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Job Number: **17NL263-T3** **Date:** **11th December, 2017**

Internal Traffic Management Report for

Lot 7 Section E DP; 6934 184 -192 Restwell Road, Prairiewood, NSW

Prepared by

LOKA CONSULTING ENGINEERS

Nermein Loka

BSC, ME, MIE (AUST), CPEng, NPER, RPEQ

Senior Civil Engineer

Accredited Certifier

Director

Table of Contents

1. Introduction

Loka Consulting Engineers Pty Ltd has been engaged by Architex to provide Internal Traffic Management Plan for the site at Lot 7 Section E DP;6934 184 -192 Restwell Road, Prairiewood, NSW (refer to Figure 1).

A Traffic Management Plan and Report is required for Section 96(2) Modification application to the approved development and that the development does not alter the location of the access to the basement level but does seek the removal of the third basement level.

A Traffic Management Plan and Report is required to provide for parking across two basement levels the proposed development to identify the impacts of the proposal on the local street network and mitigation measures required to ameliorate any impacts.

- Describes the site and provides details of the development proposal.
- Reviews the road network near the site, and traffic conditions on that road network.
- Reviews the geometric design features of the proposed car parking facilities for compliance with the relevant codes and standards.
- Assesses the adequacy and suitability of the quantum of off-street car parking provided on site.

Figure 1 - The Subject Site (from SIX Maps)

2. Proposed Development

The proposed development will facilitate the construction of four blocks residential flat buildings with a site area of 3046.6m^2; the project consists of two basements levels, with a primary function of car parking, while the whole proposed facility will include four attached residential flat buildings A, B, C and D.

Building A and B are 6-storeys building, whereas building C and D are 8-storeys. All buildings consist of a mixture of studio, 1-, 2- and 3- bedrooms units, totalling 107 units refer to table 2.1 units' distributions

BLOCK	1 Bedroom	2 Bedroom	3 Bedroom	Studio	Total Residential
BLOCK A	10	6	5	0	21
BLOCK B	1	12	8	4	25
BLOCK C	6	15	7	0	28
BLOCK D	10	11	12	0	33
Total	**27**	**44**	**32**	**4**	**106**

Table 2.1 – Unit distributions

3. Off Street Car Parking Provision

3.1. Car parking

According to the latest architectural plan, the development contains 106 apartments, which should be considered as High Density Residential Flat Buildings. Off-street car parking shall be provided generally in accordance with Fairfield City Wide DCP 2013. Table 3-1 shows the minimum space required according Fairfield City Wide DCP

Use	Flat/ unit type	Minimum spaces required
Residential flat building	units	1 space per unit
	visitors	1 visitor space per 4 dwellings

Table 3.2 Off-street parking space rates according Fairfield City DCP

The car parking spaces required for the proposed development is shown in Table 3.2.

Type	No. of units	Rate per unit	Parking required	Total
Residential Flat building	106	1 car spaces	106	106
Visitors	106	0.25 spaces per unit	26.5	27
Total parking spaces				**133**

Table 3.2 – Minimum number of off-street parking spaces

The site provides **134**-car parking space in Basement 1 and 2. This consist of **27** visitor parking spaces include 1 disabled parking space, 107 residential parking spaces include 11 disabled

parking spaces and **1** car wash bay. The location details have been shown on the architectural plan (Appendix "A"). The design complies with Fairfield City Wide DCP

4. Car Park and Driveway Layout

The design of Car Park and Driveway (driveway, internal roadways & ramps, car parking spaces) will reference and comply with Australian Standard AS 2890.1 & 2890.6.

4.1. Driveway and Ramp Design

The design is shown on the ground floor and basement architectural plans. Indication gradients and dimension are provided for long sections as shown in ground floor architectural plan. The Table 4-1 shows the architectural Plan complied with the Australian Standard.

Table 4-1 Driveway Design Standard

Feature	Australian Standard 2890.1	Architectural Plan	Compliancy
Driveway Width	• 6.0 to 9.0 for Category 2	5.9m in addition to two 300mm kerbs on both sides	The design is complying with AS2890.1
Ramp Grades	• Maximum of 1:16 in 7.0m of travel for MRV, HRV • 1:20 (5%) for 1st 6m up to footpath OR 1:8 (12.5%) down to footpath. • >20m 1:5 (20%) maximum • <20m 1:4 (25%) max. Transition required if grade change in excess of 1:8 (12.5%)	**Ramp 1 from street to basement** 1st 6.040m of 1:8 up towards a crest RL 33.59 12.400m of 1:4 slope from crest level down to basement 1 level parking with 2m of 1:8 transition at each end of the ramp **Ramp 2 from basement 1 to basement 2** 10.00 of 1:4 slope from basement 1 level down to basement 2 level parking with 2m of 1:8 transition at each end of the ramp	The design is complying with AS2890.1
Ramp Widths	• Minimum service bay width of 3.5 m. • One-way 3m wide with two 300mm kerbs on both sides. • Two ways 5.8m including two manoeuvring clearances (2 × 300 mm)	5.90m between 2 300mm kerbs @ramp 1 5.50m between 2 300mm kerbs @ramp 2	The design is complying with AS2890.1
Head Clearance	2.2m min between the floor and an overhead obstruction. Headroom above each dedicated space and adjacent shared area should be a minimum of 2.5m.	2.7m @ ramp from ground floor level to basement 1 2.3m @ ramp from basement 1 to basement 2 3.3m @ basement 1 2.5m @ basement 2	The design is complying with AS2890.1

4.2. Dimensions of Parking Spaces

Feature	Australian Standard AS2890	Architectural Plan	Compliancy
Residential Parking Space	5.4m x 2.4m	5.5m x 2.4m	The design is complying with AS2890.1
Visitor parking spaces	5.4m X 2.5m	5.5m x 2.5m	The design is complying with AS2890.1
Accessible Parking	5.4m x 2.4m with shared zone 2.4m.	5.4m x 2.4m with shared zone 2.4m.	The design is complying with AS2890.6
Aisle Width	5.8m minimum	5.8m – 6.1m @ basement 2 level 5.8m – 6.1m @ basement 1 level	The design is complying with AS2890.1
Blind Aisle	Shall be extended a minimum of 1m beyond the last parking	1000mm	The design is complying with AS2890.1

The ramp & driveway design is complying with Australian Standards AS2890.1 (2004), AS2890.6, and AS2890.2.

4.3. Sight Clearance

As required in AS 2890.1:2004, a triangular area with 2.5m (face to driveway) by 2.0m (face to street) will be kept clear of obstructions to visibility (referring to Figure 5).

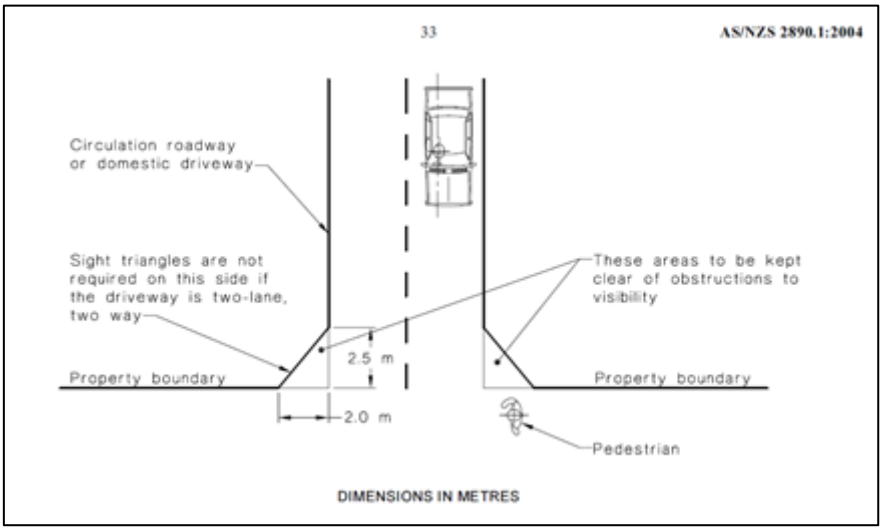


Figure 2 - AS 2890.1:2004 Requirement

In accordant to AS 2890.1:2004 requirements, sight triangle is hatched in red and shown in the following (referring to Figure 6) as well as in the Ground floor architectural plan the proposed driveway is at least 1 meter away from any structure including power poles, street lightings, signs, road furniture etc. and 3 meters away any from street trees.

Adjacent fence and plants are to be kept lower than 1.15m for sight clearance purpose.

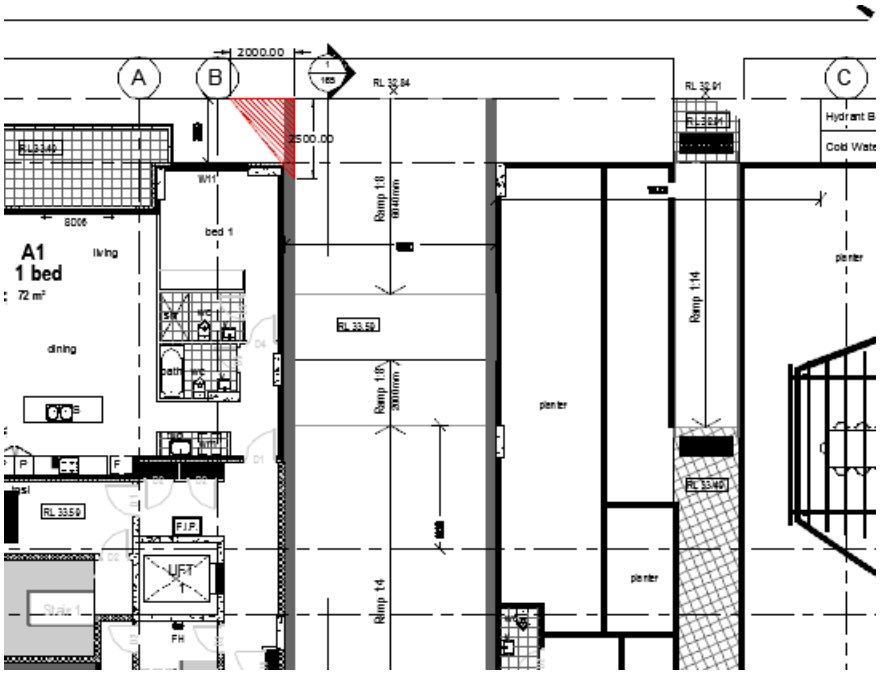


Figure 3 - Sight Triangle

It is our opinion that car spaces provided in the architectural plan have been complied with Australian Standards.

5. Traffic Generation

An indication of the traffic generation potential of the development proposal is provided in accordance with Roads and Maritime Services (RMS) publication 'Guide to Traffic Generating Developments 2002'. RMS guidelines are based on an extensive survey of a wide range of land uses. The subject site is identified as a Heavy-density residential flat building.
Rates.
Metropolitan Sub-Regional Centres.
Daily vehicle trips = not available
Peak Hour Vehicle Trips = 0.29 trips per unit.
For the subject site, there are 107 units in total, which are all small units. Therefore, there is a traffic generation potential of approximately 31 vehicles per hour during peak periods. The expected existing volume of traffic, to determine the net increase (or decrease) in future expected traffic,
should discount this value.

The existing site contains one single storey duplex. Based on RMS guidelines, the existing site is identified as two dwellings. Hence, the following is expected:
Daily vehicle trips = 9.0 per dwelling; and
Weekday peak hour vehicle trips = 0.85 per dwelling.
For the existing site which contains three dwellings, there is a traffic generation potential of approximately 0.9 vehicles per hour during peak periods. This is shown in Table 5-1 below.

Table 5-1 Project Net Increase in Peak Hour Traffic Generation Potential.

Traffic Generation Potential	**Vehicle Trips**
Future	31
Existing	1
Net	30

According to the Table above, it is likely that the proposed development will result in an increase in the traffic generated, by approximately 30 vehicle trips during peak hour.

6. Other Facility

Convex mirrors are required at the top and bottom of each driveway ramp to ensure there is sufficient a sight distance for drivers.

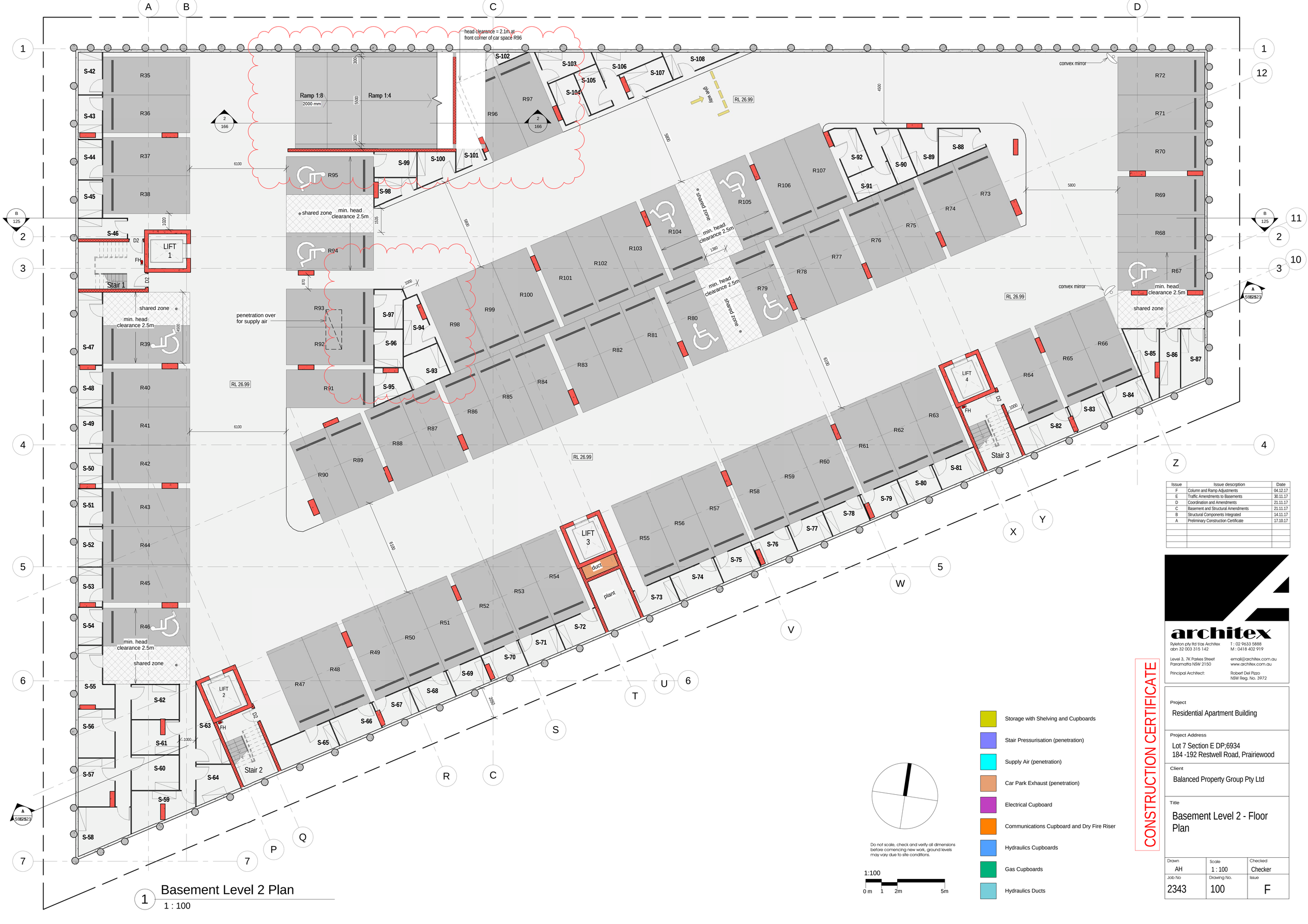
7. Swept Path Analysis

To ensure all vehicles enter and exit the site in a forward direction, swept path analysis have been conducted (See Appendix “B”).

It is our opinion that the proposed driveway and basement is compiled with Australia Standard.

APPENDIX **A**

Architectural Plan



1 Basement Level 2 Plan
1 : 100

Issue	Issue descrption	Date
F	Column and Ramp Adjustments	04.12.17
E	Traffic Amendments to Basements	30.11.17
D	Coordination and Amendments	21.11.17
C	Basement and Structural Amendments	21.11.17
B	Structural Components Integrated	14.11.17
A	Preliminary Construction Certificate	17.10.17

- Storage with Shelving and Cupboards
- Stair Pressurisation (penetration)
- Supply Air (penetration)
- Car Park Exhaust (penetration)
- Electrical Cupboard
- Communications Cupboard and Dry Fire Riser
- Hydraulics Cupboards
- Gas Cupboards
- Hydraulics Ducts

Do not scale, check and verify all dimensions before comencing new work, ground levels may vary due to site conditions.

1:100
0 m 1 2m 5m

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Principal Architect:
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NSW Reg. No. 3972

Project
Residential Apartment Building

Project Address
Lot 7 Section E DP;6934
184 -192 Restwell Road, Prairiewood

Client
Balanced Property Group Pty Ltd

Title
Basement Level 2 - Floor Plan

Drawn	Scale	Checked
AH	1 : 100	Checker
Job No	Drawing No.	Issue
2343	100	F

main switch board
NBN
hydrant tank
hydrant pump room
pump room exhaust over
Stair 1
LIFT 1
FH
Ramp 1:4
Ramp 1:8
2000 mm
Ramp 1:8
2000 mm
Ramp 1:4
S-1
S-2
S-3
S-4
S-5
S-6
S-7
shared zone
min. head clearance 2.5m
V01
V02
V03
V04
V05
R01
S-8
min. head clearance 2.5m
shared zone
S-9
S-35
S-34
S-36
S-37
S-38
S-40
S-41
S-39
RL 29.99
security roller shutter door over
RL 29.99
RL 29.99
RL 29.99
give way
carwash bay
R34
R33
R32
R31
R30
R29
R28
R27
R26
R25
R24
S-33
S-32
S-31
S-30
S-29
V27
V26
V25
V24
V23
V22
V21
V20
V19
V18
V17
V16
V15
V14
V13
V12
V11
V10
V09
V08
V07
V06
R23
R22
R21
R20
R19
R18
convex mirror
convex mirror
min. head clearance 2.5m
shared zone
R17
R16
R15
R14
R13
R12
R11
R10
R09
R08
R07
R06
R05
R04
R03
R02
S-26
S-27
S-28
S-25
S-24
S-23
S-22
S-21
S-20
S-19
S-18
S-17
S-16
S-15
S-14
S-13
S-12
S-11
S-10
LIFT 4
LIFT 3
LIFT 2
exhaust
plant
Stair 3
Stair 2
line of garbage room exhaust over
waste bins
recycle bins
Bulky Waste Storage 15m2
1640
6500
5800
4500
6100
6100
6100
2200
2000
2000
2000
1000
1000
1000
1000
6400
D2
B 125
1 165
2 166

Issue	Issue descrption	Date
F	Access Amendments	12.12.17
E	Column and Ramp Adjustments	04.12.17
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1:100
0 m 1 2m 5m

- Storage with Shelving and Cupboards
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Project Address
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Client
Balanced Property Group Pty Ltd

Title
Basement Level 1 - Floor Plan

Drawn	Scale	Checked
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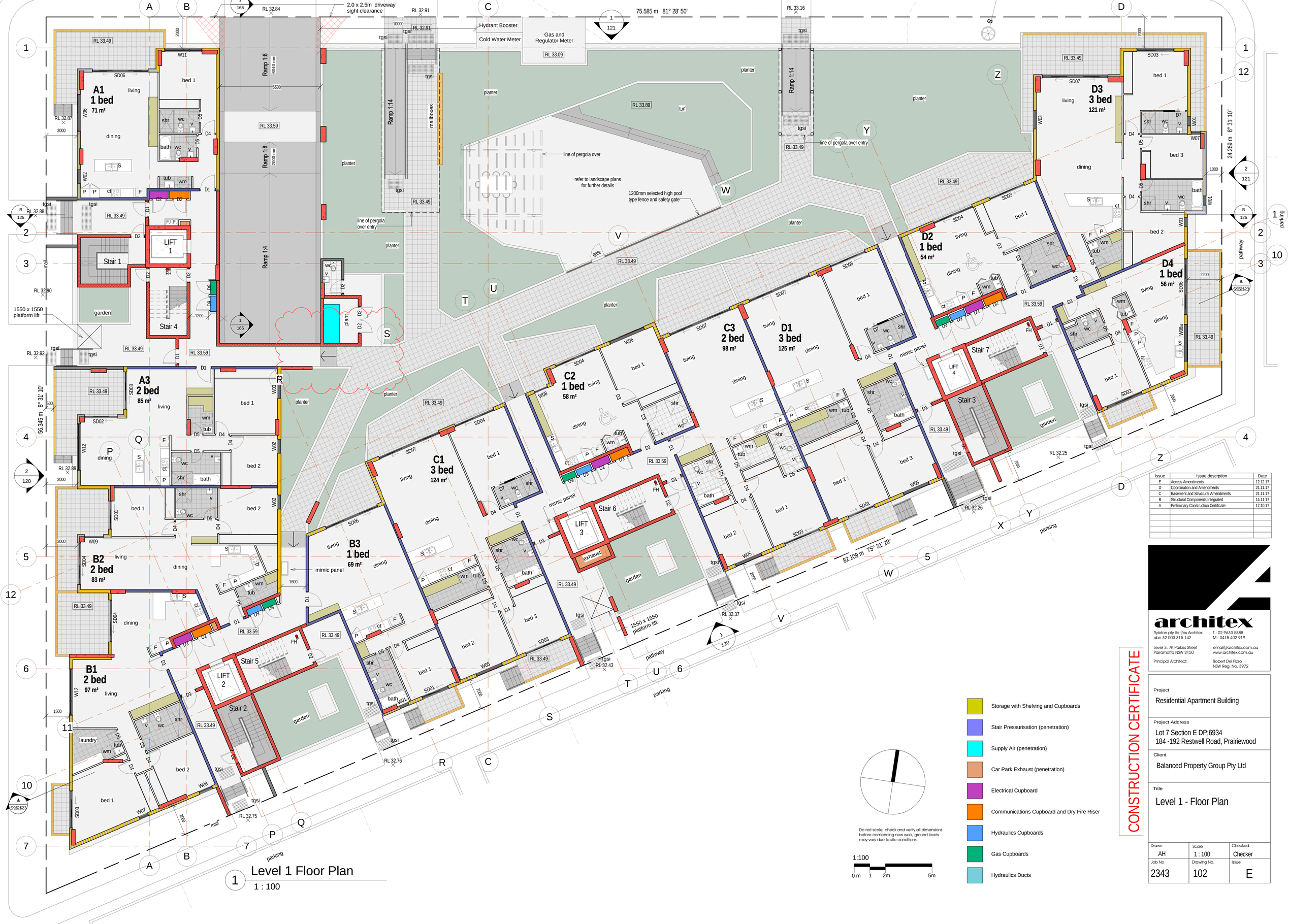
Job No	Drawing No.	Issue
2343	101	F

1 Basement Level 1 Plan
1 : 100



1 Level 1 Floor Plan
1 : 100

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1:100
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Client
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Title
Level 1 - Floor Plan

Drawn	Scale	Checked
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Job No	Drawing No.	Issue
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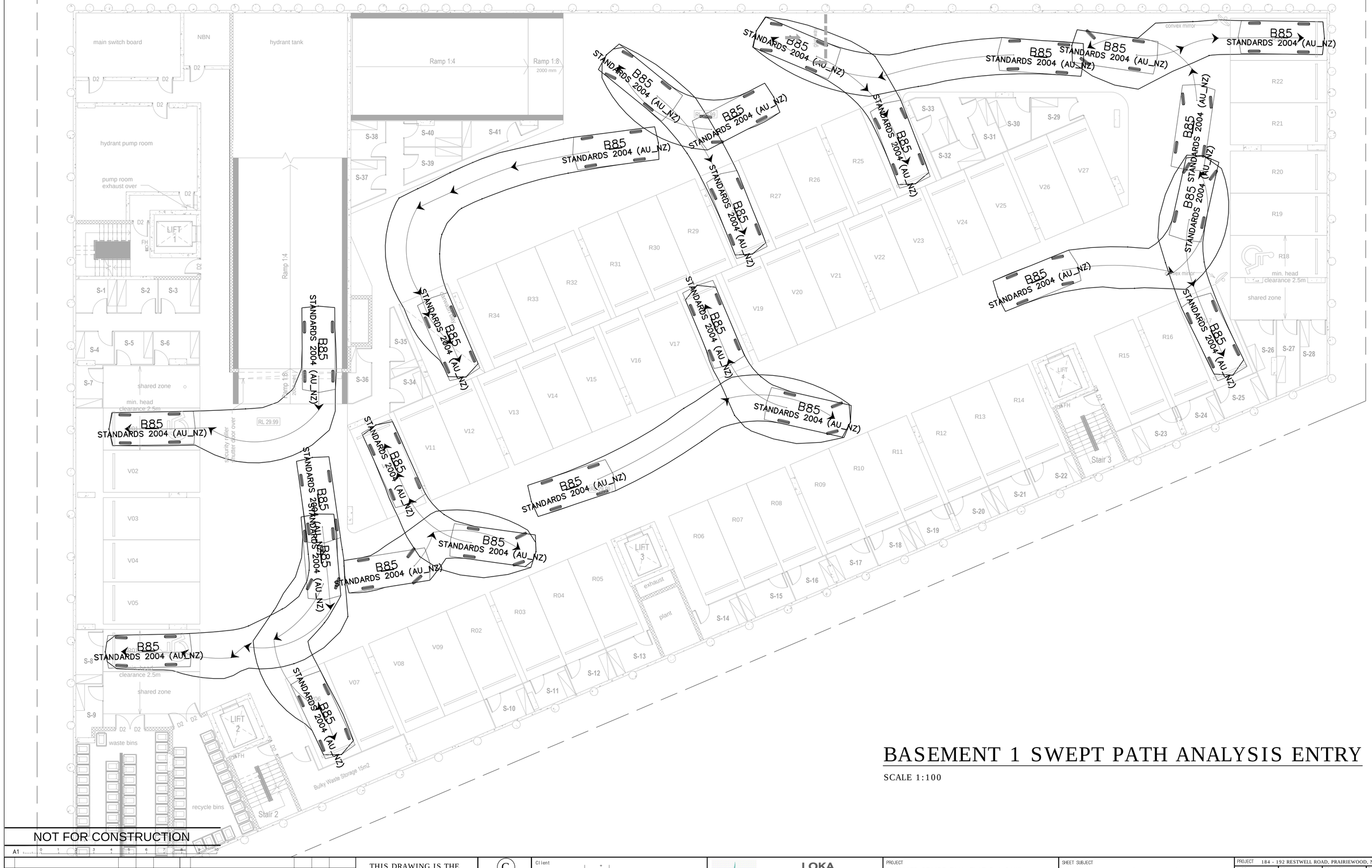
APPENDIX **B**

Swept Path Analysis



BASEMENT 1 SWEPT PATH ANALYSIS ENTRY

SCALE 1:100

NOT FOR CONSTRUCTION

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B	FOR S96 APPROVAL	N.L.	A.E.	28-11-17
A	FOR S96 APPROVAL	N.L.	A.E.	10-11-17

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PROJECT
PROPOSED RESIDENTIAL FLAT BUILDING
LOT 7 SECTION E DP 6934
184 - 192 RESTWELL ROAD,

SHEET SUBJECT
BASEMENT 1 SWEPT PATH ANALYSIS ENTER

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DATE NOV 17	DRAWN A.L.	DESIGNED N.L.	CHECKED N.L.
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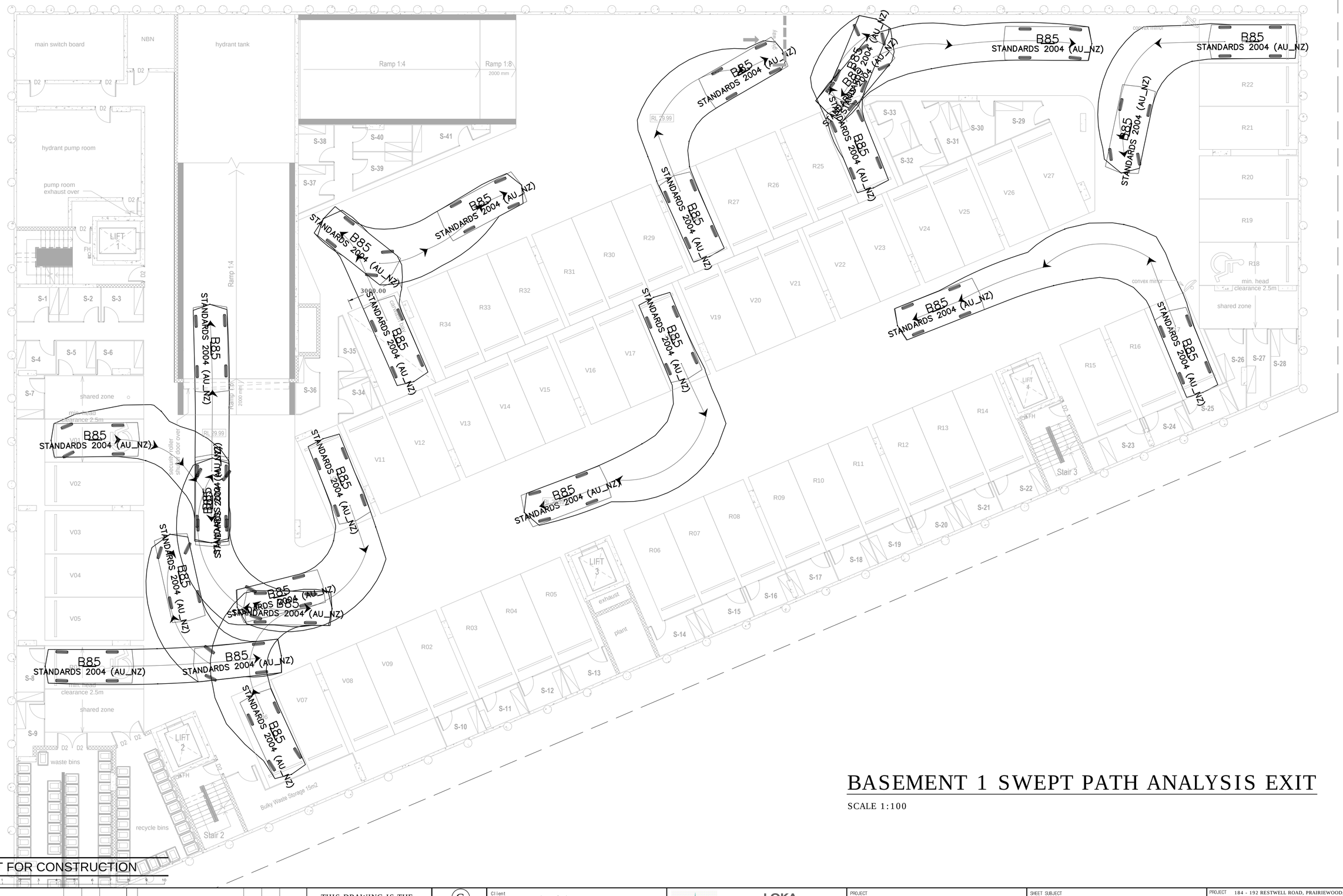

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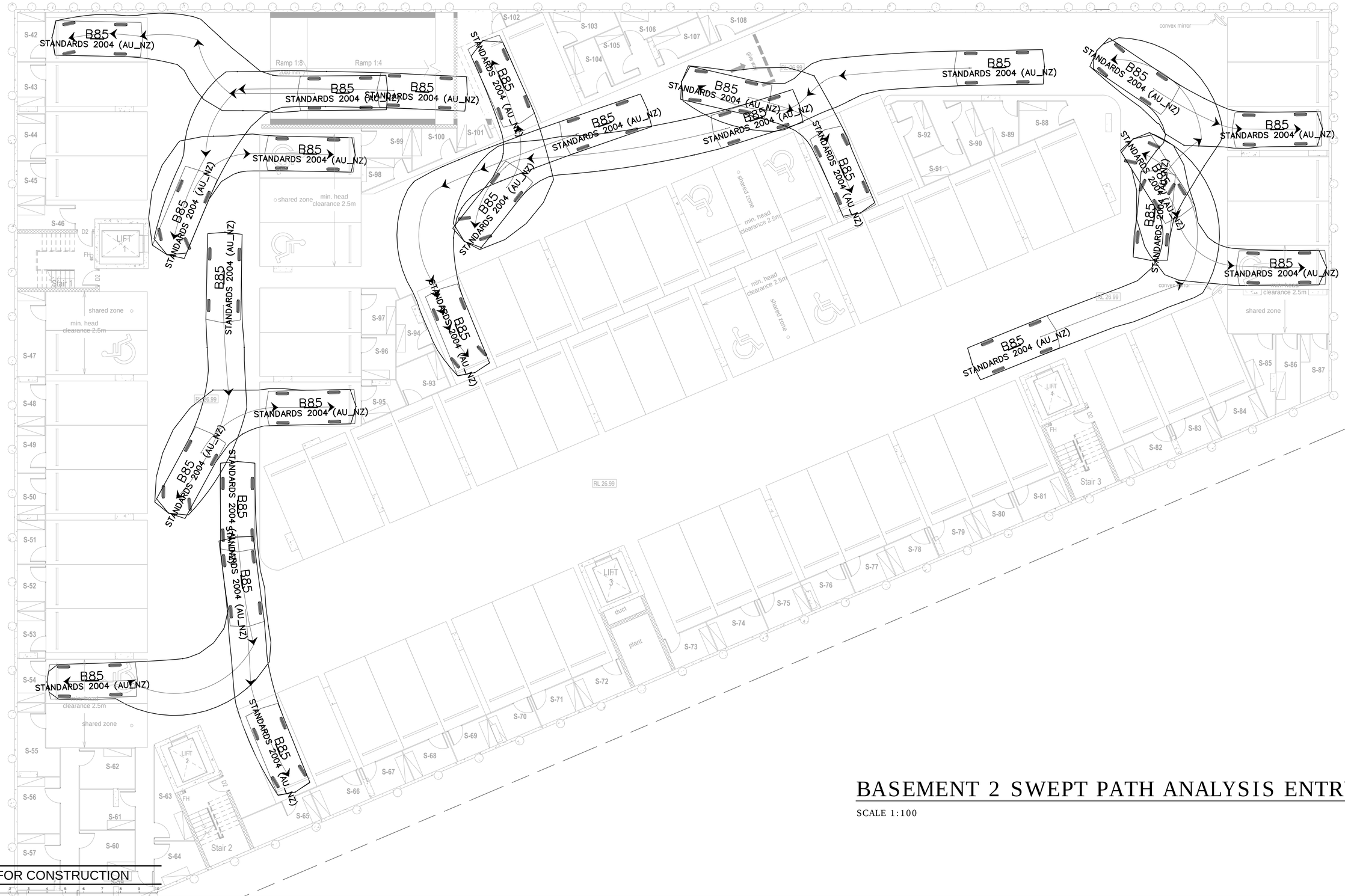

BASEMENT 2 SWEPT PATH ANALYSIS ENTRY

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NOT FOR CONSTRUCTION

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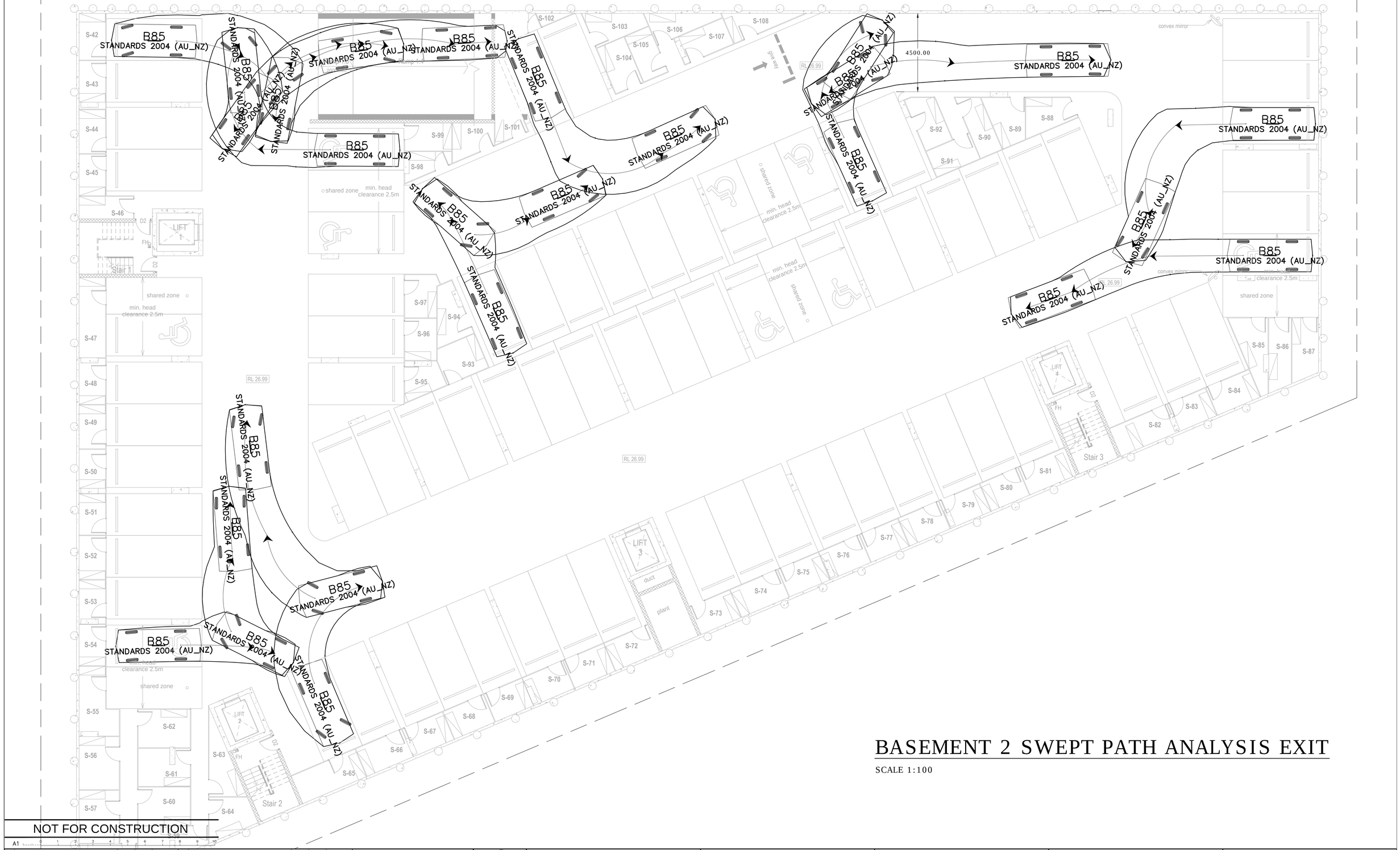

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PROPOSED RESIDENTIAL FLAT BUILDING
LOT 7 SECTION E DP 6934
184 - 192 RESTWELL ROAD,

N

SHEET SUBJECT
BASEMENT 2 SWEPT PATH ANALYSIS EXIT

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