LOKA CONSULTING ENGINEERS
www.lceng.com.au

LOKA CONSULTING ENGINEERS

OFFICE : SUITE 2, 55-59 PARRAMATTA ROAD, LIDCOMBE NSW 2141
PHONE: 02 8065 9689 FAX: 02 8065 9690
MOBILE: 0404 142 063
EMAIL: info@lceng.com.au
Web:www.lceng.com.au

Job Number: **18NL148-T2** **Date:** **06th July, 2018**

Traffic Management Report for

1 Station Lane, Penrith, NSW

Prepared by

LOKA CONSULTING ENGINEERS PTY LTD

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 Antoine J. Saouma Architect to provide a Traffic Management Plan for the site at 1 Station Lane, Penrith, NSW (refer to Figure 1-1 and Figure 1-2).

A Traffic Management Plan and Report is required for the proposed development to identify the impacts of the proposal on the local street network and mitigation measures required to ameliorate any impacts. This includes:

- A description of the site and details of the development proposal;
- A review of the road network in the vicinity of the site, and traffic conditions on that road network;
- A review of the geometric design features of the proposed car parking facilities for compliance with the relevant codes and standards; and
- An assessment of the adequacy and suitability of the quantum of off-street car parking provided on site.

Figure 1-1 Subject site (from SIX maps)

Figure 1-2 Site location (from SIX maps)

2. Proposed Development

The proposed development will facilitate the construction of a residential flat building with a site area of approximately 669 m^2.

The proposed development is bounded by

- Station Lane on the East,
- 28A Union Rd on the West,
- 20 Station Lane on the North, and
- Penrith War Memorial Swimming Pool on the South.

The development consists of 2 basement levels, 1 ground level and 5 upper level. Both basement levels will be used primarily for car parking with entry from Station Lane. A car lift is proposed to connect the ground floor and both basement levels.

2.1.Public Transportations

1. It takes 3 minutes walking (210m) from the site to Station St at Union Ln bus stop (refer to figure 2-1).
2. It takes 5 minutes walking (400m) from the site to Station St after Reserve Stat Marion St bus stop (refer to figure 2-2).

Table 2-1 shows the bus line name; routes and the time between two successive trips. Refer to Transport NSW for accurate details.

No.	Line Name	Route	Interval
1	690P	Springwood to Penrith	60 min
	770	Mount Druitt to Penrith via St Marys	30 min
	774	Mount Druitt to Penrith via Nepean Hospital	30 min
	775	Mount Druitt to Penrith via Erskine Park	30 min
	776	Mount Druitt to Penrith via St Clair	30 min
	781	St Marys to Penrith via Glenmore Park	Time varies
	791	Penrith to Jamisontown via South Penrith	30 min
	794	Glenmore Park to Penrith via The Northern Rd	30 min
	795	Warragamba to Penrith	Time varies
	799	Glenmore Park to Penrith via Regentville	60 min
2	688	Penrith to Emu Heights	30 min
	689	Penrith to Leonay	60 min
	691	Mount Riverview to Penrith	Time varies

7Table 2-1 Bus line, route, and time

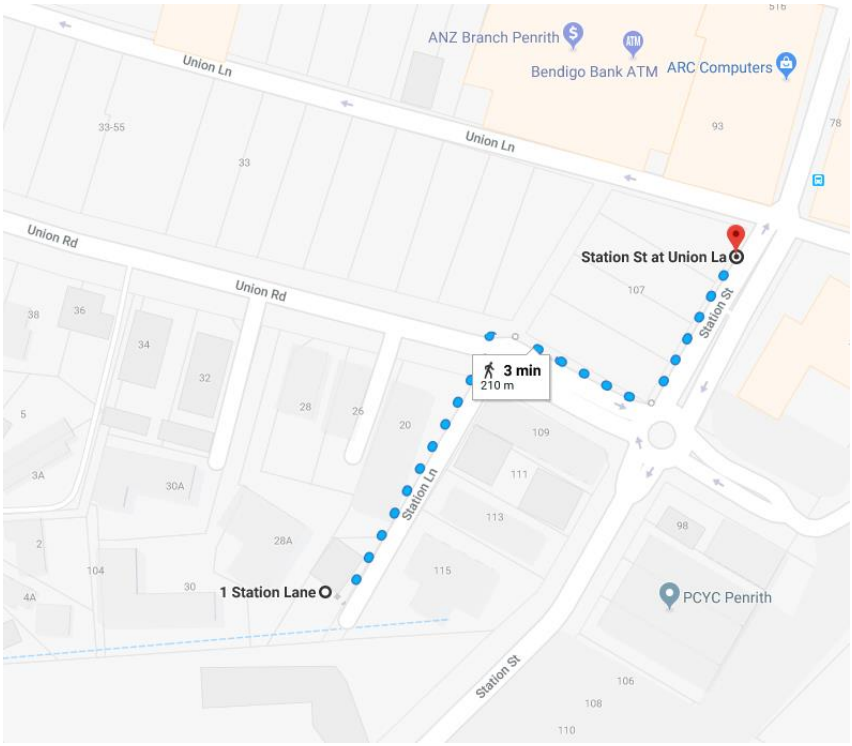


Figure 2-1 Site to bus stop (from Google maps)

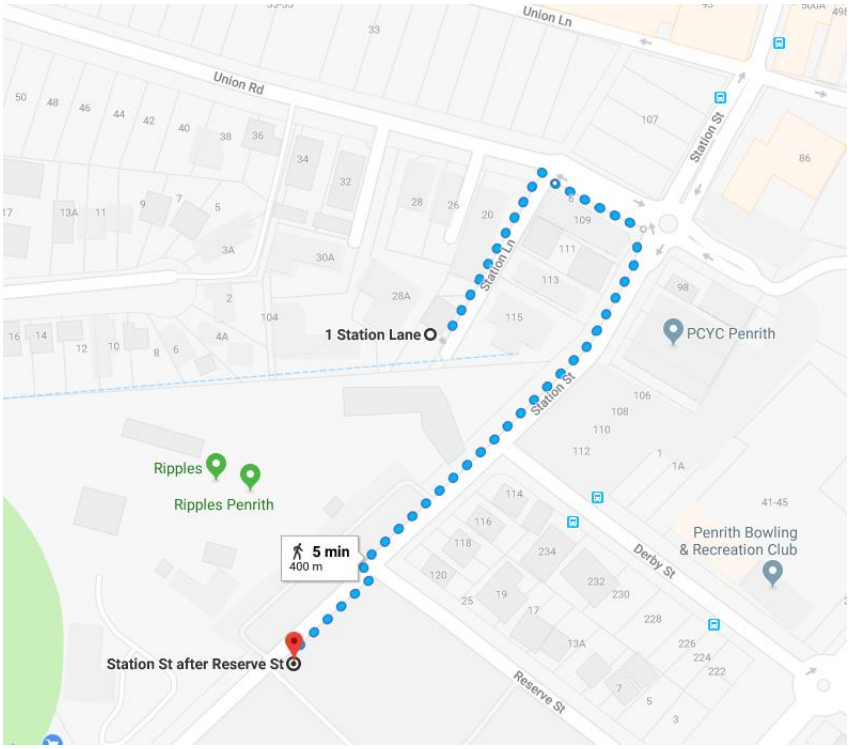


Figure 2-2 Site to train station (from Google maps)

3. Off Street Car Parking Provision

3.1. Car parking

According to the latest architectural plan, the development consists of 2 basement levels, 1 ground level and 5 upper level. Both basement levels will be used primarily for car parking with entry from Station Lane. A car lift is proposed to connect the ground floor and both basement levels.

Bedroom provision for the units is given in Table 3-1 below.

Level	1-bedroom unit	2-bedroom unit	3-bedroom unit	Total
Level 5	0	2	0	2
Level 4	0	2	0	2
Level 3	3	1	0	4
Level 2	2	1	1	4
Level 1	2	1	0	3
Ground	1	1	0	2
Total	**8**	**8**	**1**	**17**

Table 3-1 Bedroom provision

The proposed residential building is only 400m away from Penrith train station (refer to figure 2-2) according to time estimated by Google maps, it takes 5 minutes walking only.

according to Apartment Design Guide objective 3J-1 car parking is provided based to public transport on sites that are within 800 metres of a railway station or light rail stop in the Sydney Metropolitan Area the minimum car parking requirement for residents and visitors is set out in the Guide to Traffic Generating Developments, or the car parking requirement prescribed by the relevant council, whichever is less

Land use	Measure	Minimum spaces required
Metropolitan Regional (CBD) Centres	1 bedroom	0.4/unit
	2 bedrooms	0.7/unit
	3 bedrooms	1.2/unit
	Visitor	1/7 units

Table 3-2 Off-street parking space rates from Apartment Design Guide

Accordingly, the car parking spaces required for the proposed development is shown in Table 3-3.

Parking type	Unit type	No. of units	Rate	Parking required	Total
Residential	1 BED	8	0.4	3.2	10
	2 BEDS	8	0.7	5.6	
	3 BEDS	1	1.2	1.2	
Visitor	Units	17	1/7	2.4	3
MINIMUM PARKING					13

Table 3-3 Required minimum parking spaces from Apartment Design Guide

According to Penrith Development Control Plan (2014), the following minimum parking spaces shown in Table 3-4 must be provided for a residential flat building.

Land use	Parking type	Minimum spaces required
Residential Flat Buildings	**Residential**	1 space per 1 or 2 bedrooms 2 spaces per 3 or more bedrooms
	Visitor	In addition, visitor parking is to be provided for developments that have 5 or more dwellings: 1 space per 5 dwellings, or part thereof.
	Accessible	Accessible parking as per BCA & AS2890.6.
	Car wash bay	1 space for car washing for every 50 units, up to a maximum of 4 spaces per building.

	Service vehicles	1 space per 40 units for service vehicles.
	Bicycle	Bicycle parking as per "Planning Guidelines for Walking and Cycling" (NSW Government 2004) & AS2890.3.

Table 3-4 Off-street parking space rates from Penrith DCP

Required minimum car parking spaces is given in Table 3-5 below.

Parking type	1-bedroom unit (1 space/unit)	2-bedroom unit (1 space/unit)	3-bedroom unit (2 spaces/unit)	Required min. spaces
Unit	8	8	1	
Residential parking	8 x 1 = 8	8 x 1 = 8	1 x 2 = 2	18 spaces
Visitor parking	17 units x 1 space per 5 units = 3.4 spaces			4 spaces
Total				23

Table 3-5 Required minimum parking spaces from Penrith DCP

From Table 3-3 & 3-5, it can be seen that Guide to Traffic Generating Developments requires less parking than Penrith DCP

There are 13 parking spaces required. There are 14 parking spaces provided in total, 10 residential parking spaces, 4 visitor parking spaces.

The design complies with the requirement of Apartment Design Guide & Guide to Traffic Generating Developments requires.

Ground floor and basement architectural plan of the proposed development has been prepared by Antoine J. Saouma Architect and is attached in Appendix A.

3.2. Bicycle parking

According to Penrith DCP, bicycle parking is to be provided as per "Planning Guidelines for Walking and Cycling" (NSW Government 2004) & AS2890.3. Table 3-6 below assesses the requirement for bicycle parking.

Land use	Rate	Number of units	Required minimum space
RFB	20-30% of units for long term + 5-10% of units for short term	17	4 (LT) +1 (ST) = 5

Table 3-6 Required minimum bicycle parking

8 bicycle parking spaces are provided on ground floor inside the building.

The design complies with the requirement from Penrith DCP.

4. Car Park and Driveway Layout

4.1.Driveway and Ramp Design

The design of the driveway, internal roadways & ramps, and car parking spaces must comply with relevant Australian Standards; details are shown in the Basement architectural plan. Table 4-1 and Table 4-2 assess the compliance of the site to Australian Standard and Penrith Council DCP.

FEATURE	AS 2890.1:2004	Penrith Council DCP	Architectural Plan	Compliance
Driveway width	• 3.0 to 5.5 for Category 1. • 6.0 to 9.0 for Category 2.	To comply with AS2890.1	Class 1A parking facility Category 1 access facility 4.75m one-way Car lift proposed to connect ground floor and both basement levels.	The design is complied with AS 2890.1 and Penrith Council DCP
Headroom	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.	To comply with AS2890.1	Headroom GF: 3.00m UB: 2.50m LB: 3.00m Ensure min 2.2m general and 2.5 above accessible parking space after considering slab thickness and services.	The design is complied with AS 2890.1 and Penrith Council DCP

Table 4-1 Driveway and ramp design

Ground floor and basement architectural plan of the proposed development has been prepared by Antoine J. Saouma Architect and is attached in Appendix A.

4.2.Dimensions of Parking Spaces

The design of the car parking spaces should be in compliance with AS 2890.1 and AS 2890.6.

FEATURE	AS/NZS 2890.1 & 2890.6	Penrith Council DCP	Architectural Plan	Compliance
Residential parking space	5.4m x 2.4m. Additional 300mm when adjacent a wall	To comply with AS2890.1	All parking spaces are 5.5m x 2.4m. With additional 300mm when subjected to obstacle with height more than 150mm	The design is complied with AS 2890.1 and Penrith Council DCP
Disabled parking	5.4m x 2.4m adjacent a 5.4m	To comply with	5.4m X 2.4m with a shared area of 5.4m X 2.4m	The design is complied with

space	x 2.4m shared zone	AS2890.6	With additional 300mm when subjected to obstacle with height more than 150mm	AS 2890.6 and Penrith Council DCP
Aisle Widths	5.8m minimum	To comply with AS2890.1	5.8m on both basements	The design is complied with AS 2890.1 and Penrith Council DCP
Blind aisle	1m extension beyond the last parking space	To comply with AS2890.1	<u>Lower basement</u> P13: 1.162m P14: 1m <u>Upper basement</u> P6: 1.14m P7: 1m	The design is complied with AS 2890.1 and Penrith Council DCP

Table 4-2 Dimensions of parking spaces

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 (Refer to Figure 4-1).

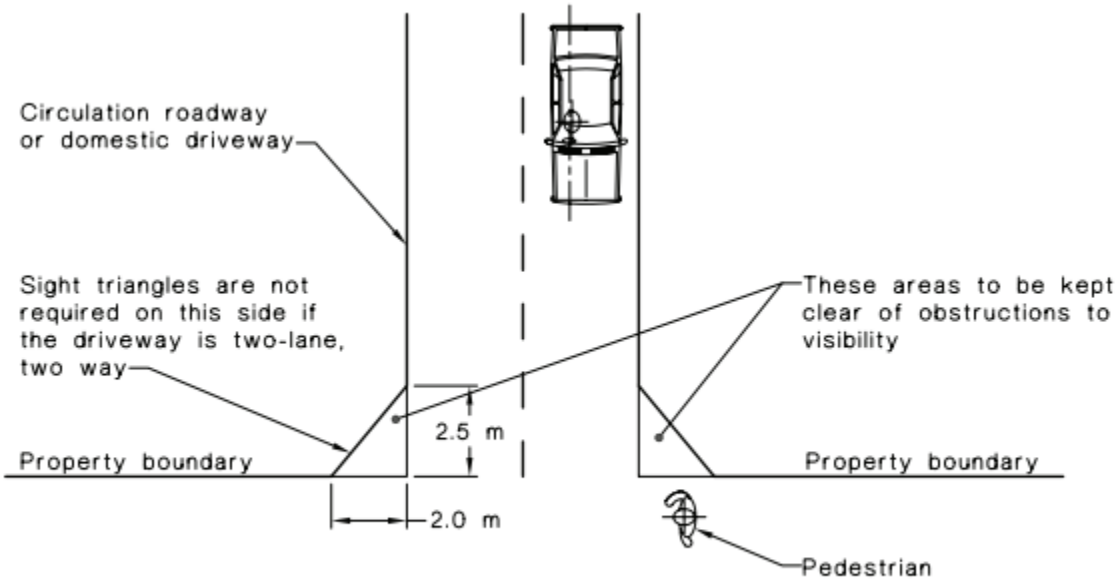


Figure 4-1 AS 2890.1:2004 requirement

In accordance with AS 2890.1:2004, sight triangle is hatched in red and shown in the following Figure 4-2.

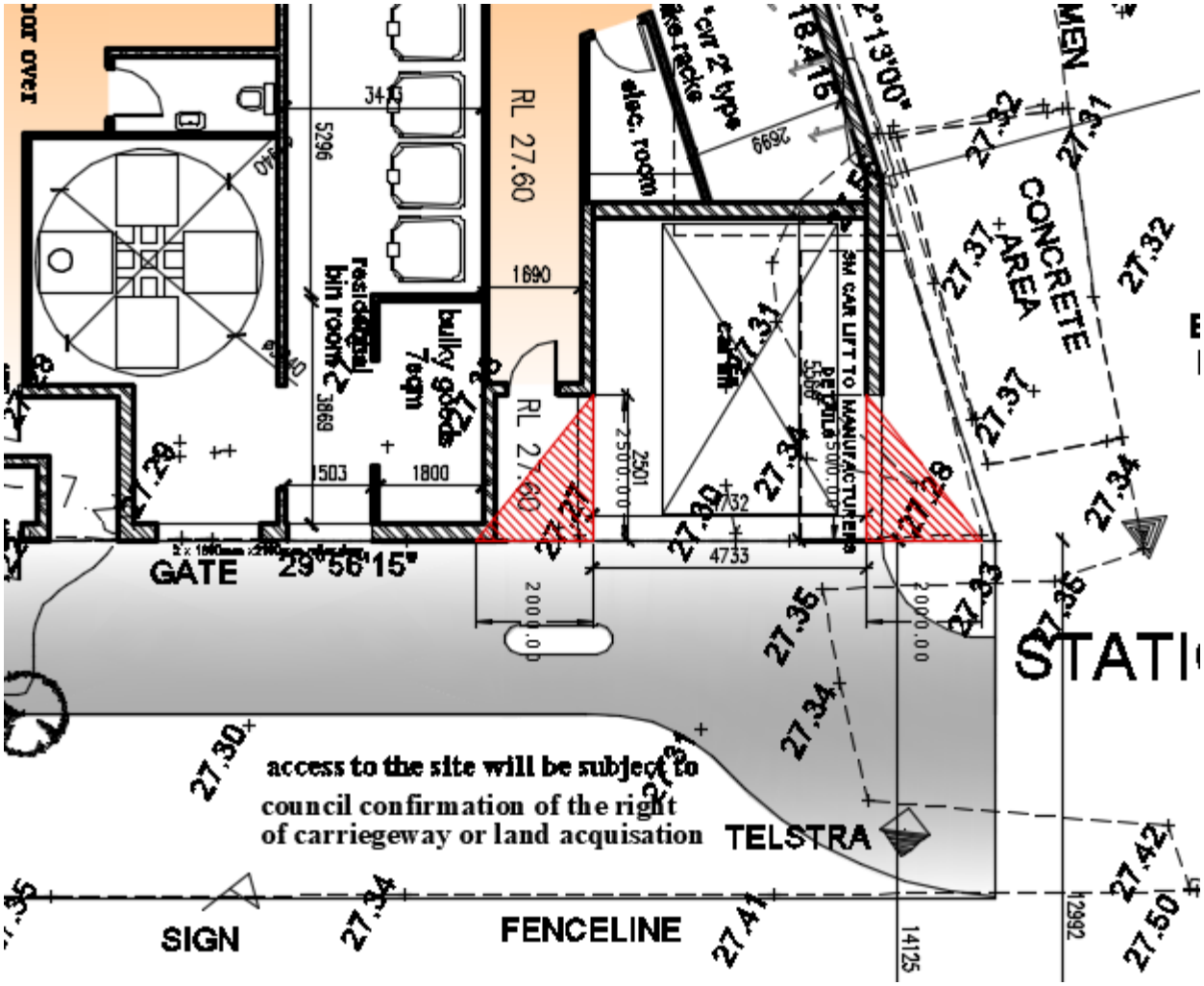


Figure 4-2 Sight triangle

The design complies with sight triangle requirement.

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 medium density residential flat building (less than 20 units). The rate and corresponding peak hour vehicle trips are given in Table 5-1 below.

Unit type	Rate	Number of proposed unit	Weekday peak hour vehicle trips
Up to two bedrooms	0.4-0.5 per dwelling	16	6.4-8.0

Three or more bedrooms	0.5-0.65 per dwelling	1	0.5-0.65
Total			Max. 9

The existing site contains one dwelling. Based on RMS guidelines, the existing site is identified as 1 dwelling. 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 is also a single dwelling house, there is a traffic generation potential of approximately 1 vehicle per hour during peak periods. The future trips should be discounted by the existing trips, which is shown in Table 5-2 below.

Traffic Generation Potential	Weekday peak hour vehicle trips
Future	9
Existing	1
Net	8

Table 5-2 Project net Increase in peak hour traffic generation potential

According to the table above, there will be net increase of 8 weekday peak hour vehicle trips in traffic generation potential for the proposed development.

6. Additional Requirement

A Traffic Signal System is proposed to manage traffic vehicles entering and exiting the basement car park for the proposed development to mitigate the impacts caused by the limited access driving width.

To ensure all vehicles enter and exit the site in a safe and efficient manner, a traffic signal system will be introduced to manage the vehicles for the proposed development. Refer to Signal system plan drawings ST01-ST02.

For vehicles entering the site

The default position of the lift will be at ground floor to prevent the queueing of vehicles at Station Lane, priority will be given to entering vehicles at the entrance of access driveway. The lift door will always be open when available to be used.

If the lift is being used, the door will be closed and there will be a red flashing light near the lift door notifying the incoming vehicles.

For vehicle leaving the site

On each basement level, a loop detector will be located at the waiting bays near the signal head to activate the signals and call the lift, convex mirror, red/green traffic light and corresponding sign will be proposed

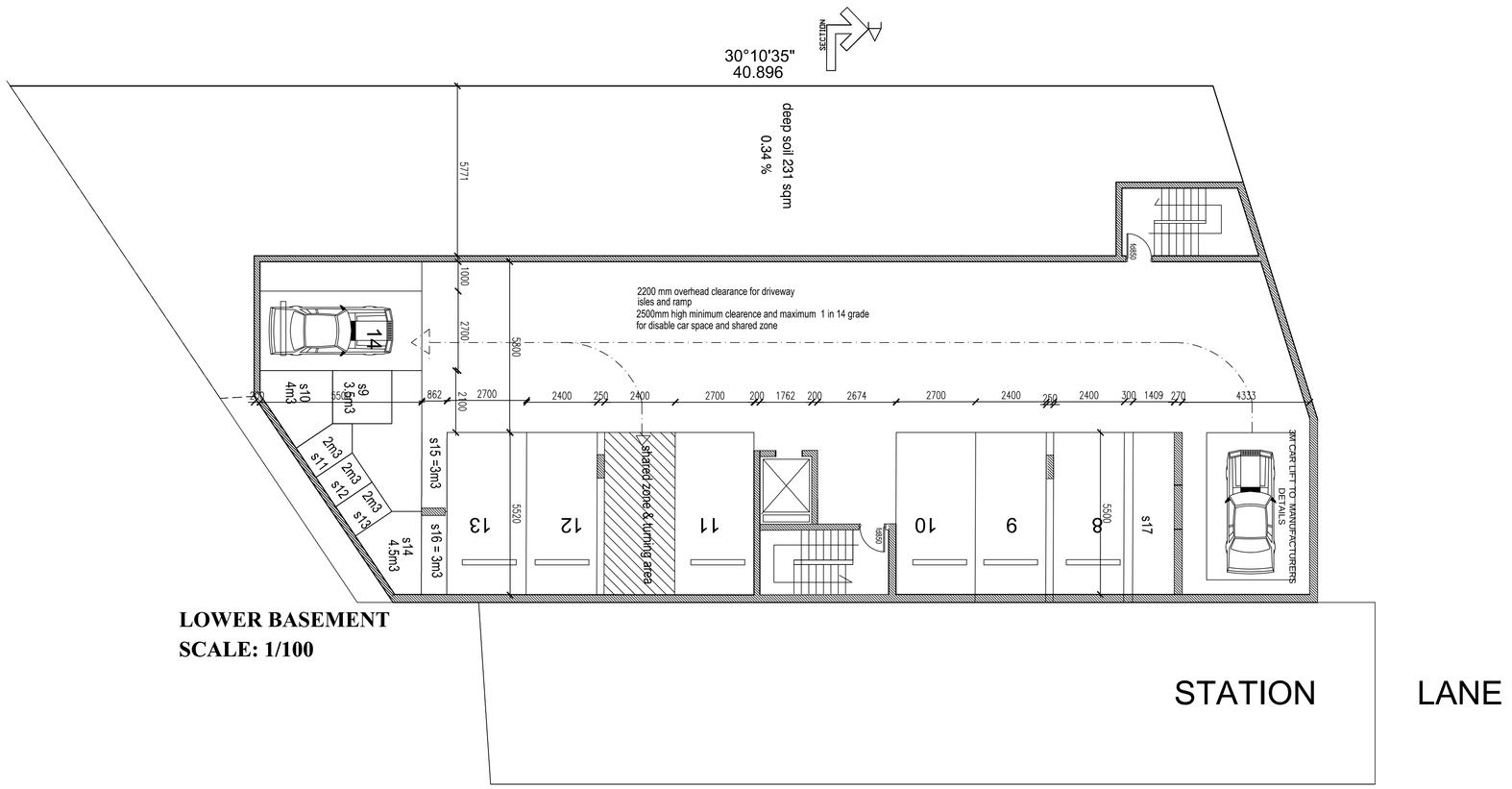
7. Swept Path Analysis

To ensure all vehicles enter and exit the site in a forward direction, swept path analysis has been conducted in the Appendix B.

It is our opinion that the proposed car parking and driveway comply with Australia Standard.

APPENDIX **A**

Architectural Plan



0 1 2 3 4 5 6

GENERAL NOTES

DEVELOPMENT APPLICATION ISSUE

Do not scale from drawings
All dimensions are to be checked on site before commencement of work
All discrepancies to be brought to the attention of the project manager
Larger scale drawings and written dimensions take preference.
This drawing is copyright and the property of the author, it must not be retained, copied or used without the express authority of Antoine Saouma.

DATE	REV	AMENDMENTS
20/02/2018	A	PRELIMINARY DRAWINGS , ISSUE FOR PRE-DA

ANTOINE J. SAOUMA
Architect 7412
MEMBER THE ROYAL AUSTRALIAN INSTITUTE OF ARCHITECTS

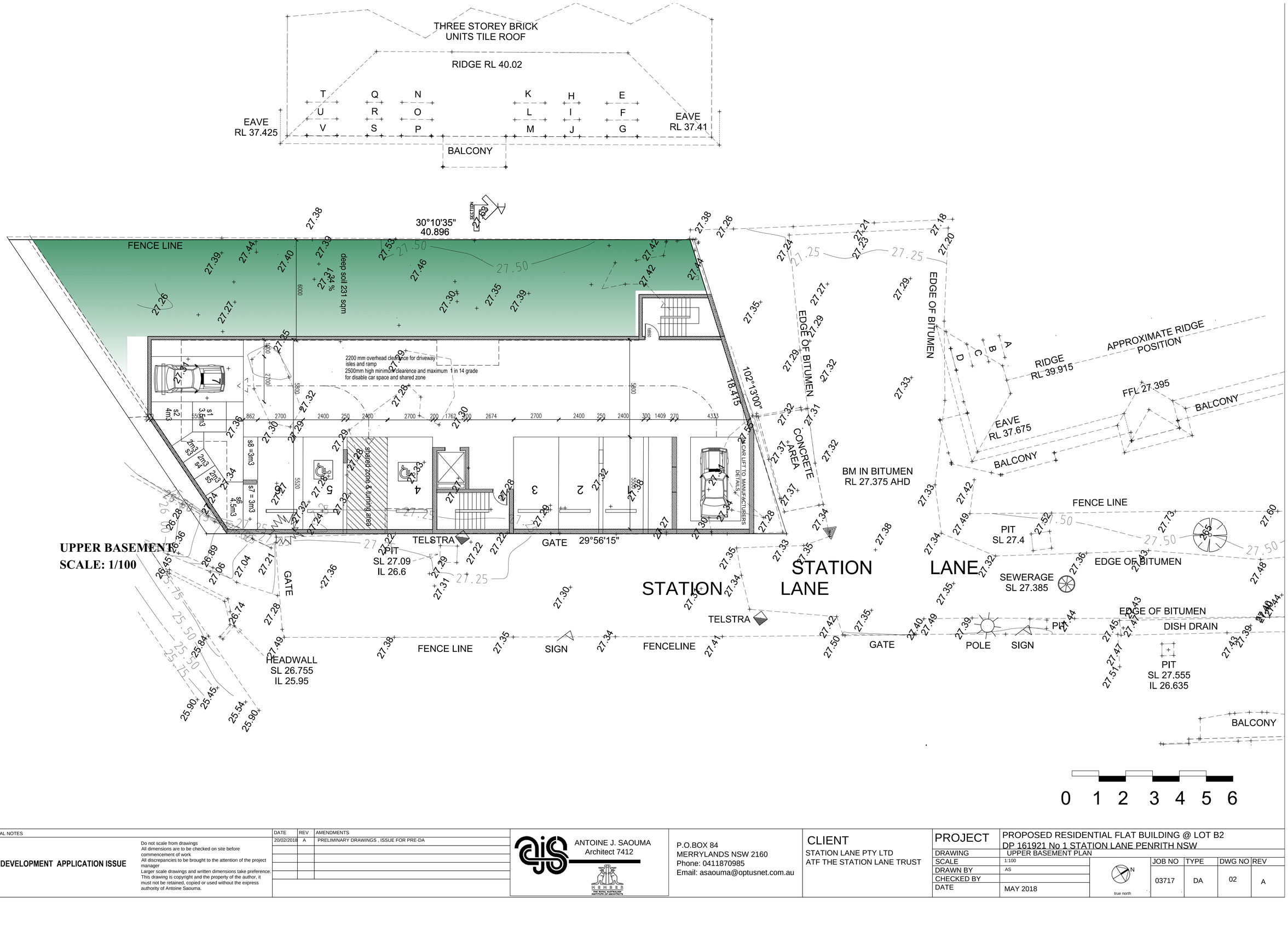
P.O.BOX 84
MERRYLANDS NSW 2160
Phone: 0411870985
Email: asaouma@optusnet.com.au

CLIENT
STATION LANE PTY LTD
ATF THE STATION LANE TRUST

PROJECT	PROPOSED RESIDENTIAL FLAT BUILDING @ LOT B2 DP 161921 No 1 STATION LANE PENRITH NSW
DRAWING	LOWER BASEMENT PLAN
SCALE	1:100
DRAWN BY	AS
CHECKED BY	
DATE	MAY 2018

true north

JOB NO	TYPE	DWG NO	REV
03717	DA	01	A



GENERAL NOTES

DEVELOPMENT APPLICATION ISSUE

Do not scale from drawings
All dimensions are to be checked on site before commencement of work
All discrepancies to be brought to the attention of the project manager
Larger scale drawings and written dimensions take preference.

DATE	REV	AMENDMENTS
20/02/2018	A	PRELIMINARY DRAWINGS , ISSUE FOR PRE-DA

ANTOINE J. SAOUMA
Architect 7412
MEMBER THE ROYAL AUSTRALIAN INSTITUTE OF ARCHITECTS

P.O.BOX 84
MERRYLANDS NSW 2160
Phone: 0411870985
Email: asaouma@optusnet.com.au

CLIENT
STATION LANE PTY LTD
ATF THE STATION LANE TRUST

PROJECT: PROPOSED RESIDENTIAL FLAT BUILDING @ LOT B2
DP 161921 No 1 STATION LANE PENRITH NSW

DRAWING	UPPER BASEMENT PLAN
SCALE	1:100
DRAWN BY	AS
CHECKED BY	
DATE	MAY 2018

N
true north

JOB NO	TYPE	DWG NO	REV
03717	DA	02	A

UNITS TILE ROOF

RIDGE RL 40.02

T U V Q R S N O P K L M H I J E F G

EAVE RL 37.425

EAVE RL 37.41

BALCONY

FENCE LINE

private open space 166sqm = 25%

communal open space 166sqm = 25%

30°10'35" 40.896

SECTION

floor over

balcony

U 2 2 bedrooms 75 sqm

BED1

robe

ensuite

BED2

robe

lobby 97 sqm

cora - "cvr 2" type 8 bike racks

elec. room

RL 27.60

1690

residential bin room 3869

bulky goods 7sqm

3M CAR LIFT TO MANUFACTURERS DETAILS

1m high retaining wall

balcony

U 1 studio 1 42 sqm

bedroom/living

robe

mail boxes

TELSTRA

PIT SL 27.09 IL 26.6

GATE 29°56'15"

2 x 1800mm x2100mm high fence

access to the site will be subject to council confirmation of the right of carriegeway or land acquisation

TELSTRA

GATE

HEADWALL SL 26.755 IL 25.95

FENCE LINE

SIGN

FENCELINE

102°13'00"

118.115

EDGE OF BITUMEN

APPROXIMATE RIDGE POSITION

RIDGE RL 39.915

EAVE RL 37.675

BALCONY

FFL 27.395

CONCRETE AREA

BM IN BITUMEN RL 27.375 AHD

FENCE LINE

PIT SL 27.4

STATION LANE

SEWERAGE SL 27.385

EDGE OF BITUMEN

EDGE OF BITUMEN

DISH DRAIN

POLE

SIGN

PIT SL 27.555 IL 26.635

BALCONY

FOUR STOREY BRICK UNITS TILE ROOF

EAVE RL 37.93

FFL 2

RIDGE RL 40.895

0 1 2 3 4 5 6

GROUND FLOOR PLAN
SCALE: 1/100

1- HANDRAILS TO COMPLY WITH CLAUSE 12 OF AS 1428.1-2009 (TERMINATION AND EXTENSION) AND ALSO TO COMPLY WITH CLAUSE 12b,g AND h OF AS 1428.2-2009
2- CONTRASTING LUMINOUS NOSING STRIP TO COMPLY WITH CLAUSE 11 OF AS 1428.1-2009
3- TACTILE INDICATORS

GENERAL NOTES

DEVELOPMENT APPLICATION ISSUE

Do not scale from drawings
All dimensions are to be checked on site before commencement of work
All discrepancies to be brought to the attention of the project manager
Larger scale drawings and written dimensions take preference.

DATE	REV	AMENDMENTS
20/02/2018	A	PRELIMINARY DRAWINGS , ISSUE FOR PRE-DA

ANTOINE J. SAOUMA
Architect 7412
MEMBER THE ROYAL AUSTRALIAN INSTITUTE OF ARCHITECTS

P.O.BOX 84
MERRYLANDS NSW 2160
Phone: 0411870985
Email: asaouma@optusnet.com.au

CLIENT
STATION LANE PTY LTD
ATF THE STATION LANE TRUST

MAY 2018

PROJECT: PROPOSED RESIDENTIAL FLAT BUILDING @ LOT B2 DP 161921 No 1 STATION LANE PENRITH NSW

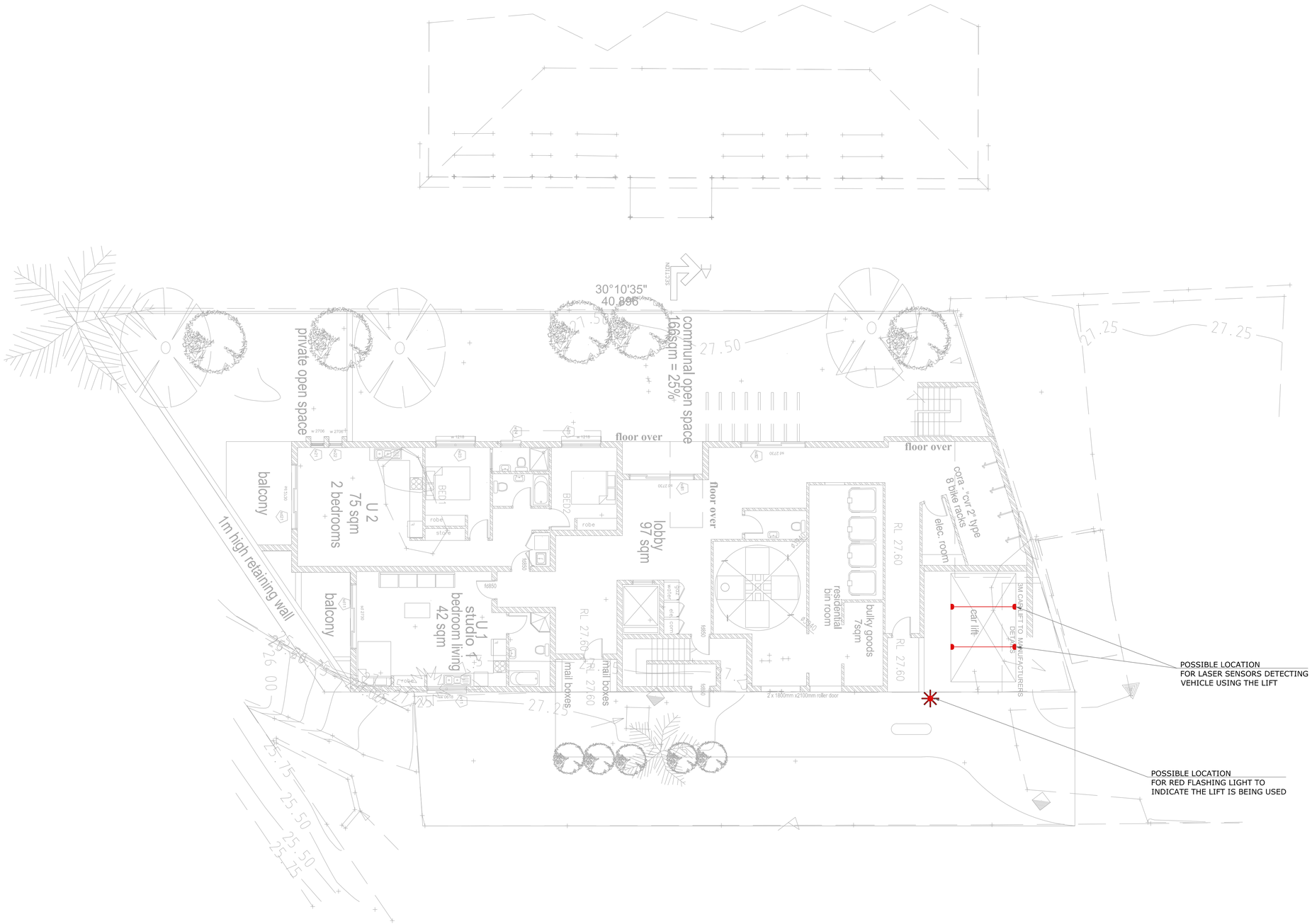
DRAWING	GROUND FLOOR PLAN
SCALE	1:100
DRAWN BY	AS
CHECKED BY	
DATE	MAY 2018

true north

JOB NO	TYPE	DWG NO	REV
03717	DA	03	A

APPENDIX **B**

Swept Path Analysis



SIGNAL SYSTEM ON GROUND FLOOR

SCALE 1:100

A1 0 1 2 3 4 5 6 7 8 9 10

No	AMENDMENT	ENG	DRAFT	DATE
A	FOR D.A. APPROVAL	N.L.	A.E.	06-07-18

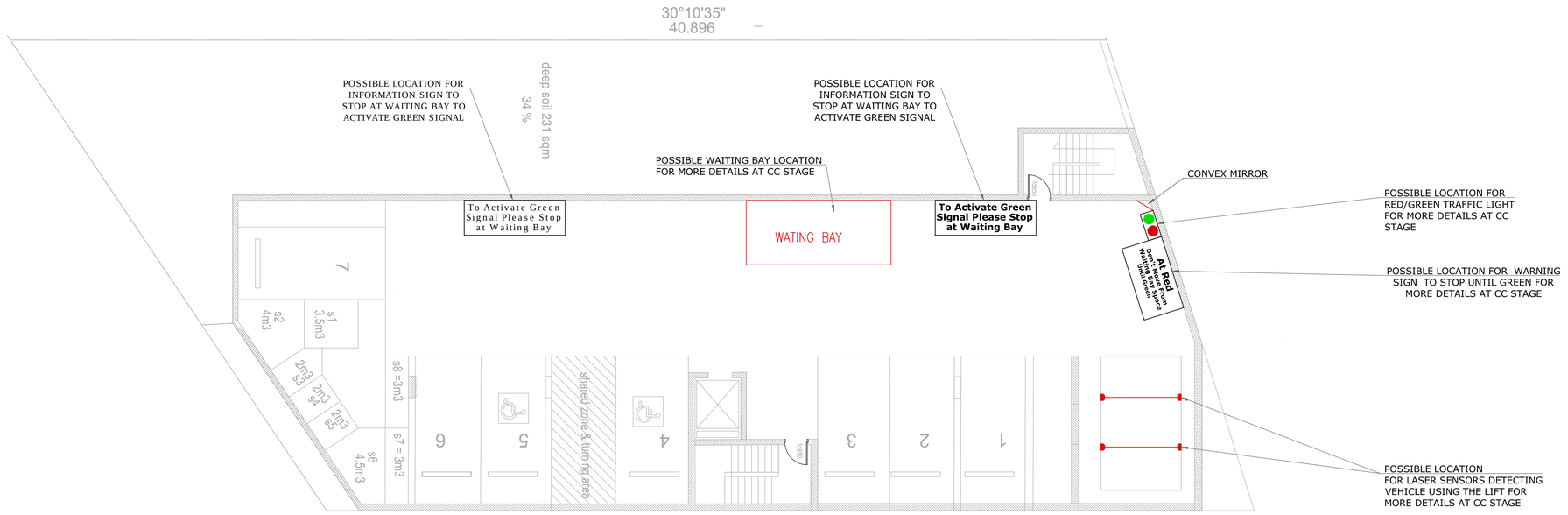
ARCHITECT
ANTOINE J. SAOUMA
Architect 7412

LOKA CONSULTING ENGINEERS PTY LTD
14A/8 AVENUE OF THE AMERICAS, NEWINGTON, NSW 2127
T: +61 2 8065 9689 F: +61 2 8065 9690
MOBILE: 0404 142 063 EMAIL: info@liceng.com.au

PROJECT
PROPOSED RFB
1 STATION LANE,
PENRITH, NSW

SHEET SUBJECT
SIGNAL SYSTEM ON GROUND FLOOR

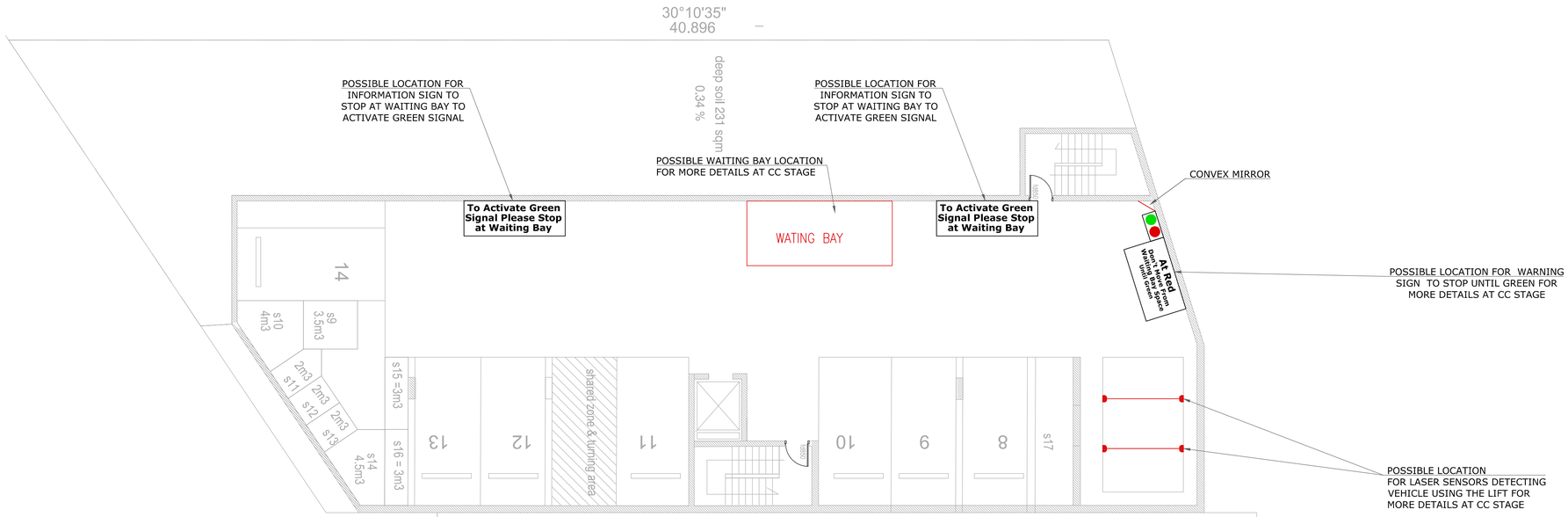
PROJECT 1 Station Lane, Penrith, NSW			
DATE JUL 18	DRAWN C.K.	DESIGNED N.L.	CHECKED N.L.
SCALE @ A1 1 : 100 U.N.O		JOB No 18NL148	
AUTHORISED NERMEIN LOKA		DWG No ST01	REV A



UPPER BASEMENT
SCALE: 1/100

UPPER BASEMENT TRAFFIC SIGNAL SYSTEM

SCALE 1:100



LOWER BASEMENT
SCALE: 1/100

UPPER BASEMENT TRAFFIC SIGNAL SYSTEM

SCALE 1:100

A1 0 1 2 3 4 5 6 7 8 9 10

No	AMENDMENT	ENG	DRAFT	DATE
A	FOR D.A. APPROVAL	N.L.	A.E.	06-07-18

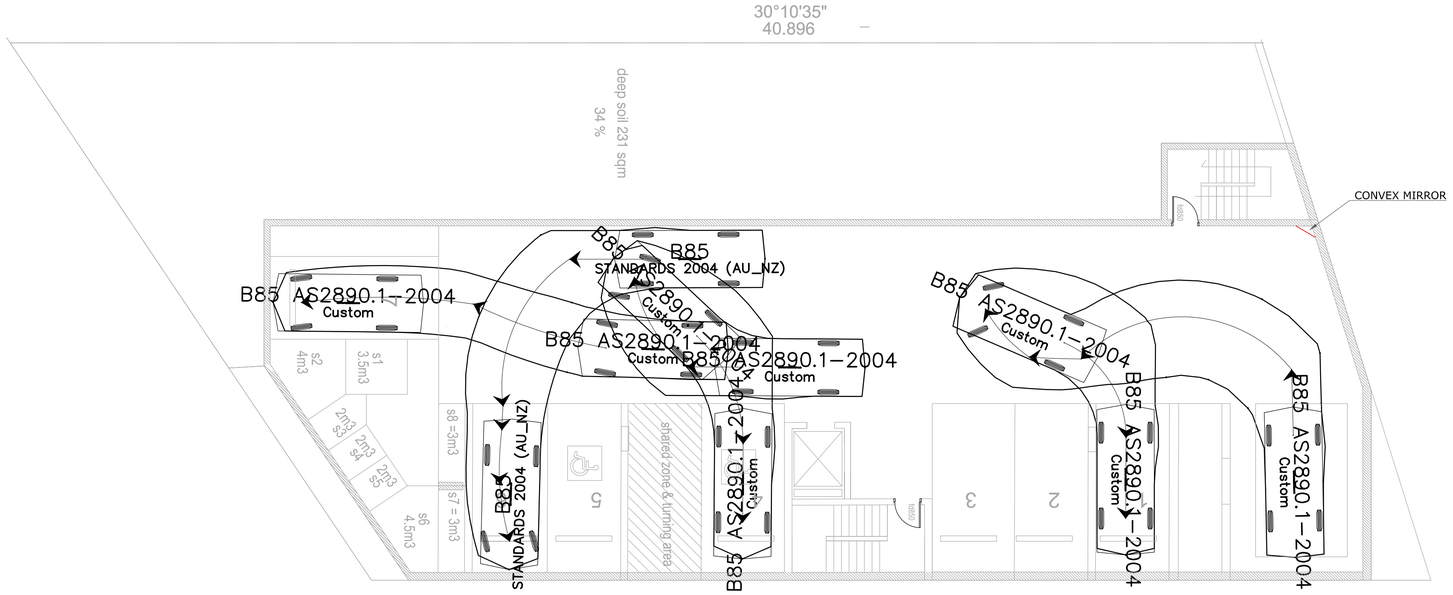
ARCHITECT
ANTOINE J. SAOUMA
Architect 7412
MEMBER THE ROYAL AUSTRALIAN INSTITUTE OF ARCHITECTS

LOKA CONSULTING ENGINEERS PTY LTD
LOKA CONSULTING ENGINEERS www.lceng.com.au
14A/8 AVENUE OF THE AMERICAS, NEWINGTON, NSW 2127
T: +61 2 8065 9689 F: +61 2 8065 9690
MOBILE: 0404 142 063 EMAIL: info@lceng.com.au

PROJECT
PROPOSED RFB
1 STATION LANE,
PENRITH, NSW

SHEET SUBJECT
SWEPT PATH ANALYSIS
UPPER & LOWER BASEMENT
CIRCULATION

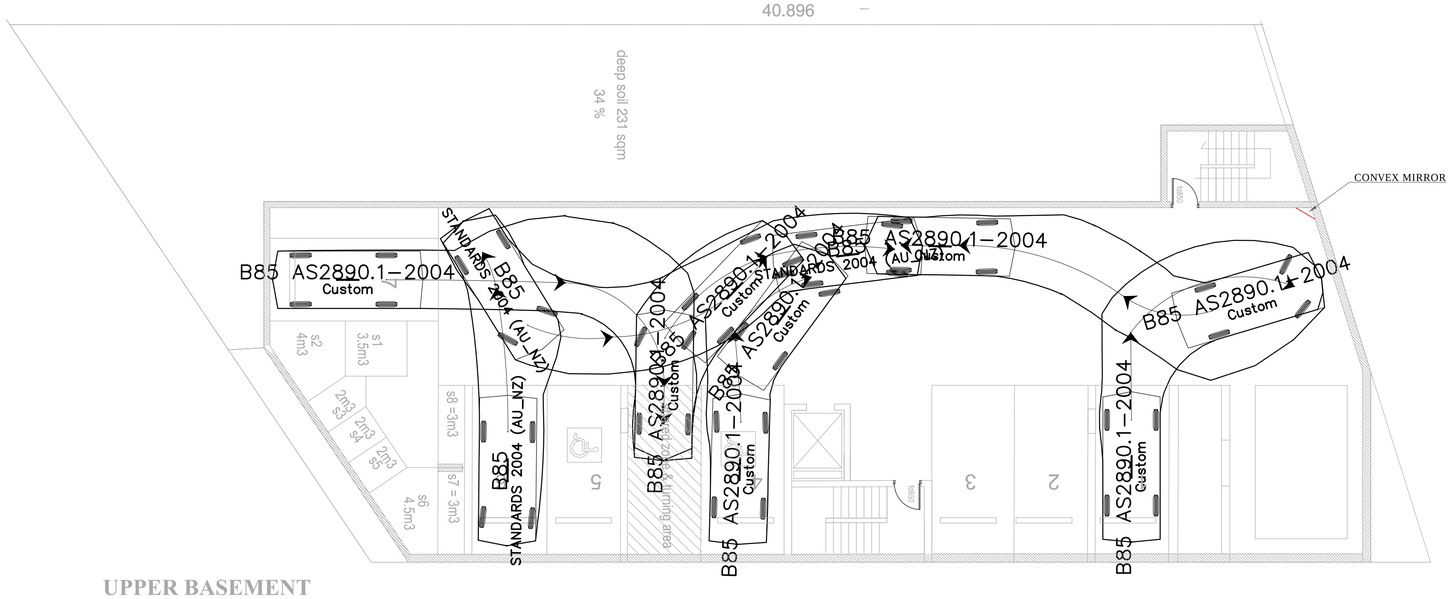
PROJECT 1 Station Lane, Penrith, NSW			
DATE JUL 18	DRAWN C.K.	DESIGNED N.L.	CHECKED N.L.
SCALE @ A1 1 : 100 U.N.O		JOB No 18NL148	
AUTHORISED NERMEIN LOKA		DWG No T03	REV A



UPPER BASEMENT
SCALE: 1/100

SWEPTH PATH ANALYSIS UPPER BASEMENT ENTRY

SCALE 1:100



UPPER BASEMENT
SCALE: 1/100

SWEPTH PATH ANALYSIS UPPER BASEMENT EXIT

SCALE 1:100

A1 0 1 2 3 4 5 6 7 8 9 10

No	AMENDMENT	ENG	DRAFT	DATE	No	AMENDMENT	ENG	DRAFT	DATE
C	FOR D.A. APPROVAL	N.L.	A.E.	04-07-18					
B	FOR D.A. APPROVAL	N.L.	A.E.	04-07-18					
A	FOR D.A. APPROVAL	N.L.	C.K.	04-07-18					

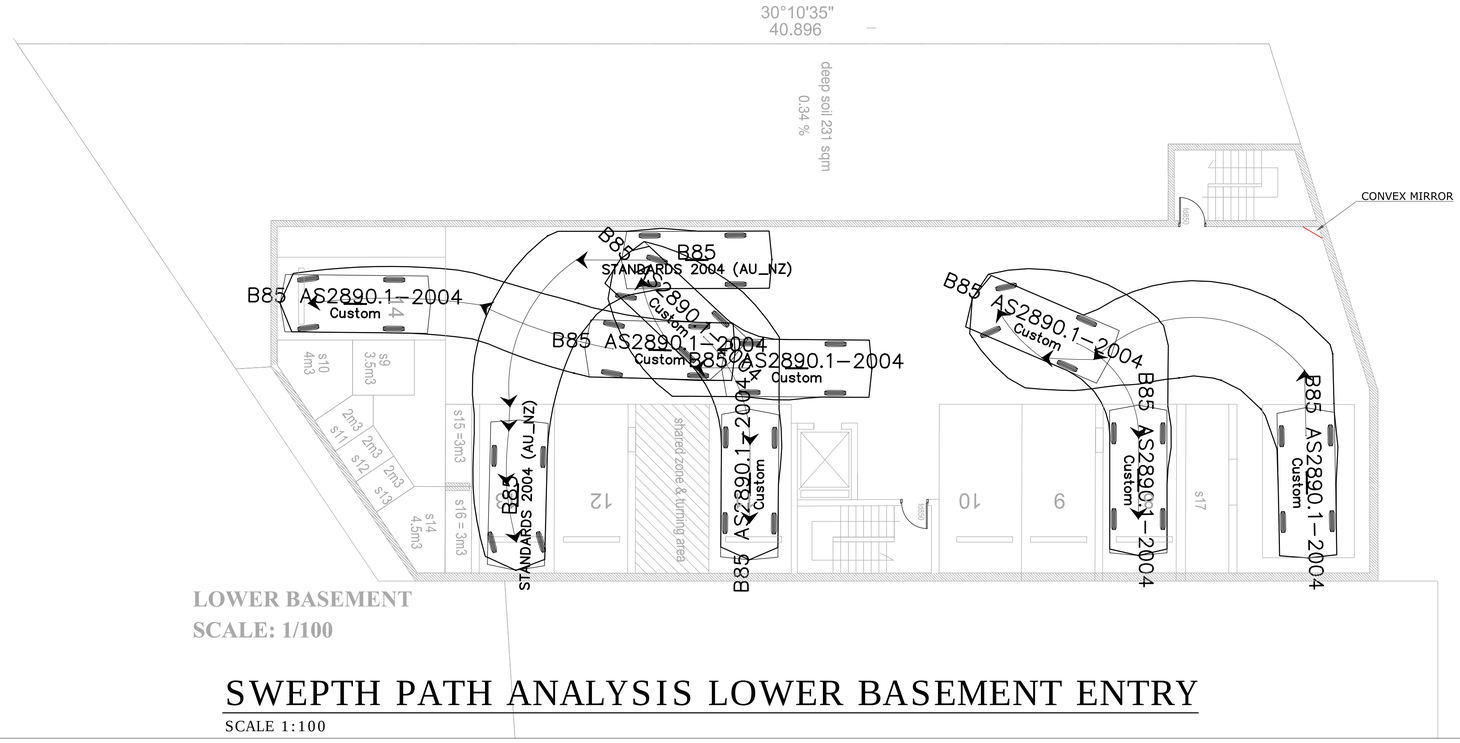
ARCHITECT
ANTOINE J. SAOUMA
Architect 7412
NSW REGISTRATION BOARD OF ARCHITECTS

LOKA CONSULTING ENGINEERS PTY LTD
LOKA CONSULTING ENGINEERS www.lceng.com.au
14A/8 AVENUE OF THE AMERICAS, NEWINGTON, NSW 2127
T: +61 2 8065 9689 F: +61 2 8065 9690
MOBILE: 0404 142 063 EMAIL: info@lceng.com.au

PROJECT
PROPOSED RFB
1 STATION LANE,
PENRITH, NSW

SHEET SUBJECT
SWEPT PATH ANALYSIS
UPPER BASEMENT ENTRY &
EXIT

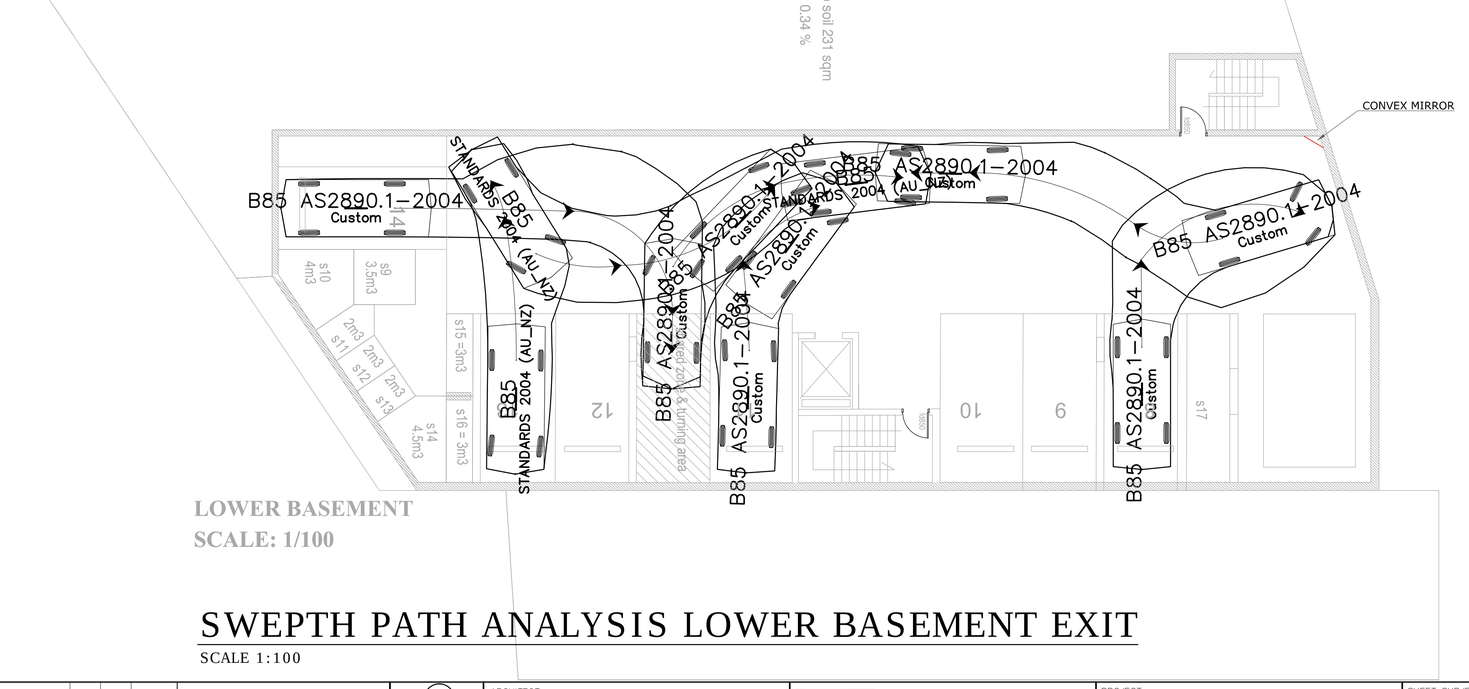
PROJECT	1 Station Lane, Penrith, NSW
DATE	JUL 18
DRAWN	C.K.
DESIGNED	N.L.
CHECKED	N.L.
SCALE @ A1	1 : 100 U.N.O
JOB No	18NL148
AUTHORISED	NERMEIN LOKA
DWG No	T01
REV	C



LOWER BASEMENT
SCALE: 1/100

SWEPTH PATH ANALYSIS LOWER BASEMENT ENTRY

SCALE 1:100



LOWER BASEMENT
SCALE: 1/100

SWEPTH PATH ANALYSIS LOWER BASEMENT EXIT

SCALE 1:100

A1 0 1 2 3 4 5 6 7 8 9 10

No	AMENDMENT	ENG	DRAFT	DATE	No	AMENDMENT	ENG	DRAFT	DATE
C	FOR D.A. APPROVAL	N.L.	A.E.	04-07-18					
B	FOR D.A. APPROVAL	N.L.	A.E.	04-07-18					
A	FOR D.A. APPROVAL	N.L.	C.K.	04-07-18					

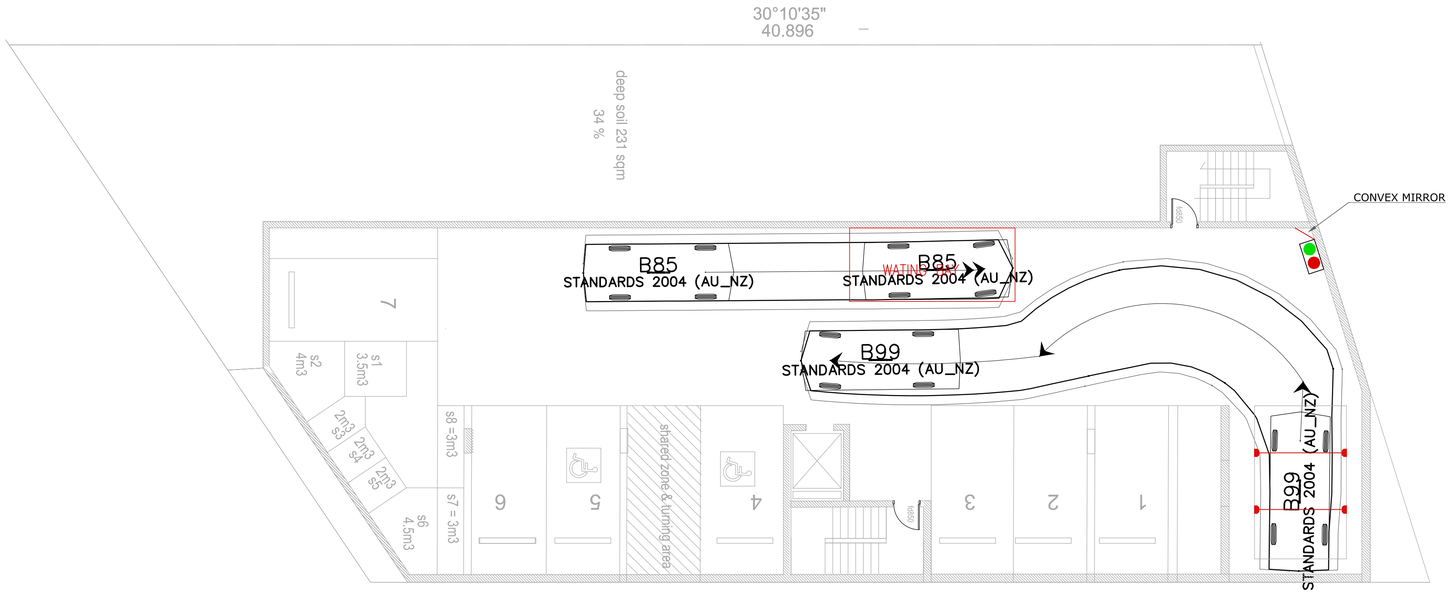
ARCHITECT
ANTOINE J. SAOUMA
Architect 7412
NSW REG. No. 7412

LOKA CONSULTING ENGINEERS PTY LTD
14A/8 AVENUE OF THE AMERICAS, NEWINGTON, NSW 2127
T: +61 2 8065 9689 F: +61 2 8065 9690
MOBILE: 0404 142 063 EMAIL: info@lceng.com.au
www.lceng.com.au

PROJECT
PROPOSED RFB
1 STATION LANE,
PENRITH, NSW

SHEET SUBJECT
SWEPT PATH ANALYSIS
LOWER BASEMENT ENTRY &
EXIT

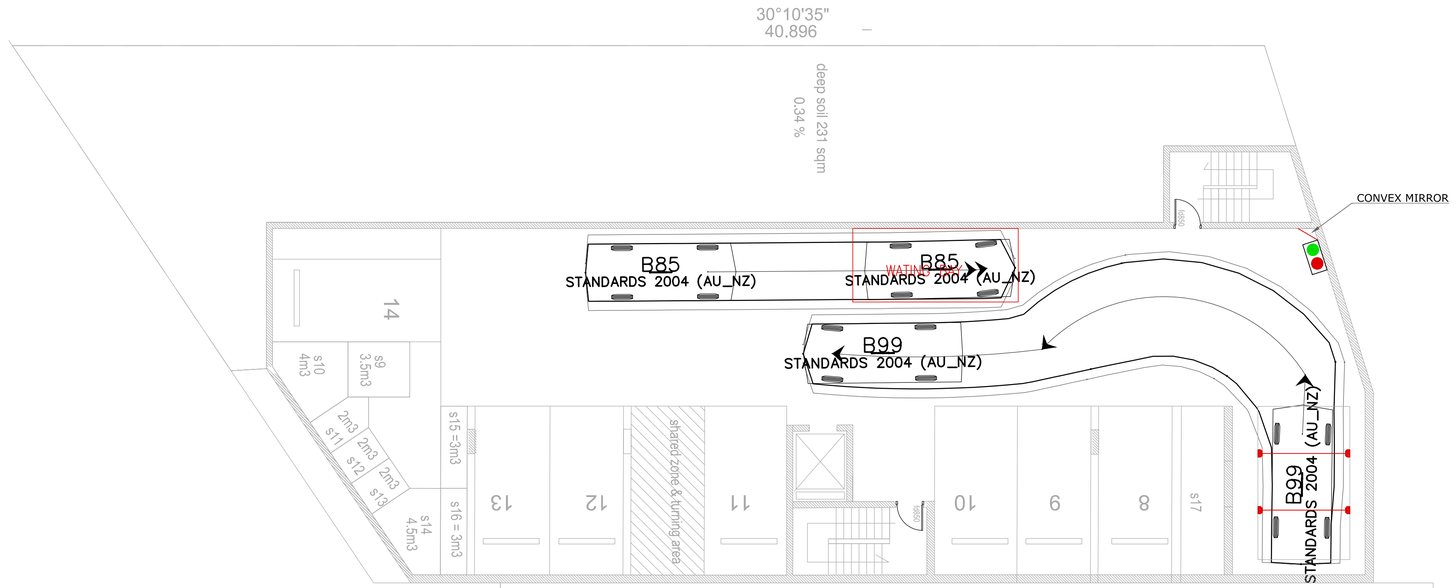
PROJECT	1 Station Lane, Penrith, NSW
DATE	JUL 18
DRAWN	C.K.
DESIGNED	N.L.
CHECKED	N.L.
SCALE @ A1	1 : 100 U.N.O
JOB No	18NL148
AUTHORISED	NERMEIN LOKA
DWG No	T02
REV	C



UPPER BASEMENT
SCALE: 1/100

SWEPTH PATH ANALYSIS UPPER BASEMENT CIRCULATION

SCALE 1:100



LOWER BASEMENT
SCALE: 1/100

SWEPTH PATH ANALYSIS LOWER BASEMENT CIRCULATION

SCALE 1:100

A1 0 1 2 3 4 5 6 7 8 9 10

No	AMENDMENT	ENG	DRAFT	DATE
A	FOR D.A. APPROVAL	N.L.	C.K.	04-07-18

ARCHITECT
ANTOINE J. SAOUMA
Architect 7412
THE ROYAL AUSTRALIAN INSTITUTE OF ARCHITECTS

LOKA CONSULTING ENGINEERS PTY LTD
LOKA CONSULTING ENGINEERS www.lceng.com.au
14A/8 AVENUE OF THE AMERICAS, NEWINGTON, NSW 2127
T: +61 2 8065 9689 F: +61 2 8065 9690
MOBILE: 0404 142 063 EMAIL: info@lceng.com.au

PROJECT
PROPOSED RFB
1 STATION LANE,
PENRITH, NSW

SHEET SUBJECT
SWEPT PATH ANALYSIS
UPPER & LOWER BASEMENT
CIRCULATION

PROJECT 1 Station Lane, Penrith, NSW			
DATE JUL 18	DRAWN C.K.	DESIGNED N.L.	CHECKED N.L.
SCALE @ A1 1 : 100 U.N.O		JOB No 18NL148	
AUTHORISED NERMEIN LOKA		DWG No T03	REV A