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North Ryde NSW 2113
P +61-2 9812 5000
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www.psm.com.au

Our Ref: PSM5527-002L

13 September 2024

19 Roseville Avenue and 14 Lord Street
Roseville 2069
NSW
scraig@crestron.com

Attention: Stuart Craig

Dear Stuart

RE: 19 ROSEVILLE AVENUE AND 14 LORD STREET, ROSEVILLE - PRELIMINARY GEOTECHNICAL ASSESSMENT

1. Introduction

This letter presents the results of the desktop study and preliminary assessment for the proposed development at 19 Roseville Avenue and 14 Lord Street, Roseville (the Site). The site locality plan is shown in Inset 1.

The purpose of this study is to consider all available information to inform the preliminary impact assessment of the proposed basement excavation in proximity to the existing rail assets. The following scope has been completed and reported:

1. Collation and review of available information regarding rail infrastructure relevant to the Site.
2. Development of a preliminary geometrical model based on the available information.
3. Determination of the protection reserves in accordance with the Sydney Metro Underground Corridor Protection Technical Guidelines, version 2.0, dated April 2021 (**Sydney Metro Guideline**).
4. Identification of gaps in information.
5. Provision of a qualitative impact assessment based on the predicted deformations resulting from the proposed excavation at the Site.

Inset 1: Aerial Photograph of the Site (the Site is Outlined in Red).

2. Reference Documents

We have relied on the following documents obtained from PSM's archives:

- Parramatta Rail Link drawing, showing the tunnel alignment in plan, drawing no. PRL-CSD 114402 Rev. D, dated 14 July 2003
- Parramatta Rail Link as-built tunnel geological profile, drawing no. PRL-CSD 114421 Rev.2, dated 15 August 2005
- Plan of proposed acquisition of DP1046912, dated 4 November 2002. This drawing is included in Appendix A
- Plan of proposed acquisition of DP1076734, dated 25 October 2002. This drawing is included in Appendix A.

3. Development Details

3.1 Proposed Development

Based on the information provided, we understand that the proposed development comprises:

- Demolition of the existing low-rise buildings
- Construction of a new building with approximately 6 storeys above the ground and 2-level basement excavation. We have assumed that the excavation depth will be 7m. This will result in the deepest portion of the basement excavation at approximately RL 84m.

The proposed building footprint, shoring details for the excavation and the details on foundation loads are not known.

3.2 Existing Rail Tunnels

Based on the Guideline and the available documentations, we understand the following about the existing Epping-to-Chatswood Rail Line (ECRL):

- The rail tunnels comprise twin single track with diameter of 7.2m
- The tunnels were excavated by tunnel boring machine (TBM) and are supported by unreinforced cast in-situ concrete lining
- The crown of the tunnels are approximately at RL75.5m to RL76.5m around the Site.

4. Model Development

4.1 Surface Conditions

The site is currently occupied by low-rise residential buildings. Based on the publicly available elevation data, the surface along Roseville Avenue grades gently towards south-west from approximately RL 93m (at the western end) towards RL 91m (at the eastern end).

4.2 Geological Setting

The 1:100,000 Sydney Geological Map (1983) indicates the Site is underlain by (Rwa) Ashfield Shale of Wianamatta Group consisting black to dark-grey Shale and Laminite.

4.3 Subsurface Conditions

Based on the available geotechnical data available on PSM's archives, the inferred subsurface condition at the Site comprises a layer of soil (Residual) overlying Ashfield Shale overlying Mittagong Formation and Hawkesbury Sandstone. The Mittagong Formation is a transitional formation that separates the Ashfield Shale from the underlying Hawkesbury Sandstone.

4.4 Geometrical Assessment

A preliminary two-dimensional geometrical model was developed. The rail protection reserves (i.e. first and second reserves) are in accordance with the Sydney Metro Guideline. The extent of the protection reserves is largely dependent on the geometry (width and height) of the tunnel being assessed and Sydney Metro substratum extent.

Figure 1 to Figure 4 present the assessed extents of the protection reserves relative to the Site and proposed basement excavation in plan and sections.

The following should be noted:

- The Site falls within the protection reserves, partially in the First Reserve.
- The First Reserve on the 19 Roseville Avenue is expected to extend to RL85m.
- The First Reserve on the 14 Lord Street is expected to extend to RL88m.
- We have considered the Sydney Metro substratum extents as shown on DP1046734 and DP1046912 drawings. Buyers should make their own enquiries with a register surveyor to confirm the extent of this substratum. This may indicate that the first reserve extends past the boundaries shown on Figures 1 to 4.

4.5 Construction Activities Permitted in the 1st and 2nd Reserves

The Sydney Metro Guideline states the construction restrictions that are applied to each protection reserve in Table 4.5 of the guideline and reproduced as Inset 2. It is clear from the Sydney Metro Guideline that nothing is allowed within the First Reserve with the exception of investigation holes and installation of instrumentation

(and is subject to assessment). In addition, Section 9.2 of the Sydney Metro Guideline reiterates that ground anchors are not allowed within the First Reserve, and this includes temporary and permanent anchors.

The proposed excavation is generally outside the First Reserve, with a small portion could potentially be in the First Reserve. The basement elevation would need to be adjusted at this location to not encroach on the First reserve. We have considered the likely column loads, which we assess to be in the order of 3,500 kN and consider that these could be supported on shallow footings founded within the shale unit located at the proposed excavation elevation. That is the loads are likely to be able to be supported on shallow footings outside of the First Reserve.

Therefore we consider that based on current information no geometrical restrictions apply to these for the proposed development.

Nevertheless, the permission for excavation and loading via means of shallow footings will be contingent on an impact assessment completed in accordance with the requirements in the **Sydney Metro Guideline.**

A preliminary impact assessment is presented in the Section 5.

Types of construction	First reserve	Second reserve
Excavation for basements, footings	Not allowed	• Excavations less than 2.0 m depth from surface level, assessment not required. • Excavation greater than 2.0 m depth, assessment required.
Shallow footings or pile foundations	Not allowed	Allowed, subject to load restrictions. Assessment required.
Tunnels and underground excavations	Not allowed	Allowed, subject to assessment.
Ground anchors	Not allowed	Allowed, subject to assessment.
Demolition of existing subsurface structures	Not allowed	Allowed, subject to assessment.
Penetrative subsurface investigations e.g. boreholes, instrumentation	Allowed away from support zone. Assessment required.	Allowed, subject to assessment (refer to Section 7.1 for requirements)

Inset 2: Construction Restrictions Based on the Sydney Metro Guideline

5. Preliminary Impact Assessment

5.1 General

2D finite element analyses have been completed using the program RS2 version 11.022 by Rocscience to assess the induced ground movements around rail tunnels due to the proposed basement excavation.

A section through the middle of the Site between the basement and the rail tunnels has been selected. Given the geometry of the basement relative to the rail tunnels we consider that the 2D plain strain assumption in our analysis is likely to be conservative and that a 3D model would indicate smaller effects of the excavation on the tunnels.

5.2 Model Geometry

The model geometry has been developed based on information listed on Section 2 and 3.

The as-built ECRL tunnels geological profile drawing shows that the ERCL tunnels are in Class I/II Sandstone. Based on this geological profile, the adopted subsurface profiles above the ECRL on the analysis comprises the following geotechnical units:

- 4m of Soil/Residual Clay, overlying
- 2m of Shale class IV/V, overlying
- 4m of Shale Class II/III, overlying
- 3m Mittagong Formation, overlying
- Sandstone I/II or better.

We note we have not modelled the structural lining of the rail tunnels, nor the presence of other basements in the vicinity of the proposed excavation (if any).

Figure 5 presents the numerical model geometry.

5.3 Modelling Stages

Seven analysis stages from stress initialisation to final excavation and loading of the proposed basement have been modelled. Details of each stage are summarised in Table 1.

Table 1 – Modelling Stages

Stage	Description
Stage 1	Apply in-situ field stresses
Stage 2 (1)	Excavate rail tunnels
Stage 3 – 6	Excavate to basement level in stages (approximately 2 m increments)
Stage 7	Apply nominal building load of 80 kPa across basement footprint (10 kPa x 2 basement levels + 6 storeys) (2)

Notes:
(1) The assessed ground movements in this report are related to the end of stage 2 (i.e. the present-day situation).
(2) Building loads are assumptions only, no building load has been provided.

5.4 Material Properties

Table 2 presents elastic material properties adopted for the ground movements assessment:

Table 2 – Geotechnical Unit Properties

Geotechnical Unit	Unit Weight [kN/m^3]	Young's Modulus [MPa]	Poisson's Ratio
Soil/Residual Clay	20	10	0.3
Shale IV/V	22	100	0.25
Shale II/III	22	800	0.25
Mittagong Formation and Sandstone I/II	24	2000	0.25

The geotechnical units are modelled as elastic materials.

5.5 Applied in-Situ Stress

The following in-situ stress scenarios have been considered in the finite-element analyses as shown in Table 3. This is based on de Ambrosis and Clarke (2014) and encompasses the higher end of the expected range of in-situ stresses scenarios, in order to model the higher end of expected displacements. These are particularly conservative in the range of depth of our excavation which are only 7 m deep.

Table 3 – Design In-Situ Stresses Cases

Stress Case	Rock Class	
	Mittagong Formation and Sandstone II or better	Shale II/III
Base case	$\sigma_H = \sigma_v = \sigma_h$ $\sigma_v = 0.024\ z$	$\sigma_H = \sigma_v = \sigma_h$ $\sigma_v = 0.022\ z$
Sensitivity case	$\sigma_H = 2.5 + 2.0\ \sigma_v$ $\sigma_h = 0.7\ \sigma_H$ $\sigma_v = 0.024\ z$	$\sigma_H = 1.5 + 2.0\ \sigma_v$ $\sigma_h = 0.7\ \sigma_H$ $\sigma_v = 0.022\ z$

Notes: σ_H = Major horizontal stress (MPa), σ_h = Minor horizontal stress (MPa), σ_v = Vertical stress (MPa), z = Depth below ground surface (m). Taken from de Ambrosis & Clarke (2014).

5.6 Analysis Summary

Table 4 summarises the analyses undertaken to assess excavation induced ground movements around ECRL tunnels.

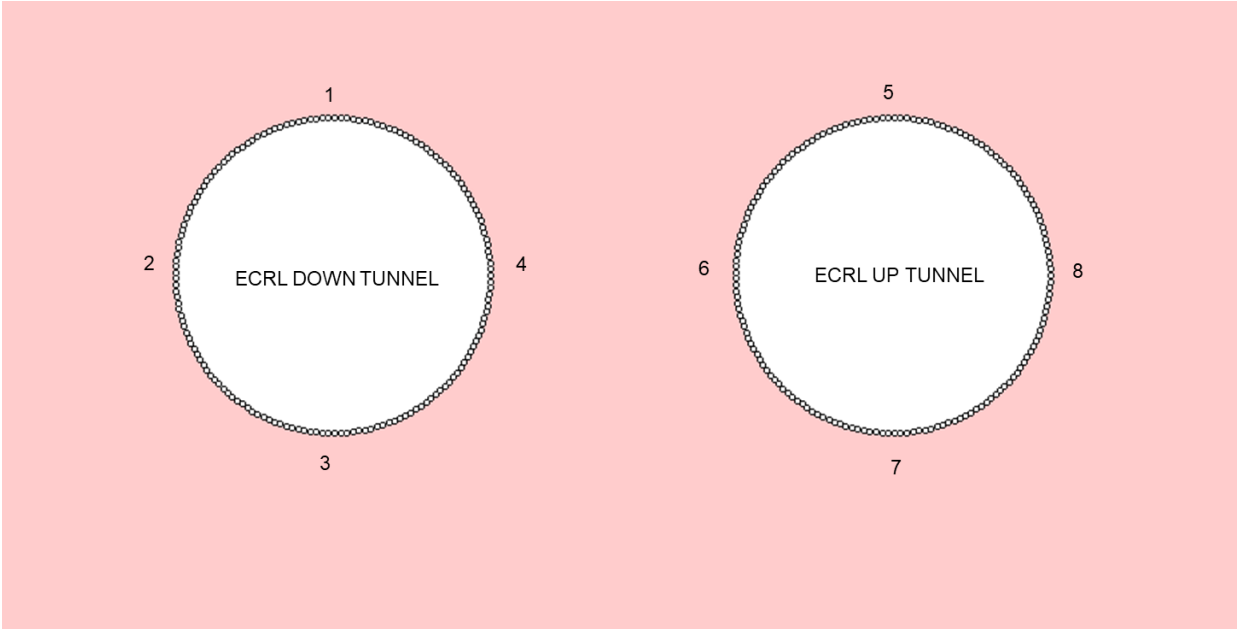
Table 4 – Analyses Summary

Run ID	Descriptions
Run 01	• Base Case • Elastic model with material properties as per Section 5.4 • Base case in-situ stresses case as per Section 5.5
Run 02	• Sensitivity Case • Elastic model with material properties as per Section 5.4 • Sensitivity in-situ stresses case as per Section 5.5

6. Results of Analyses

The results of the two analyses are presented in this report. The outputs of the analyses showing vertical displacement contours at the final excavation stage, and following application of a nominal building load are provided in Appendix B.

We have selected 4 points at each of the two tunnels as shown on Inset 3 below and tabulated the predicted total displacement in Table 5.



Inset 3: Displacement Query locations

Table 5 – Summary of Maximum Tunnel Vertical Displacement

Tunnel	Point ID	At the end of basement excavation (mm)		Following application of building load (mm)	
		Run 01	Run 02	Run 01	Run 02
ECRL Down Tunnel	1	<1	2	<1	2
	2	<1	<1	<1	<1
	3	<1	1	<1	1
	4	<1	1	<1	1
ECRL Up Tunnel	5	<1	3	<1	3
	6	<1	1	<1	1
	7	<1	1	<1	1
	8	<1	1	<1	1

Note: Positive vertical displacement indicates upward movement (i.e. heave).

7. Preliminary Assessment of Ground Movement in Relation to Rail Tunnels

The potential impacts on existing ECRL Tunnels have been assessed against the criteria set out in Section 9.1.2 of the Sydney Metro Guideline.

Section 9.1.2 of the Sydney Metro Guideline states.

"For metro cast in-situ cavern and tunnel concrete linings, the allowable total movement in any direction is 10 mm and differential movement in any plane is 10 mm or 1:2000 whichever is less."

The analysis results reported above indicates that the calculated displacement at the ECRL is generally less than 1 mm, with a maximum of 3mm, which is less than the allowable movement limit.

The calculated differential deformations along the horizontal and vertical axes for all of the runs are less than 1:2000 as stipulated by the Sydney Metro Guideline.

We note that we consider that our analyses are conservative as:

- The models adopt the high end of the stress range measured in Sydney. This is typically in the north south direction. The proposed basement excavation occurs somewhat north west of the tunnel alignment.
- The analysis has assumed plane strain two dimensional conditions. In reality the section modelled is through the corner of the excavation. Three dimensional effects are such that the actual deformations at the tunnel are expected to be less 50% to 70% of those calculated in the analyses.

We conclude that at this stage we consider that the proposed basement excavation is feasible and is unlikely to have adverse effects on the rail tunnels.

Further work including assessment of the tunnel structural lining will need to be performed at a later stage to comply with the full requirements for engineering impact assessment as per Section 7.2 of the Sydney Metro Guideline. This will need to include a dilapidation survey and consideration of the current condition of the lining in the impact assessment.

8. Closure

Section 4 of this letter presents:

- An assessment of the protection reserves around the ECRL tunnels and their relation to the Site boundaries and proposed basement excavation. Note that we have considered the Sydney Metro substratum extents as shown on DP1046734 and DP1046912 drawings. Buyers should make their own enquiries with a register surveyor to confirm the extent of this substratum. This may indicate that the first reserve extends past the boundaries shown on Figures 1 to 4.

- A list of activities that are allowed and not allowed in each of the protection reserves. Proposed basement levels may need to be adjusted to not encroach on the First Reserve. This might lead in the basement depth limited to a depth of approximately 5m.

This indicates to us that the proposed development is permitted subject to approval by Sydney Metro following completion of an impact assessment as per Section 7.2 of the Sydney Metro Guideline.

Section 6 presents details and results of initial numerical analyses to investigate the potential effects of the proposed excavation and building loads on the ECRL tunnels. The analyses, whilst preliminary in their nature, indicate to us that future detailed impact assessments as per Section 7.2 of the Sydney Metro Guidelines are likely to demonstrate acceptable impacts due to the proposed development on the ECRL tunnels.

Nevertheless, we reiterate that as per the Sydney Metro Guideline further work will need to be undertaken at design and construction stage to confirm the impacts on the tunnels as per Section 7.2 of the Sydney Metro Guideline.

As a minimum this will need to include:

- Detailed survey plan showing the boundaries of proposed development, rail corridor and Sydney Metro easements or substratum extent
- Details of development (e.g. excavation extent, support system and building loads)
- Site investigation to confirm subsurface conditions
- Review of as-built drawings of ECRL tunnels
- Dilapidation survey
- Detailed numerical analysis
- Structural assessment
- Risk assessment
- Noise and vibration assessment
- Instrumentation and monitoring plan
- Remedial action.

Please do not hesitate to contact us should you have further queries.

Yours Sincerely

STEPHANIE SALIM
SENIOR GEOTECHNICAL ENGINEER

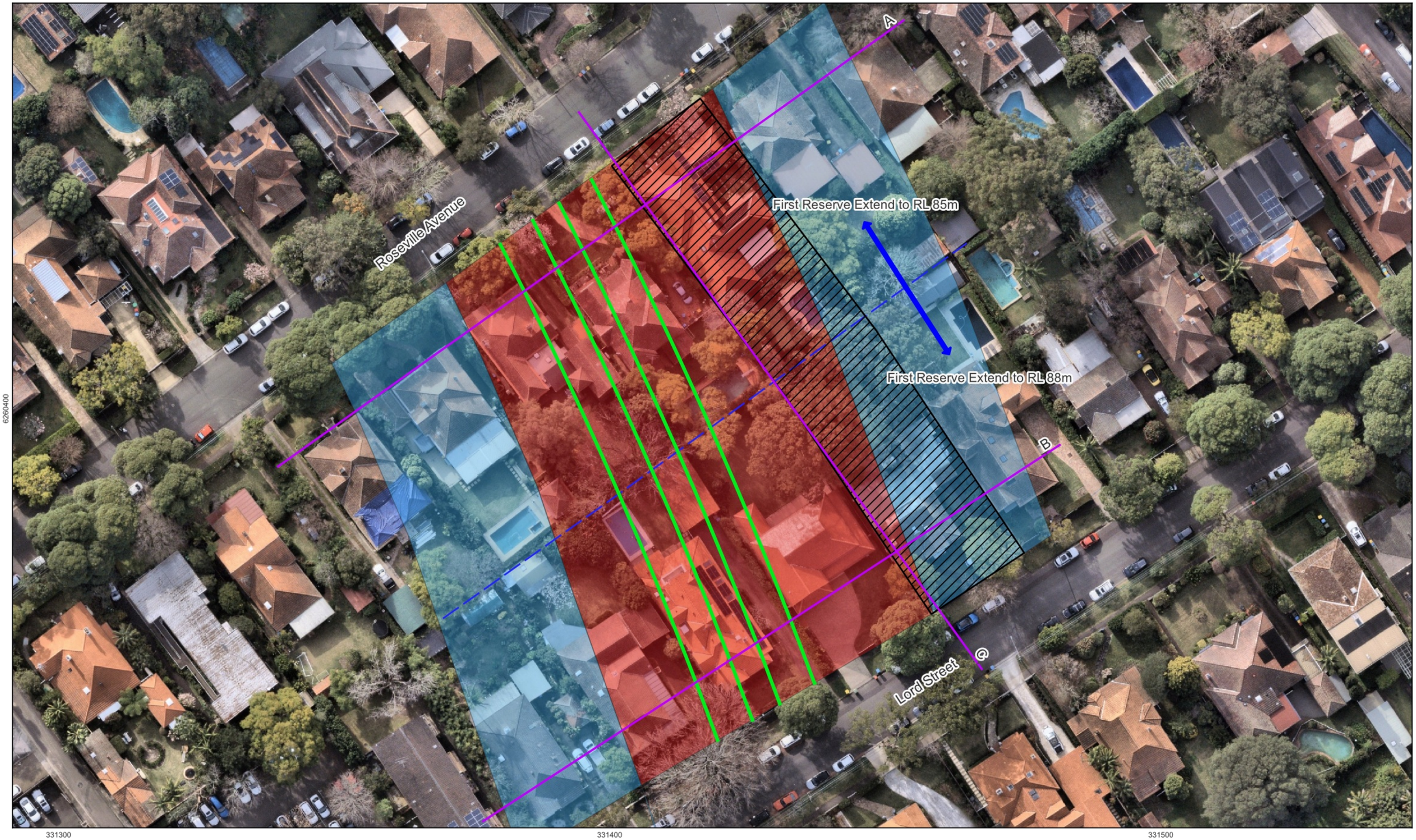
DAVID PICCOLO
PRINCIPAL

Encl

Figure 1	Plan view
Figure 2	Section view
Figure 3	Numerical model geometry
Appendix A	Deposited Plan Drawings
Appendix B	Numerical Modelling Displacement Results

331300 331400 331500

6260400



6260400

331300 331400 331500

Legend

- Approximate extent of the Site
- Cross section location
- Approximate location of Epping to Chatswood Rail Tunnels

Approximate Extent of the Protection Reserves

- First reserve
- Second reserve

Notes:
The protection reserves are in accordance with Sydney Metro Underground Corridor Protection Technical Guidelines, version 2.0, April 2021 for the Sydney Metro tunnels. The extent is indicative only.

N

Scale 1:650

0 5 10 15 20 25 m

Map Projection : GDA2020 / MGA zone 56
Grid: EPSG:7856

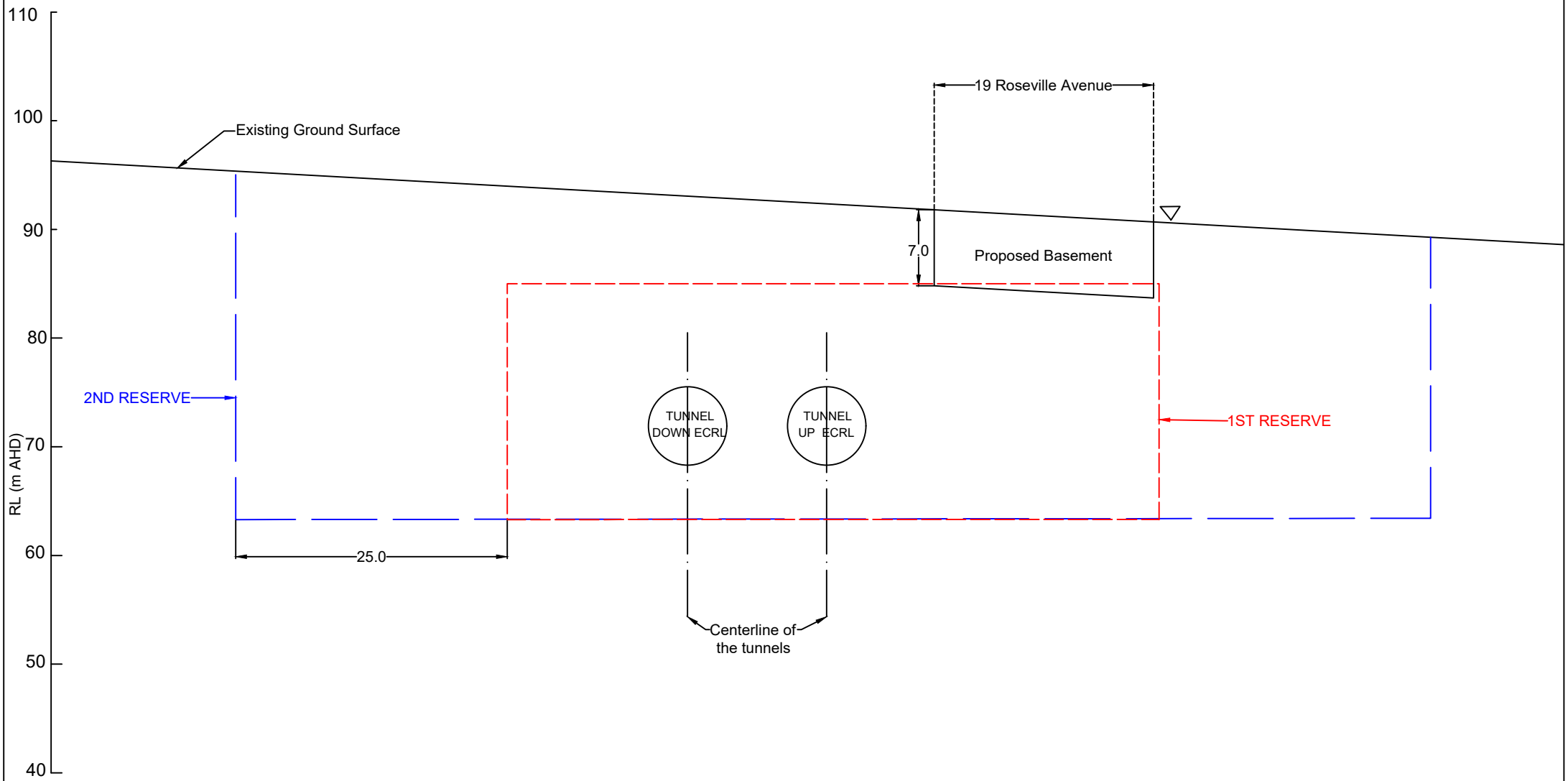
P S M	Created By: PSM	Revision: A
	Date: 12 Sep 2024	Paper Size: A3

Stuart Craig
19 Roseville Avenue & 14 Lord Street, Roseville
Preliminary Geotechnical Assessment

Site Locality Plan with Sydney Metro Protection Reserves

PSM5527-002L | Figure 1

C:\Users\Stephanie Salim\Pells Sullivan Meyninki\GIS - PSM5527\02_WorkSpace\01_Projects\PSM5527.qgz Layout: Figure 1 - Site locality



Notes:

1. ECRL refers to Epping to Chatswood Rail Lines.
2. All dimensions are in meters unless noted otherwise.
3. The protection reserves (i.e. first and second reserves) are based on the Sydney Metro Underground Protection Technical Guideline, version 2.0, dated April 2021.
4. The ECRL tunnel locations are based on the design drawing PRL-CSD 114402 and as-built geological tunnel profile PRL-CSD114421.

0 5 10
SCALE (m)

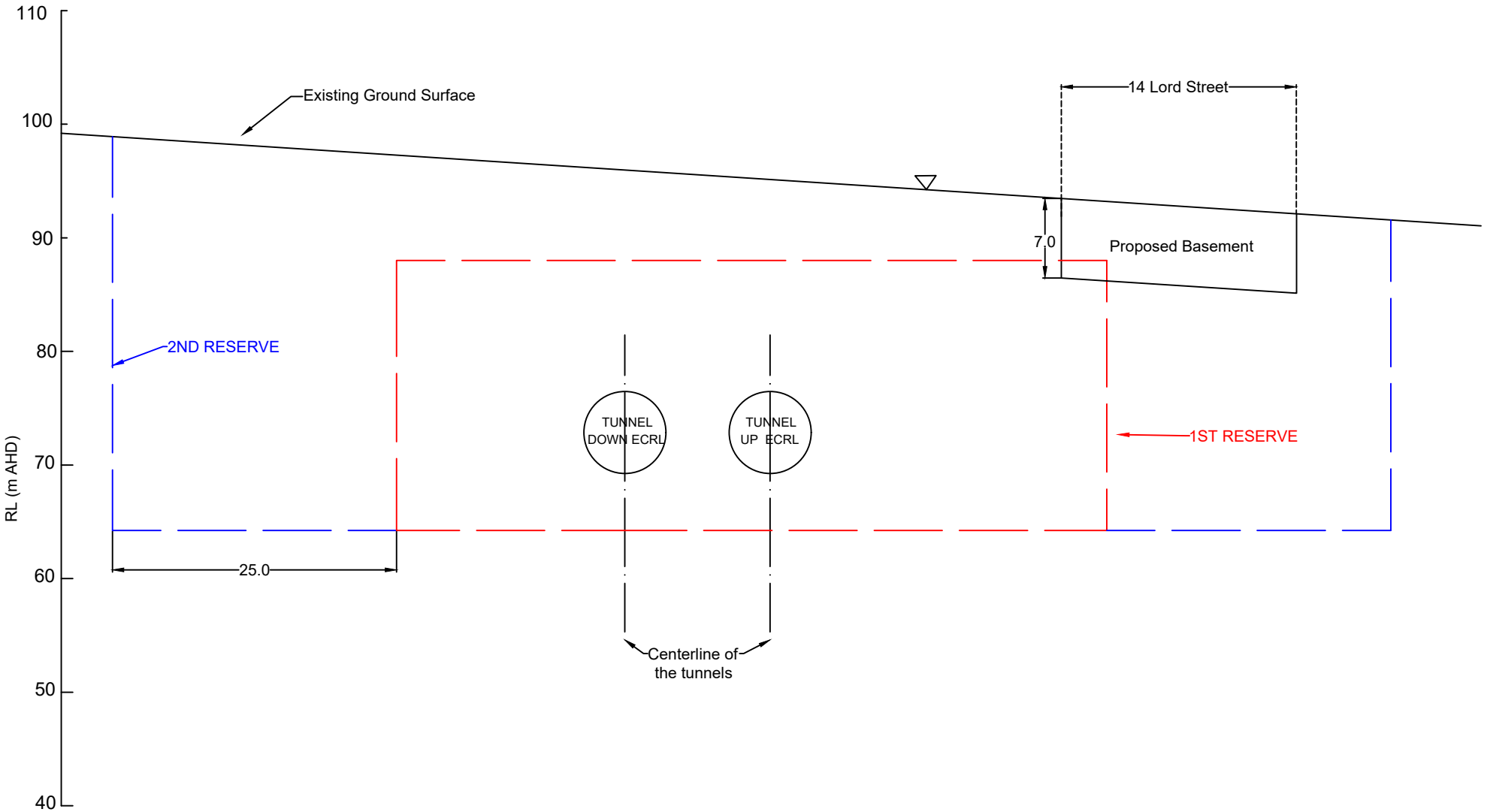
STUART CRAIG

19 Roseville Avenue & 14 Lord Street, Roseville

PRELIMINARY GEOTECHNICAL ASSESSMENT

CROSS SECTION A

PSM5527-002L	FIGURE 2



Notes:

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3. The protection reserves (i.e. first and second reserves) are based on the Sydney Metro Underground Protection Technical Guideline, version 2.0, dated April 2021.
4. The ECRL tunnel locations are based on the design drawing PRL-CSD 114402 and as-built geological tunnel profile PRL-CSD114421.

0 5 10
SCALE (m)

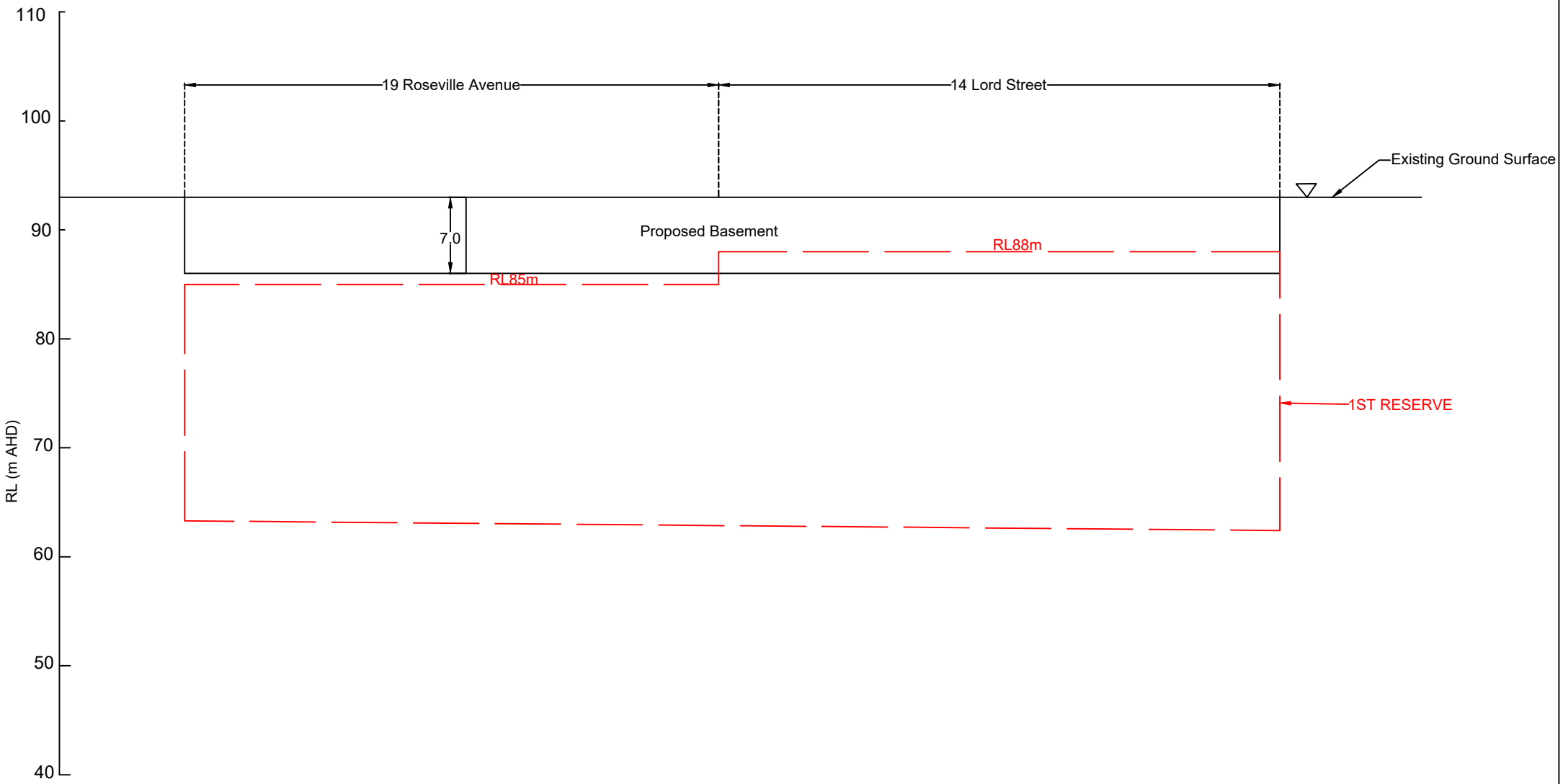
STUART CRAIG

19 Roseville Avenue & 14 Lord Street, Roseville

PRELIMINARY GEOTECHNICAL ASSESSMENT

CROSS SECTION B

PSM5527-002L	FIGURE 3



Notes:

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2. All dimensions are in meters unless noted otherwise.
3. The protection reserves (i.e. first and second reserves) are based on the Sydney Metro Underground Protection Technical Guideline, version 2.0, dated April 2021.
4. The ECRL tunnel locations are based on the design drawing PRL-CSD 114402 and as-built geological tunnel profile PRL-CSD114421.

0 5 10
SCALE (m)

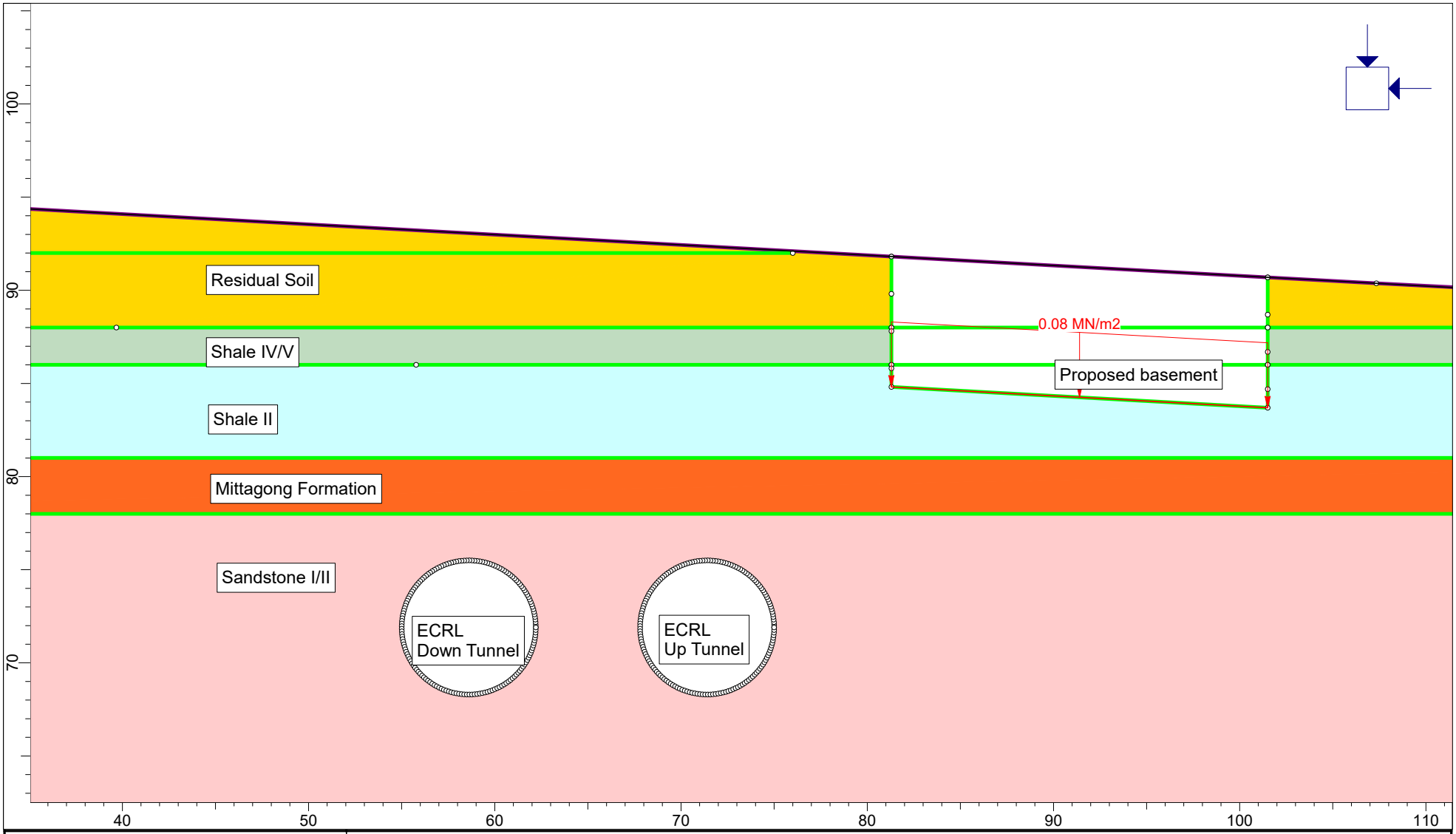
STUART CRAIG

19 Roseville Avenue & 14 Lord Street, Roseville

PRELIMINARY GEOTECHNICAL ASSESSMENT

CROSS SECTION C

PSM5527-002L	FIGURE 4



Client: Stuart Craig						
Project: 19 Roseville Ave and 14 Lord St proposed basement						
Location: 19 Roseville Ave and 14 Lord St, Roseville						
Analysis description: Base Case						
Job No: PSM5527	By: SS	Date: 12/09/2024	Stage: 7 of 7, Adopting UDL-80kPa	Scale: 1:300	RPT: PSM5527_Impact assessment - figure.fez	

RS2 11.022

\\anf.psm.local\anf-files\5000\PSM5527\Eng\Prelim Impact assessment\PSM5527_Impact assessment - figure.fez

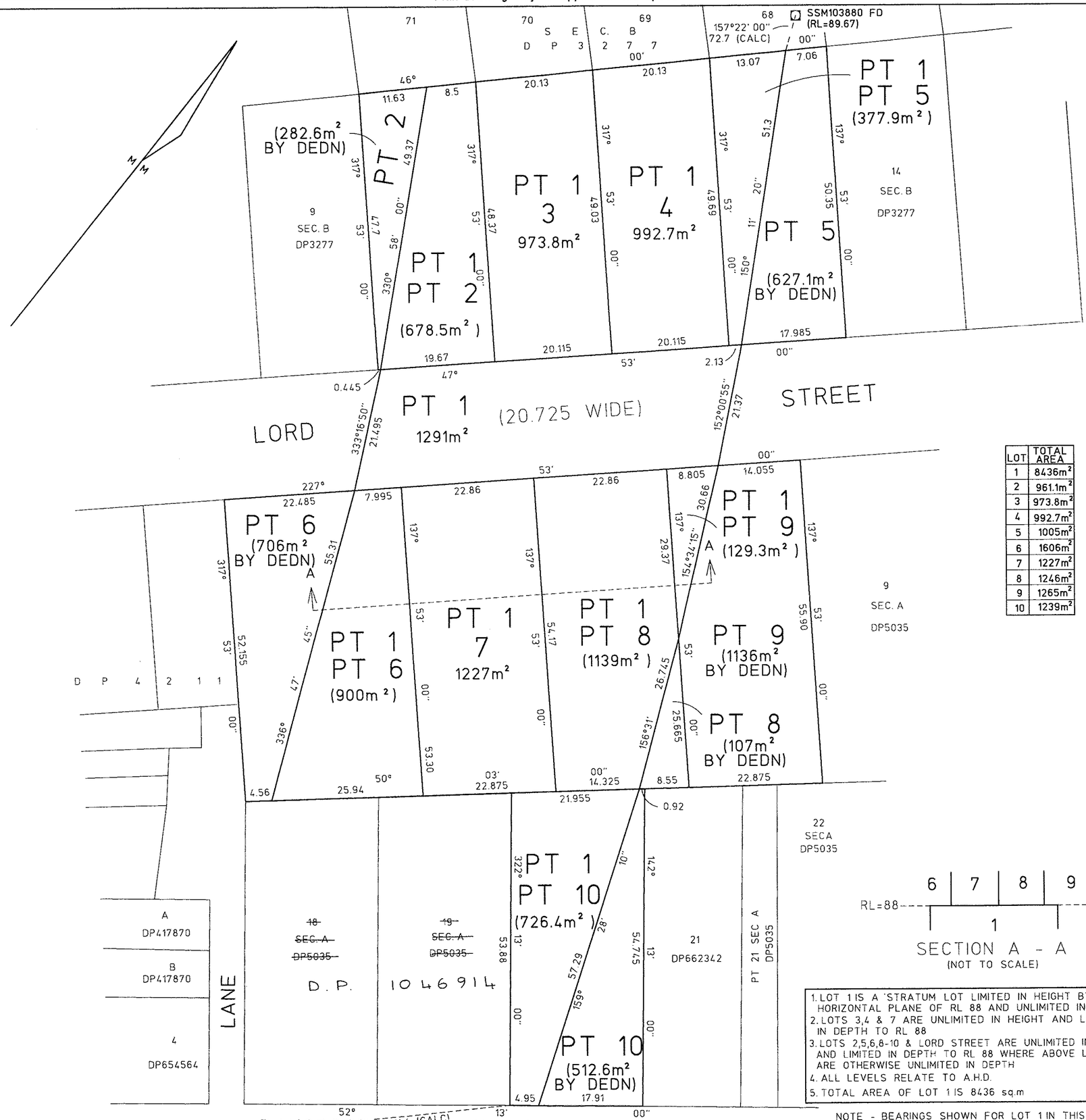
Appendix A
Deposited Plan Drawings

PLAN FORM 2

Plan Drawing only to appear in this space

* OFFICE USE ONLY

SIGNATURES AND SEALS ONLY



LOT	TOTAL AREA
1	8436m²
2	961.1m²
3	973.8m²
4	992.7m²
5	1005m²
6	1606m²
7	1227m²
8	1246m²
9	1265m²
10	1239m²

SECTION A - A
(NOT TO SCALE)

1. LOT 1 IS A 'STRATUM LOT LIMITED IN HEIGHT BY A HORIZONTAL PLANE OF RL 88 AND UNLIMITED IN DEPTH.
2. LOTS 3,4 & 7 ARE UNLIMITED IN HEIGHT AND LIMITED IN DEPTH TO RL 88
3. LOTS 2,5,6,8-10 & LORD STREET ARE UNLIMITED IN HEIGHT AND LIMITED IN DEPTH TO RL 88 WHERE ABOVE LOT 1 AND ARE OTHERWISE UNLIMITED IN DEPTH
4. ALL LEVELS RELATE TO A.H.D.
5. TOTAL AREA OF LOT 1 IS 8436 sq.m

NOTE - BEARINGS SHOWN FOR LOT 1 IN THIS PLAN ARE DERIVED FROM A COMPUTER MODEL BASED ON MGA DESIGN CO-ORDINATES

DP1046912

Registered: 19-11-2002

Title System: TORRENS

Purpose: ACQUISITION

Ref Map: KU-RING- GAI SHT33

Last Plan: DP3277, DP4211, DP5035

PLAN OF PROPOSED ACQUISITION OF LOT 1 AFFECTING LOTS 10-13 SEC B DP3277, LOT 10 DP4211, LOTS 6-8, 20 SEC A DP5035 & PART LORD STREET

Lengths are in metres. Reduction Ratio 1:500

LGA: KU-RING-GAI

Locality: ROSEVILLE

Parish: GORDON

County: CUMBERLAND

~~This is sheet 1 of my plan in ~~ sheets.

(Delete if inapplicable)

Surveyors (Practice) Regulation 2001

I, LIANG HEE CHIA

of DEPT. OF PUBLIC WORKS & SERVICES.

a surveyor registered under the Surveyor's Act 1929, hereby certify that ~~the survey represented~~ in this plan is accurate, has been made in accordance with the Surveyors (Practice) Regulation 2001 and was ~~completed~~ compiled on 04/11/2002.

~~The survey relates to~~

~~(here specify the land actually surveyed or specify any land shown in the plan that is not the subject of the survey)~~

(Signature) ..... Dated 4/11/02

Surveyor registered under the Surveyors Act, 1929

~~Datum Line:~~

Type : ~~Urban/Rural~~

Plans used in preparation of ~~survey~~/compilation.

DP3277
DP4211
DP5035
DP662342

PANEL FOR USE ONLY for statements of intention to dedicate public roads, to create public reserves, drainage reserves, easements, restrictions on the use of land or positive covenants.

LOT 1 PROPOSED TO BE ACQUIRED.

S.B.55308

Crown Lands Office Approval

PLAN APPROVED ..... Authorised Officer

Land District .....

Paper No. .....

Field Book ..... pages .....

Subdivision Certificate

I certify that the provisions of s.109J of the Environmental Planning and Assessment Act 1979 have been satisfied in relation to the proposed

..... * (insert 'subdivision' or 'new road') set out herein

..... * Authorised Person/General Manager/Accredited Certifier

Consent Authority : .....

Date of Endorsement : .....

Accreditation no : .....

Subdivision Certificate no : .....

File no : .....

Note :
When the plan is to be lodged electronically in the Land Titles Office, it should include a signature in an electronic or digital format approved by the Registrar-General.

* Delete whichever is inapplicable.

SURVEYOR'S REFERENCE: S.B. 55308 2001M7100(1551)

WARNING: CREASING OR FOLDING WILL LEAD TO REJECTION

Req:R221767 /Doc:DP 1046912 P /Rev:20-Nov-2002 /Sts:SC.OK /Prt:24-Oct-2005 09:39 /Pgs:ALL /Seq:1 of 1
Ref:5184 /Src:M

LAND REGISTRY SERVICES

LegalStream Australia Pty Ltd
An Approved NSW LRS Information Broker
ABN: 80 002 801 498

New South Wales Land Registry Services - Document Request

Client Code.....: **TRUENORTH**
Search Date.....: **18-Jun-2018** at **5:36 PM**
Client Reference: **8828**

User ID.....: **TRUENORTH**
Our Ref#.....: **4520055**

Doc Reference...: **1046734**
Document Type...: **Deposited Plan**
Sub Type.....: **Plan**
Pages.....: **ALL**
NSW LRS Ref.....: **R777936**
Message.....: **OK**

	TOTAL	GST Inc.
On Line Charge..:	**3.29**	0.30
Authority Fee...:	**10.68**	0.87
Total Cost.....:	**13.97**	**1.17**

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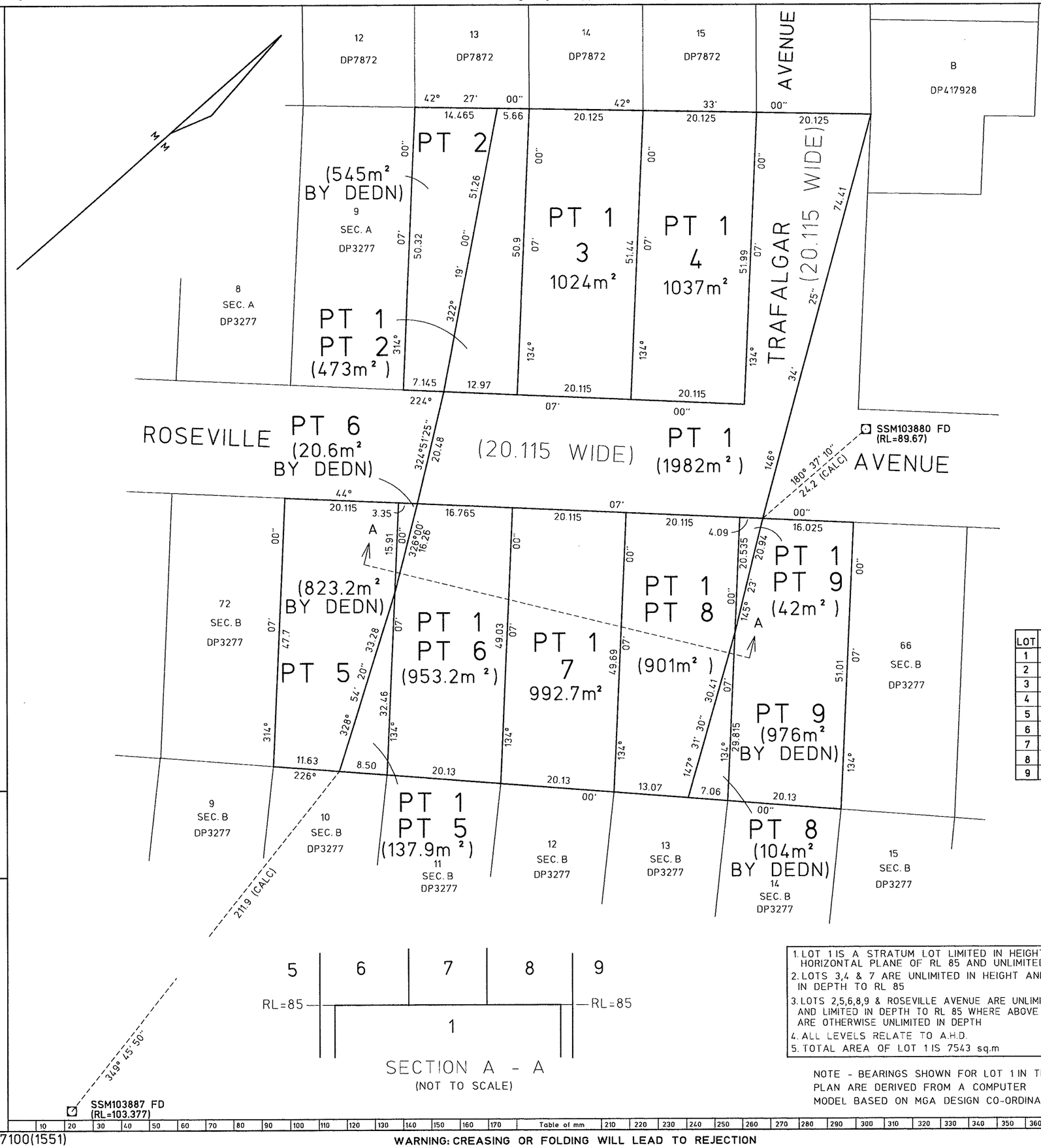
PLAN FORM 2 — Plan Drawing only to appear in this space — * OFFICE USE ONLY

SIGNATURES AND SEALS ONLY



LOT	TOTAL AREA
1	7543m²
2	1018m²
3	1024m²
4	1037m²
5	961.1m²
6	973.8m²
7	992.7m²
8	1005m²
9	1018m²

1. LOT 1 IS A STRATUM LOT LIMITED IN HEIGHT BY A HORIZONTAL PLANE OF RL 85 AND UNLIMITED IN DEPTH.
2. LOTS 3,4 & 7 ARE UNLIMITED IN HEIGHT AND LIMITED IN DEPTH TO RL 85
3. LOTS 2,5,6,8,9 & ROSEVILLE AVENUE ARE UNLIMITED IN HEIGHT AND LIMITED IN DEPTH TO RL 85 WHERE ABOVE LOT 1 AND ARE OTHERWISE UNLIMITED IN DEPTH
4. ALL LEVELS RELATE TO A.H.D.
5. TOTAL AREA OF LOT 1 IS 7543 sq.m

NOTE - BEARINGS SHOWN FOR LOT 1 IN THIS PLAN ARE DERIVED FROM A COMPUTER MODEL BASED ON MGA DESIGN CO-ORDINATES

Crown Lands Office Approval

PLAN APPROVED ..... Authorised Officer

Land District .....

Paper No. .....

Field Book ..... pages .....

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I certify that the provisions of s.109J of the Environmental Planning and Assessment Act 1979 have been satisfied in relation to the proposed

..... set out herein

* (insert 'subdivision' or 'new road')

.....

* Authorised Person/General Manager/Accredited Certifier

Consent Authority : .....

Date of Endorsement : .....

Accreditation no : .....

Subdivision Certificate no : .....

File no : .....

Note :
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* Delete whichever is inapplicable.

SURVEYOR'S REFERENCE: S.B. 55310 2001M7100(1551)

DP1046734

Registered: 8.11.2002

Title System: TORRENS

Purpose: ACQUISITION

Ref. Map: PARISH

Last Plan: (DP 3277)

PLAN OF PROPOSED ACQUISITION OF LOT 1 AFFECTING LOTS 10-12 SEC A, LOTS 67-71 SEC B DP3277 AND PART OF TRAFALGAR AVE & ROSEVILLE AVE

Lengths are in metres. Reduction Ratio 1:500

LGA: KU-RING-GAI

Locality: ROSEVILLE

Parish: GORDON

County: CUMBERLAND

~~This is sheet 1 of my plan in ..... sheets.~~
(Delete if inapplicable)

Surveyors (Practice) Regulation 2001

I, LIANG HEE CHIA

of DEPT. OF PUBLIC WORKS & SERVICES

a surveyor registered under the Surveyor's Act. 1929, hereby certify that ~~the survey represented in~~ this plan is accurate, has been made in accordance with the Surveyors (Practice) Regulation 2001 and was ~~completed~~ compiled on 25.10.2002

~~The survey relates to~~ .....

~~(here specify the land actually surveyed or specify any land shown in the plan that is not the subject of the survey)~~

(Signature) ..... Dated 25.10.02

Surveyor registered under the Surveyors Act, 1929

~~Datum Line~~: .....

Type : Urban/~~Rural~~

Plans used in preparation of ~~survey~~/compilation.
DP3277
DP7872
DP 417928

PANEL FOR USE ONLY for statements of intention to dedicate public roads, to create public reserves, drainage reserves, easements, restrictions on the use of land or positive covenants.

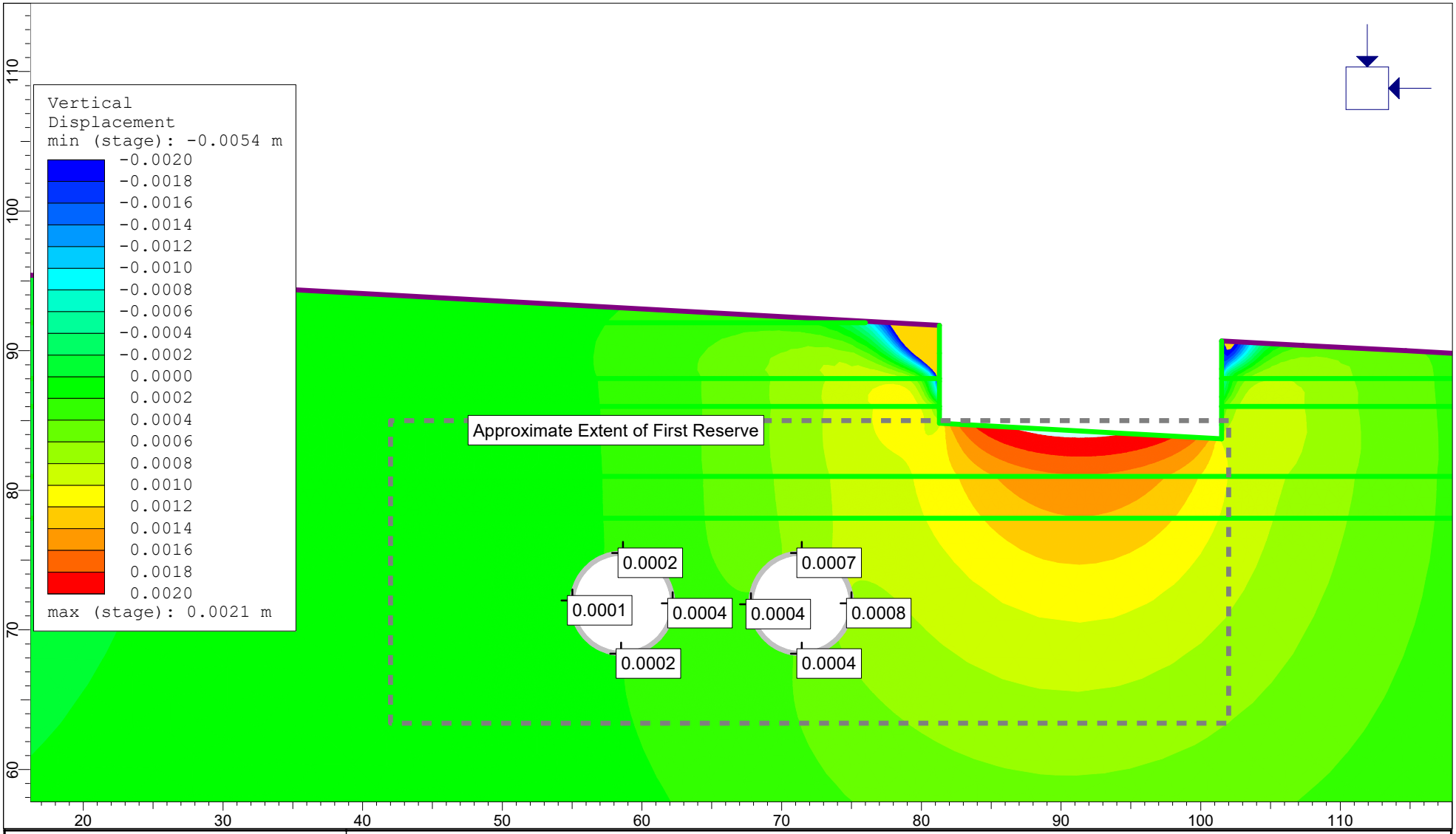
LOT 1 PROPOSED TO BE ACQUIRED.

S.B.55310

WARNING: CREASING OR FOLDING WILL LEAD TO REJECTION

Req:R777936 /Doc:DP 1046734 P /Rev:15-Nov-2002 /Sts:SC.OK /Pgs:ALL /Prt:18-Jun-2018 17:36 /Seq:1 of 1
Ref:8828 /Src:B S.B.55310

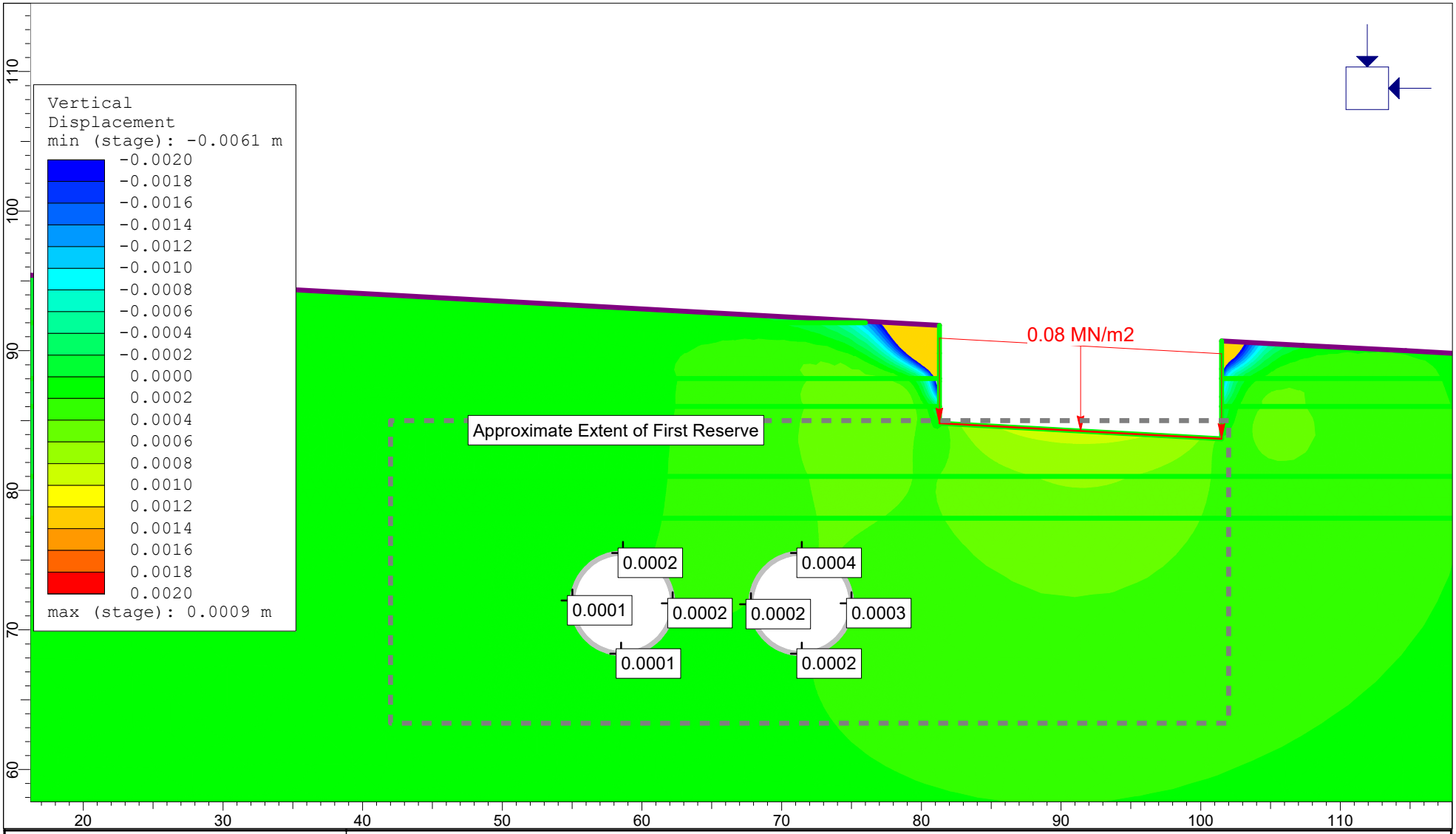
Appendix B
Numerical Modelling Displacement Results



Client: Stuart Craig						
Project: 19 Roseville Ave and 14 Lord St proposed basement						
Location: 19 Roseville Ave and 14 Lord St, Roseville						
Analysis description: Base Case						
Job No: PSM5527	By: SS	Date: 12/09/2024	Stage: 6 of 7, 6. Excavation of the proposed basement - 7m	Scale: 1:400	Rev: PSM5527_Impact assessment - Base.fez	

INTERPRET 11.022

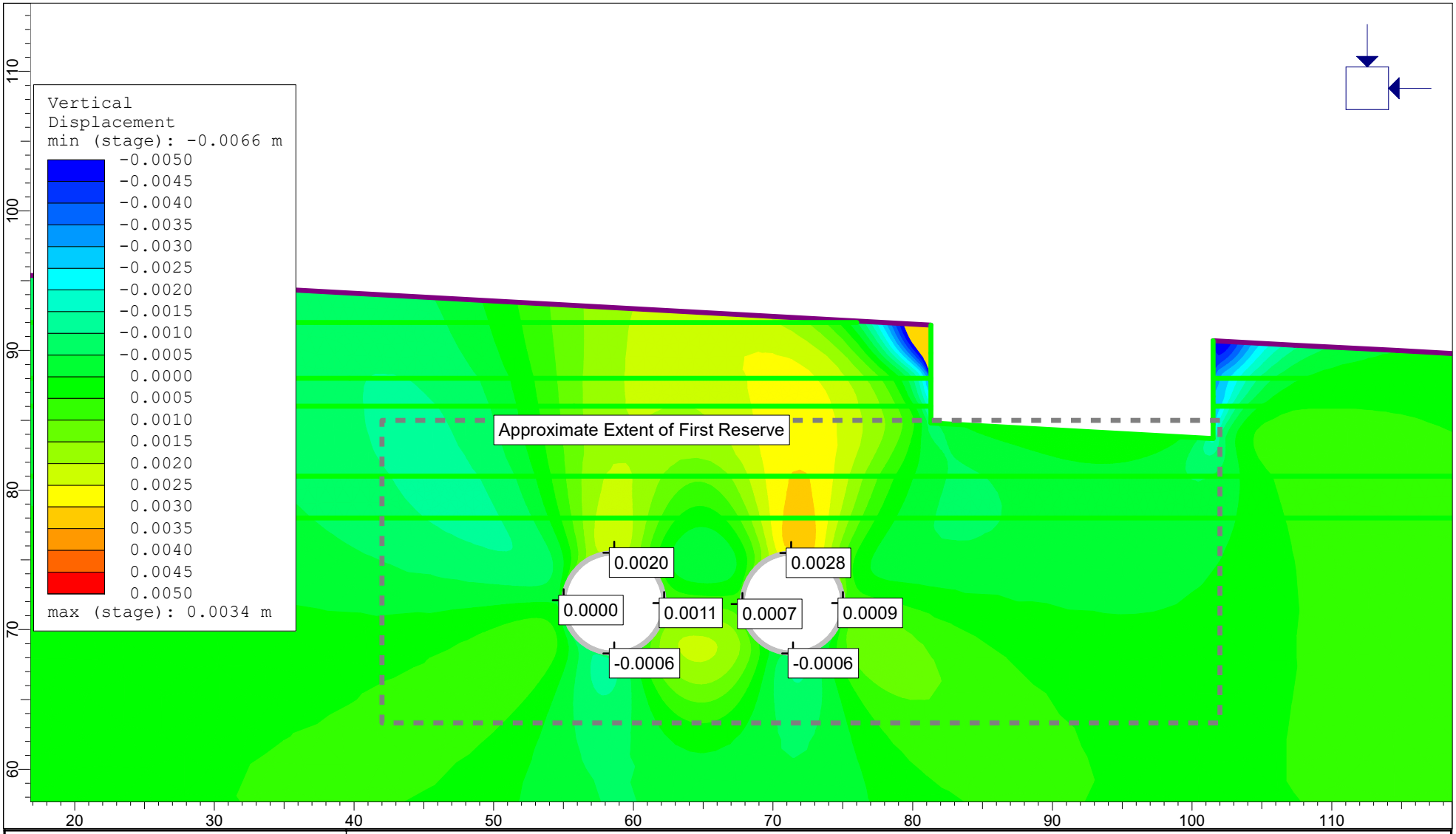
\\anf.psm.local\anf-files\5000\PSM5527\Eng\Prelim Impact assessment\PSM5527_Impact assessment - Base.fez



Client: Stuart Craig						
Project: 19 Roseville Ave and 14 Lord St proposed basement						
Location: 19 Roseville Ave and 14 Lord St, Roseville						
Analysis description: Base Case						
Job No: PSM5527	By: SS	Date: 12/09/2024	Stage: 7 of 7, 7. Adopting UDL-80kPa	Scale: 1:400	PSM5527_Impact assessment - Base.fez	

INTERPRET 11.022

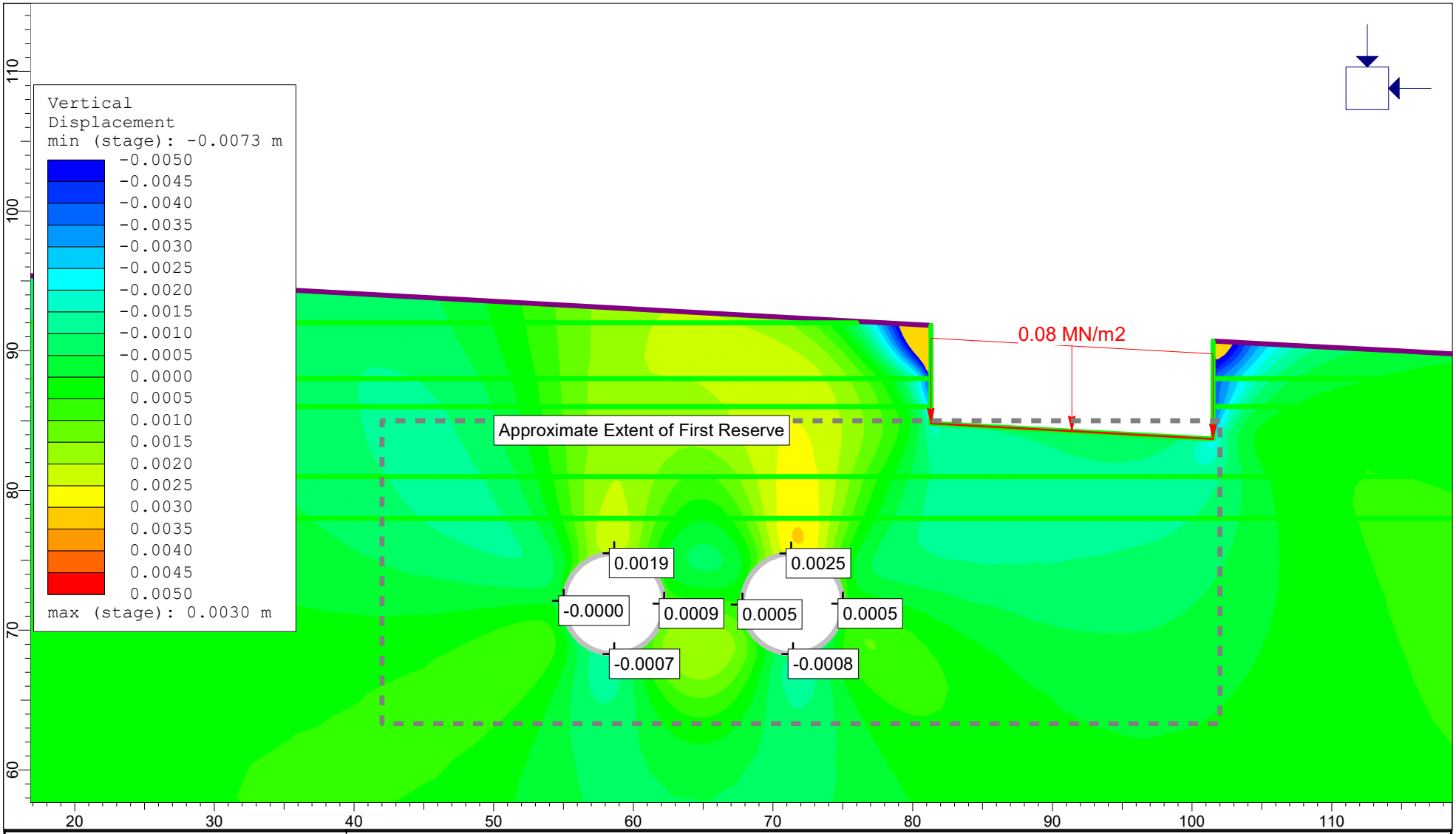
\\anf.psm.local\anf-files\5000\PSM5527\Eng\Prelim Impact assessment\PSM5527_Impact assessment - Base.fez



Client: Stuart Craig						
Project: 19 Roseville Ave and 14 Lord St proposed basement						
Location: 19 Roseville Ave and 14 Lord St						
Analysis description: Sensitivity Case						
Job No: PSM5527	By: SS	Date: 12/09/2024	Stage: 6 of 7, 6. Excavation of the proposed basement - 7m	Scale: 1:400	File: PSM5527_Impact assessment - High.fez	

INTERPRET 11.022

\\anf.psm.local\anf-files\5000\PSM5527\Eng\Prelim Impact assessment\PSM5527_Impact assessment - High.fez



PSM	Client: Stuart Craig					
	Project: 19 Roseville Ave and 14 Lord St proposed basement					
	Location: 19 Roseville Ave and 14 Lord St					
	Analysis description: Sensitivity Case					
INTERPRET 11.022	Job No: PSM5527	By: SS	Date: 12/09/2024	Stage: 7 of 7, 7. Adopting UDL-80kPa	Scale: 1:400	PSM5527_Impact assessment - High.fez

\\anf.psm.local\anf-files\5000\PSM5527\Eng\Prelim Impact assessment\PSM5527_Impact assessment - High.fez