

APPENDIX I – GEOTECHNICAL REPORT

Kangaroo Point Precinct - Cathedral Campus Preliminary Assessment Urbis / C of Russian Orthodox Church

Geotechnical Correspondence

B01554-I



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Location:	Brisbane, QLD	Date:	27 May 2025
Distribution:	Ryan Maclellan, Angus McNichol		
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Attachments:	Appendix A – Conceptual Drawings by Cavill Architects Appendix B – Finite Element Model Appendix C – Finite Element Assessment Outputs		
References:	EDG Correspondence Ref. B01554-IAC – Geotechnical Report – Western (CRR) Side		

I Project Background

Urbis / C of Russian Orthodox Church is in the process of preparing a Priority Development Area (PDA) Development Application (DA) for a new church campus redevelopment located at the Russian Orthodox Church in Kangaroo Point, QLD. Parts of the development on the western side of the site, are located above the recently constructed Cross River Rail (CRR) mined cavern, mined running tunnels and Tunnel Boring Machine (TBM) running tunnels. Development of the site will therefore be required to satisfy the requirements of the CRR infrastructure, to ensure the proposed works do not exceed prescribed limits / criteria.

EDG Consulting Pty Ltd (EDG) has been engaged to provide geotechnical analysis and advice relating to the proposed works forming part of the wider Mark Lane precinct development. The outcomes of our preliminary geotechnical assessment for the western side of the development, located above the CRR cavern and tunnels, are documented in geotechnical correspondence Ref. B01554-IAC.

Since the issue of our initial report, the proposed development has been updated to include the construction of an additional building named the “Cathedral Campus”. EDG has been engaged to provide preliminary geotechnical analysis relating to the proposed Cathedral Campus building and its impact on the underground infrastructure, documented herein.

2 Development Description

The proposed “Cathedral Campus” building consists of one level of underground carpark, a ground level community space / courtyard, and a 4-storey high building above the basement carpark. The basement level varies between RL 9m towards the east to RL 9.8m towards the west.

Conceptual drawings of the proposed development provided by Cavill Architects are included in Appendix A.

3 Ground Conditions and Geotechnical Parameters

For this preliminary assessment, we have adopted the same ground model and geotechnical parameters previously described in our geotechnical correspondence Ref. B01554-IAC – Geotechnical Report – Western (CRR) Side.

4 CRR FOSD Allowances

Requires and limitations associated with Future Over Station Development (FOSD) for CRR infrastructure are described in detail in our previous geotechnical correspondence Ref. B01554-IAC – Geotechnical Report – Western (CRR) Side. The CRR infrastructure within proximity of the proposed Cathedral Campus development comprise:

- Woolloongabba Cavern
- Woolloongabba Mined Stub Tunnels (i.e. TBM launch tunnels)

In addition to the existing rock, earth and groundwater loads, the cavern and stub tunnel linings have been designed to accommodate additional loads resulting from future building developments. The allowance considered by the tunnel lining engineer is an additional load of 50kN/m² acting at a reference level of 1m above the cavern/tunnel crown.

5 Preliminary Finite Element Assessment

5.1 Methodology

The analysis methodology and finite element inputs are previously described in our geotechnical correspondence Ref. B01554-IAC – Geotechnical Report – Western (CRR) Side.

To provide a comparison between the CRR design criteria and the effects of the proposed building loads, we have developed a preliminary 2D finite element model to assess the ground stresses associated with the proposed building at a reference level of 1m above the cavern/tunnel crown.

The assessment adopts the process shown in Figure 1.

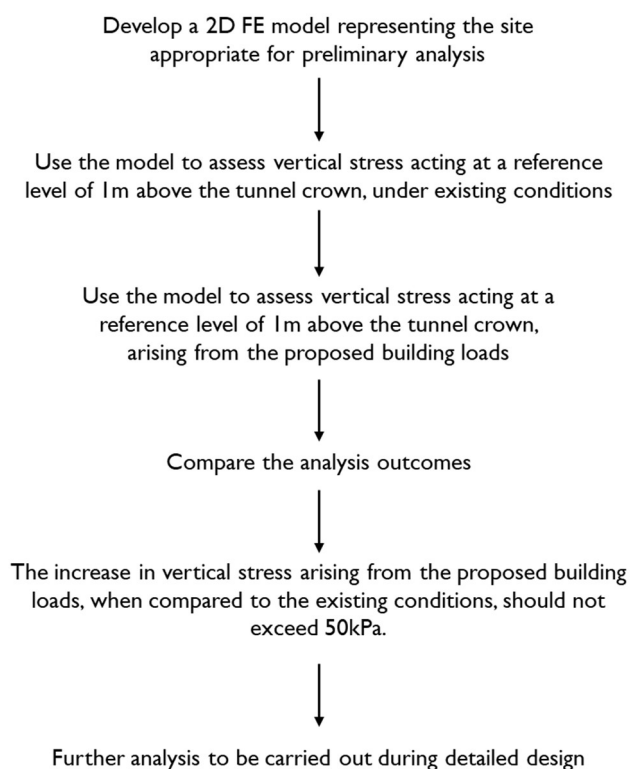


Figure 1 - Analysis Process

For this preliminary assessment, we have considered a uniform distributed load (UDL) of 12kPa per level of building and basement. Referring to the conceptual drawings of the Cathedral Campus, over the footprint area of the underground carpark and ground level courtyard (i.e. two levels), we have considered a UDL of 24kPa. Over the footprint area of the 4-storey building above the basement carpark (i.e. five levels), we have considered a UDL of 60kPa.

The 2D finite element model for the cavern and stub tunnels are shown in Figure B1 and B2, respectively, in Appendix B.

5.2 Analysis Results and Discussion

In accordance with the CRR design requirements, we have extracted the vertical stress at a reference level of 1m above the cavern / tunnel crown. The results of our assessment for the cavern and stub tunnels are presented graphically on Figure C1 to C2, respectively, in Appendix C, and are discussed below.

Values of the vertical stress are presented in terms of relative change (or delta). The delta values are the change in vertical stress following excavation of the tunnels (i.e. they reflect the additional vertical stress from the basement excavation and building loads).

Figure C1 shows that the increase in vertical stress within a 10m offset from the cavern wall are within the FOSD allowance of 50kPa. Similarly, Figure C2 shows that the increase in vertical stress within a 7m offset from the stub tunnel walls are also within the FOSD allowance of 50kPa.

The results indicative that the building loads from the proposed Cathedral Campus development, based on the current conceptual drawings shown in Appendix A, are likely to satisfy the CRR design requirements. The level of analysis carried out in this assessment should be considered as an early stage proof of concept assessment only. Further work will be required during detailed design including the following:

- Further development of the geotechnical model, based on additional geotechnical investigation data in subsequent design stages.
- 3D finite element analysis.
- Incorporation of design loads provided by a structural engineer.

6 Risk and Limitations

- A uniform distributed load (UDL) of 12kPa per level of building and basement has been considered in this preliminary assessment. Although we consider this to be an appropriate estimate for carrying out an early stage proof of concept assessment, the actual design loads will need to be confirmed by a structural engineer in subsequent design stages.
- To reduce uncertainty and risk associated with the interpretation of ground conditions, additional geotechnical investigation has been proposed and is expected to be carried out during subsequent design stages. Changes in ground model can potentially have a significant impact on the analysis outcomes.
- The outcome of this analysis should be considered as an early stage proof of concept assessment only. Further work will be required during detailed design

For and on behalf of EDG Consulting Pty Ltd



Darron Lee
Senior Engineer

Ground conditions and the natural environment often present the highest potential risks to project construction and operation. Helping our clients manage their geotechnical risk is fundamental to the role of EDG. We have prepared these notes to assist our clients to understand the information we provide and to help them to manage their risk. Where there is uncertainty about the site, project or geotechnical conditions, contact EDG for assistance.

Scope of Services

The information provided in this document is based on the scope of services defined in the client's agreement with EDG Consulting Pty Ltd (EDG). In undertaking the work, EDG has relied on information provided by the client and other individuals and organisations. Unless stated in the document, EDG has not verified the accuracy of that information and does not accept responsibility for the conclusions, recommendations or designs developed based on that information should it be incorrect, misrepresented or withheld.

Unless specifically stated to the contrary, this document does not cover geo-environmental issues, which require significantly different equipment, techniques and personnel. A geo-environmental specialist should be engaged to provide such advice.

The document is based on specific project details

The information provided in this document is relevant to the subject site and project only. The document has been prepared based on the specific details and requirements of your project and may not be relevant if any changes to the project occur. Should changes occur, must review the report to identify if and how such changes will affect the conclusions, recommendations or designs provided. EDG accepts no responsibility if the client elects not to consult in the event of changes to the project.

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The document is for our client only

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Should you choose to engage an alternative party for advice based on the information in the document, it must be understood that the alternative party will be less familiar with the site conditions and basis of information provided, and there is a potential for misinterpretation. EDG will not be held liable in any way from such misinterpretation.

EDG will not be liable to update or revise the document to take into account information any events or circumstances or facts occurring or becoming apparent after the date of the report.

All site conditions cannot be identified

The scope of work undertaken represents a professional assessment of the information cited to develop a basic geotechnical model of the site based on EDG's understanding of the client's risk profile. In some cases, increasing the frequency of investigations and/or sampling, or considering alternative investigation techniques may improve the interpretation, but may not identify all relevant subsurface conditions at the site.

The document presents an interpretation

Geotechnical information is an interpretation of conditions evident based on a limited number of facts established during a site investigation. Engineering logs are an interpretation of observations of samples and test results at discrete locations in the subsurface profile. A geotechnical model is an interpretation of site conditions, developed using information from discrete locations on the site and an understanding of geological processes. Interpreted conditions at and between investigation locations may be different to those inferred on the engineering logs and geotechnical model. The client must consider how variations in conditions could affect the project and seek advice to reduce risk if it is unacceptable to the client.

Conditions can change

The geotechnical information provided is based on the conditions observed at the time of the investigation. Such conditions may be time dependent and subject to external influences. Many things could influence the site conditions, including geological processes, variation in groundwater or surface water levels, other natural cycles and influence from human activities (on this site or nearby sites). Specific advice should be sought if conditions on site change from those observed at the time the report was prepared.

How to deal with different site conditions

The sub-surface conditions on the site may not be as inferred in this report. Geotechnical uncertainties can be managed throughout the project life cycle, but particularly during construction.

Knowledge of site conditions must be further developed as the ground is exposed during construction and/or operation. It is essential that the client implements the nominated design and construction requirements, including observation, interpretation and assessment of the exposed conditions during construction and operation using skilled staff familiar with the design assumptions and assumed geotechnical conditions, or engaging EDG to undertake this role on your behalf.

Appendix A

Conceptual Drawings by Cavill Architects

CATHEDRAL CAMPUS

DEVELOPMENT APPLICATION DRAWING SET

SHEET LIST

A-100	COVER SHEET & LOCALITY PLAN	3	26.05.25
A-111	EXISTING & DEMOLITION - FLOOR PLAN	3	26.05.25
A-112	EXISTING & DEMOLITION - LOT 1	1	26.05.25
A-120	BASEMENT 1 FLOOR PLAN	3	26.05.25
A-121	GROUND FLOOR PLAN	3	26.05.25
A-122	TYPICAL APARTMENT LEVELS	3	26.05.25
A-124	ROOF PLAN	3	26.05.25
A-201	ELEVATIONS	3	26.05.25
A-202	ELEVATIONS	3	26.05.25
A-301	SECTIONS	3	26.05.25
A-302	SECTIONS	3	26.05.25
A-701	SHADOW DIAGRAMS	3	26.05.25
A-901	AREA PLANS - GFA	3	26.05.25
A-902	AREA PLANS - LANDSCAPE	3	26.05.25

REAL PROPERTY DESCRIPTION	DEVELOPMENT SUMMARY PROPOSED SITE	
340 VULTURE ST, WOOLLOONGABBA	IMPERVIOUS AREA (Within New development)	1759m² (92%)
PROJECT SITE AREA 1910m²	IMPERVIOUS AREA (Whole Site)	3302m²
TOTAL PARISH SITE AREA 3454m²	TOTAL SITE COVER	1675m² 48.5%

DEVELOPMENT SUMMARY PROPOSED BUILDING

GFA SCHEDULE:		UNIT SCHEDULE:			
		LEVEL	1B APARTMENT	2B APARTMENT	APARTMENTS PER LEVEL
GF	361m²	LEVEL 3	2	3	5
1F	370m²	LEVEL 2	2	3	5
2F	370m²	LEVEL 1	2	3	5
3F	370m²	GROUND			
TOTAL	1471m²	BASEMENT			
No. OF STOREYS:					
4 STOREYS		TOTAL 15			
No. OF CARPARKS:					
BASEMENT	34 (incl. PWD)				
GROUND	10				

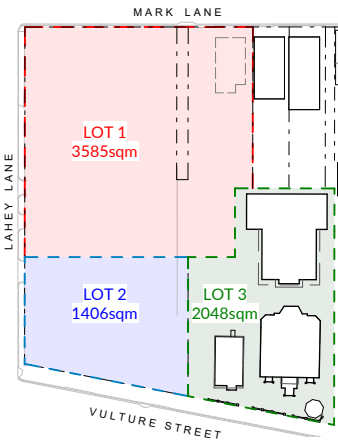
NOTE:

THIS DRAWING HAS BEEN CONSTRUCTED FROM THIRD PARTY INFORMATION.

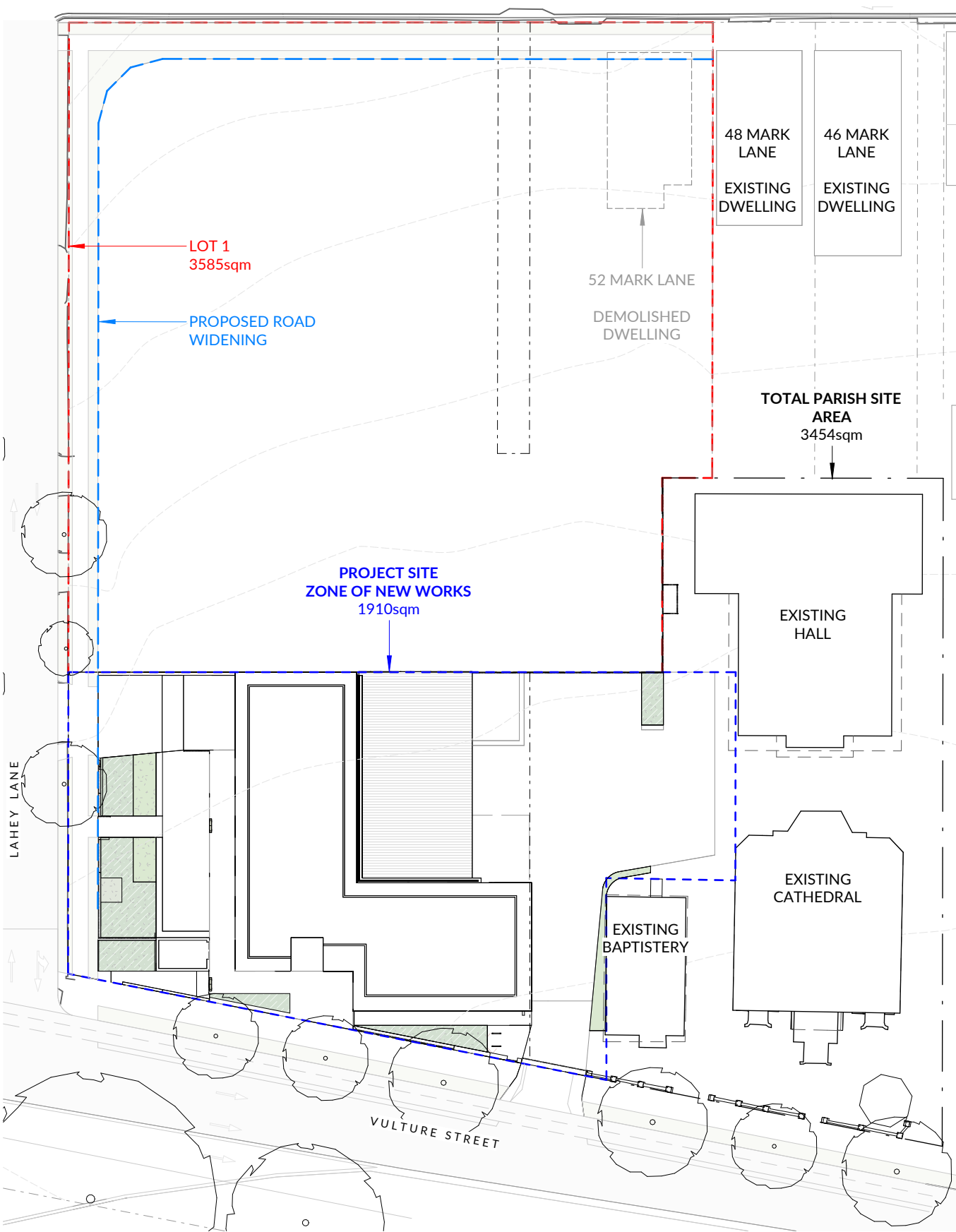
ALL SITE PLAN LAYOUTS, AREAS, CONTOURS AND LEVEL INFORMATION ACCESSED FROM SURVEY DRAWING #21-0542S-01 PREPARED BY WOLTER CONSULTING GROUP.

ACTUAL DIMENSIONS AND LAYOUTS MAY VARY SLIGHTLY FROM THOSE INDICATED. CHECK ALL DIMENSIONS ON SITE FOR ACCURACY PRIOR TO FABRICATION AND CONSTRUCTION.

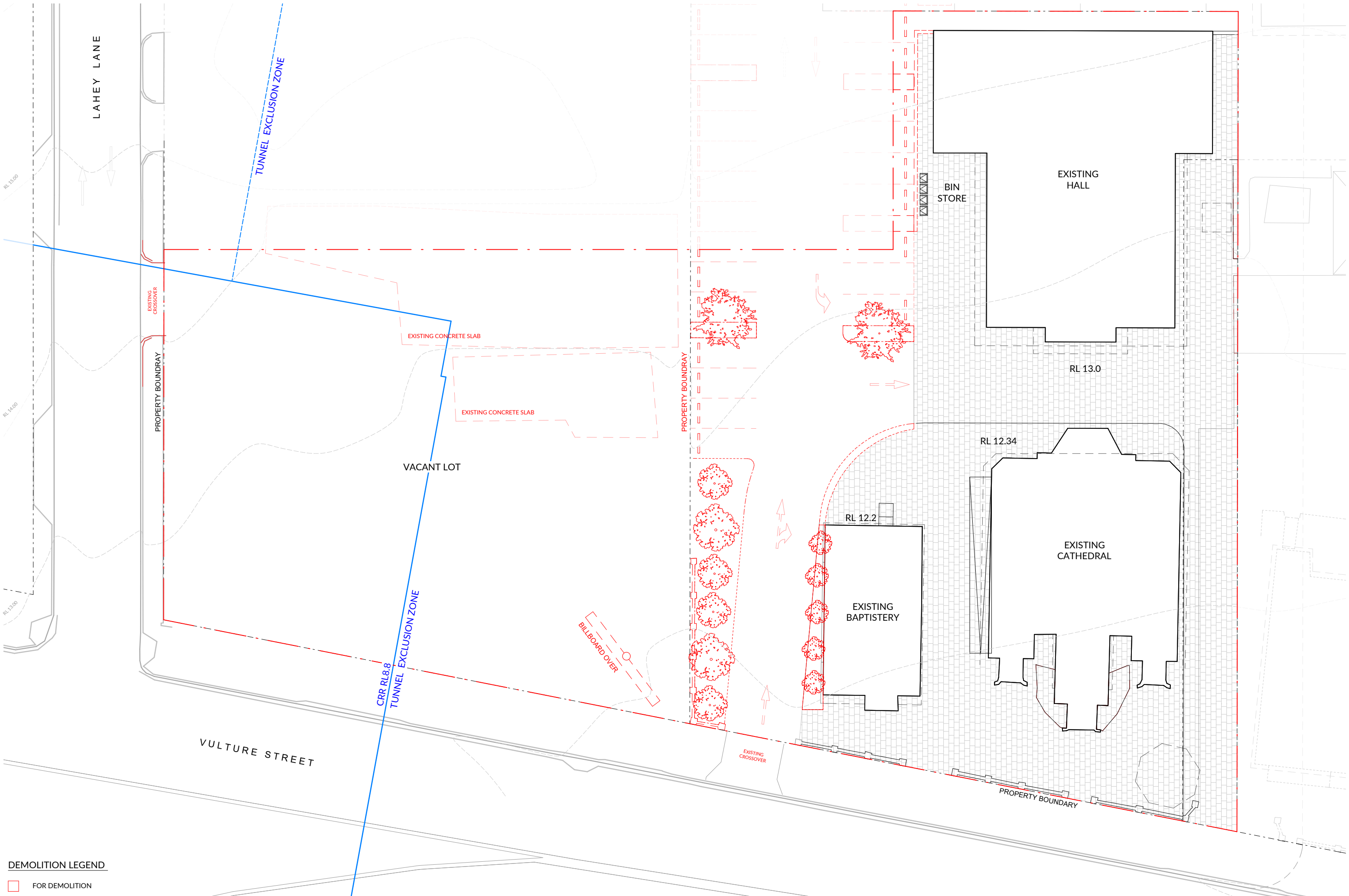
THESE DESIGN DRAWINGS HAVE BEEN PREPARED FOR APPROVAL PURPOSES ONLY AND WILL NEED TO BE SUPPLEMENTED WITH FURTHER DETAILED DESIGN AND DOCUMENTATION FOR CONSTRUCTION.

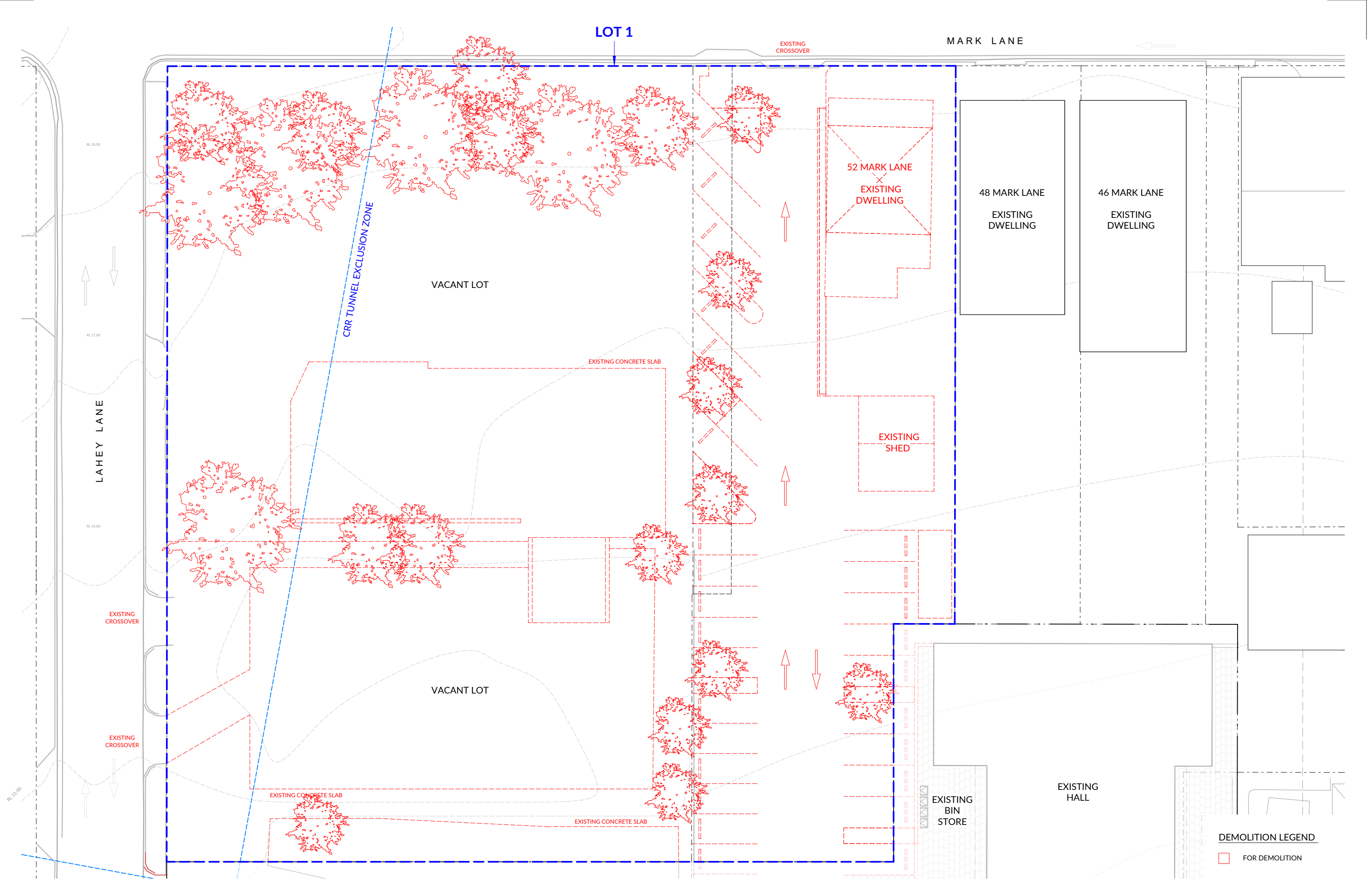


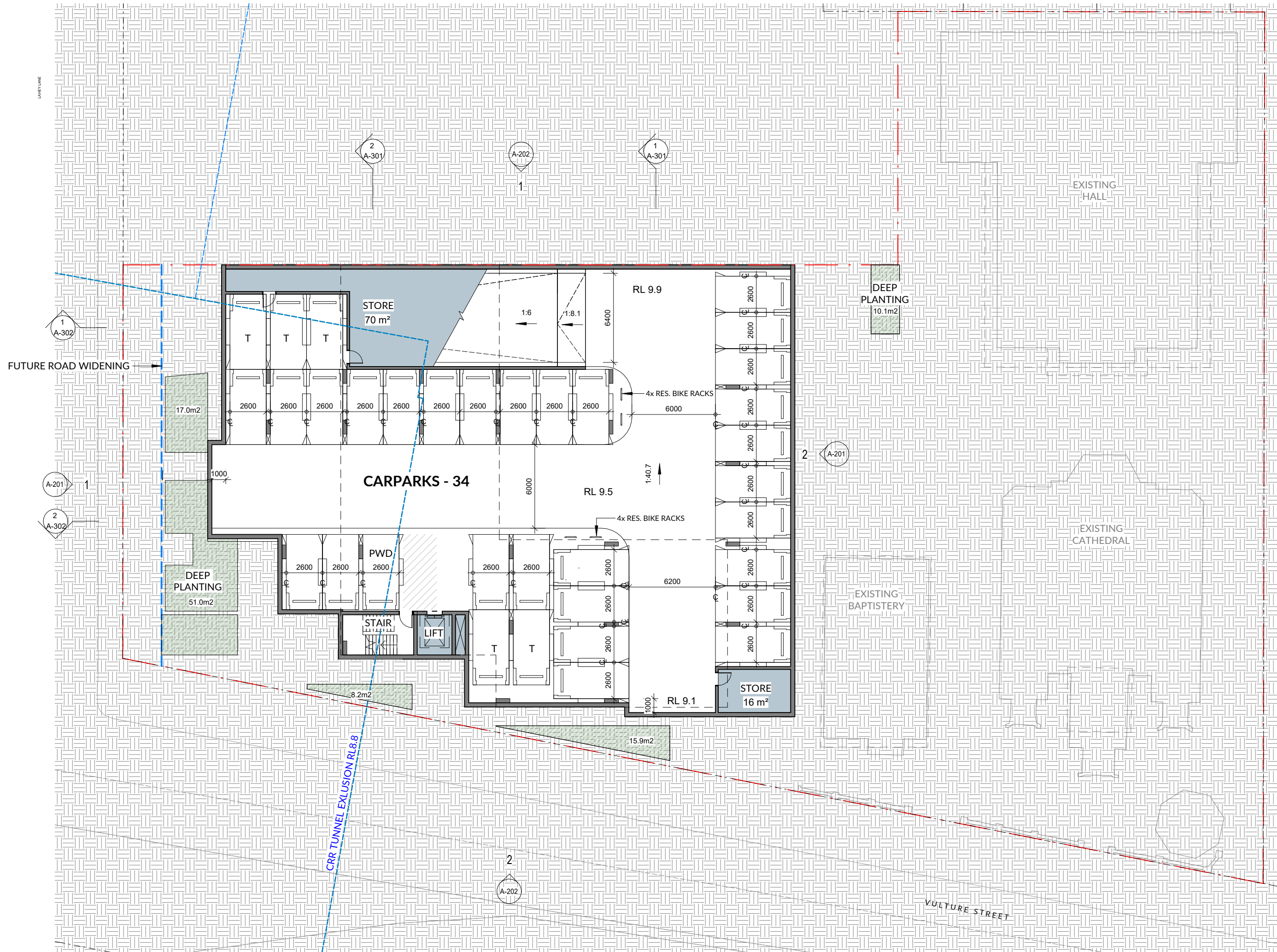
SITE KEY PLAN

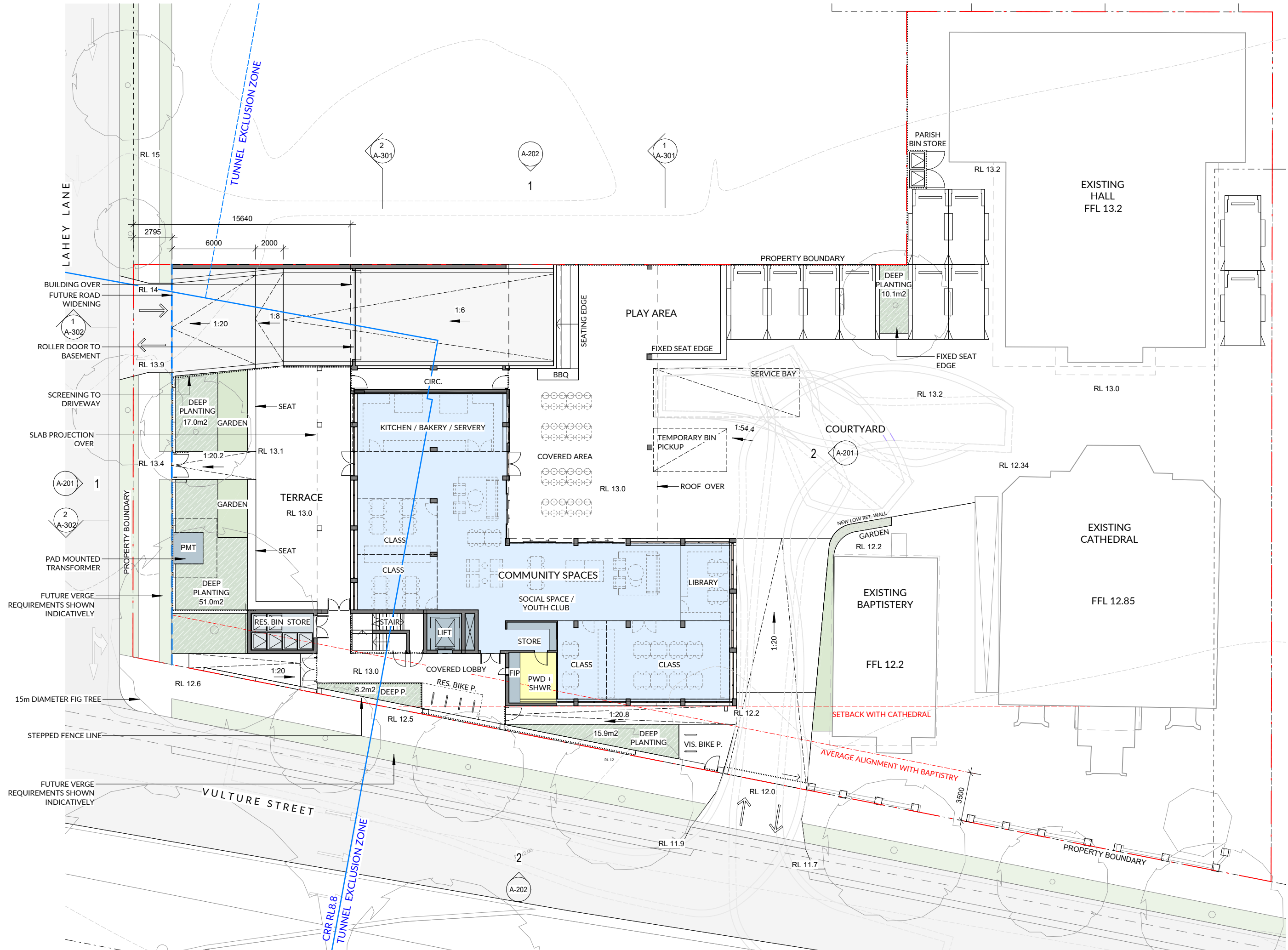


PROPOSED SITE PLAN 1 : 500









1 : 250 @ A3

DWG NO.A-121 REV.3

GROUND FLOOR PLAN

LAHEY LANE

1
A-302

A-201 1

2
A-302

2
A-301

A-202

1

1
A-301

2
A-201

2

A-202

15640

PROPOSED ROAD WIDENING

2 BED UNIT

1 BED UNIT

1 BED UNIT

15M DIA
TREE
CANOPY

AWNING BELOW

PLANT

OPEN STAIR

LIFT

PLANT

OPEN WALKWAY

ROOF BELOW

PROPERTY BOUNDARY

METAL PRIVACY
SCREENING

2 BED UNIT

2 BED UNIT

EXISTING
BAPTISTERY

SETBACK WITH CATHEDRAL

AVERAGE ALIGNMENT WITH BAPTISTRY

3500

EXISTING
HALL

EXISTING
CATHEDRAL

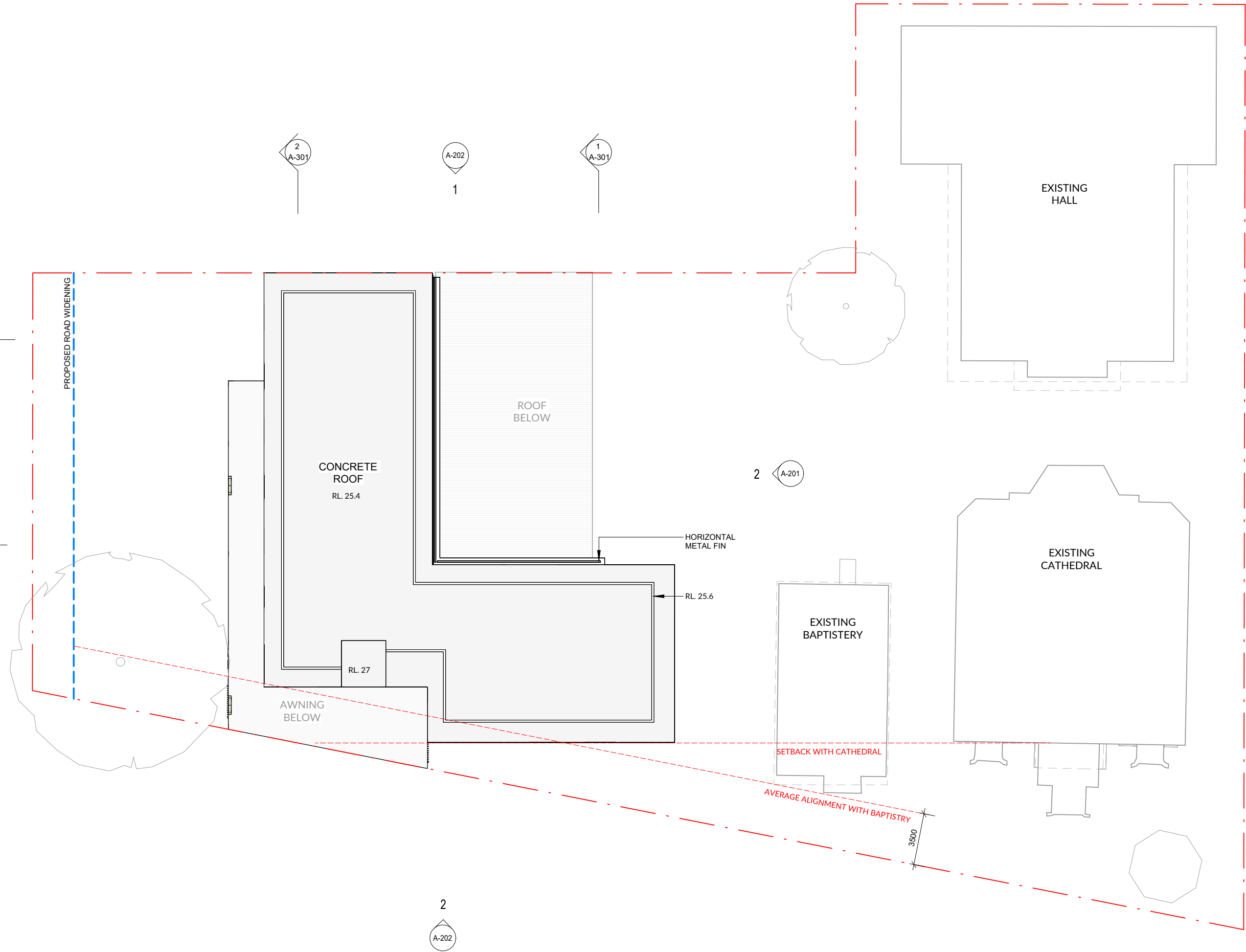
VULTURE STREET

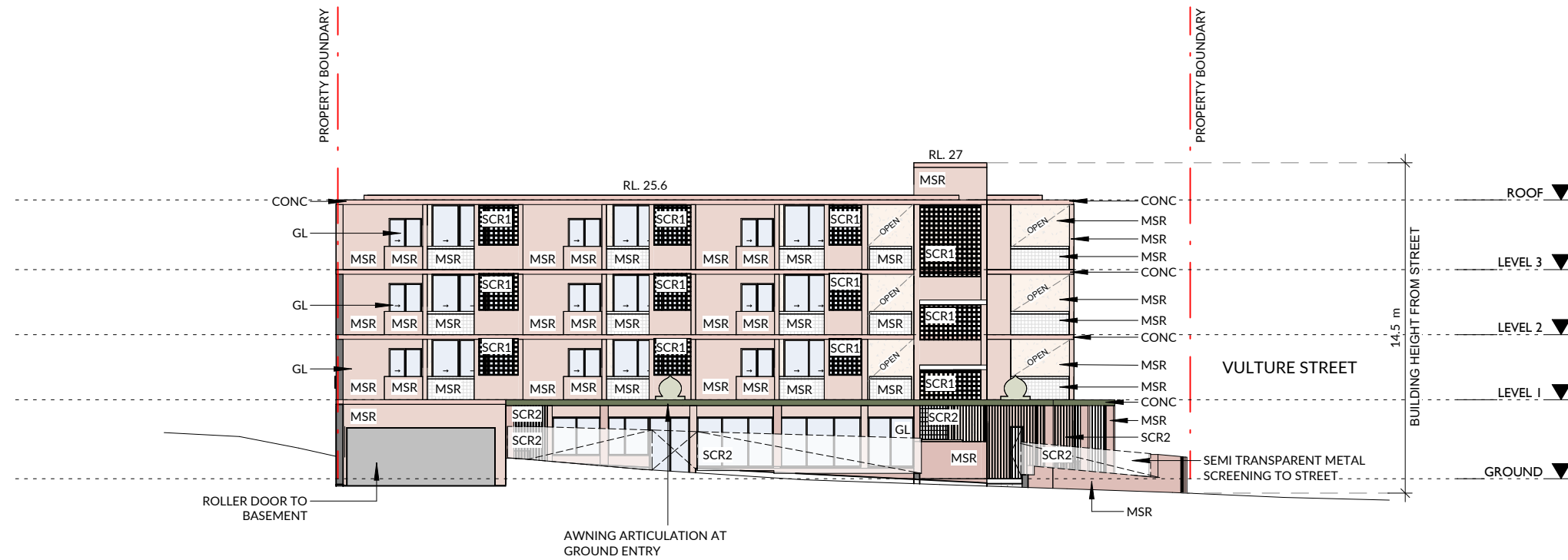
PROPERTY BOUNDARY

1 : 250 @ A3

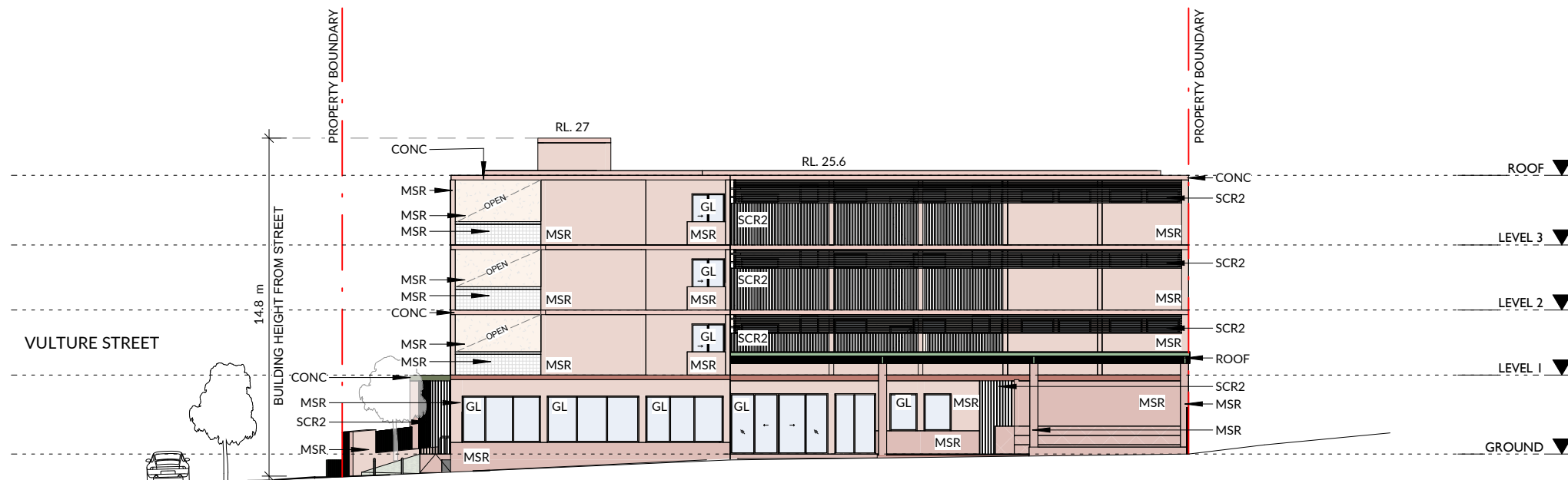
DWG NO.A-122 REV.3

TYPICAL APARTMENT LEVELS





WEST ELEVATION - LAHEY LANE 1 : 250



EAST ELEVATION - THROUGH COURTYARD 1 : 250

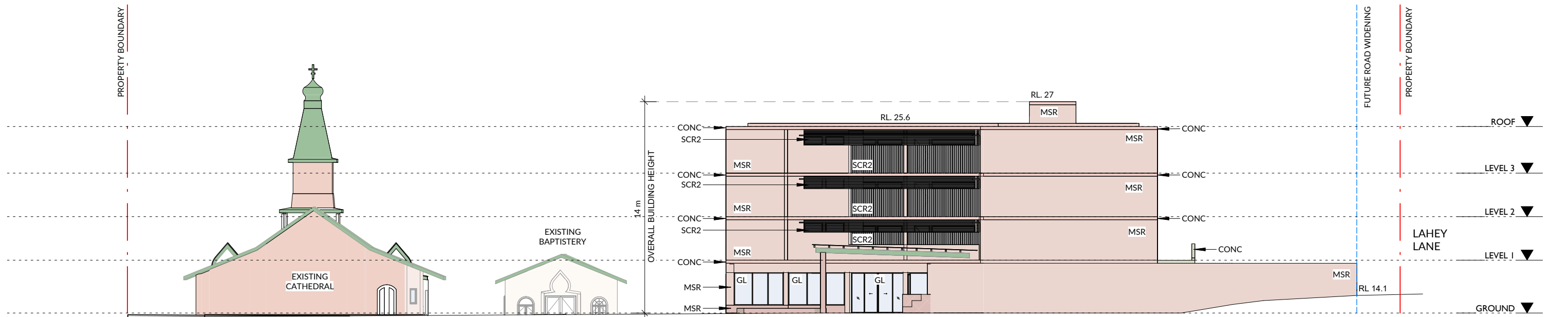
MATERIAL LEGEND

MSR	MASONRY
CONC	CONCRETE
GL	GLAZING
SCR1	MASONRY SCREEN
SCR2	METAL SCREEN

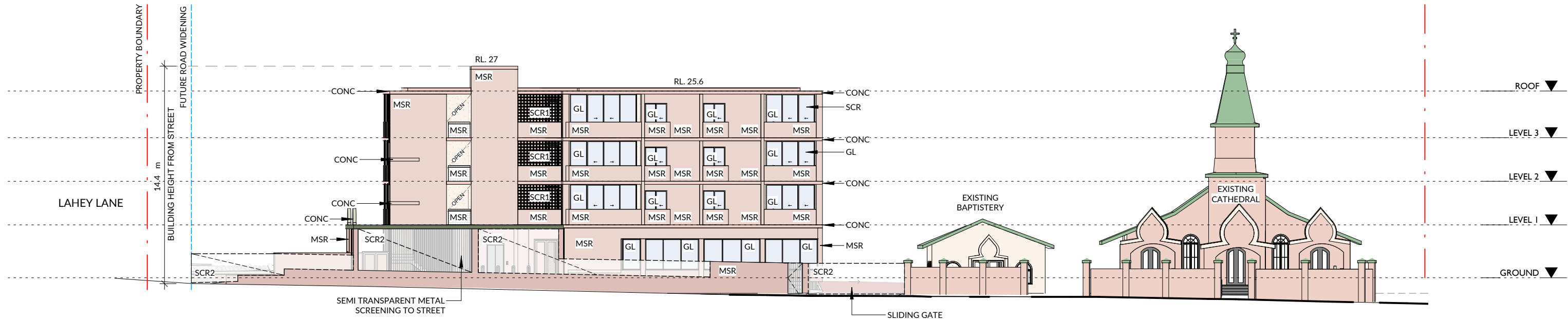
As indicated @ A3

DWG NO.A-201 REV.3

ELEVATIONS



NORTH ELEVATION 1 : 250



SOUTH ELEVATION - VULTURE ST 1 : 250

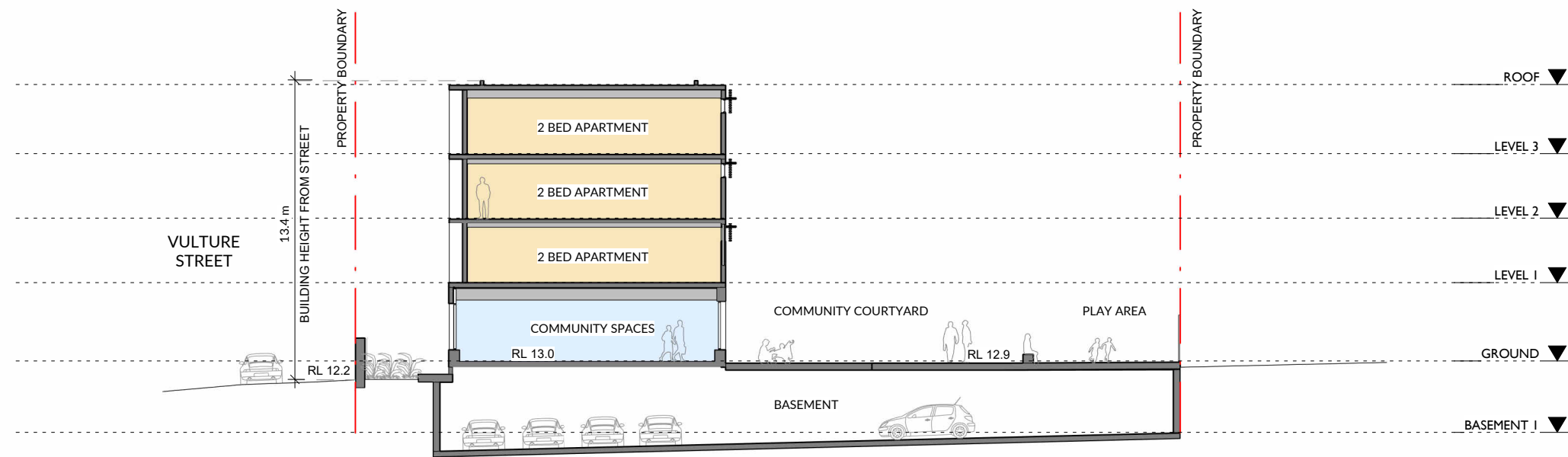
MATERIAL LEGEND

MSR	MASONRY
CONC	CONCRETE
GL	GLAZING
SCR1	MASONRY SCREEN
SCR2	METAL SCREEN

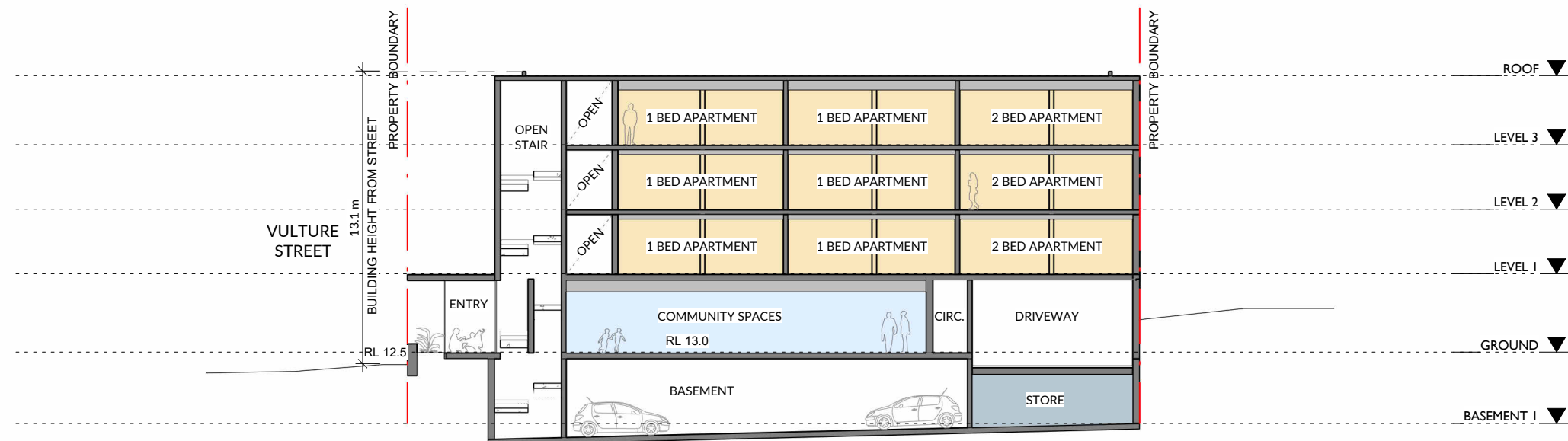
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DWG NO.A-202 REV.3

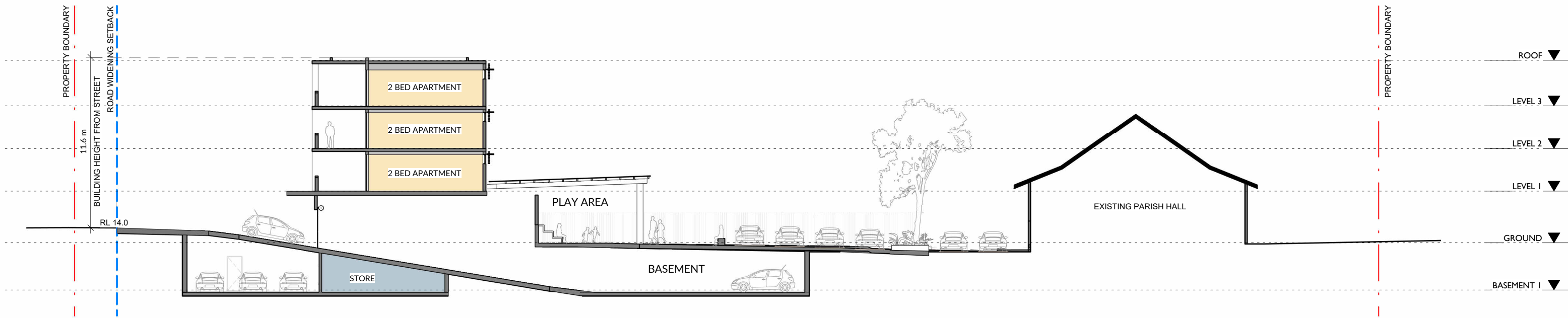
ELEVATIONS



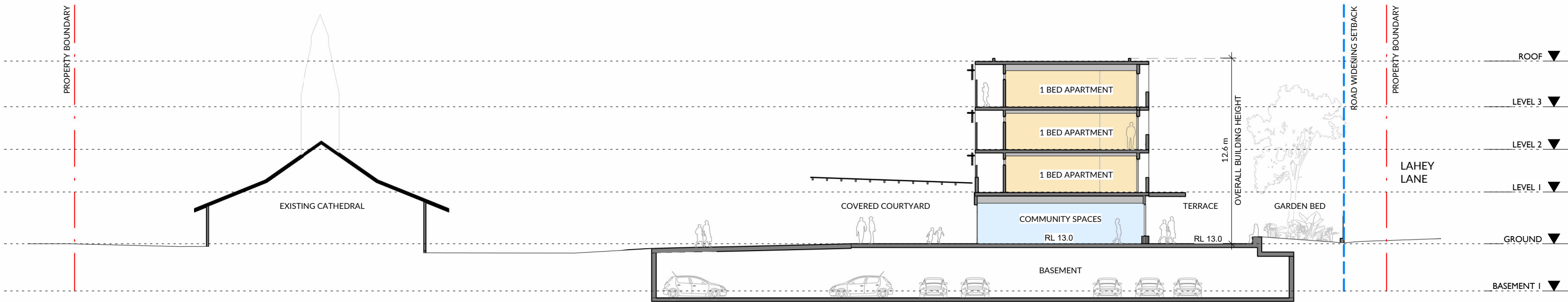
SECTION A



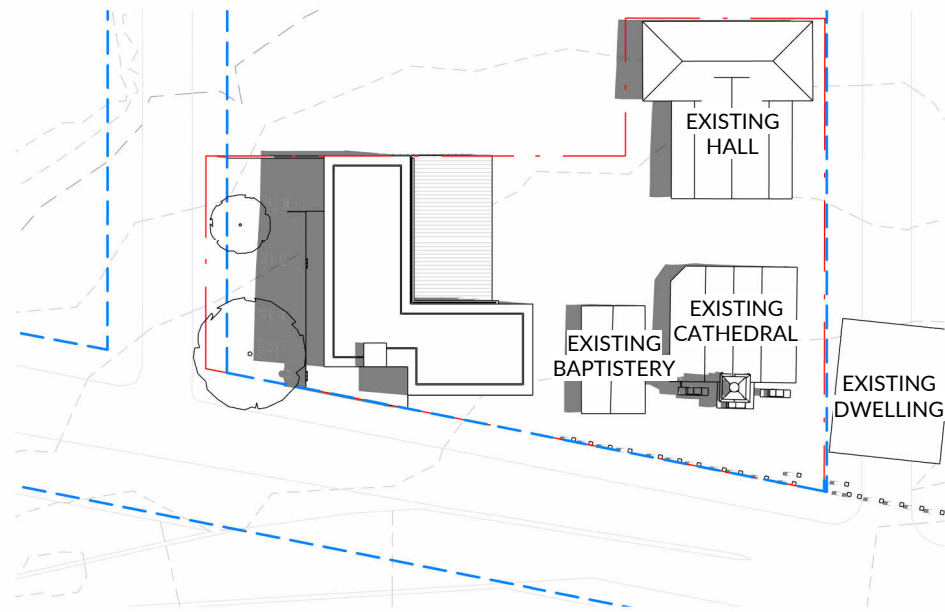
SECTION B



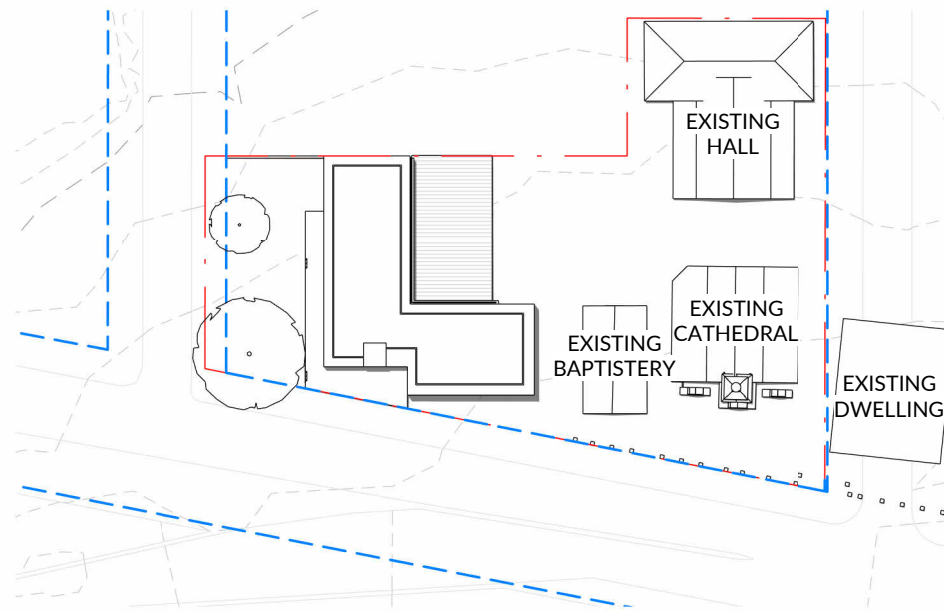
SECTION C



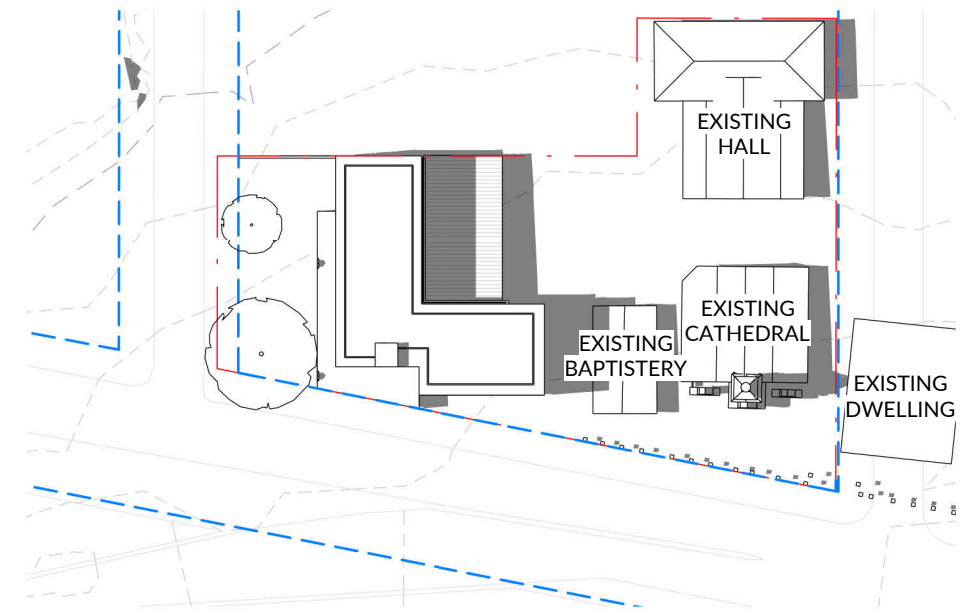
SECTION D



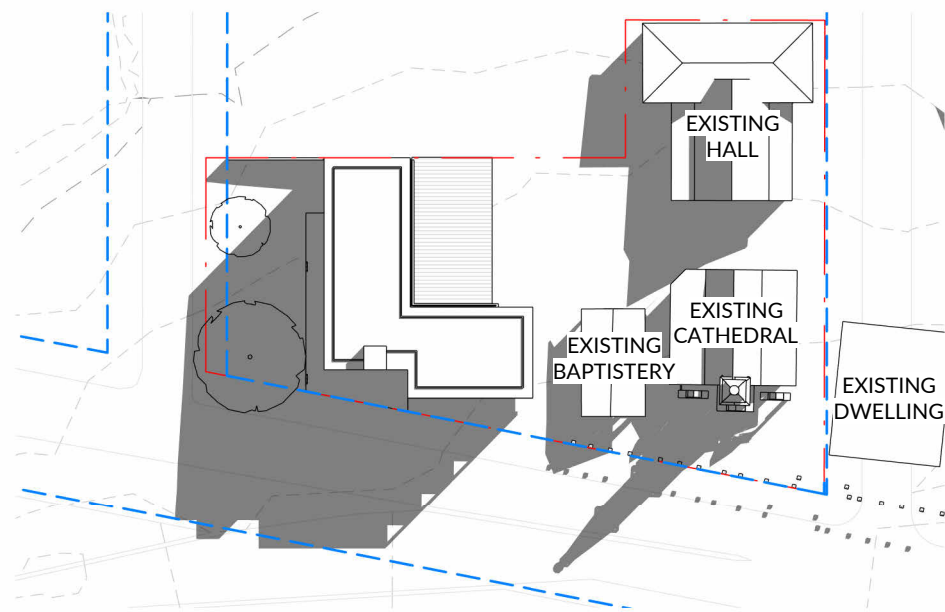
SUMMER 9AM



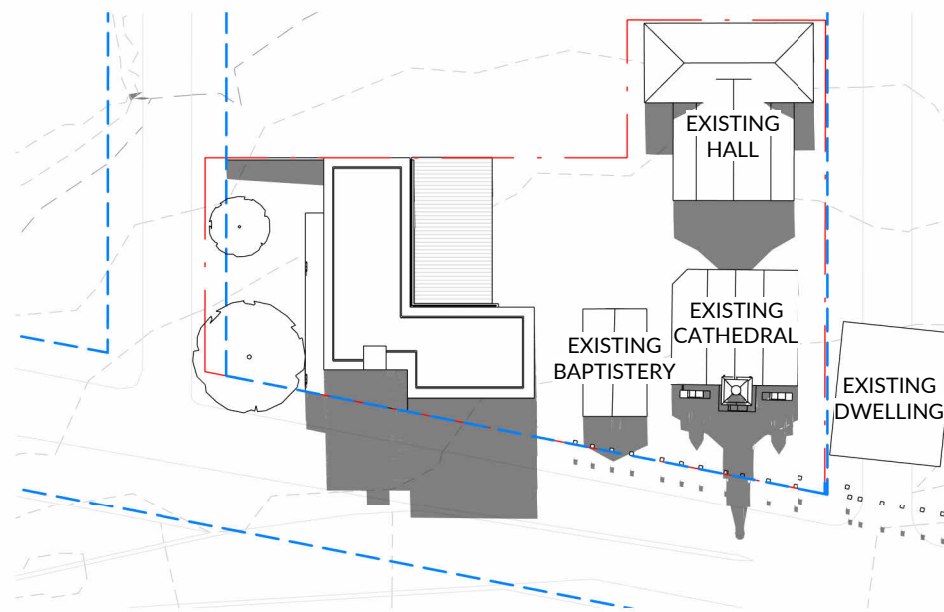
SUMMER 12PM



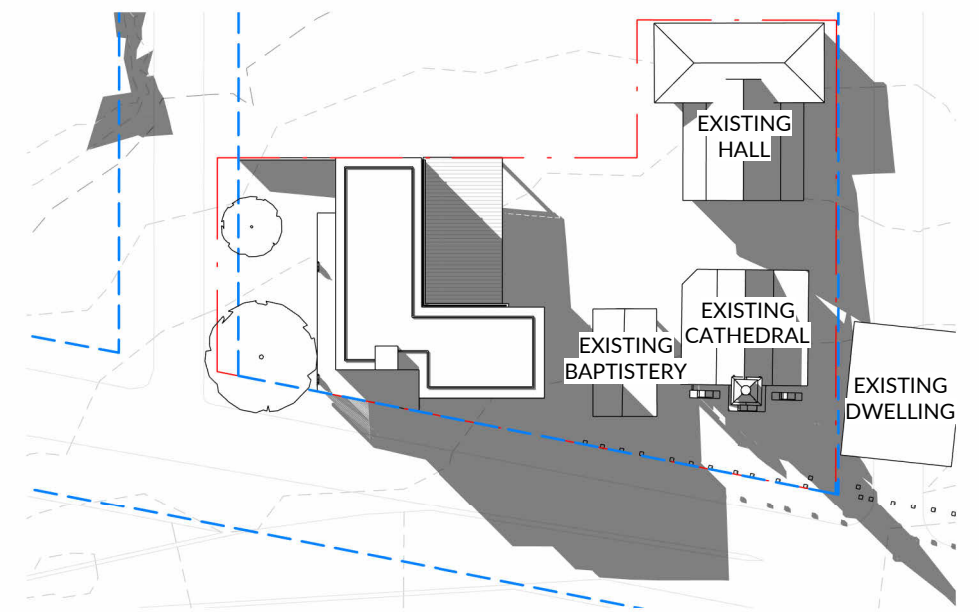
SUMMER 3PM



WINTER 9AM

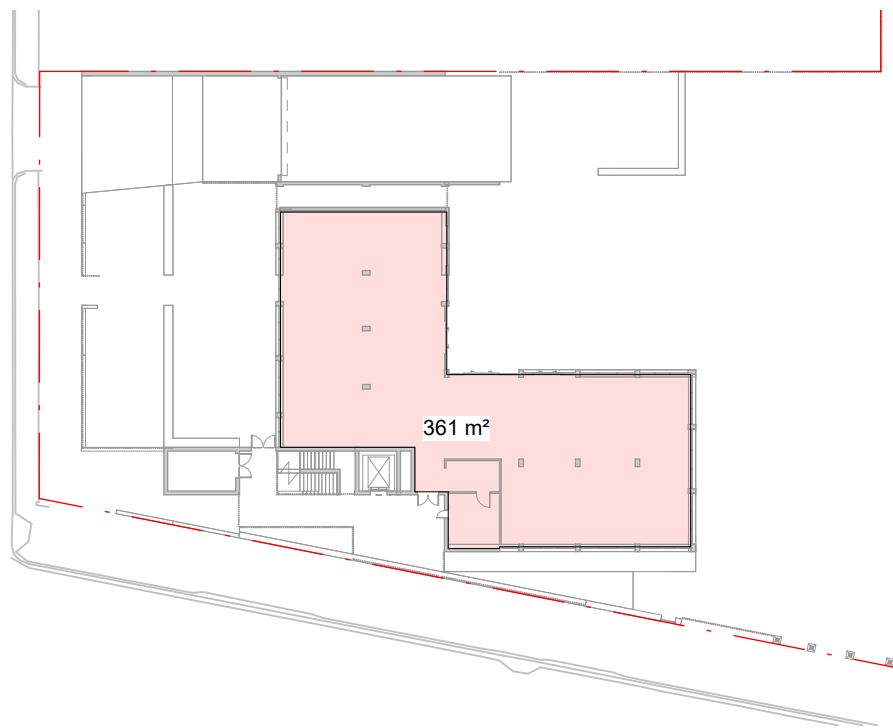


WINTER 12PM



WINTER 3PM





GROUND FLOOR



LEVEL 1 (TYPICAL APARTMENT)



LEVEL 2 (TYPICAL APARTMENT)



LEVEL 3 (TYPICAL APARTMENT)

GFA AREAS

LEVEL	AREA
GROUND LEVEL	361 m ²
LEVEL 01	370 m ²
LEVEL 02	370 m ²
LEVEL 03	370 m ²
TOTAL:	1471 m²

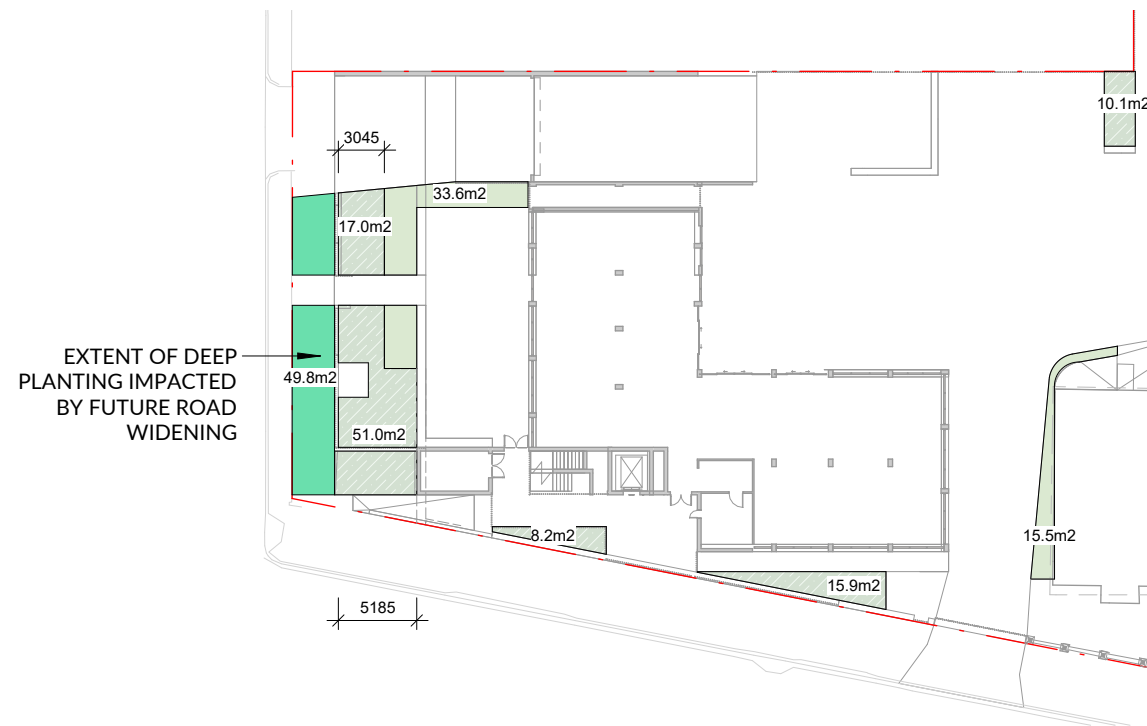
 GFA



1 : 500 @ A3

DWG NO.A-901 REV.3

AREA PLANS - GFA



GROUND FLOOR

CONTAINER & DEEP PLANTING

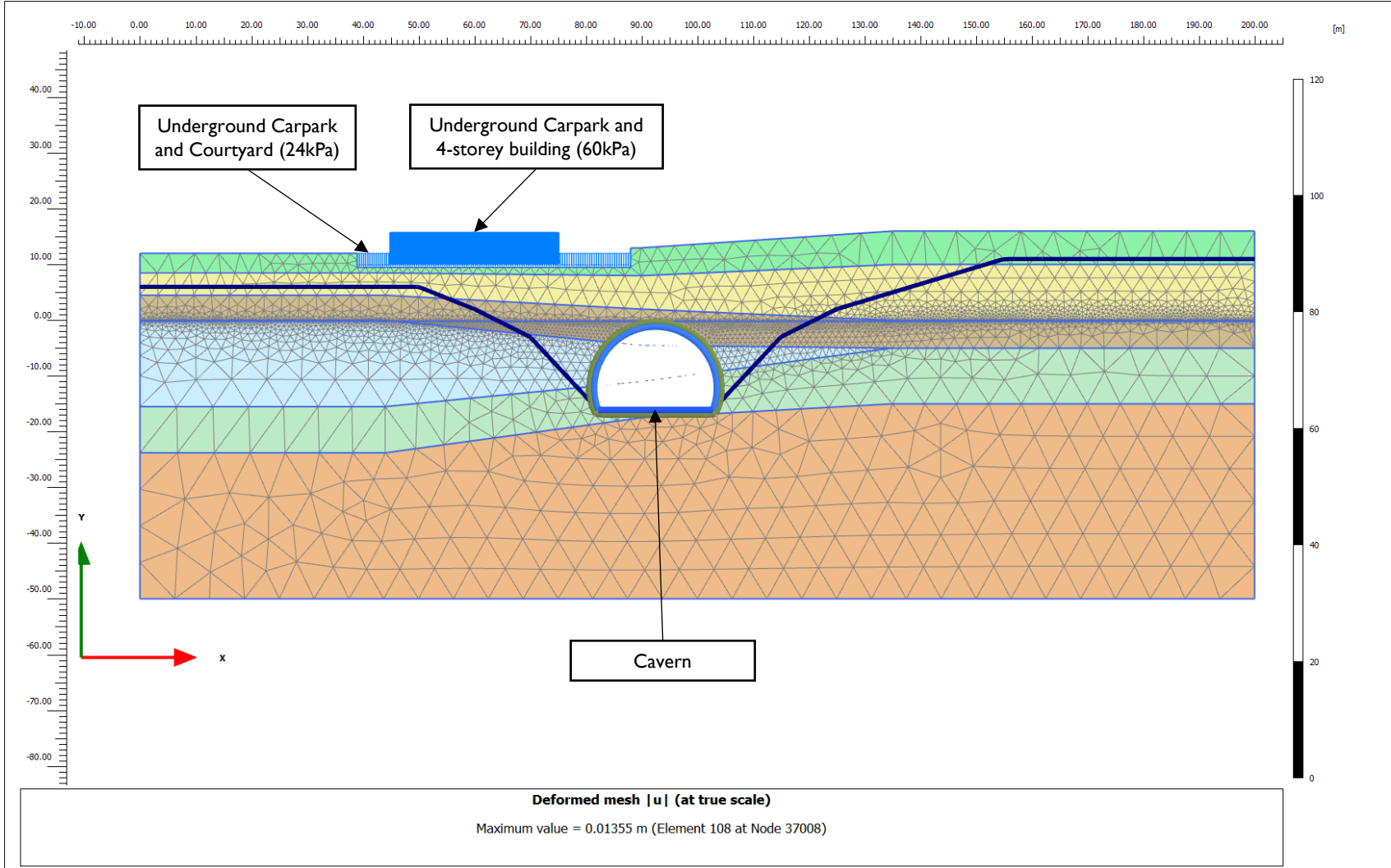
LEVEL	DEEP PLANTING	CONTAINER PLANTING
GROUND LEVEL	102.2 m ² (5.3%)	49.1m ²
LEVEL 01		0 m ²
LEVEL 02		0 m ²
LEVEL 03		0 m ²
ROOF LEVEL		0 m ²
TOTAL:	102.2 m²	49.1 m²

PROJECT SITE AREA	1910m ²
TOTAL PLANTING	7.9%

	CONTAINER PLANTING
	DEEP PLANTING

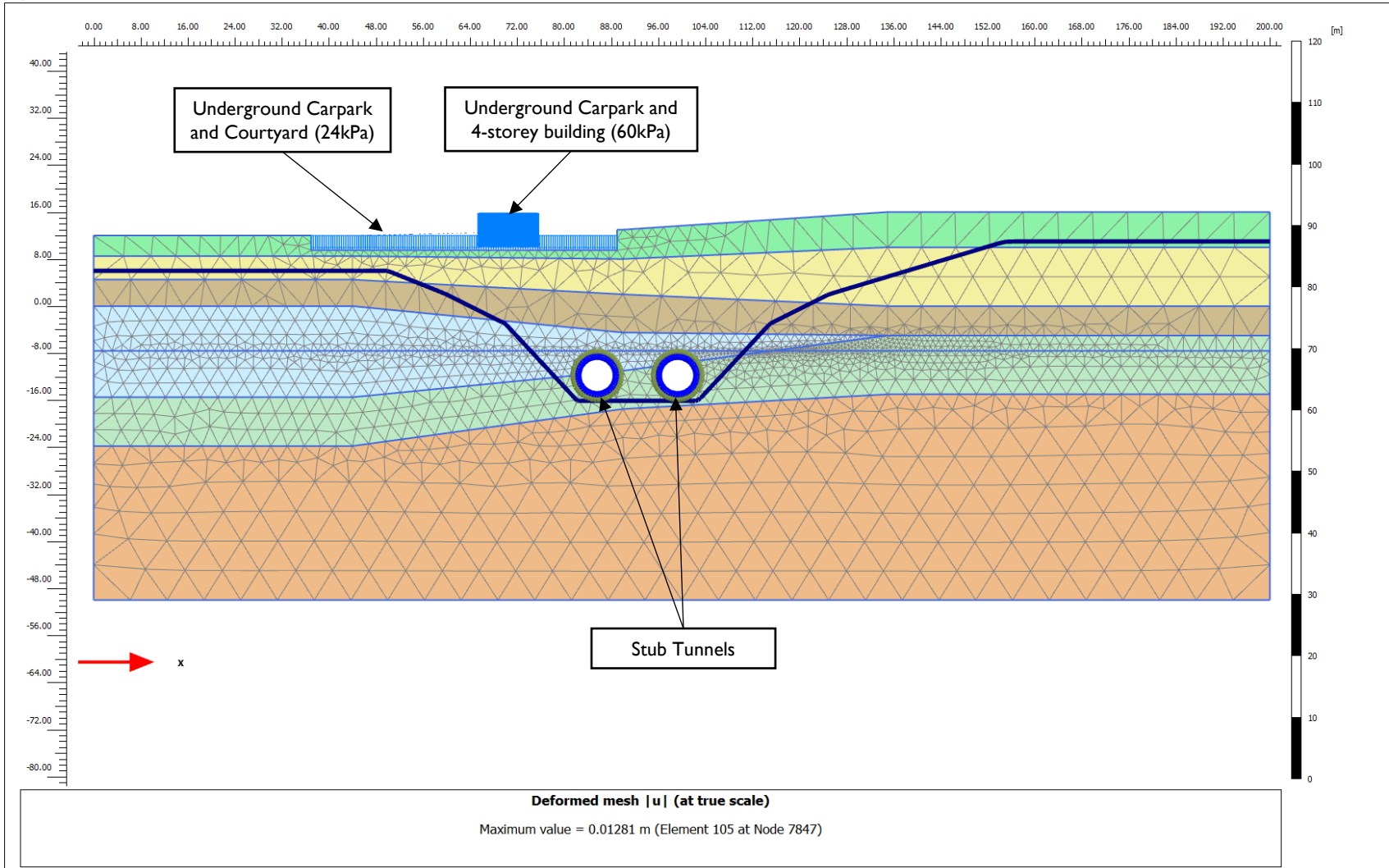
Appendix B

Finite Element Model



	Project description		Date
	Project filename	Step	12/02/2025
	Cavern Assessment	9	EDG Consulting Pty Ltd

by:	DL	client:	Urbis / C of Russian Orthodox Church
date:	12/02/2025	project:	Kangaroo Point Precinct
approved:	DJC	location:	Brisbane, QLD
scale:	As per axis	title:	Cavern Model
		job no:	B01554-I



	Project description	Date	
	Stub Tunnel Assessment	12/02/2025	
Project filename		Step	Company
Stub Tunnel Assessment		8	EDG Consulting Pty Ltd

by:	DL	client:	Urbis / C of Russian Orthodox Church
date:	12/02/2025	project:	Kangaroo Point Precinct
approved:	DJC	location:	Brisbane, QLD
scale:	As per axis	title:	Stub Tunnel Model
		job no:	B01554-I

engineering | design | geosciences
TYPESA Group

figure: B2

Appendix C

Finite Element Assessment Outputs

