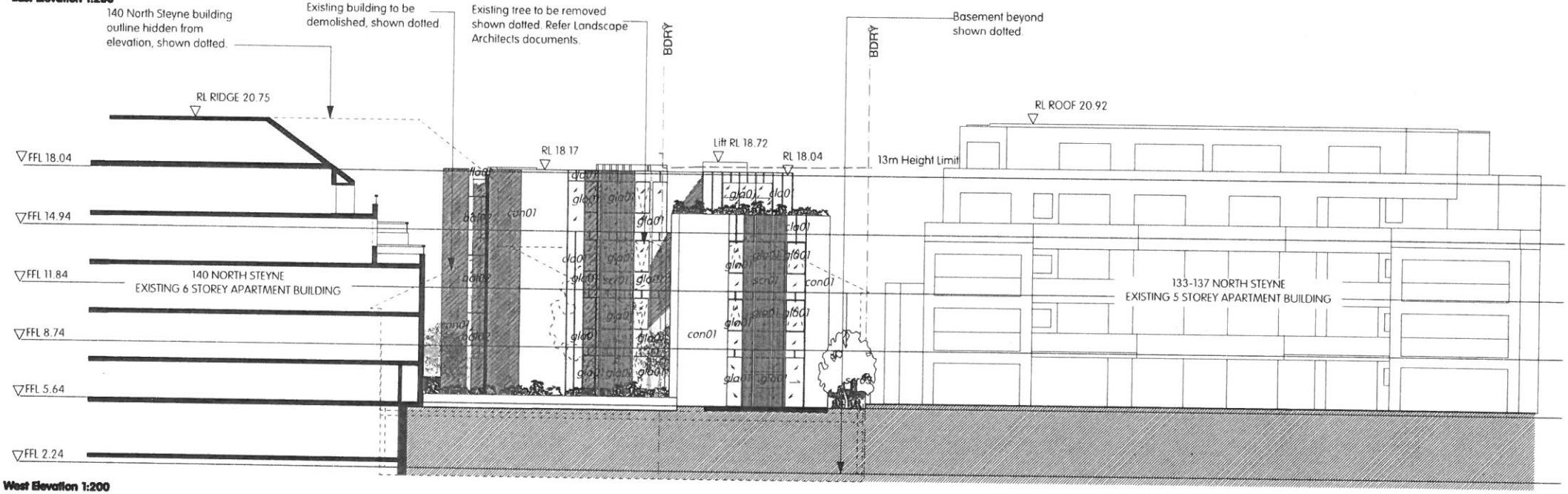

Manly
Manly Vale
Freshwater
Nth Balgowlah
Queenscliff
Fairlight
Seaforth
Balgowlah
Manly
Castlecrag
Northbridge
The Bluff
The Spit
Middle Harbour
Beauty Point
Balgowlah Heights
Clontarf
Manly Wharf
Dobroyd Head
North Harbour
Spit Junction
Grotto Point
Balmoral Hts
Balmoral
North Head
Bus Depot
Mosman
Middle Head
Route 168 Street Legend
1. St Pauls Rd
Route 139 Street Legend
1. Bridge Rd
2. Pavilion St
3. Greenhills St
The Spit Bridge Services
Military Rd Services
As at July 2009
Cartography by TransitGraphics

Appendix C

Comparable Access Plan



East Elevation 1:200



West Elevation 1:200

RobertsDay ABN 53 667 373 703
Level1 17 Randle SURRY HILLS NSW
T +61 2 8202 8000 E adam.russell@robertsday.com.au
NOMINATED ARCHITECT: Adam Russell ARB #6764

PRELIMINARY 01 DECEMBER 2017

REV. DATE DESCRIPTION

NOTES
- DRAWINGS FOR PRE DA APPLICATION ONLY
- ALL DIMENSIONS SHOWN IN MILLIMETRES = ALL LEVELS SHOWN IN METRES UNLESS OTHERWISE NOTED
- ALL DIMENSIONS + LEVELS TO BE CHECKED ON SITE PRIOR TO COMMENCEMENT OF WORK
- WORK TO FIGURED DIMENSIONS. DO NOT SCALE OFF DRAWINGS.
- VERIFY ALL DIMENSIONS ON SITE + REPORT ALL DISCREPANCIES TO THE ARCHITECT

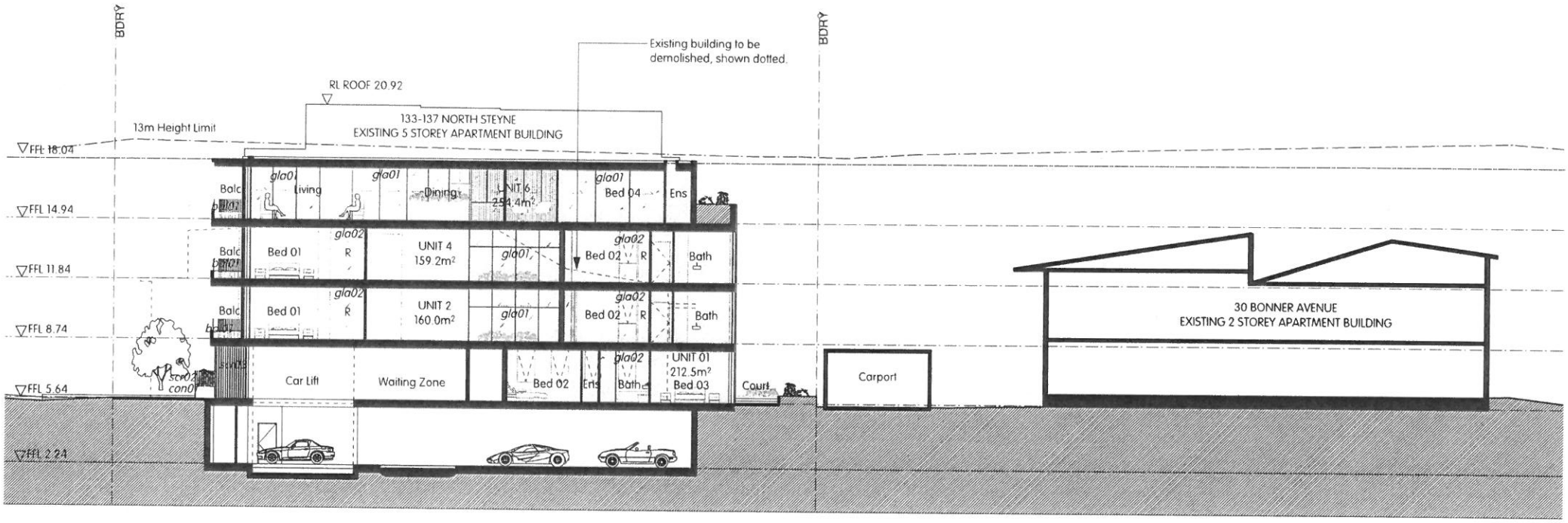
TN

0 1 2 3 mtr

CLIENT:
SUN PROPERTY GROUP

TITLE
ELEVATION EAST & WEST

PROJECT ADDRESS	JOB NO.	DATE	SCALE	DWG NO.	ISSUE
139 NORTH STEYNE MANLY	SPG-NOR	15.11.2017	1:200@A3	A300	-



RobertsDay ABN 53 667 273 703
Level4 17 Randle SURRY HILLS NSW
T +61 2 8202 8000 E adam.russell@robertsday.com.au
NOMINATED ARCHITECT: Adam Russell ABB #6764

PRELIMINARY 01 DECEMBER 2017

REV.	DATE	DESCRIPTION
-	-	-

NOTES
- DRAWINGS FOR PRE DA APPLICATION ONLY
- ALL DIMENSIONS SHOWN IN MILLIMETRES + ALL LEVELS SHOWN IN METRES UNLESS OTHERWISE NOTED
- ALL DIMENSIONS + LEVELS TO BE CHECKED ON SITE PRIOR TO COMMENCEMENT OF WORK
- WORK TO FIGURED DIMENSIONS. DO NOT SCALE OFF DRAWINGS.
- VERIFY ALL DIMENSIONS ON SITE + REPORT ALL DISCREPANCIES TO THE ARCHITECT

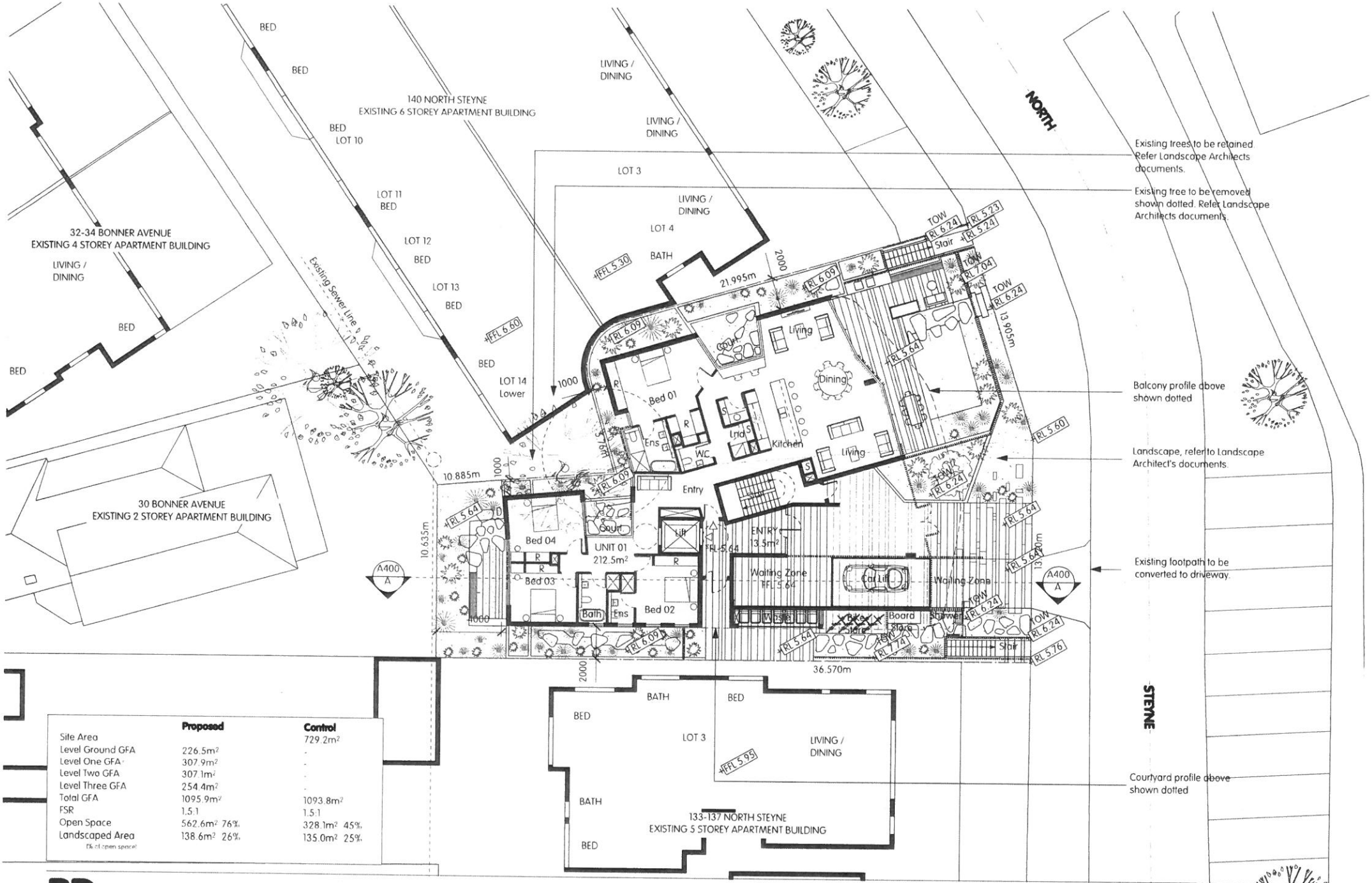
TN

0 1 2 3 mtr

CLIENT: SUN PROPERTY GROUP

TITLE: SECTION AA

PROJECT ADDRESS	JOB NO.	DATE	SCALE	DWG NO.	ISSUE
139 NORTH STEYNE MANLY	SPG-NOR	29.09.2017	1:200@A3	A400	-



	Proposed		Control	
Site Area			729.2m²	
Level Ground GFA	226.5m²		-	
Level One GFA	307.9m²		-	
Level Two GFA	307.1m²		-	
Level Three GFA	254.4m²		-	
Total GFA	1095.9m²		1093.8m²	
FSR	1.5:1		1.5:1	
Open Space	562.6m²	76%	328.1m²	45%
Landscaped Area	138.6m²	26%	135.0m²	25%

(% of open space)

PRELIMINARY 01 DECEMBER 2017

RobertsDay ABN 53 667 373 704
Level4 17 Randle SURRY HILLS NSW
T +61 2 8202 8000 E adam.russell@robertsday.com.au
NOMINATED ARCHITECT: Adam Russell #8676

REV. DATE DESCRIPTION

NOTES
- DRAWINGS FOR PRE DA APPLICATION ONLY
- ALL DIMENSIONS SHOWN IN MILLIMETRES - ALL LEVELS SHOWN IN METRES UNLESS OTHERWISE NOTED
- ALL DIMENSIONS + LEVELS TO BE CHECKED ON SITE PRIOR TO COMMENCEMENT OF WORK
- WORK TO FIGURED DIMENSIONS. DO NOT SCALE OFF DRAWINGS
- VERIFY ALL DIMENSIONS ON SITE - REPORT ALL DISCREPANCIES TO THE ARCHITECT

TN

0 1 2 3 mtr

CLIENT:
SUN PROPERTY GROUP

TITLE
PLAN LEVEL GROUND

PROJECT ADDRESS	JOB NO.	DATE	SCALE	DWG NO.	ISSUE
139 NORTH STEYNE MANLY	SPG-NOR	29.09.2017	1:200@A3	A201	-

Appendix D

Car Stacker Details

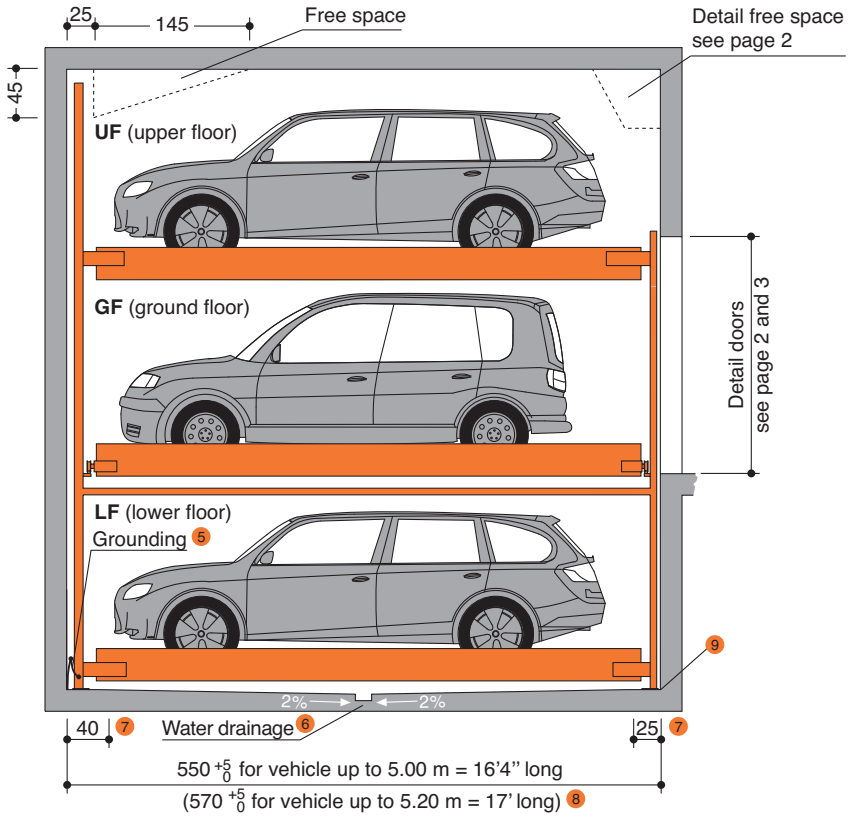
KLAUS Multiparking GmbH
Hermann-Krum-Straße 2
D-88319 Aitrach
Fon +49 (0) 7565 508-0
Fax +49 (0) 7565 508-88
info@multiparking.com
www.multiparking.com

PRODUCT DATA

CE CONFORMITY

trendvario 4300

2000 kg [1] / 2600 kg [2]



Loadable up to 2600 kg! Single parking spaces can also be upgraded to handle heavier loads at a later date!

Dimensions

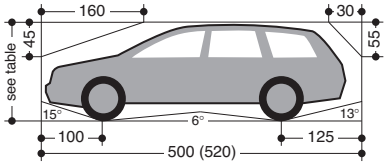
Tolerances for space requirements $^{+3}_{0}$ [3]
Dimensions in cm.

Suitable for

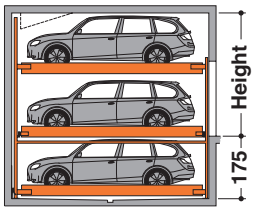
Standard passenger cars:
Limousine, station wagon, SUV, van according to clearance and maximal surface load.

	Standard	Special [2]
Width	190 cm [4]	190 cm [4]
Weight	max. 2000 kg	max. 2600 kg
Wheel load	max. 500 kg	max. 650 kg

Clearance profile

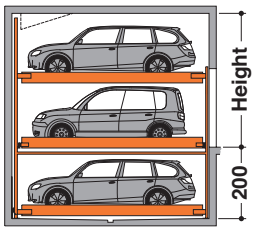


4300-175



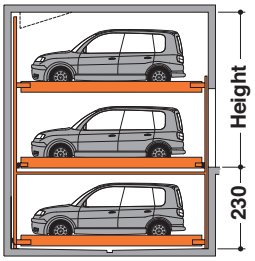
Height	Car height UF	GF	LF
325	150	150	150
345	150	170	150
365	150	190	150
365	170	170	150
380	150	205	150
405	190	190	150
435	205	205	150

4300-200



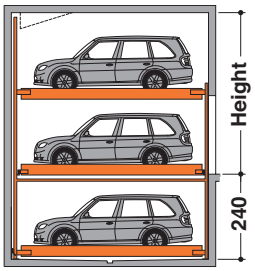
Height	Car height UF	GF	LF
350	150	175	175
375	175	175	175
380	150	205	175
405	175	205	175
435	205	205	175

4300-230



Height	Car height UF	GF	LF
380	150	205	205
405	175	205	205
420	190	205	205
435	205	205	205

4300-240



Height	Car height UF	GF	LF
390	150	215	215
405	165	215	215
415	175	215	215
435	195	215	215
445	205	215	215
455	215	215	215

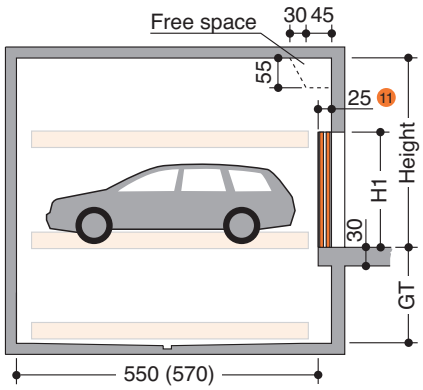
1. Standard type
2. Special system: maximum load for extra charge.
3. To follow the minimum finished dimensions, make sure to consider the tolerances according to VOB, part C (DIN 18330 and 18331) and the DIN 18202.
4. Car width for platform width 230 cm. If wider platforms are used it is also possible to park wider cars.
5. Potential equalization from foundation grounding connection to system (provided by the customer).
6. Slope with drainage channel and sump.
7. These floor areas need to be horizontal and on equal level across the full width of the pit
8. For convenient use of your parking space and due to the fact that the cars keep becoming longer we recommend a pit length of 570 cm.
9. At the transition section between pit floor and walls no hollow mouldings/coves are possible. If hollow mouldings/coves are required, the systems must be designed smaller or the pits accordingly wider.

! If sprinklers are required make sure to provide the necessary free spaces during the planning stage.

TrendVario 4300 | Code number 585.29.210-012 | Version 01.2017

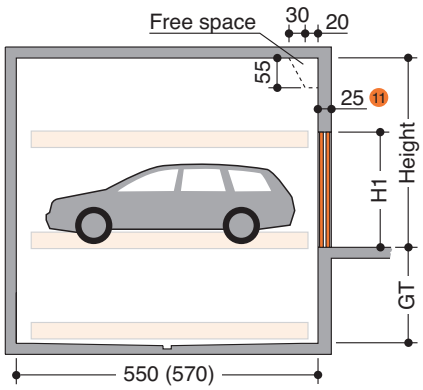
Garages with sliding doors (standard) I Widths dimensions

Sliding door behind columns



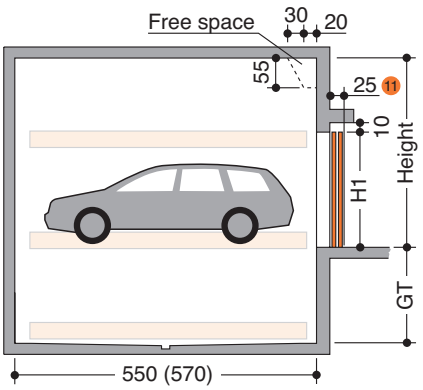
Type	GT	Height	H1
4300	175	325/345/365/405	210
4300	175	380/435	220
4300	200	350/375	210
4300	200	380/405/435	220
4300	230	380/405/420/435	220
4300	240	390/405/415/435/445/455	230

Sliding door between columns



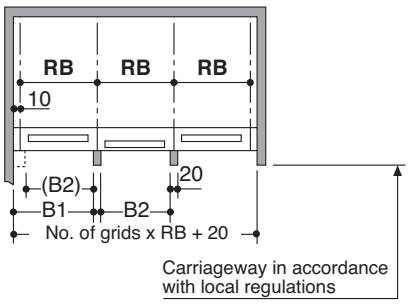
Type	GT	Height	H1
4300	175	325/345/365/405	220
4300	175	380/435	230
4300	200	350/375	220
4300	200	380/405/435	230
4300	230	380/405/420/435	230
4300	240	390/405/415/435/445/455	240

Sliding door in front of columns



Type	GT	Height	H1
4300	175	325/345/365/405	220
4300	175	380/435	230
4300	200	350/375	220
4300	200	380/405/435	230
4300	230	380/405/420/435	230
4300	240	390/405/415/435/445/455	240

Columns per each grid unit

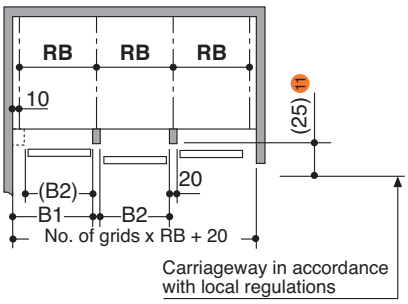


Usable platform width	RB [10]	B1	B2
230	250	250	230
240	260	260	240
250	**270**	**270**	**250**
260	**280**	**280**	**260**
270	**290**	**290**	**270**

Columns per each grid unit

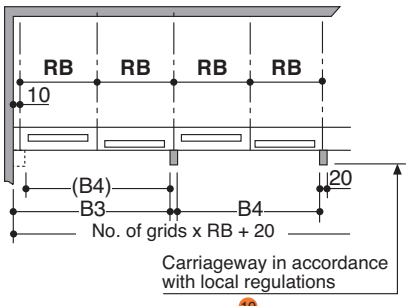
Not available!

Columns per each grid unit



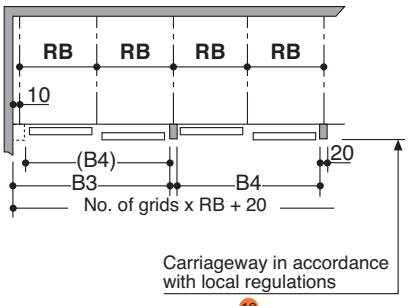
Usable platform width	RB [10]	B1	B2
230	250	250	230
240	260	260	240
250	**270**	**270**	**250**
260	**280**	**280**	**260**
270	**290**	**290**	**270**

Columns every second grid unit



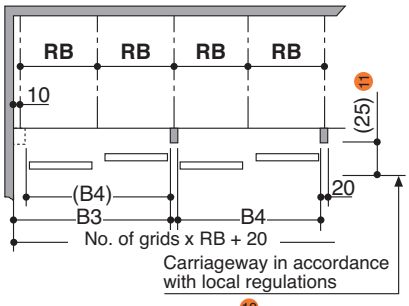
Usable platform width	RB [10]	B3	B4
230	250	500	480
240	260	520	500
250	**270**	**540**	**520**
260	**280**	**560**	**540**
270	**290**	**580**	**560**

Columns every second grid unit



Usable platform width	RB [10]	B3	B4
230	250	500	480
240	260	520	500
250	**270**	**540**	**520**
260	**280**	**560**	**540**
270	**290**	**580**	**560**

Columns every second grid unit



Usable platform width	RB [10]	B3	B5
230	250	500	480
240	260	520	500
250	**270**	**540**	**520**
260	**280**	**560**	**540**
270	**290**	**580**	**560**

According to the BGR 232, an inspection book is required for the commercial use of a gate with electric drive. Prior to commissioning, and then once a year, the gate has to be inspected by an expert and the findings entered in the inspection book. The inspection has to be carried out independent of any maintenance work.

For parking boxes on the edges and boxes with intermediate walls we recommend our maximum platform width of 270 cm. Please consider adjoining grids. Problems may occur if smaller platform widths are used (depending on car type, access and individual driving behaviour and capability).

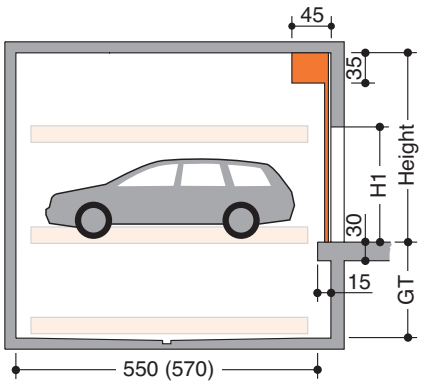
For larger limousines and SUV wider driveways are necessary (in particular on the boxes on the sides due to the missing manoeuvring radius).

[10] RB = Grid unit width **must** strictly conform to dimensions quoted!

[11] Only applies to manually operated doors. The electrically driven doors must have 35 cm.

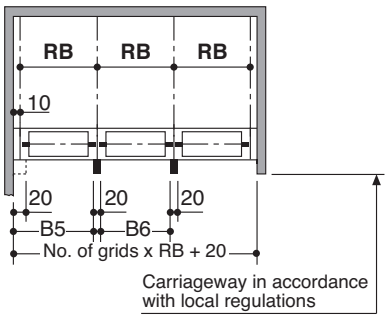
Garages with roll doors I Widths dimensions

Roll door behind columns



Type	GT	Height	H1
4300	175	325/345/365/405	210
4300	175	380/435	220
4300	200	350/375	210
4300	200	380/405/435	220
4300	230	380/405/420/435	220
4300	240	390/405/415/435/445/455	230

Columns per each grid unit



Usable platform width	RB [10]	B5	B6
230	250	250	230
240	260	260	240
250	**270**	**270**	**250**
260	**280**	**280**	**260**
270	**290**	**290**	**270**

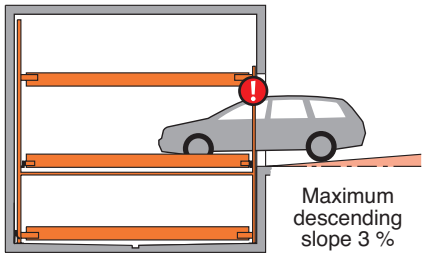
According to the BGR 232, an inspection book is required for the commercial use of a gate with electric drive. Prior to commissioning, and then once a year, the gate has to be inspected by an expert and the findings entered in the inspection book. The inspection has to be carried out independent of any maintenance work.

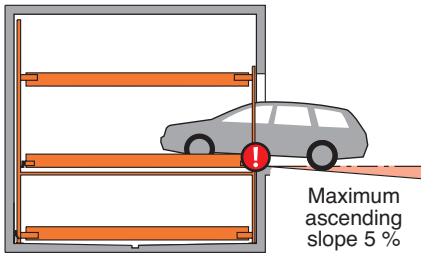
For parking boxes on the edges and boxes with intermediate walls we recommend our maximum platform width of 270 cm. Please consider adjoining grids. Problems may occur if smaller platform widths are used (depending on car type, access and individual driving behaviour and capability).

For larger limousines and SUV wider driveways are necessary (in particular on the boxes on the sides due to the missing manoeuvring radius).

[10] RB = Grid unit width **must** strictly conform to dimensions quoted!

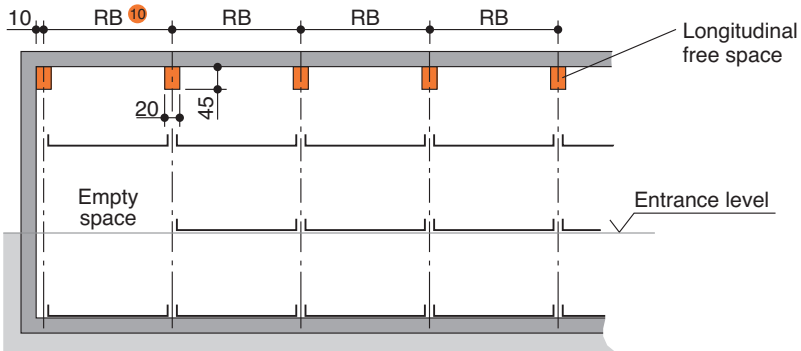
Approach





The illustrated maximum approach angles must not be exceeded. Incorrect approach angles will cause serious maneouvring & positioning problems on the parking system for which the local agency of KLAUS Multiparking accepts no responsibility.

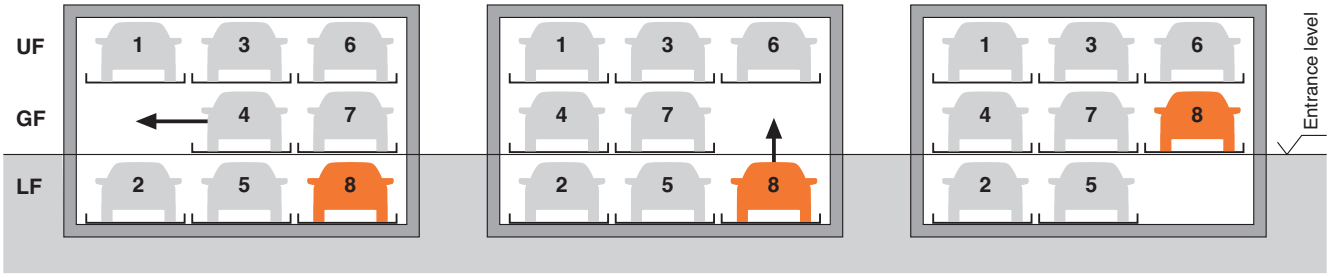
Longitudinal free space



[10] RB = Grid unit width **must** strictly conform to dimensions quoted!

Function with standard numbering and identification of parking levels

e.g. for parking space No. 8:
Check first that all doors are closed, then select No. 8 on operating panel.



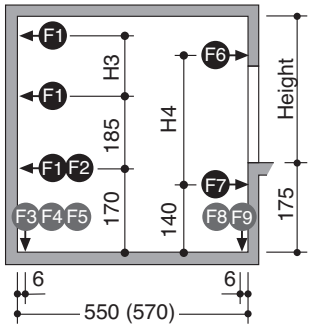
For driving the vehicle off platform No. 8 the ground floor parking platforms are shifted to the left.

The empty space is now below the vehicle which shall be driven off the platform. The platform No. 8 will be lifted.

The vehicle on platform No. 8 can now be driven off the platform.

Load plan

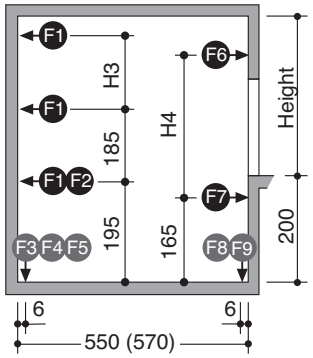
4300-175



Type 4300-175

Height	Car height GF	H3	H4
325	150	130	245
345	170	150	265
365	190	170	285
365	170	150	265
380	205	185	300
405	190	170	285
435	205	185	300

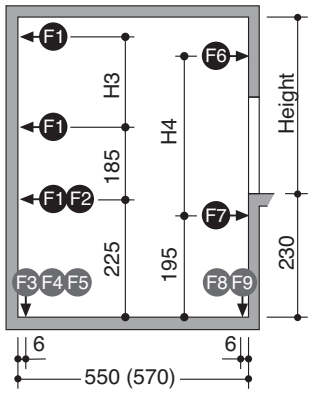
4300-200



Type 4300-200

Height	Car height GF	H3	H4
350	175	155	270
375	175	155	270
380	205	185	300
405	205	185	300
435	205	185	300

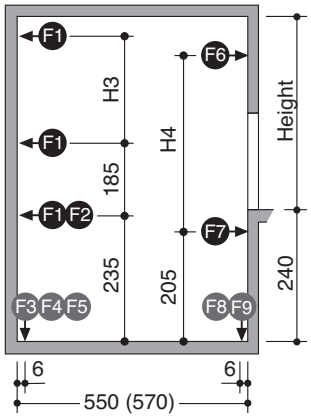
4300-230



Type 4300-230

Height	Car height GF	H3	H4
380	205	185	300
405	205	185	300
420	205	185	300
435	205	185	300

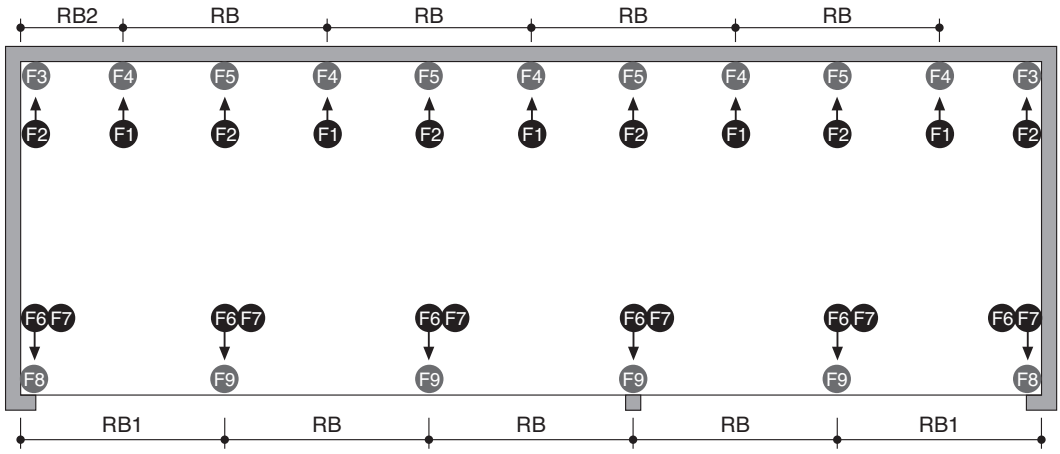
4300-240



Type 4300-240

Height	Car height GF	H3	H4
390	215	195	310
405	215	195	310
415	215	195	310
435	215	195	310
445	215	195	310
455	215	195	310

Load plan – top view



Usable platform width	RB [10]	RB1	RB2
230	250	260	135
240	260	270	140
250	**270**	**280**	**145**
260	**280**	**290**	**150**
270	**290**	**300**	**155**

Platform load	F1	F2	F3	F4	F5	F6	F7	F8	F9 [12]
2000 kg	±5	±2,5	±14,5	+70	±29	±0,2	±2,5	+25	+50
2600 kg	±5	±2,5	±14,5	+80	±29	±0,2	±2,5	+35	+70

The system is dowelled to floor and walls. The drilling depth in the floor is approx. 15 cm.
The drilling depth in the walls is approx. 12 cm.

Floor and walls are to be made of concrete (grade of concrete min. C20/25)!

The dimensions for the points of support are rounded values. If the exact position is required, please contact KLAUS Multiparking.

[10] RB = Grid unit width **must** strictly conform to dimensions quoted!

[12] All forces in kN

Technical data

Field of application

By default, the system can only be used for a fixed number of users.
If different users use the system (e.g. short-time parkers in office buildings or hotels) the Multiparking system needs to be adjusted. If required, would you please contact us.

Available documents

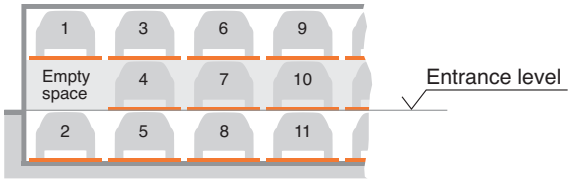
– wall recess plans
– maintenance offer/contract
– declaration of conformity
– test sheet on airborne and slid-borne sound

Environmental conditions

Environmental conditions for the area of multiparking systems: Temperature range –10 to +40° C. Relative humidity 50% at a maximum outside temperature of +40° C.
If lifting or lowering times are specified, they refer to an environmental temperature of +10° C and with the system set up directly next to the hydraulic unit. At lower temperatures or with longer hydraulic lines, these times increase.

Numbering

Standard numbering of the parking spaces:



Initial position: lower floor platform No. 2 at entrance level (covering of pit; safety regulation).

Different numbering is only possible at extra cost

Please take note of the following specifications:

– In general, the empty space must be arranged to the left.
– The numbers must be provided 8 – 10 weeks before the delivery date.

Sound insulation

According to DIN 4109 (Sound insulation in buildings), para. 4, annotation 4, KLAUS Multiparkers are part of the building services (garage systems).

Normal sound insulation:

DIN 4109, para. 4, Sound insulation against noises from building services.

Table 4 in para. 4.1 contains the permissible sound level values emitted from building services for personal living and working areas. According to line 2 the maximum sound level in personal living andworking areas must not exceed 30 dB (A).
Noises created by users are not subject to the requirements (see table 4 , DIN 4109).

The following measures are to be taken to comply with this value:

– Sound protection package according to offer/order (KLAUS Multiparking GmbH)
– Minimum sound insulation of building R'_W = 57 dB (to be provided by customer)

Increased sound insulation (special agreement):

Draft DIN 4109-10, Information on planning and execution, proposals for increased sound insulation.

Agreement: Maximum sound level in personal living and working areas 25 dB (A). *Noises created by users are not subject to the requirements (see table 4, DIN 4109).*

The following measures are to be taken to comply with this value:

– Sound protection package according to offer/order (KLAUS Multiparking GmbH)
– Minimum sound insulation of building R'_W = 62 dB (to be provided by customer)

Note: User noises are noises created by individual users in our Multiparking systems. These can be noises from accessing the platforms, slamming of vehicle doors, motor and brake noises.

Electrically driven doors

In accordance with BGR 232 commercially used power-driven doors must be subjected to annual inspections. We urgently recommend concluding a maintenance agreement that includes this service for the entire system.

Building application documents

According to LBO and GaVo (garage regulations) the Multiparking systems are subject to approval. We will provide the required building application documents.

Care

To avoid damages resulting from corrosion, make sure to follow our cleaning and care instructions and to provide good ventilation of your garage.

Corrosion protection

See separate sheet regarding corrosion protection.

CE Certification

The systems on offer comply with DIN EN 14010 and EC Machine Directive 2006/42/EC. Furthermore, this system underwent voluntary conformity testing by TÜV SÜD.

ZERTIFIKAT ◆ CERTIFICATE ◆ 認証書 ◆ СЕРТИФИКАТ ◆ CERTIFICADO ◆ CERTIFICAT

TÜV SÜD Industrie Service

Certificate concerning the examination of conformity

Certificate no:	**KP 194**
Certification body:	TÜV SÜD Industrie Service GmbH Zertifizierungsstelle für Produkte der Fördertechnik Westendstr. 199 80686 München - Germany
Applicant / Certification holder:	Klaus Multiparking GmbH Hermann-Krum-Str. 2 88319 Aitrach - Germany
Date of application:	2012-03-09
Manufacturer:	Klaus Multiparking GmbH Hermann-Krum-Str. 2 88319 Aitrach - Germany
Product:	Equipment for power driven parking of motor vehicles
Type:	**TrendVario 4100 2.000 kg and 2.600 kg** **TrendVario 4300 2.000 kg and 2.600 kg**
Test laboratory:	TÜV SÜD Industrie Service GmbH Prüflaboratorium für Produkte der Fördertechnik Prüfbereich Maschinen der Fördertechnik Gottlieb-Daimler-Str. 7 70794 Filderstadt – Germany
Date and number of the test report / mark of conformity:	2014-01-22 **TÜ SW-12-230 DG**
Test specifications:	- 2006 / 42 / EC, Annex I - DIN EN 14010
Validity:	**This Certificate is valid until 2019-02-13**
Result:	The equipment fulfills the requirements of the test specifications for the respective scope of application stated in the annex (page 1) of this certificate, keeping the mentioned conditions.
Date of issue:	2014-02-14

Certification body for lifts and cranes

Chadi Noureddine

TÜV SÜD Industrie Service GmbH

TÜV®

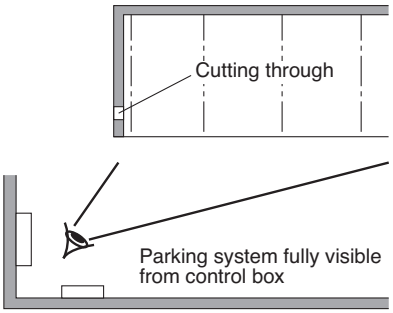
Electrical data

Control box

The control box must be accessible at all times from outside!

Dimensions approx. 100 x 100 x 30 cm.

Cutting through of wall from control box to parking system (contact the local agency of KLAUS Multiparking for clarification).



Electrical supply to the control box / Foundation earth connector

Suitable electrical supply min. 5 x 2,5 mm² (3 PH+N+PE) to control box with mains fuse 3 x 16 A slow or over-current cut-out 3 x 16 A trigger characteristic K or C. DIN/VDE and local regulations must be taken into consideration.

Suitable electrical supply to the control box must be provided by the customer during installation. The functionality can be monitored on site by our fitters together with the electrician. If this cannot be done during installation for some reason for which the customer is responsible, the customer must commission an electrician at their own expense and risk.

In accordance with DIN EN 60204 (Safety of Machinery. Electrical Equipment), grounding of the steel structure is necessary, provided by the customer (distance between grounding max. 10 m).

Operating device

Easy-to-survey positioning (e.g. on column).

Protection against unauthorized use.

May also be recessed in wall if required.

To be performed by the customer

Safety fences

Any constraints that may be necessary according to DIN EN ISO 13857 in order to provide protection for the park pits for pathways directly in front, next to or behind the unit. This is also valid during construction.

Numbering of parking spaces

Consecutive numbering of parking spaces.

Building services

Any required lighting, ventilation, fire extinguishing and fire alarm systems as well as clarification and compliance with the relevant regulatory requirements.

Drainage

For the middle area of the pit we recommend a drainage channel, which you connect to a floor drain system or sump (50 x 50 x 20 cm). The drainage channel may be inclined to the side, however not the pit floor itself (longitudinal incline is available). In the interests of environmental protection we recommend painting the pit floor. Oil and petrol separators must be provided according to the statutory provisions when connecting to the public sewage system!

Wall cuttings

Any necessary wall cuttings.

Strip footings

If due to structural conditions strip footings must be effected, the customer shall provide an accessible platform reaching to the top of the said strip footings to enable and facilitate themounting work.

Electrical supply to the control box / Foundation earth connector

Suitable electrical supply to the control box must be provided by the customer during installation. The functionality can be monitored on site by our fitters together with the electrician. If this cannot be done during installation for some reason for which the customer is responsible, the customer must commission an electrician at their own expense and risk.

In accordance with DIN EN 60204 (Safety of Machinery. Electrical Equipment), grounding of the steel structure is necessary, provided by the customer (distance between grounding max. 10 m).

Door suspension

The lintel height H2 (see page 2) is absolutely necessary. With differing heights, additional fixings are required for extra charge.

Door shields

Door shields that may be necessary. If desired, they can be ordered from KLAUS Multiparking for an additional charge.

If the following are not included in the quotation, they will also have to be provided / paid for by the customer:

– Costs for final technical approval by an authorized body

Description

General description:

Multiparking system providing independent parking spaces for cars, one on top of the other and side by side.

Dimensions are in accordance with the underlying dimensions of parking pit, height and width.

The parking bays are accessed horizontally (installation deviation ± 1%).

Along the complete width of the parking automat an approach lane (driving lane in accordance with local regulations) must be available. Parking spaces are arranged on three different levels, one level on top of the other.

The platforms of both the lower floor (LF) and upper floor (UF) are moved vertically, the platforms of the ground floor (GF) horizontally. At approach level (GF) there is always one parking space less available. This vacant space is used for shifting the ground floor (GF) parking spaces sideways, thus enabling an upper floor (UF) parking space or lower floor (LF) parking space to be lowered or lifted to approach level. Consequently, a unit of five parking spaces (2 on the upper floor, 1 on the ground floor, 2 on the lower floor) is the smallest unit available for this parking system.

The TrendVario 4300 allows parking of passenger cars and station wagons.

For safety reasons the platforms can only be moved behind locked doors.

All necessary safety devices are installed. This consists mainly of a chain monitoring system, locking lever for the upper and lower platforms and locked doors. The doors can only be opened if the selected parking space has reached the park position and all openings are secured.

A steel framework mounted inside the pit, consisting of:

– Seriated supports
– Steel pillars with sliding platform supports
– Cross and longitudinal members
– running rails for the transversely movable ground floor (GF) platforms

Platforms consisting of:

– Side members
– Cross members
– Platform base sections
– 1 wheel stop (on the right per parking space)
– Screws, small parts, etc.

Lifting device for upper floor (UF) and lower floor (LF) platforms:

– Hydraulic cylinder with solenoid valve
– Chain wheels
– Chains
– Limit switches
– The platforms are suspended on four points and guided along the supports using plastic sliding bearings.

Drive unit of transversely movable platforms on the ground floor (GF):

– Gear motor with chain wheel
– Chains
– Running and guide rollers (low-noise)
– Power supply via cable chain

Description

Hydraulic unit consisting of:

– Hydraulic power unit (low-noise, installed onto a console with a rubber-bonded-to-metal mounting)
– Hydraulic oil reservoir
– Oil filling
– Internal geared wheel pump
– Pump holder
– Clutch
– 3-phase-AC-motor (3.0 kW, 230/400 V, 50 Hz)
– Motor circuit breaker
– Test manometer
– Pressure relief valve
– Hydraulic hoses (which reduce noise transmission onto the hydraulic pipe

Control system:

– Central control panel (operating device) used to select the desired parking space
– With series installation, the doors are opened manually
If desired, this can also be done using electric motors
– Electric wiring is made from the electric cabinet by the manufacturer

Roller doors:

Size

Dimensions modified based on width and height measurements.

Shutter box

– 2-piece, roll formed aluminium box 45° consisting of upper and lower part
– lacquered type

Guide rails

– extruded aluminium guide rails with brush insert
– lacquered type

Gate type

– aluminium gate type, roll formed
– end rod with electronic safety strip
– lacquered type

Colour options

Shutter box, guide rails and gate type are avialabel with the following colour options:
– RAL 9010 (white)
– RAL 7038 (light grey)
– RAL 9006 (aluminium metallic)

Door actuation

Powered electrically by means of tube motor in the shaft.

For safety reasons the movement of the platforms is always made behind locked doors. Position sensing, i.e. “door open” and “door closed” is effected by electric signalers.

Sliding doors:

Size

Sliding door, dimensions: approx. 2500 mm x 2000 mm (width x height).

Frame

– Frame construction with vertical centre stay bar made from extruded aluminium profiles (anodized, layer thickness approx 20 µm).
– To open the doors a recessed grip is integrated in the aluminium profile.
– A rubber lip is used for the finishing of the closing edge to the building.

Standard door panel

Perforated steel plate
– Thickness 1mm, RV 5/8, galvanized, layer thickness: approx. 20 µm
– Ventilation cross-section of the panel approx. 40%
– Not suitable for outdoor garages

Alternative door panel

Perforated aluminium plate
– Thickness 2mm, RV 5/8 E6/EV1, anodized, layer thickness: approx. 20 µm
– Ventilation cross-section of the panel approx. 40%

Beaded steel plate
– Thickness 1mm, galvanized, layer thickness: approx. 20 µm.
– additional power coating, layer thickness: approx. 25 µm on the outside and approx. 12 µm on the inside
– Colour options for the outside (building view):
RAL 1015 (light ivory), RAL 3003 (ruby),
RAL 5014 (pigeon blue), RAL 6005 (moss green),
RAL 7016 (charcoal grey), RAL 7035 (light grey),
RAL 7040 (window grey), RAL 8014 (sepia),
RAL 9006 (white aluminium), RAL 9016 (traffic white)
– Inside of the gates in light grey

Plain aluminium sheet
– Thickness 2mm, E6/EV1, anodized, layer thickness: approx. 20 µm

Wooden panelling
– Nordic spruce in grade A
– vertical tongue and groove boards
– preimpregnated colourless

Laminated safety glass
– Laminated safety glass made from single pane safety glass 8/4mm

Wire grating
– Mesh size 12 x 12 mm
– Mesh size 40 x 40 mm (for manual sliding gates only)

Running rails

– The running gear of each doors consists of 2 twin-pair rolling gadgets, adjustable in height
– The running rails of the doors are fixed to brackets or the concrete lintel, or on a building-specific door suspension using ceiling fittings
– The guide consists of 2 plastic rollers mounted to a base plate, which is dowelled to the floor
– Running rails, ceiling fittings and guide roller base plate are hot-dip galvanized

Door actuation

Standard:
– Manually, i.e. the door is opened and closed by hand

Alternatively:
– Electric drive via electric motor mounted to the rail system at the turning point of the sliding doors. The drive pinion engages into the chain mounted to the door.

For safety reasons the movement of the platforms is always made behind locked doors. Position sensing, i.e. “door open” and “door closed” is effected by electric signalers.

Separation (if necessary):

– Upon request

Please note:

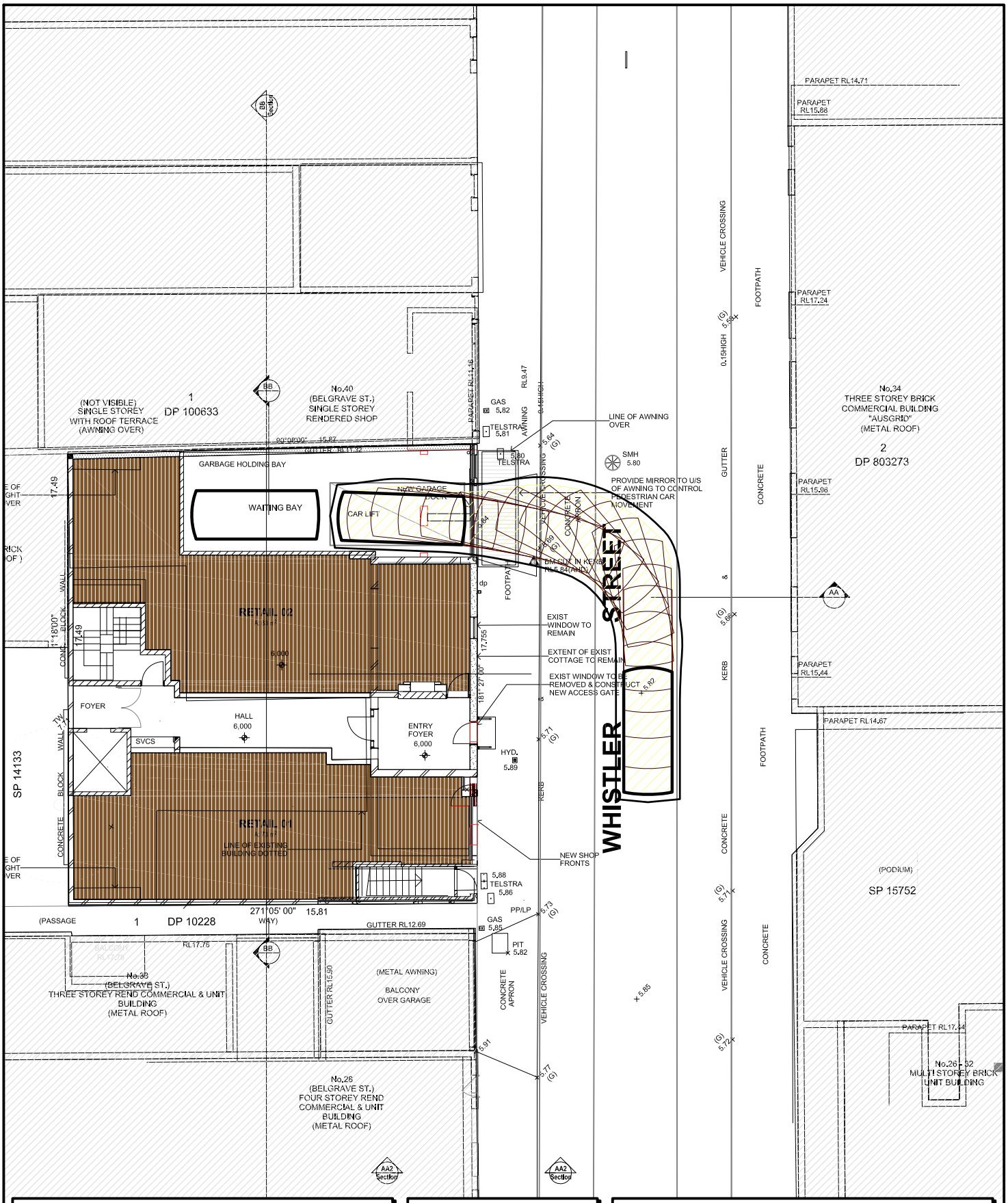
Door panels (on the side, cover for running rails, etc.) and door suspensions are not included in the standard version but can be delivered against surcharge as special equipment.

We reserve the right to change this specification without further notice

KLAUS Multiparking reserves the right in the course of technical progress to use newer or other technologies, systems, processes, procedures or standards in the fulfillment of their obligations other than those originally offered provided the customer derives no disadvantage from their so doing.

Appendix E

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.

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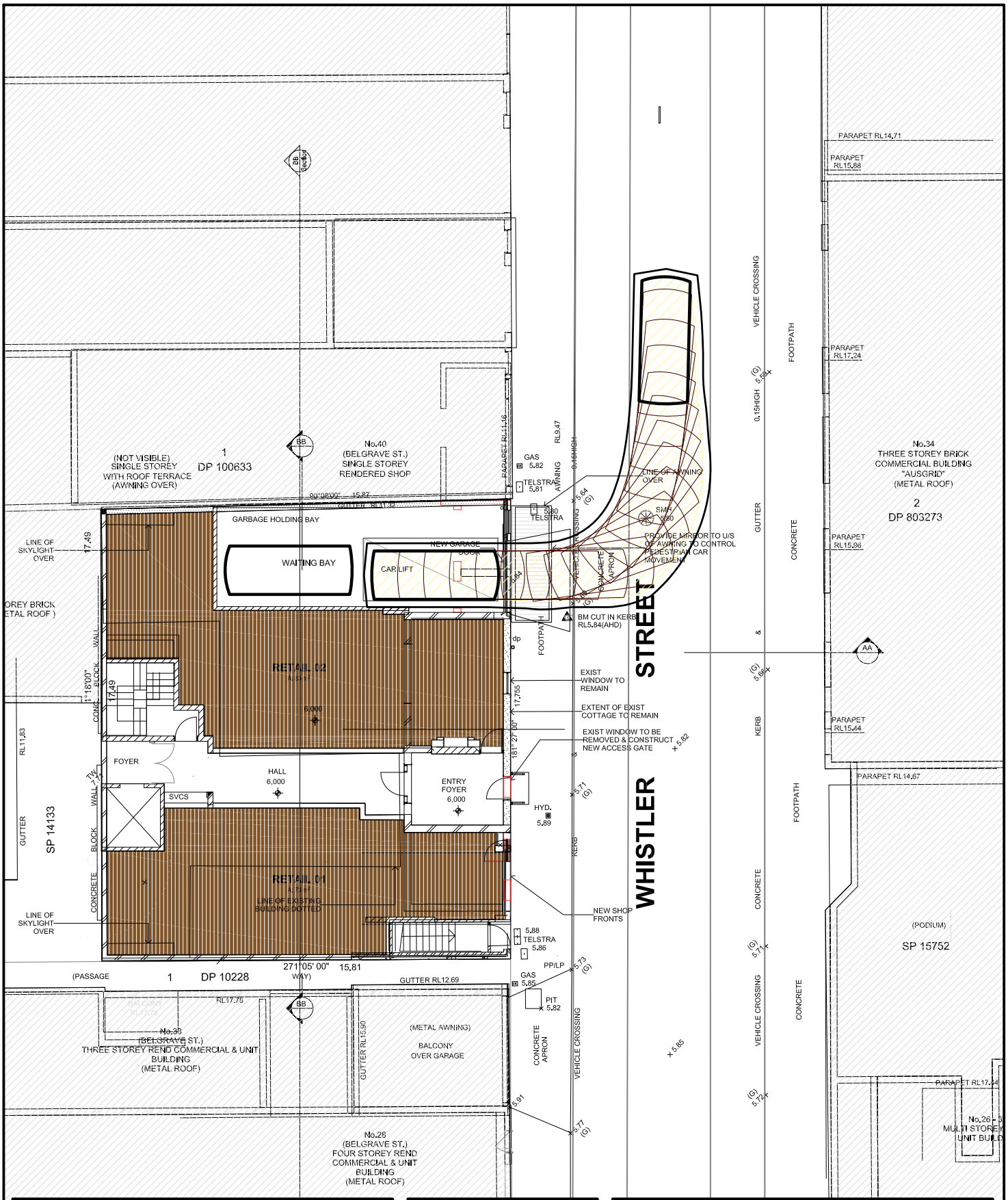
SWEPT PATH ANALYSIS OF AN 85th PERCENTILE VEHICLE ENTERING THE LIFT

SP 1



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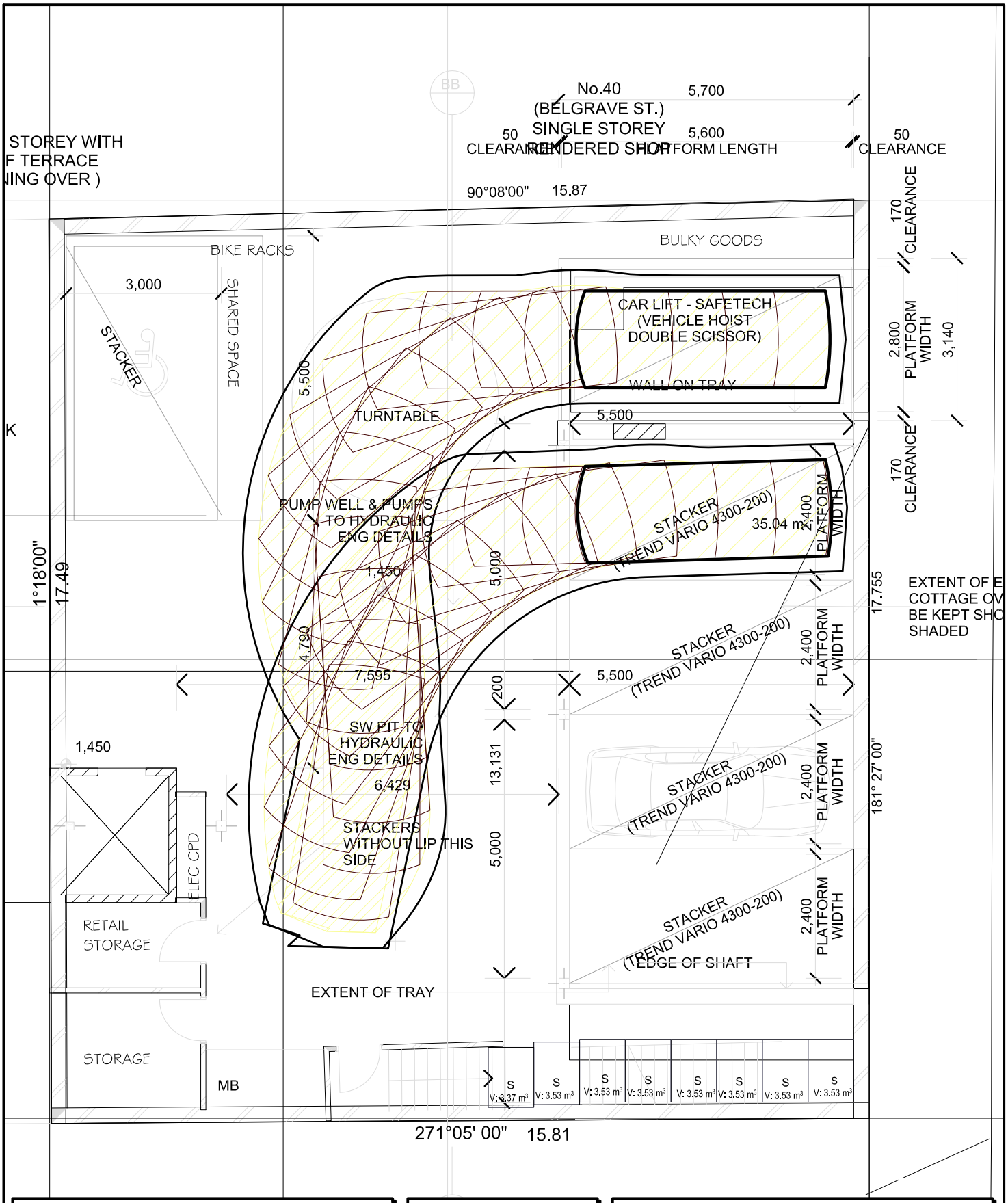
SWEPT PATH ANALYSIS OF AN 85th PERCENTILE VEHICLE EXITING THE LIFT

SP 2



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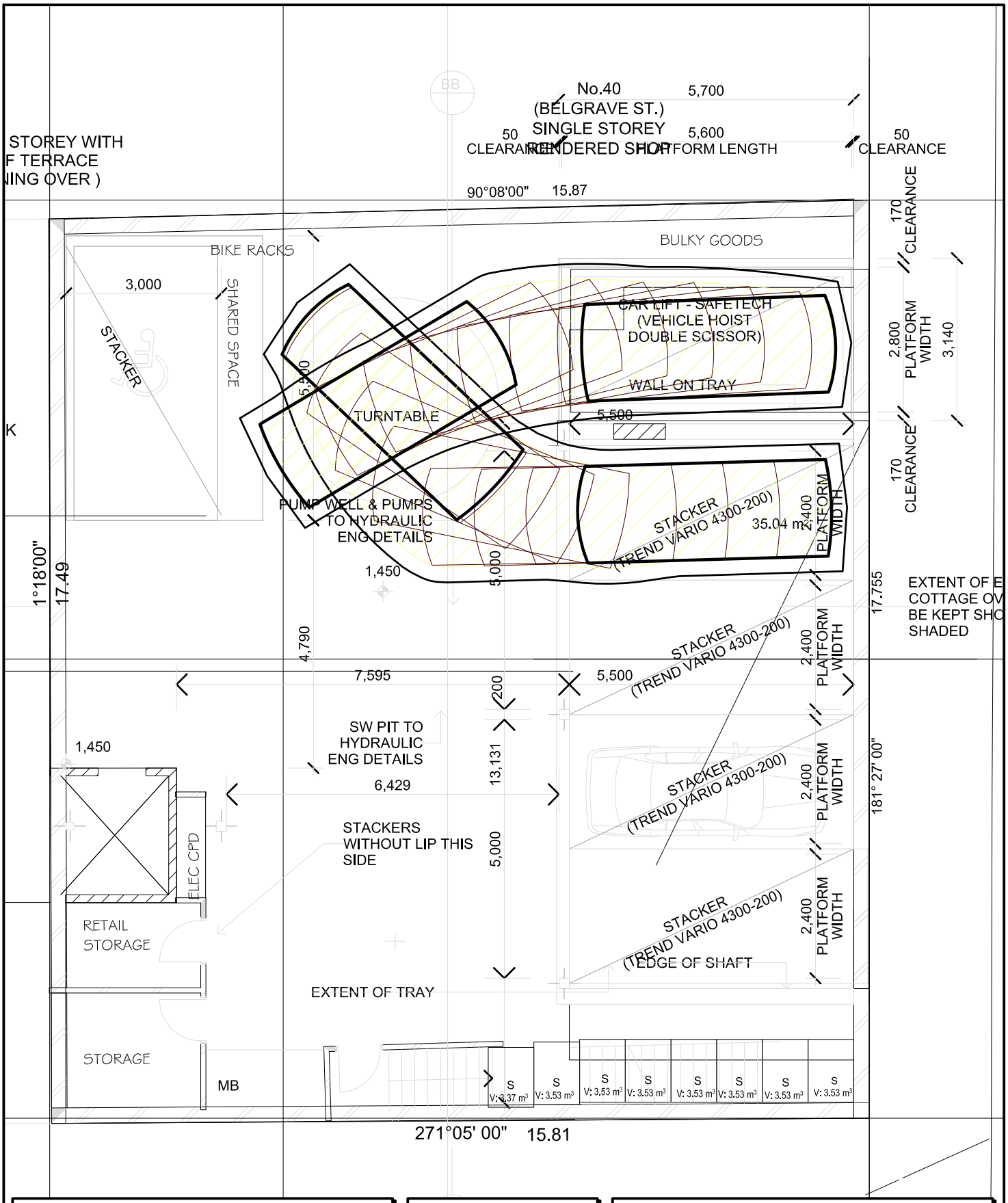
SWEPT PATH ANALYSIS OF AN 85th PERCENTILE VEHICLE ENTERING THE SITE

SP 3



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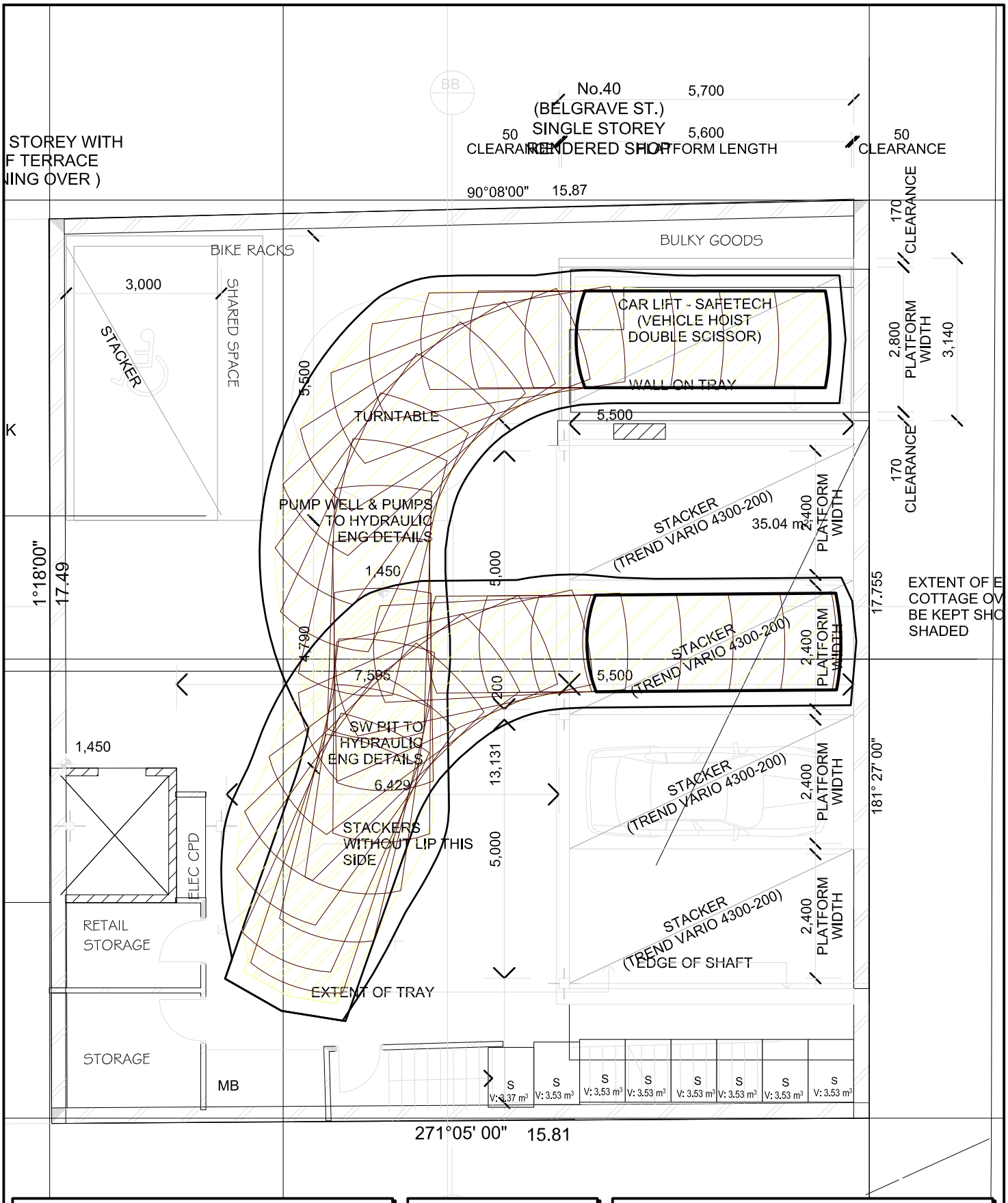
SWEPT PATH ANALYSIS OF AN 85th PERCENTILE VEHICLE EXITING THE SITE

SP 4



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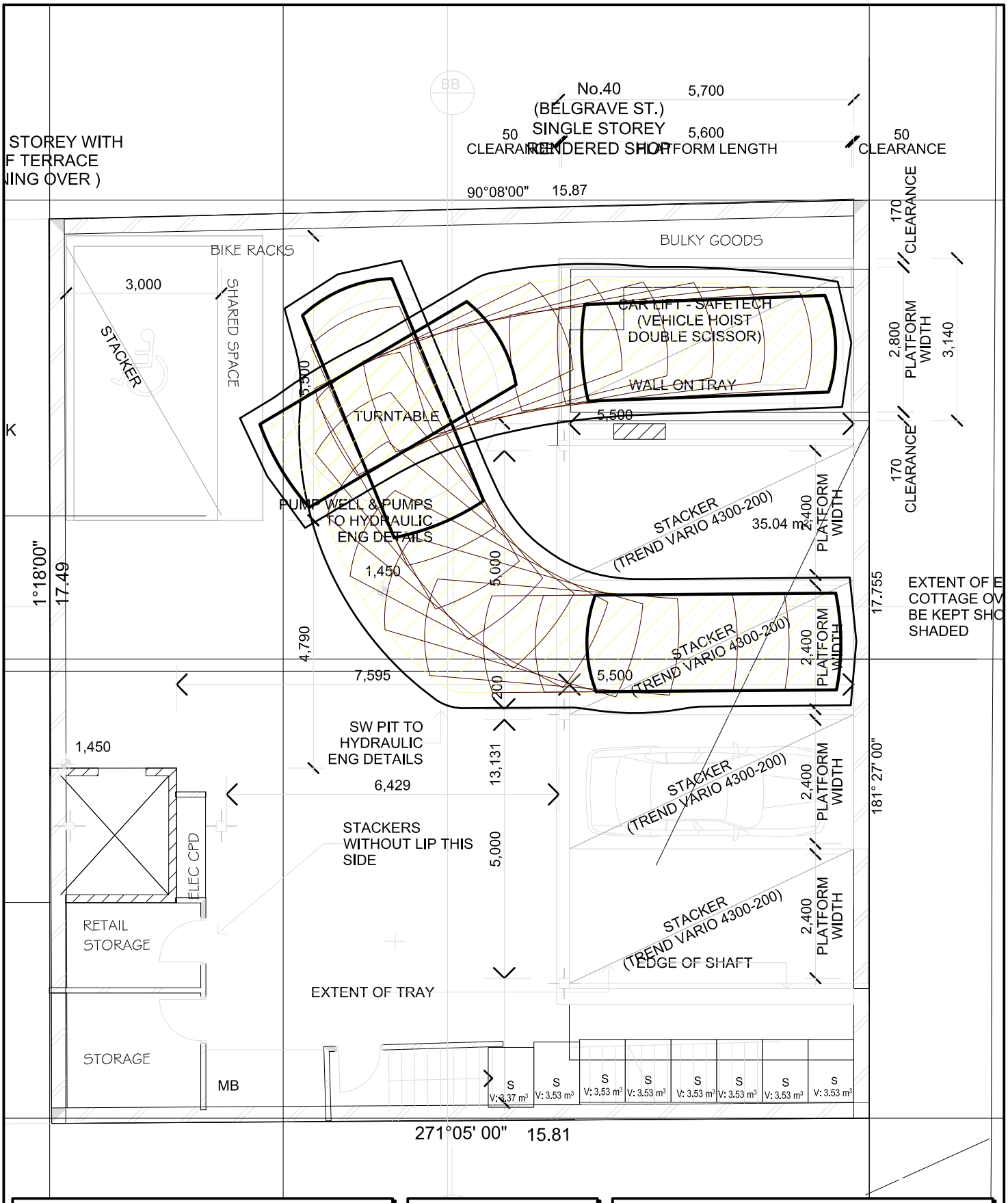
SWEPT PATH ANALYSIS OF AN 85th PERCENTILE VEHICLE ENTERING THE SITE

SP 5



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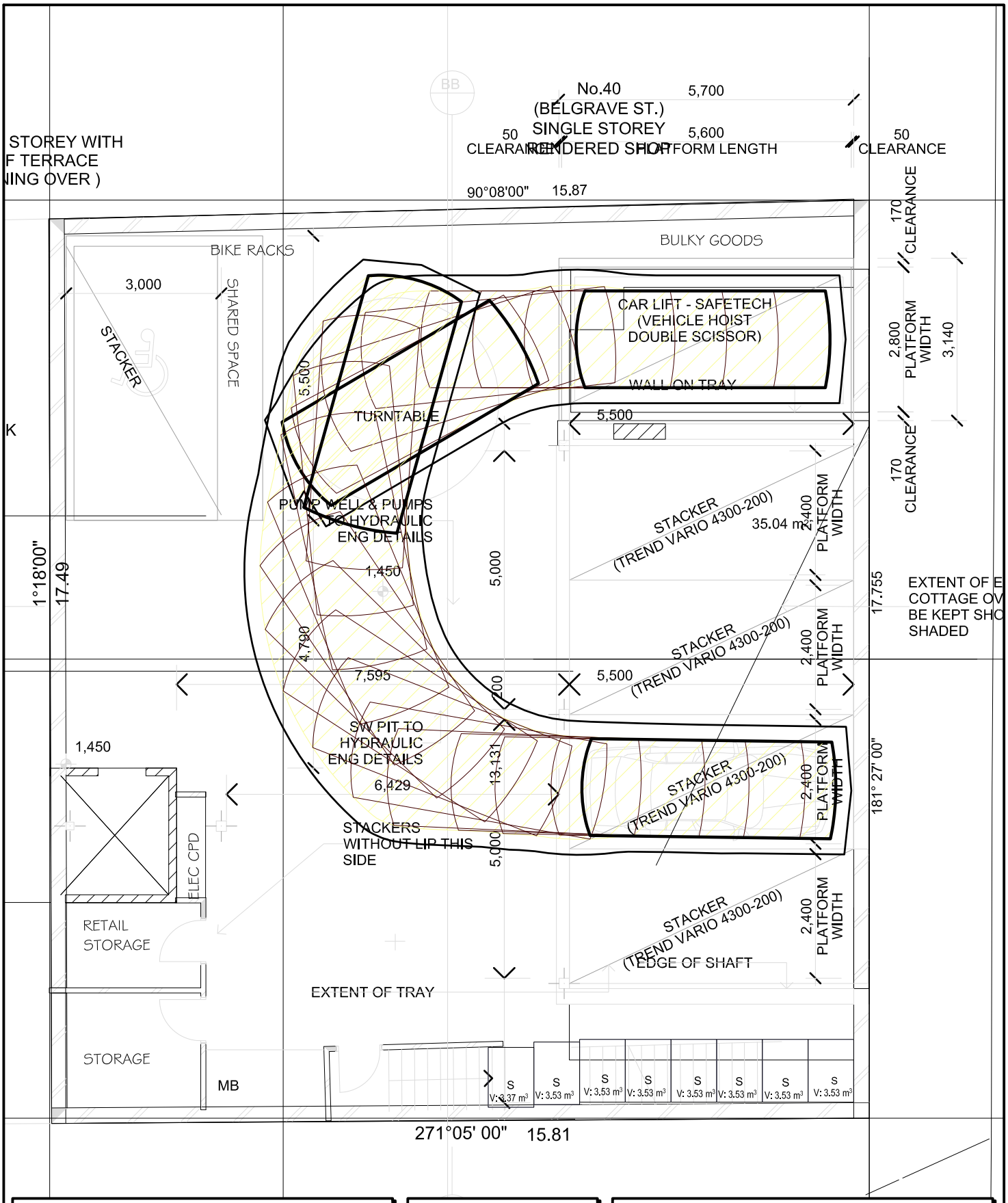
SWEPT PATH ANALYSIS OF AN 85th PERCENTILE VEHICLE EXITING THE SITE

SP 6



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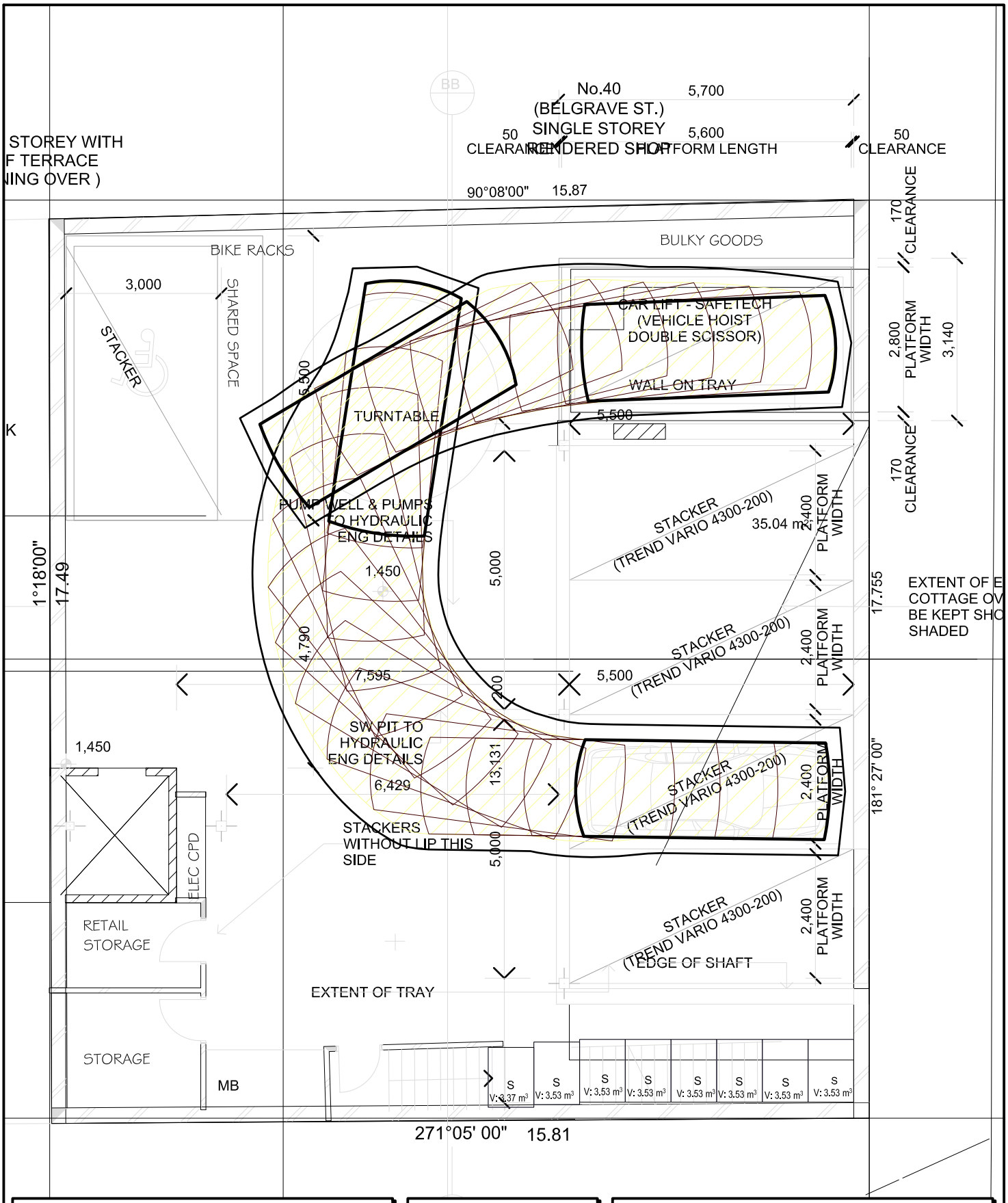
SWEPT PATH ANALYSIS OF AN 85th PERCENTILE VEHICLE ENTERING THE SITE

SP 7



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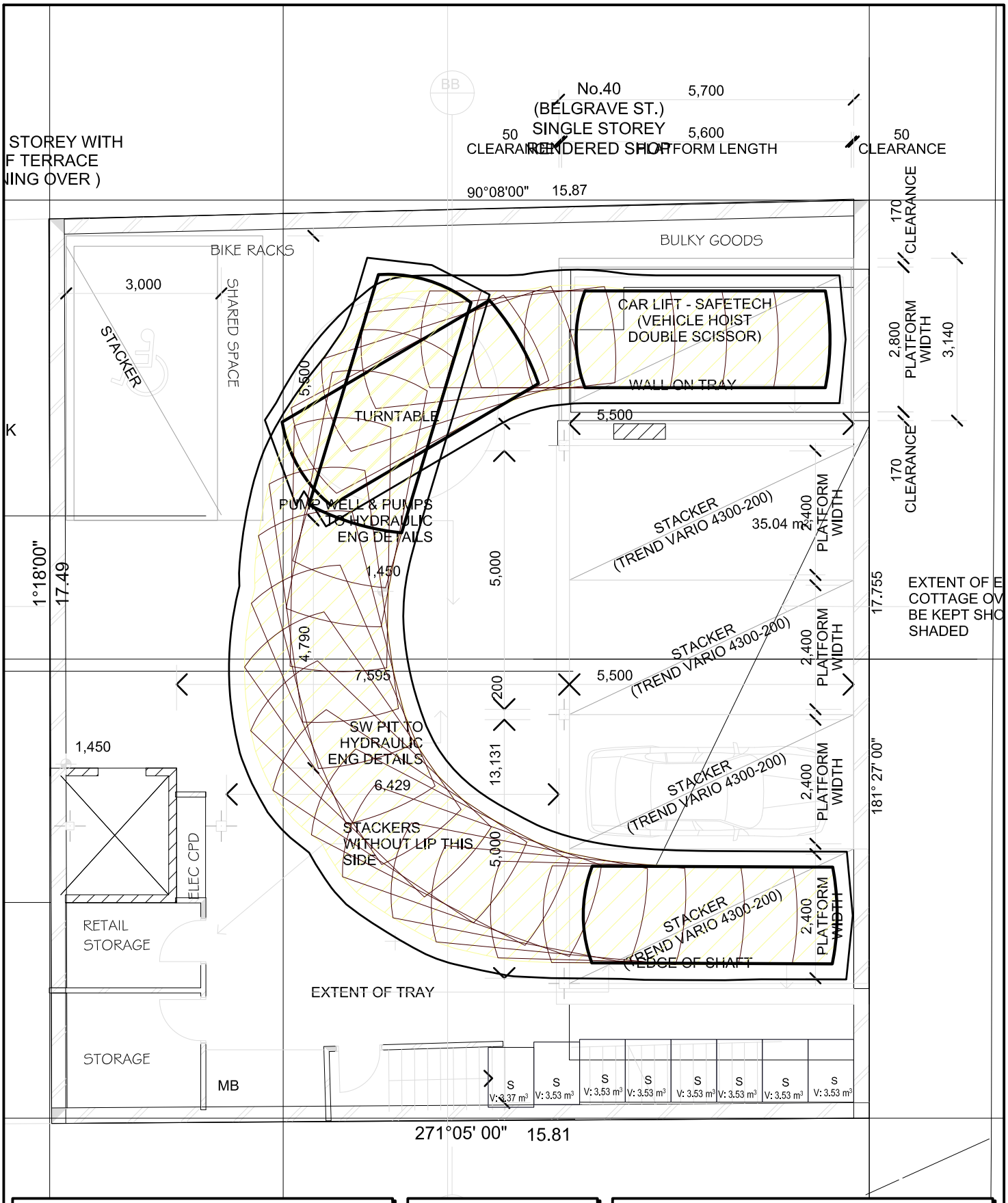
SWEPT PATH ANALYSIS OF AN 85th PERCENTILE VEHICLE EXITING THE SITE

SP 8



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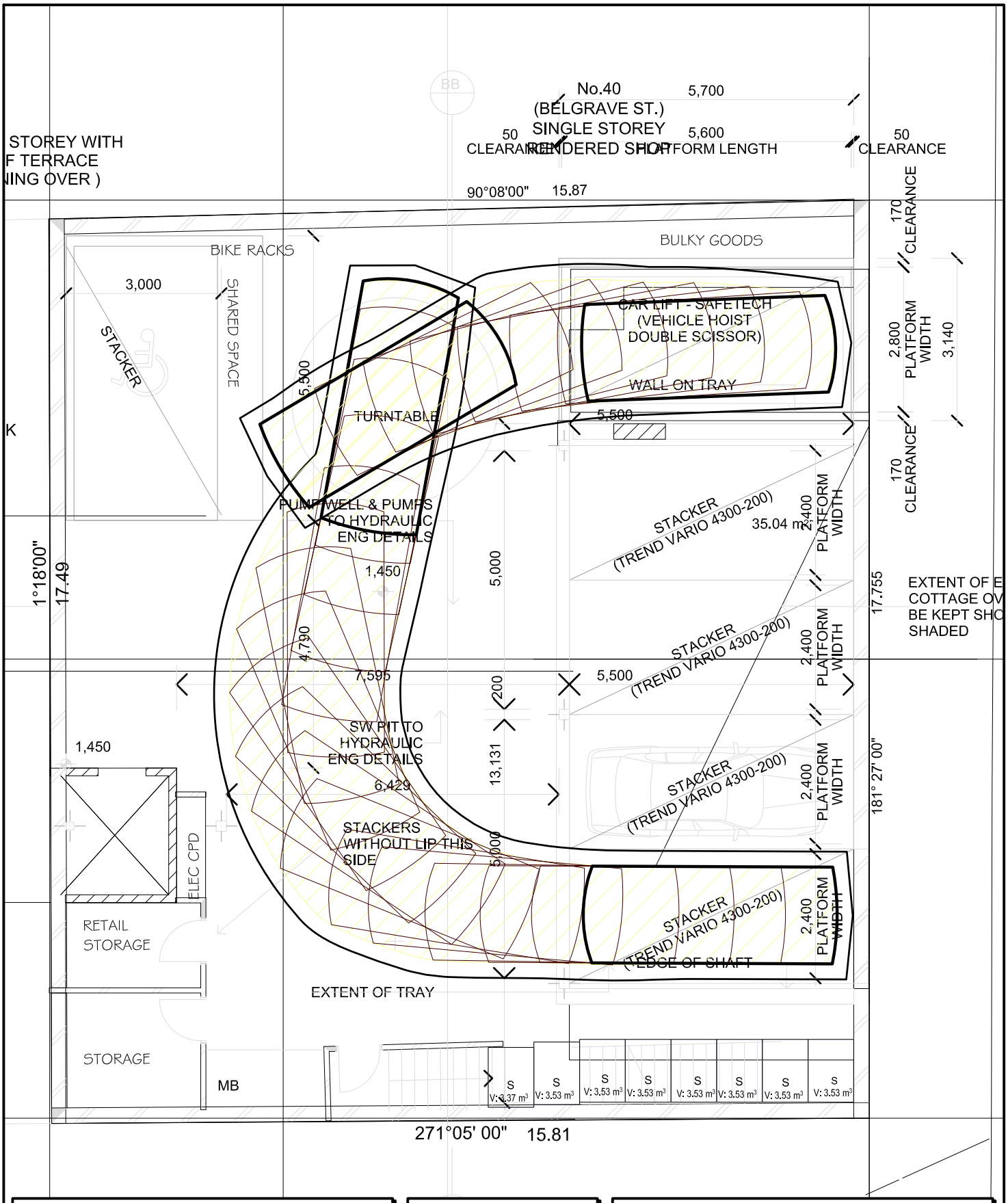
SWEPT PATH ANALYSIS OF AN 85th PERCENTILE VEHICLE ENTERING THE SITE

SP 9



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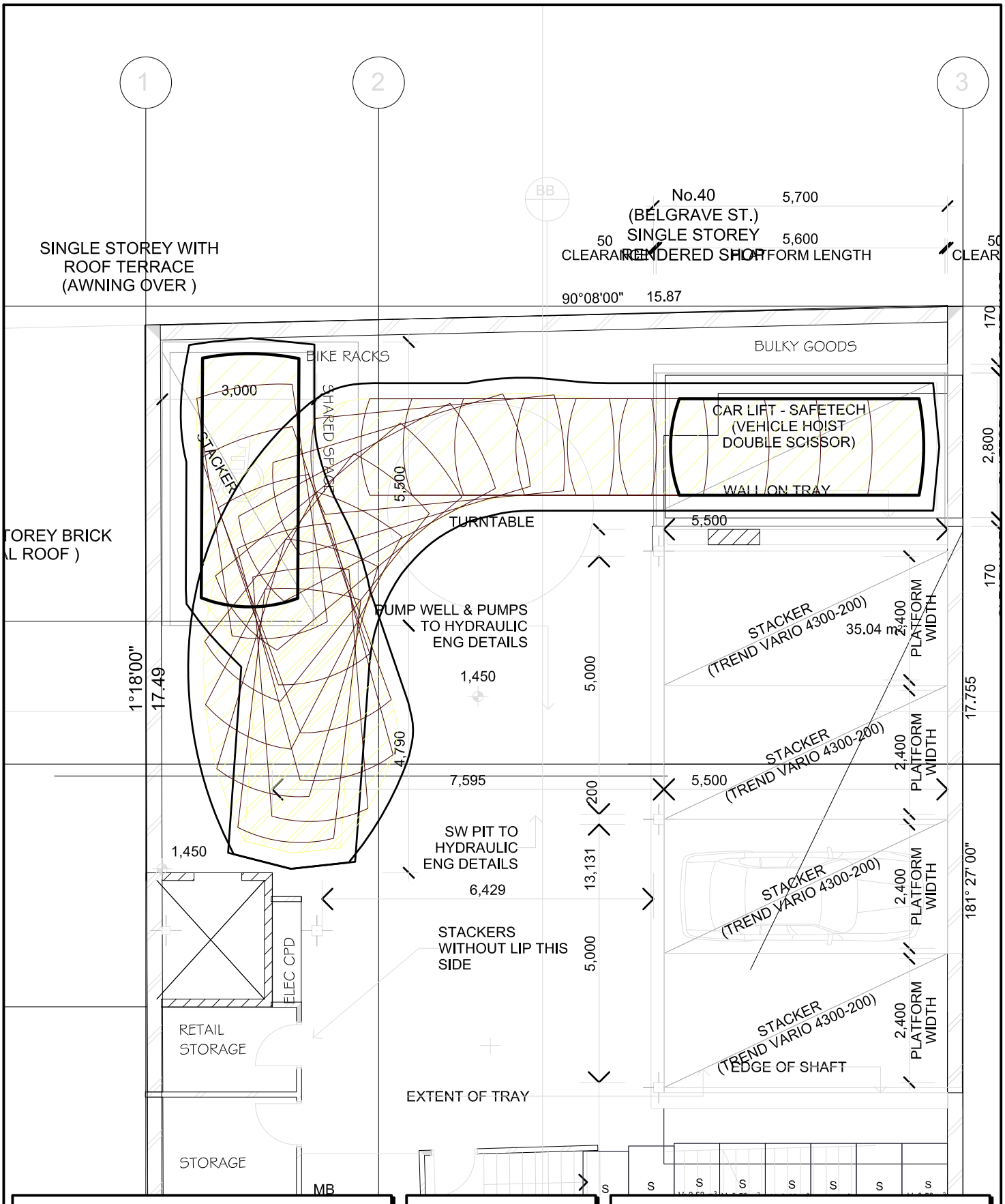
SWEPT PATH ANALYSIS OF AN 85th PERCENTILE VEHICLE EXITING THE SITE

SP 10



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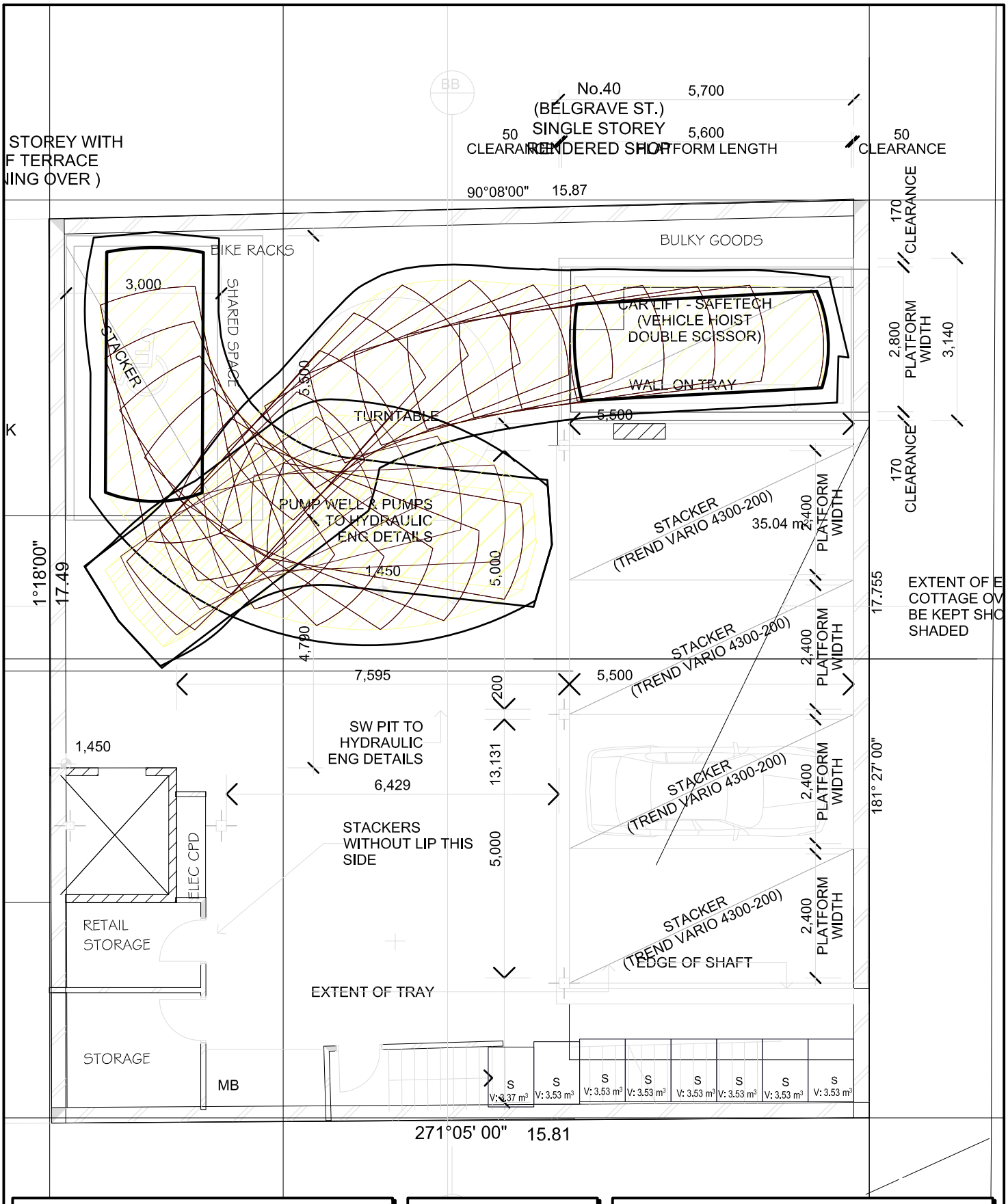
SWEPT PATH ANALYSIS OF AN 85th PERCENTILE VEHICLE ENTERING THE SITE

SP 11



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

SP 12