Taylor Thomson Whitting

Construction Methodology Assessment

74 Carlton Crescent, Summer Hill

Iglu Pty Limited / 27 June 2019

181975

Structural
Civil
Traffic
Facade
Consulting Engineers

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Contents

1.0 Introduction

The proposed development will occupy both 74 and 75 Carlton Crescent in Summer Hill (see Figure 1 below), which currently consists of two adjoining buildings previously used as a storage and operations facility for ambulance vehicles. The property to the west contains a skate park and tennis court at a lower level, which abut the driveway, and is separated by a retaining wall. The property to the east contains a two-storey brick warehouse and is separated to 74 Carlton Crescent by a thin strip of land (72A Carlton Crescent) approximately 1 metre wide. Carlton Crescent is to the north of the property and a railway line is located approximately 15 m to the north of the site. Sydney Trains mains high-voltage power lines exist adjacent to the property along the northern boundary (along Carlton Crescent).

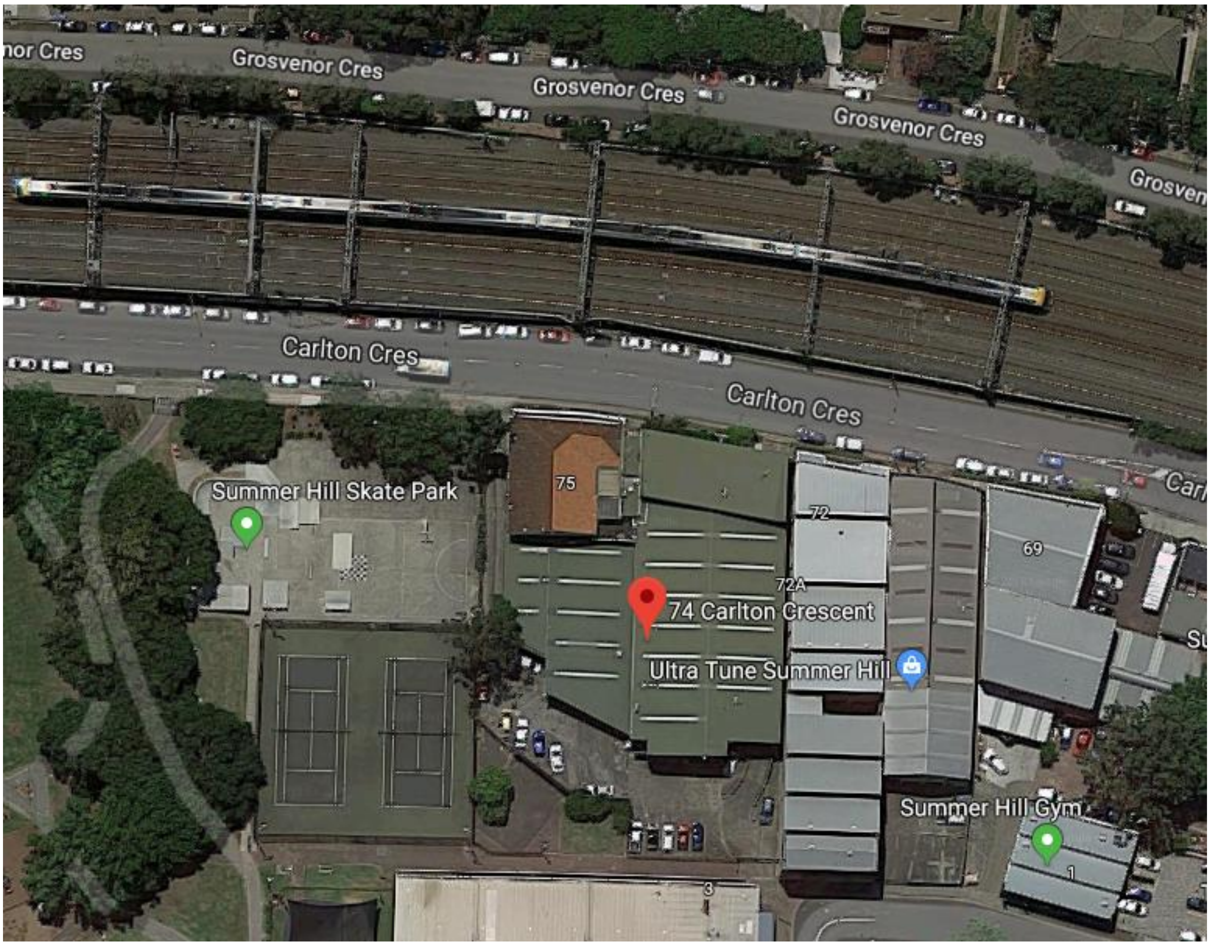

Figure 1: Existing Site

The proposed development at this site involves the construction of a new 3-4 storey student accommodation facility. It is intended to retain a majority of the external skin, internal structure and roof of 75 Carlton Crescent, which was previously the 'Western Suburbs District Ambulance' building. The existing structure at 74 Carlton Crescent will entirely be demolished to enable the development. See Figures 2 and 3 for the extent of the existing building to be retained.

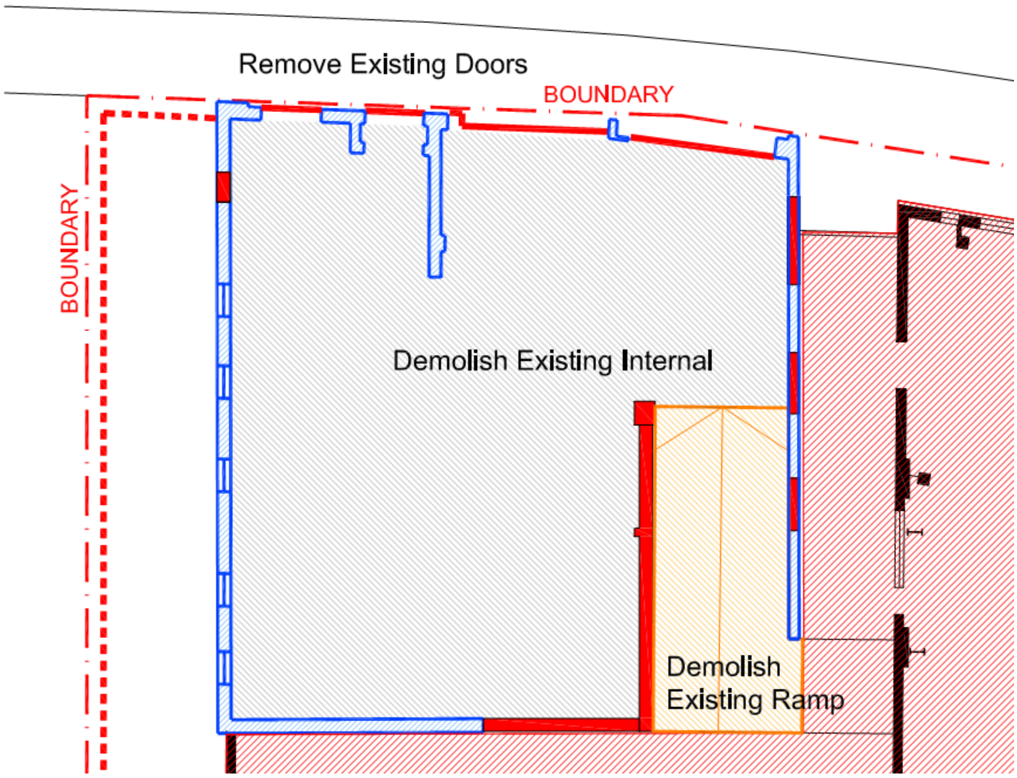

Figure 2: Extent of the ground floor plan at 75 Carlton Crescent to be retained shown hatched in blue and extent of load-bearing walls to be removed shown hatched in red.

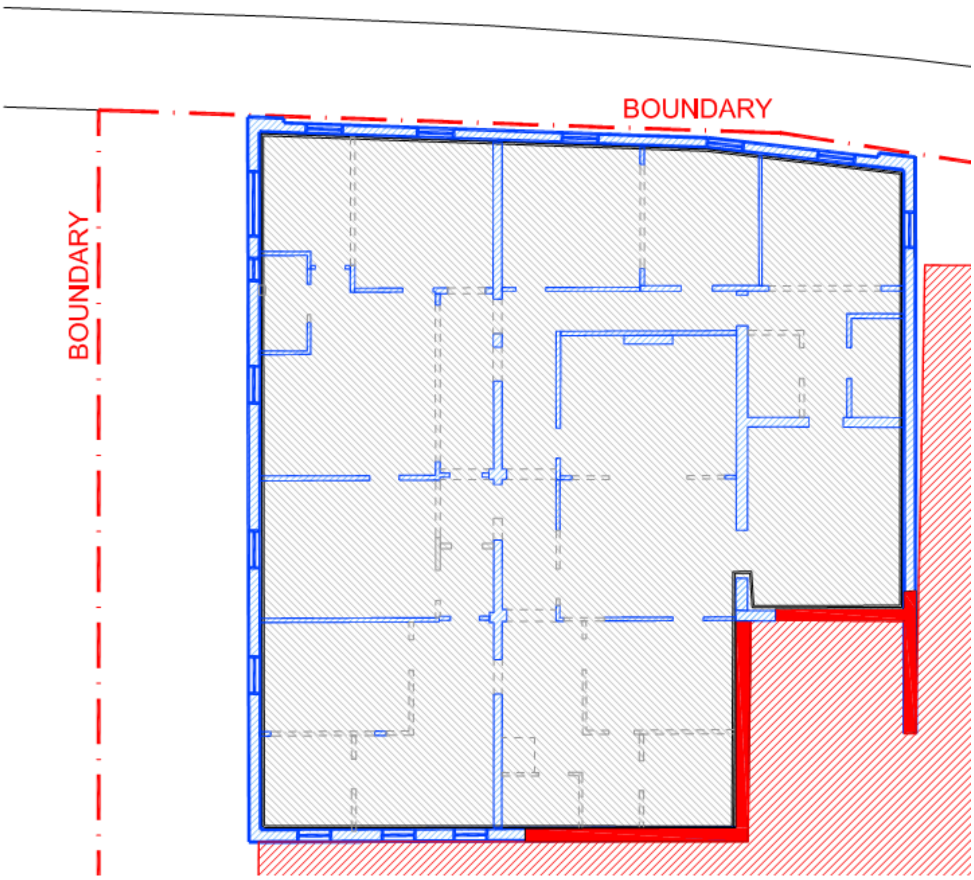

Figure 3: Extent of the first-floor plan at 75 Carlton Crescent to be retained shown hatched in blue and extent of load-bearing walls to be removed shown hatched in red.

The works also involve excavation to allow the construction of a lower ground level. This will necessitate measures to shore the excavation along neighbouring boundaries and will require additional foundation works to retain the existing façade of 75 Carlton Crescent. Further works will also need to be carried out to retain the first floor slab while the excavation takes place. See Figure 4 for the proposed extent of the new lower ground floor.

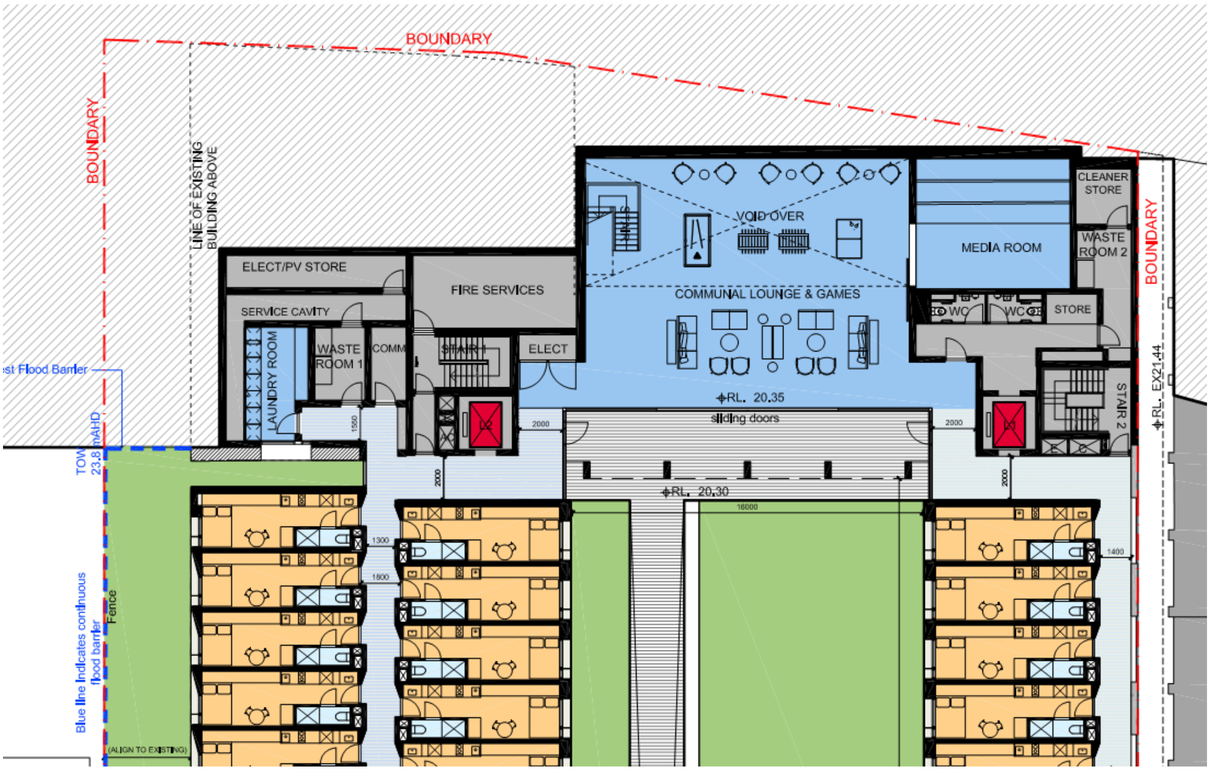

Figure 4: Extent of the proposed lower ground floor level.

This report outlines the proposed methods for the demolition, excavation and retention of the existing building at 75 Carlton Crescent to allow the construction of the proposed development.

2.0 Site Overview

2.1 Existing Structure

The current Western Suburbs District Ambulance building (75 Carlton Crescent) comprises of a two-storey structure. The external façade is brick and is rendered on the northern side with shallow footings most likely founded in silty clay. The ground floor and first floor levels consist of a combination of concrete and traditional timber framing. The roof structure is timber framed and is clad with terracotta roof tiles.

Figure 5: Western Suburbs District Ambulance building (75 Carlton Crescent)

The site slopes from a high point at Carlton Crescent towards the rear of the property. An internal driveway ramp at ground floor level connects street level (RL 23.33) to the rear of the Ambulance building (RL 21.22).

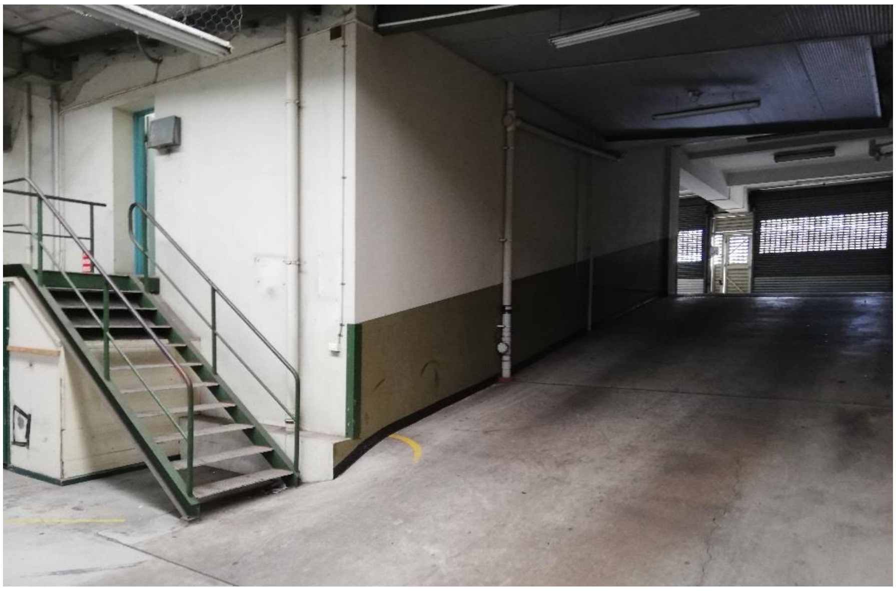

Figure 6: Internal ramp connecting the front and rear of the Ambulance building.

2.2 Geological and Subsurface Conditions

There has been a geotechnical report produced by JK Geotechnics for Health Infrastructure for a (previously) proposed development at 74 and 75 Carlton Crescent, Summer Hill.

At the time of writing, TTW has received this report, reference number 28412Lrpt, dated 3rd July 2015. The report details a study of the relevant soil landscape, geological maps of the project area and five (5) bore hole samples drilled into the bedrock.

Generally, the boreholes encountered poorly compacted fill overlying residual silty clays, then weathered shale bedrock. In the borehole adjacent to 75 Carlton Crescent (BH1), extremely low strength shale was encountered at RL 20.2 and medium strength shale encountered at RL 19.5.

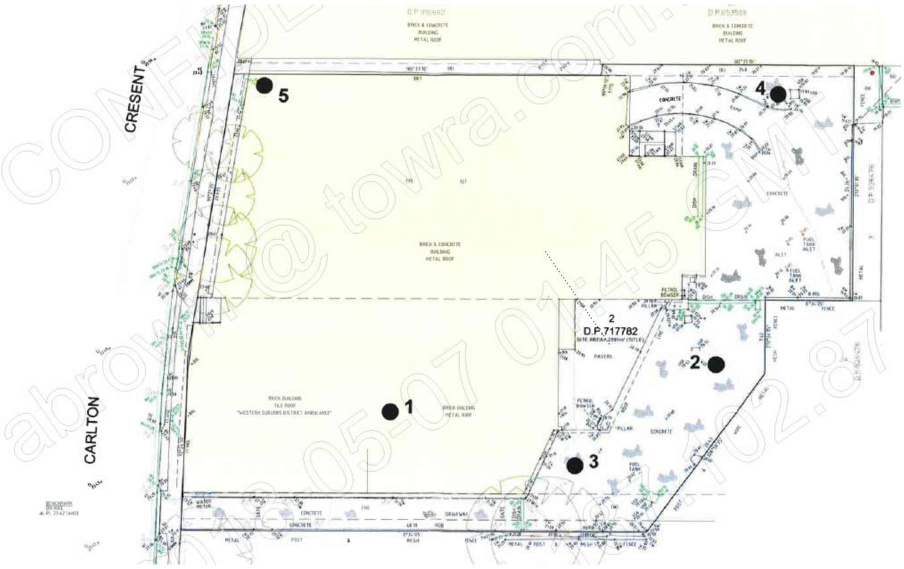

Figure 7: Bore hole locations from JK Report 28412Lrpt dated 3rd July 2015.

3.0 Construction Methodology Assessment

The following sections should be read in conjunction with the sketches provided in Appendices B and C, and the blow out report by AA Power Engineering (AAPE).

3.1 Shoring

The proposed development introduces a lower ground floor with a finished floor level of RL 20.35. This floor level is most likely below the underside of the existing brick footings of 75 Carlton Crescent and close to the level of the shale bedrock (based off BH1 of the geotechnical report by JK Geotechnics). As a result, to enable excavation to the lower ground level adjacent to the existing brick wall of 75 Carlton Crescent, several sections of the existing brick wall footings may need to be underpinned to the shale bedrock.

The proposed lower ground floor enters the envelope of 75 Carlton Crescent. As a result, shoring will be required along the western side of the lower ground floor (Laundry Room) to accommodate the difference between the external ground level and the finished lower ground floor level (refer Section A1 of the 'Shoring Plan' in Appendix B).

The northern and eastern boundaries of 74 Carlton Crescent also require shoring due to the difference between the existing ground level and the proposed lower ground floor level. Section A2 on the 'Shoring Plan' (Appendix B) highlights a typical section through this wall, in which a soldier pile wall has been adopted in line with the recommendations outlined in the geotechnical report by JK Geotechnics.

The proposed scheme aims to retain a majority of the internal structure of 75 Carlton Crescent. This includes the first floor slab, a large number of internal walls and the roof. The proposed addition of a lower ground floor at 75 Carlton Crescent means that a significant amount of the existing support to the first floor structure will need to be removed. The proposed construction methodology involves supporting the first floor structure through the installation of steel beams to the underside of the first floor before these structural supports are removed and before the excavation commences. These steel beams will be supported by plunge columns – these columns are installed before any demolition work commences and are founded below the proposed lower ground floor level. The resulting shoring structure allows the first floor support to be removed and the excavation to proceed around the plunge columns without compromising the integrity of the existing structure. Refer to the 'First Floor Retention' drawing in Appendix B.

3.2 Façade Retention

The retention of the first floor slab and a majority of the first floor internal walls and roof, means that the existing façade will remain stable during the entire construction program. As a result, a temporary façade retention structure is not required to be installed. It may be prudent to monitor the condition of the existing façade during the works to ensure that it is not damaged during the construction and excavation works.

3.3 Construction Adjacent to the Rail Corridor

As shown in Appendix C, the proposed development is adjacent to the rail corridor between Ashfield and Summer Hill stations. Appendix C presents a detailed and accurate survey plan of the proposed development with respect to RailCorp's land and infrastructure. Also included are two detailed sections addressing the assessment requirements as outlined by Sydney Trains.

3.3.1 Train Derailment Protection Measures

As shown in Appendix C, the proposed development is within 10m – 20m of the centreline of the nearest track. The Transport for NSW Technical Note T HR CI 12080 ST – External Developments outlines that possible train collision loads may need to be considered in accordance with AS 5100.2 Clause 11.4.2.4, subject to the requirements from Sydney Trains. It should be noted that a risk analysis may be carried out to assess whether or not the structure is required to carry any train derailment collision loads.

3.3.2 Stray Current and Electrolysis

Due to the proximity of the proposed development to the rail corridor, stray currents and electrolysis may need to be considered for the design of the structure subject to requirements from Sydney Trains and an electrolysis testing report. It is anticipated that any affects arising from stray current and electrolysis will be able to mitigated through the use of a plastic membrane in combination with an increase in the concrete strength and cover to the reinforcement.

3.4 Suggested Construction Methodology

The following is a suggested construction methodology that can be followed to achieve the final design intent. The final construction methodology should address the issues raised in Sections 3.4.1 and 3.4.2 below relating to works adjacent to Sydney Trains assets, and the requirements outlined in the blow out report by AAPE. It should be noted that there may be other equally valid methodologies that could be more desirable from a construction sequencing perspective. As a result, the suggested construction methodology is subject to input from the contractor when appointed.

The following construction methodology is briefly outlined in Appendix B and is elaborated below:

1) Demolish the existing building at 74 Carlton Crescent.
2) Install the soldier pile wall along the northern and eastern boundaries of 74 Carlton Crescent. The full extent of the shoring wall is to be confirmed by the geotechnical engineer and will be subject to final finished levels.
3) Install the plunge columns at 75 Carlton Crescent by locally breaking away the existing ground floor slab and excavating using a micro-piling rig or similar method.
4) Install the steel beams to provide temporary, and in some cases permanent, support to the existing first floor slab. These steel beams allow the first floor structure, first floor internal walls and a majority of the roof to be retained.
5) Underpin the brick footings (as noted on plan in Appendix B) of 75 Carlton Crescent to approved bearing on the shale bedrock. The underpinning should use a ‘hit or miss’ method, or similar approved construction sequence.
6) Install the soldier pile walls on the western side of 75 Carlton Crescent to enable excavation within the existing structure.
7) Demolish the existing ground floor slab and required ground floor internal walls at 75 Carlton Crescent and excavate over the entire site to the desired levels.
8) Construct the proposed structure at 74 and 75 Carlton Crescent. Note that the steel beams supporting the existing floor at 75 Carlton Crescent may be removed if the new structure provides permanent support to the existing first floor slab.

3.4.1 Methodology Considerations for Works Adjacent to Rail Corridor

As noted above, a contractor has not yet been appointed for the project. The detailed craneage and construction methodology will be developed by the contractor once they are appointed. Such a methodology should pay careful attention to the proximity of the adjacent rail corridor and the specific requirements of Sydney Trains regarding developments adjacent to the rail corridor.

In particular, the crane should be set up so that the jib of the crane and any load it is lifting cannot over sail the rail boundary or the HV power lines to the north boundary. Adequate clearances should be made to ensure that materials handled by the crane do not impede on the minimum distances stated in the blow out report, by AAPE, under maximum sway of the load.

We note that the proposed development is only between 3 and 4 storeys in height, and that the proposed buildings are spread across a large, 64 m deep site. Therefore, any crane is likely to be centrally located some 45-50m from the rail boundary. The materials handling and loading zone is likely to be located in the driveway to the west of the site, and as such, the crane should be able to be easily incorporated within the site to ensure compliance with the blow-out report. Refer ‘Survey Plan of Proposed Development’ in Appendix C for an indicative location of the crane relative to the loading zone. The final craneage design will be undertaken in consultation with the contractor and will adhere to the requirements of the blow out report.

Construction safe work method statements (SWMS) should be developed by the contractor to meet the Sydney Trains requirements. Where scaffolding is used, shade cloth should be provided to prevent debris or materials being blown onto the Sydney Trains property, the exact details of which will be resolved by the contractor.

3.4.2 Methodology Considerations for Works Adjacent to Existing HV Aerial Line

The appointed contractor is to incorporate safe work method statements (SWMS) into their construction methodology for all works adjacent to the existing HV aerial line. The SWMS should comply with the requirements set out by Sydney Trains for works near or in the vicinity of high voltage cables, clearly outlining and recognising the Safe Approach Distances (SADs).

For specifics relating to works adjacent to the HV lines, the reader is referred to the blow out report, by AAPE. It should be noted that the appointed contractor, in developing their construction plans and SWMS, should ensure the works comply with the following standards:

- AS 7000 – Overhead line design - Detailed procedures
- ISSC 20 – Guideline for the management of activities with Electrical Easements and Close electrical infrastructure.
- SMS-06-GD-0268 – Working around electrical equipment
- Relevant Transport for NSW Asset Standards Authority standards/guidelines

Additional to the above standards and policies the final construction management plan, developed in conjunction with the appointed contractor, is to also comply with the following codes and guides.

- Work Cover “Work Near Overhead Power Lines” Code of Practice 2006
- Australian Standard “AS/NZS 4576:1995 Guidelines for scaffolding”

It has been noted that an external scaffold may be required for access to repair, paint and add shutters to the existing heritage façade. This scaffold (not necessary for structural stability of the existing structure) should to be erected in accordance with the recommendations provided in the blow out report (by AAPE) and the aforementioned Work Cover requirements.

Refer to Section 3.4.1 for requirements relating to craneage and proximity to the HV lines.

4.0 Structural Description

4.1 Foundation

The proposed structure consists of a four-storey development, with the lower ground floor at RL 20.35. The proximity of the lower ground floor to the shale bedrock, in combination with the relatively low bearing capacity of the overlying silty clay, means that the footings for the new development will most likely be founded in the shale bedrock.

Once the existing building has been demolished, detailed geotechnical investigation should be conducted on site to confirm the rock strength, stability and profile. Where rock levels are relatively close to the underside of the structure, pad and strip footings can be used for the support of vertical elements and the lower ground floor can be designed as a slab on ground. If rock levels are relatively far away from the underside of the structure at any point within the site, a piled foundation with footing beams may be the most economical foundation solution and the lower ground floor slab may have to be designed as a suspended slab over the fill layer in this region.

4.2 Shoring

The suggested shoring system has been described in Section 3.1. Once the existing building has been demolished, a detailed geotechnical investigation should to be conducted on site to confirm the retention strategy along the north and eastern boundaries. This investigation should also attempt to determine the level of the footings of the adjacent building on the eastern boundary in order to determine if these foundations lie within the zone of influence of the proposed shoring system. Further, the level of the underside of the existing brick footing should be determined and compared to the level of the shale bedrock, and the proposed lower ground floor level, in order to assess the required extent of underpinning.

It should be noted that where the retained height is reduced, shoring solutions alternate to a soldier pile wall may be adopted. Examples of alternative shoring solutions include reinforced block retaining walls and propped micro-pile systems, both of which have a reduced overall structural depth when compared to the soldier pile solution.

4.3 Vertical System

It is envisaged that the structural vertical support system will comprise of a grid of structural columns and walls supporting and arrangement of primary and secondary beams (refer Figure 8 below). A one-way (or two-way) flooring system would then span between this structural framing grid.

4.4 Lateral Stability

It is envisaged that lateral stability will be provided to the proposed development through a combination of the two lift cores, the two stair cores and additional vertical bracing elements located within structural walls (refer Figure 9 below). The floor system would act as a rigid diaphragm, spanning between the lateral stability elements, and act to distribute lateral loads to the bracing system.

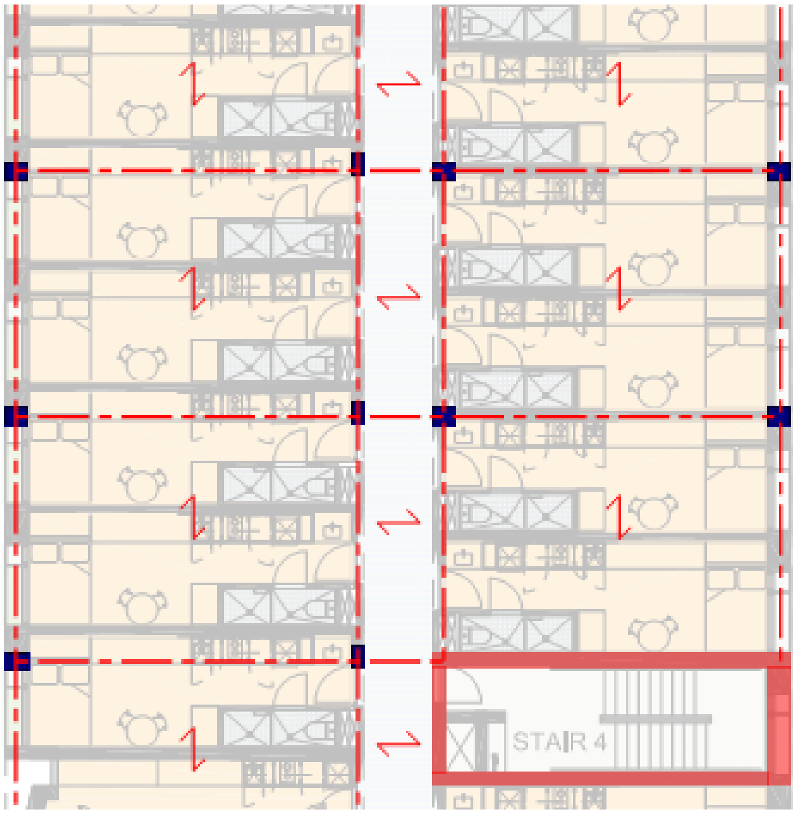

Figure 8: Typical arrangement of the suggested structural framing system.

Figure 9: Arrangement of the lateral stability elements.

5.0 Performance Brief

5.1 Design Life

The design life for all new structural elements is to be 50 years.

5.2 Structural Importance Level

All structures will be designed for an Importance Level 2 in accordance with AS/NZS 1170:0. This reflects that the building is not essential in a post disaster situation. This importance level will be used in determining the wind and seismic loads on the structure.

5.3 Design Loadings

In general, all loads and load combinations shall comply with AS/NZS 1170 Parts 0 to 4 Structural Design Actions. Live load reductions will be applied as permitted by AS/NZS 1170.1. Generally, the floor design loads are:

5.3.1 Permanent Actions – Dead and Superimposed Dead Loads

Dead load shall be considered as the self-weight of the structure plus an allowance for services, walls and ceilings which vary significantly throughout the building. In general, 1.5kPa superimposed dead load would be included in the design.

5.3.2 Imposed Actions – Live Loads

Generally, for the Support Services building, the floor design live loads and superimposed dead loads are:

Occupancy Type	Live Load (kPa)	SDL (kPa)
Bedrooms	2.0	1.5
Stairs & Corridors	4.0	1.5
Plant Rooms	5.0	2.5
Communal Areas	4.0	1.5
Non-Trafficable Roof	1.8/A + 0.12 but not less than 0.25	-

5.3.3 Barriers

Barriers including parapets, balustrades and railings are to be designed in accordance with Table 3.3 of AS/NZS 1170.1.

5.3.4 Wind Loads

Wind loads are in accordance with AS1170.2 and based on the following parameters:

Region	A2
Importance Level (BCA Table B1.2a)	2
Annual probability of exceedance (BCA Table B1.2b):	500 years

Regional Wind Speed	45m/s
Terrain Category (all directions):	3

5.3.5 Earthquake Loads

Earthquake loadings shall be in accordance with AS1170.4 – 2007 (Earthquake actions in Australia) and AS/NZS1170.0 – 2002.

Hazard Factor (Z):	**0.08**
Site Sub-Soil Class:	TBC
Importance Level (BCA Table B1.2a)	2
Annual probability of exceedance (BCA Table B1.2b):	500
Earthquake Design Category:	2
Probability Factor (Kp)	1.0

5.3.6 Load Combinations

The basic combinations for the ultimate limit states used in checking strength are as follows. These are based upon AS1170.0 section 4.

LOAD COMBINATION	G	Q	W_u	E_u
1	1.2	1.5		
2	1.2	Ψ_c	1.0	
3	1.0	Ψ_c		1.0
4	1.2	$1.5\Psi_l$		
5	1.35			
6	0.9		1.0 up	

The basic combinations for the serviceability limit states used in checking service are as follows. They are based upon AS1170.0 section 4.

LOAD COMBINATION	G	Q	W_s	E_s
7	1.0			
8		Ψ_s		
9		Ψ_l		
10			1.0	
11				1.0

G	:	structure self-weight plus superimposed dead loads
Q	:	imposed action
W_u	:	ultimate wind action
W_{es}	:	serviceability wind action
E_u	:	ultimate earthquake action
E_s	:	serviceability earthquake action
Ψ_c	:	combination factor for imposed action
Ψ_s	:	short-term factor
Ψ_l	:	long-term factor

Load Duration Factors	Ψ_s	Ψ_l	Ψ_c
Distributed Actions - Floors	0.7	0.4	0.4
Distributed Actions - Roofs	0.7	0.4	0.4
Concentrated Actions - Floors	1.0	0.6	0.4
Concentrated Actions - Roofs	0.7	0.4	0.4

5.3.7 Design Standards

The structural design will be in accordance with the latest revision of all relevant Australian Design Standards, Codes and other statutory requirements. As a minimum requirement, the design shall be based on, but not limited to;

Number	Edition	Title
AS/NZS 1170.0	2002	Structural design actions Part 0: General Principles
AS/NZS 1170.1	2002	Structural design actions Part 1: Permanent, imposed & other actions
AS/NZS 1170.2	2002	Structural design actions Part 2: Wind actions
AS 1170.4	2007	Structural design actions Part 4: Earthquake loads
AS 2159	2009	Piling – Design and installation
AS 3600	2009	Concrete Structures
AS 3700	2001	Masonry Structures
AS 4100	1998	Steel Structures

AS 3700	2001	Masonry Structures
AS 1720	2010	Timber Structures
AS 1684.4	2010	Residential timber framed construction
AS 2870	2011	Residential Slabs and Footings

5.4 Serviceability

5.4.1 Deflection Limits

Deflection limits for the concrete structures are generally as follows.

Maximum Floor Deflection Limit				
Element	**Dead**	**Incremental**	**Live**	**DL + LL**
Floors supporting masonry walls	Span/500	Span/1000 [1.]	Span/500	Span/300 20mm max.
Other floor areas	Span/360	N/A	Span/500	Span/300 20mm max.

1. Areas supporting normal weight masonry partitions

5.4.2 Durability

For concrete elements this will be achieved by specifying all elements in accordance with section 4 of AS 3600 which sets out requirements for plain, reinforced and post tensioned concrete structures and members with a design life of 40 to 60 years. Exposure classifications are as follows.

Exposure Classification	Elements
A2	Internal/In Ground
B1	External

Protective coatings to structural steel elements shall comply with AS/NZS 2312 and ISO 2063 for the long-term protection category.

5.4.3 Crack Control

Crack propagation in concrete elements due to shrinkage and temperature effects will be controlled by providing reinforcement quantities sufficient for a ‘strong’ degree of crack control where concrete slabs or soffits are to remain exposed. Careful consideration of the exposure classification needs to be adhered to due to proximity of structure to the sea.

5.4.4 Fire Resistance Levels

Fire Resistance Levels (FRL) for the structural elements is to be in accordance with Specification C1.1 of the BCA. Note the FRL requirement for columns are the same as the level they are supporting.

6.0 Risks & Opportunities

Risk/Opportunity	Description
Excavation and Shoring	Latent conditions can cause delay/cost. Extreme care to be taken during the underpinning of the existing brick structure and the installation of the plunge columns. Careful excavation and shoring are required adjacent to the eastern boundary to prevent undermining the footings of 72 Carlton Crescent. Shoring of the first floor slab should be carried out to ensure that excessive deflections of the structure do not occur once the existing supports are removed.
Works Close to Buildings	Noise, dust and vibration issues. Potential undermining of existing footings/pavement at 72A and 72 Carlton Crescent. Existing soil profile adjacent to the eastern boundary should be investigated during demolition and excavation.
Works Close to Rail Corridor and HV Aerial Line	Refer Sections 3.3, 3.4, and to the blow out report by AAPE for specifics relating to works adjacent to HV lines.
Geotechnical/Contamination	Detailed geotechnical/contamination investigation has to be carried out to reduce in ground risk for foundations, retaining walls/shoring and contamination.
Existing Brick Structure	The structural adequacy of the existing brick structure will need to be assessed considering changes to the building codes since the original construction of the building. The compliance of this structure to existing regulations may require strengthening works, in particular the northern parapet, which may not comply with current earthquake standards. Further, locations for surveying to monitor facade movement must be identified. Existing cracks and the locations of potential cracks must be assessed, and recommendations made on those to be monitored. Monitoring of the facade which must continue until it is fully attached to the permanent structure.

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Kevin Berry
Director

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Appendix A

Architectural Drawings

Revision summary:
-Powerline setback on L02 to Carlton Cresent

Revision	Date	Description	Initial	Checked
C	24.06.19	For Development Application	JC	HS
B	17.05.19	For Development Application	JC	WG
A	07.12.18	For Development Application	JC	WG

74 Carlton Crescent
Summer Hill

Lower Ground Plan

Check all dimensions and site conditions prior to commencement of any work, the purchase or ordering of any materials, fittings, plant, services or equipment and the preparation of shop drawings and/or the fabrication of any components.
All drawings to be read in conjunction with all architectural documents and all other consultants documents.
Do not scale drawings - refer to figured dimensions only. Any discrepancies shall immediately be referred to the architect for clarification.
All drawings may not be reproduced or distributed without prior permission from the architect.

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Status: FOR INFORMATION
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Drawing No.: [Revision]

A03.100 - LOWER GROUND PLAN

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BATESSMART

DEVELOPMENT APPLICATION | NOT FOR CONSTRUCTION

LEGEND

- New opening in existing
- Existing retained

Revision summary:
-Powerline setback on L02 to Carlton Cresent

Revision	Date	Description	Initial	Checked
C	24.06.19	For Development Application	JC	HS
B	17.05.19	For Development Application	JC	WG
A	07.12.18	For Development Application	JC	WG

74 Carlton Crescent
Summer Hill

Ground Plan

iglu

Check all dimensions and site conditions prior to commencement of any work, the purchase or ordering of any materials, fittings, plant, services or equipment and the preparation of shop drawings and/or the fabrication of any components.
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A03.000 - GROUND PLAN

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BATESSMART

DEVELOPMENT APPLICATION | NOT FOR CONSTRUCTION

LEGEND

Existing retained

Revision summary:
-Powerline setback on L02 to Carlton Cresent

Revision	Date	Description	Initial	Checked
C	24.06.19	For Development Application	JC	HS
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A	07.12.18	For Development Application	JC	WG

DEVELOPMENT APPLICATION | NOT FOR CONSTRUCTION

74 Carlton Crescent
Summer Hill

L01 Plan

Check all dimensions and site conditions prior to commencement of any work, the purchase or ordering of any materials, fittings, plant, services or equipment and the preparation of shop drawings and/or the fabrication of any components.
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Drawing No. [Revision]

A03.001 - L01 PLAN

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Revision	Date	Description	Initial	Checked
C	24.06.19	For Development Application	JC	HS
B	17.05.19	For Development Application	JC	WG
A	07.12.18	For Development Application	JC	WG

Revision summary:
-Powerline setback on L02 to Carlton Cresent

74 Carlton Crescent
Summer Hill

L02 Plan

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Drawing No.	[Revision]

A03.002 - L02 PLAN

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DEVELOPMENT APPLICATION | NOT FOR CONSTRUCTION

Revision summary:	
-Powerline setback on L02 to Carlton Cresent	

Revision	Date	Description	Initial	Checked
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DEVELOPMENT APPLICATION | NOT FOR CONSTRUCTION

74 Carlton Crescent
Summer Hill

Roof Plan

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A03.003 - ROOF PLAN

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Material Key

1. Performance vision glass/ Metal window reveal/ Metal louvres
2. Metal planter box to landscape architect's detail
3. Slim profile brick
4. Off-form Concrete
5. Metal framed clear DGU vision glass
6. Metal Gate
7. Performance vision glass/Metal window reveal/ glass louvres
8. Metal frame and steel balustrade screen
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10. Timber batten screen

DEVELOPMENT APPLICATION	NOT FOR CONSTRUCTION

Revision summary:
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74 Carlton Crescent
Summer Hill

North Elevation

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A07.000 - NORTH ELEVATION

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DEVELOPMENT APPLICATION | NOT FOR CONSTRUCTION

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-Powerline setback on L02 to Carlton Cresent

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A	07.12.18	For Development Application	JC	WG

74 Carlton Crescent
Summer Hill

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West Elevation

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A07.001 - WEST ELEVATION

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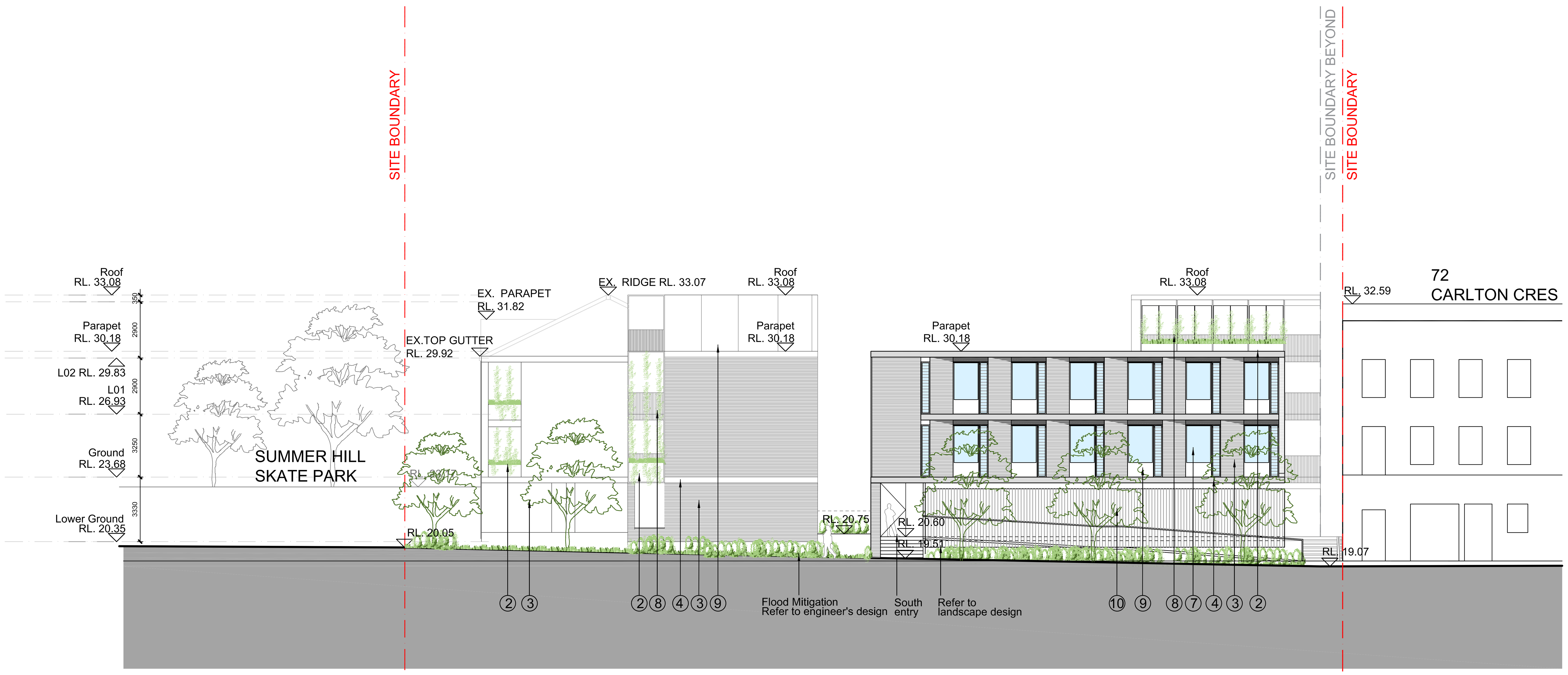

Material Key

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2. Metal planter box to landscape architect's detail
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4. Off-form Concrete
5. Metal framed clear DGU vision glass
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DEVELOPMENT APPLICATION | NOT FOR CONSTRUCTION

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-Powerline setback on L02 to Carlton Cresent

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A	07.12.18	For Development Application	JC	WG

74 Carlton Crescent Summer Hill

South Elevation

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A07.002 - SOUTH ELEVATION

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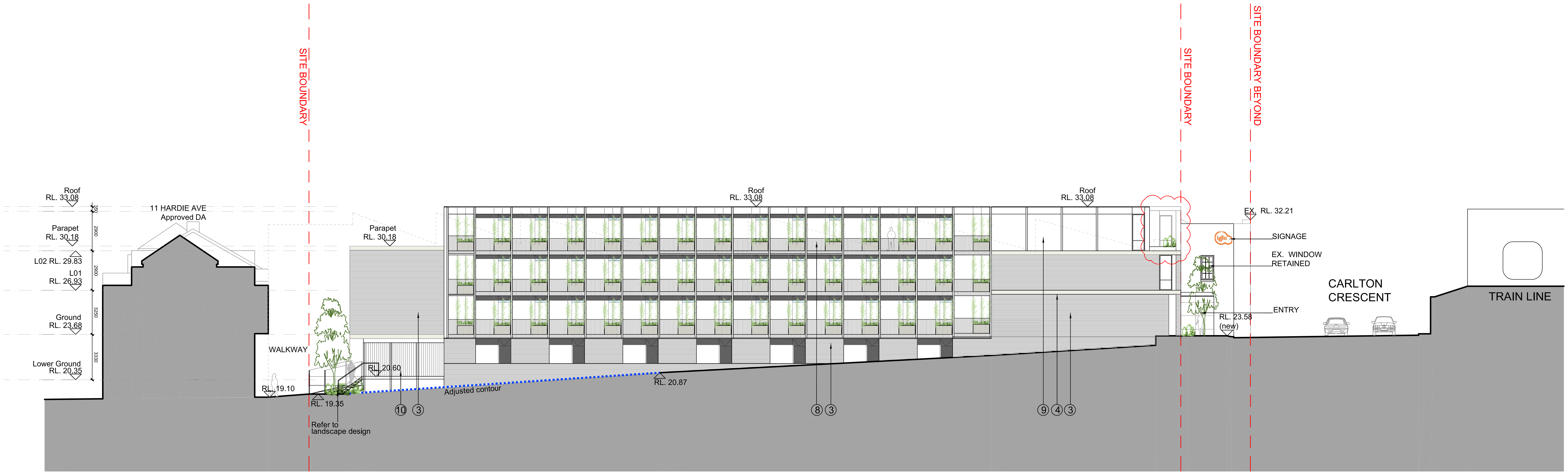

Material Key

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3. Slim profile brick
4. Off-form Concrete
5. Metal framed clear DGU vision glass
6. Metal Gate
7. Performance vision glass/Metal window reveal/ glass louvres
8. Metal frame and steel balustrade screen
9. Metal panel
10. Timber batten screen

DEVELOPMENT APPLICATION | NOT FOR CONSTRUCTION

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74 Carlton Crescent
Summer Hill

East Elevation

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A07.003 - EAST ELEVATION

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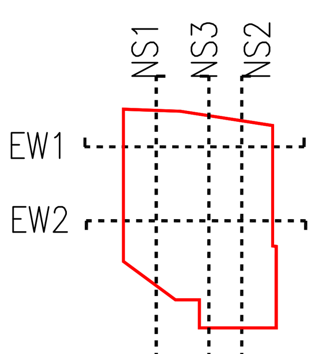

Material Key

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5. Metal framed clear DGU vision glass
6. Metal Gate
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8. Metal frame and steel balustrade screen
9. Metal panel
10. Timber batten screen

DEVELOPMENT APPLICATION | NOT FOR CONSTRUCTION

Revision summary:

-Powerline setback on L02 to Carlton Cresent

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C	24.06.19	For Development Application	JC	HS
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74 Carlton Crescent
Summer Hill

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NS Long Section 01

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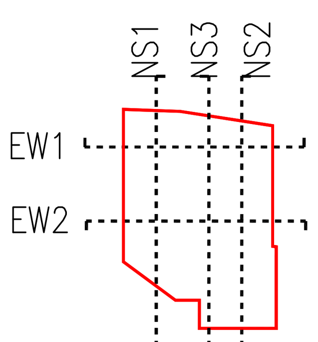

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DEVELOPMENT APPLICATION | NOT FOR CONSTRUCTION

Revision summary:
-Powerline setback on L02 to Carlton Cresent

Revision	Date	Description	Initial	Checked
C	24.06.19	For Development Application	JC	HS
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A	07.12.18	For Development Application	JC	WG

74 Carlton Crescent
Summer Hill

NS Long Section 02

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A08.001 - NS LONG SECTION 02

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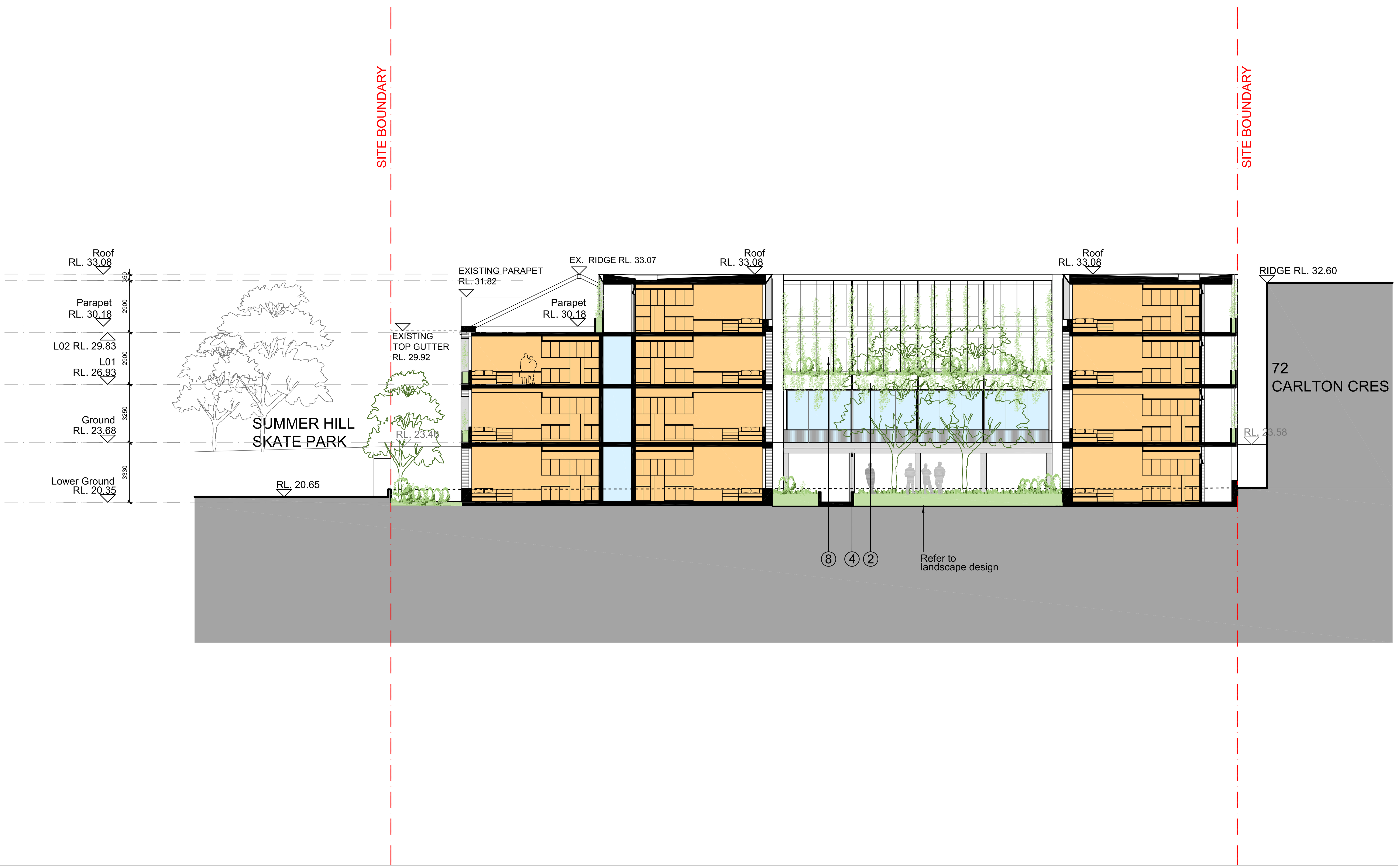

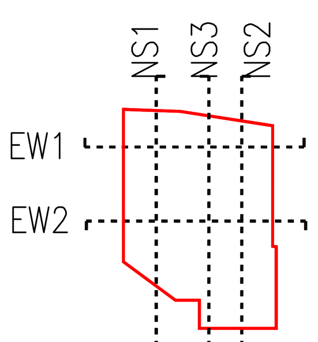

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DEVELOPMENT APPLICATION	NOT FOR CONSTRUCTION

Revision summary:

-Powerline setback on L02 to Carlton Cresent

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A	07.12.18	For Development Application	JC	WG

74 Carlton Crescent
Summer Hill

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EW Cross Section 01

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Drawing No.	[Revision]

A08.002 - EW CROSS SECTION 01

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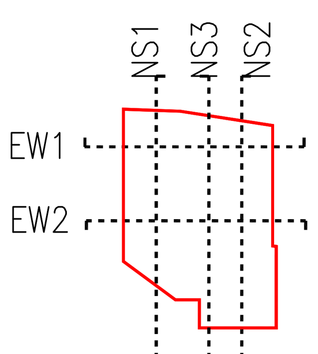

Material Key

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DEVELOPMENT APPLICATION	NOT FOR CONSTRUCTION

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74 Carlton Crescent Summer Hill

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EW Cross Section 02

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Drawing No.	[Revision]

A08.003 - EW CROSS SECTION 02

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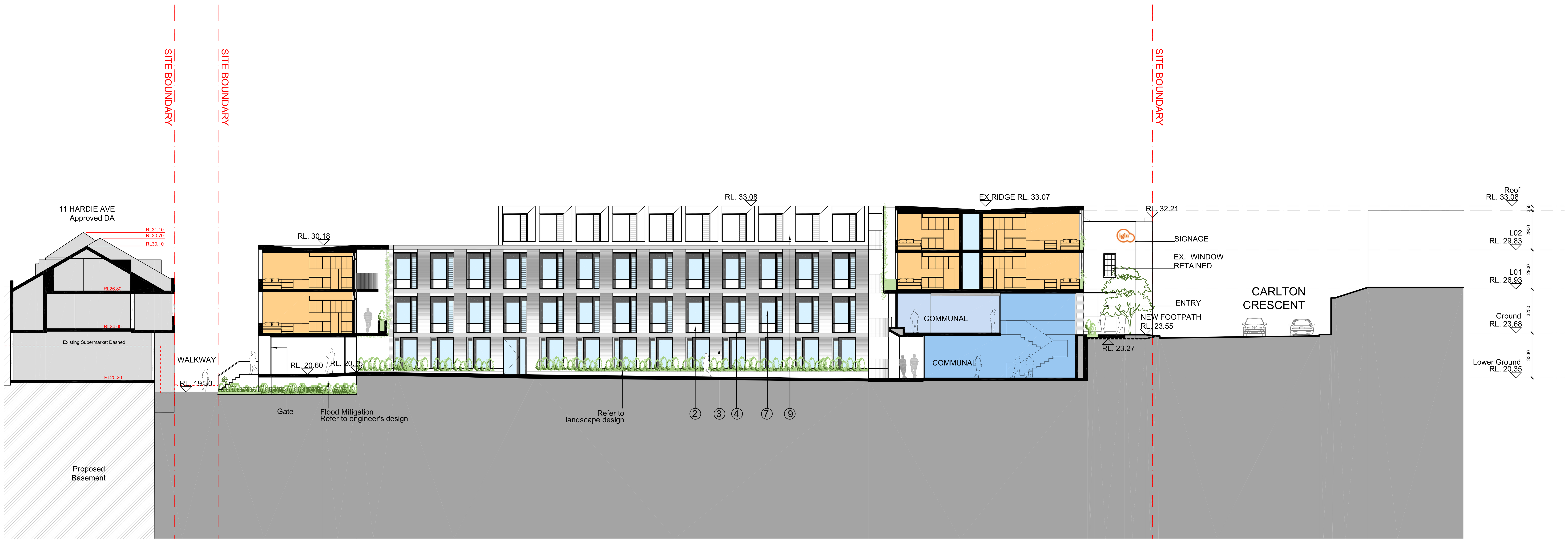

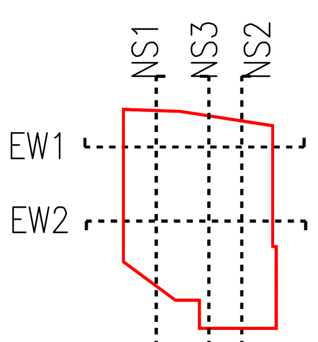

DEVELOPMENT APPLICATION | NOT FOR CONSTRUCTION

Material Key
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74 Carlton Crescent
Summer Hill

NS Long Section 03

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Drawing No. [Revision]

A08.004 - NS LONG SECTION 03

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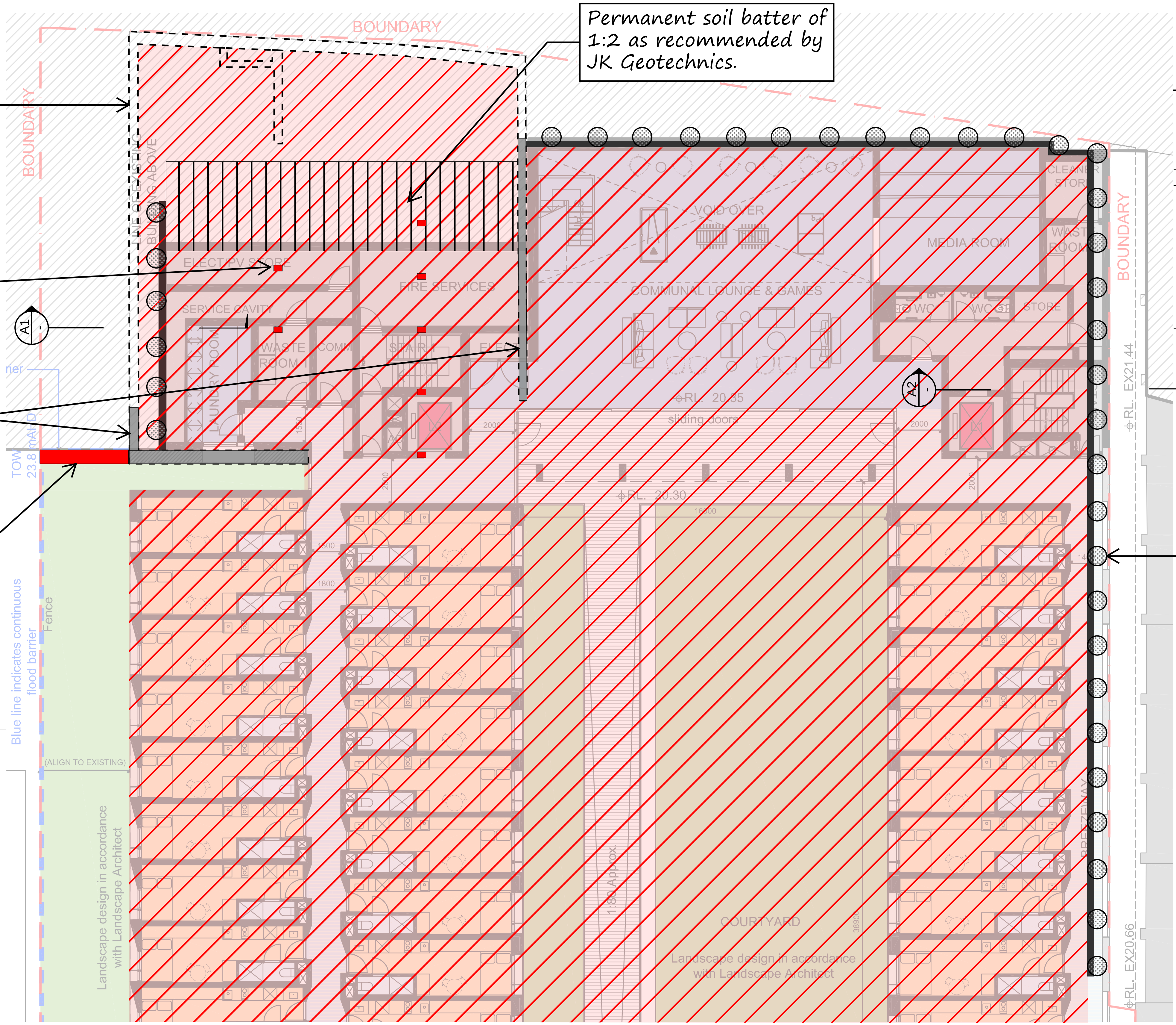
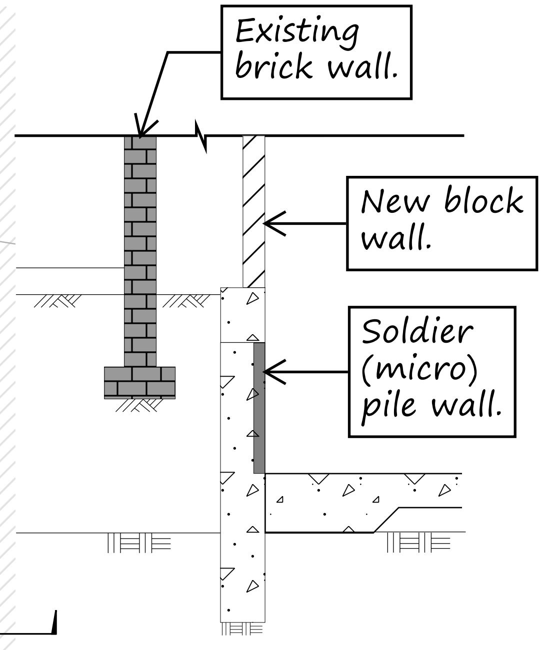
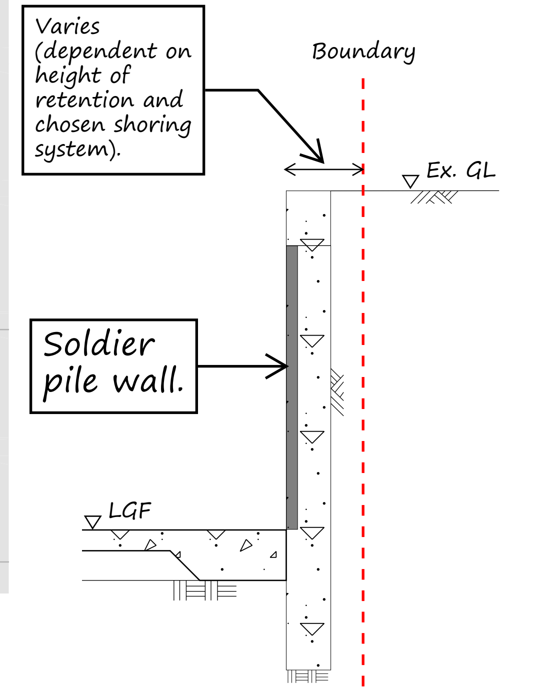
Appendix B

Proposed Construction Methodology





Section A1



Section A2

N.B. Alternative shoring solutions may be adopted for reduced retained heights, e.g. reinforced block wall or propped micro-piles. Both of these solutions reduce the required structural width when compared to a soldier pile solution.

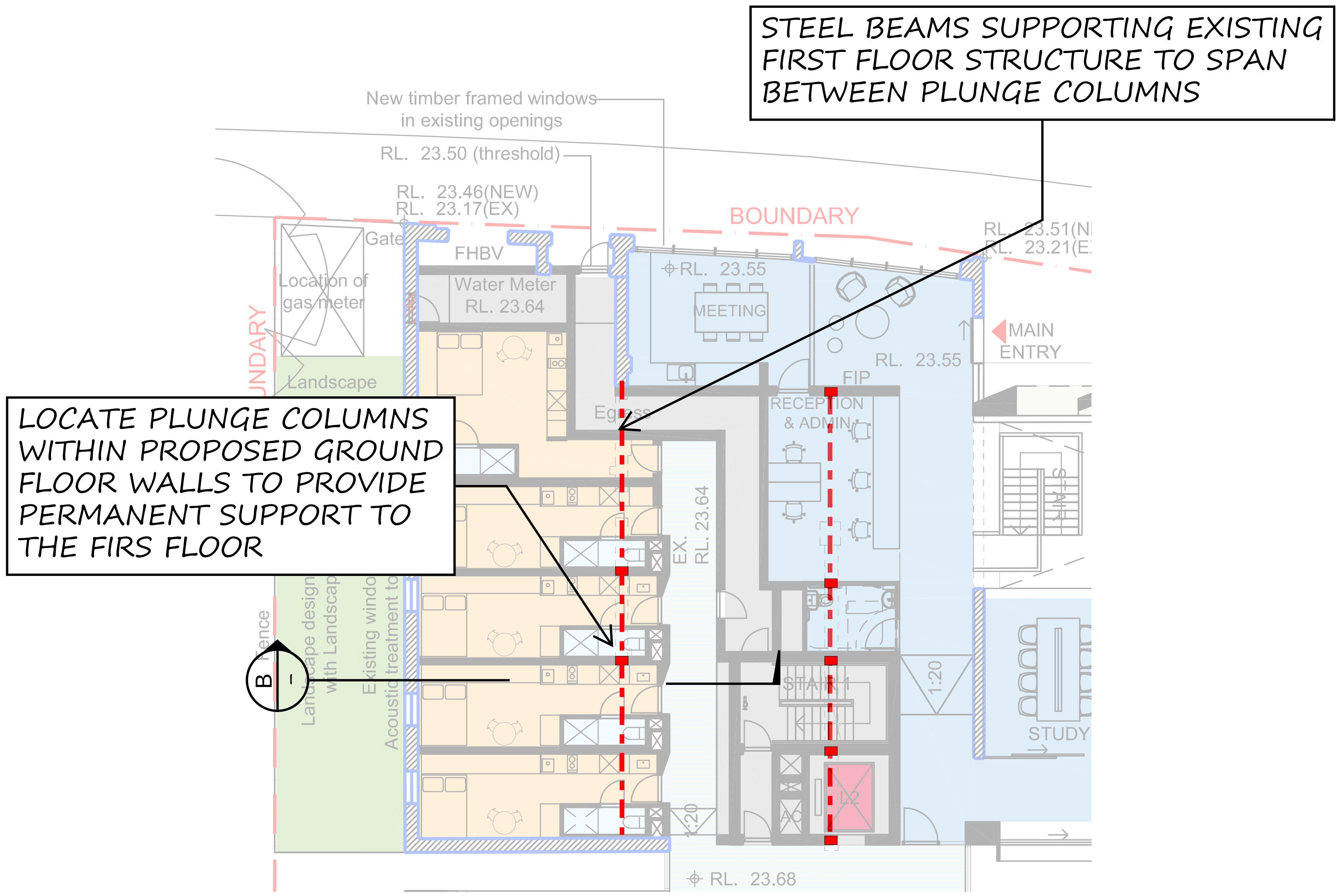
Suggested Construction Method*:

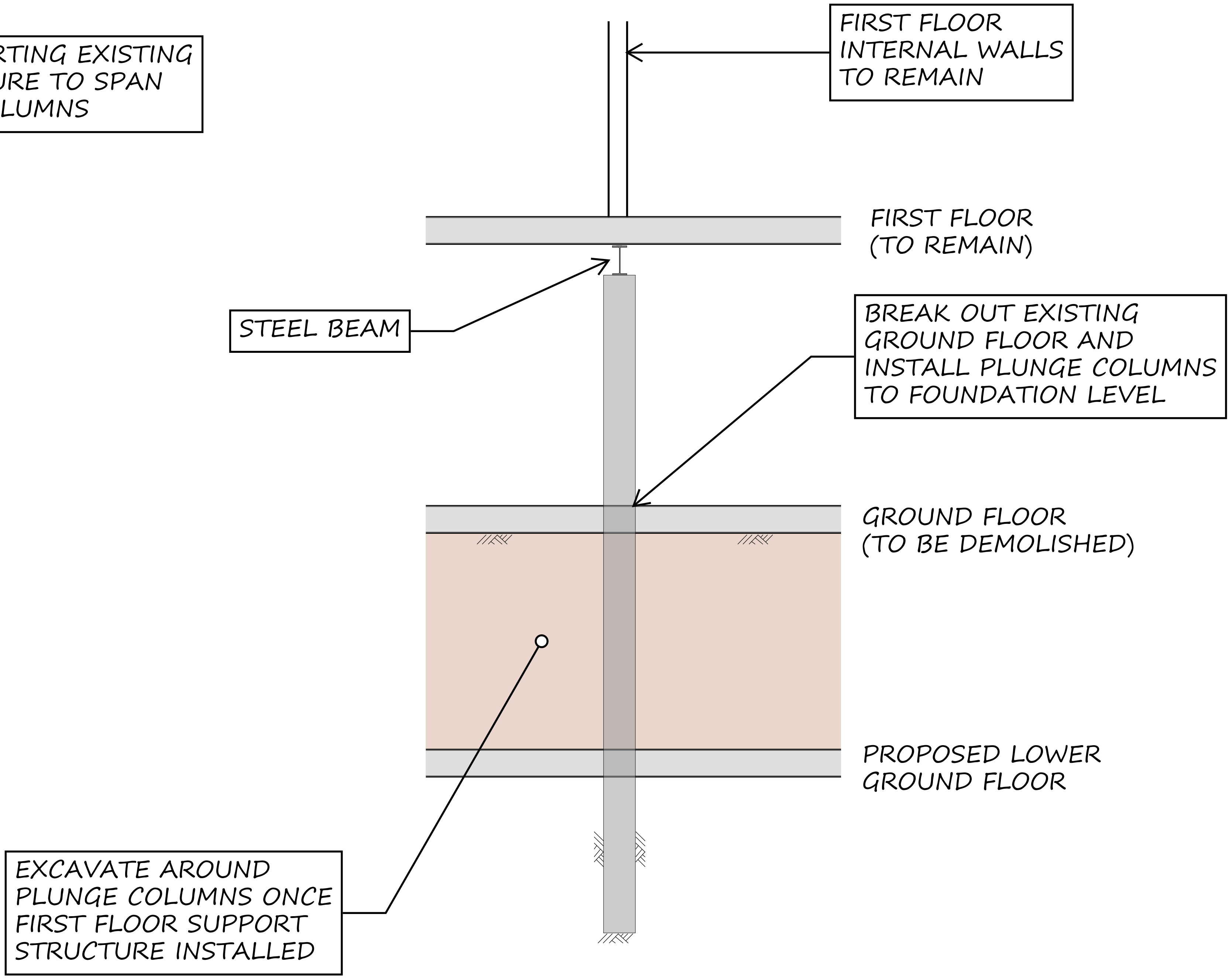
1) Demolish existing building at 74 Carlton Crescent.
2) Install soldier pile wall at No. 74 (extent to be confirmed by geotechnical engineer and proposed levels).
3) Install plunge columns at No. 75.
4) Install steel beams to support existing first floor at No. 75.
5) Underpin existing brick footings at 75 Carlton Crescent (proposed extent shown on plan) using a 'hit and miss' methodology.
6) Install soldier pile wall on western side of No. 75.
7) Demolish and excavate to required levels.
8) Construct proposed structure at No. 74 and 75 Carlton Crescent. Steel supporting the first floor may be removed as required once permanent support is provided to the slab.

*The final construction methodology should address the issues raised in Sections 3.4.1 and 3.4.2 of the Construction Methodology Report relating to works adjacent to Sydney Trains assets.

SHORING PLAN

TTW Taylor Thomson Whitting





SECTION B

Suggested Construction Method*:

1) Demolish existing building at 74 Carlton Crescent.
2) Install soldier pile wall at No. 74 (extent to be confirmed by geotechnical engineer and proposed levels).
3) Install plunge columns at No. 75.
4) Install steel beams to support existing first floor at No. 75.
5) Underpin existing brick footings at 75 Carlton Crescent (proposed extent shown on plan) using a 'hit and miss' methodology.
6) Install soldier pile wall on western side of No. 75.
7) Demolish and excavate to required levels.
8) Construct proposed structure at No. 74 and 75 Carlton Crescent. Steel supporting the first floor may be removed as required once permanent support is provided to the slab.

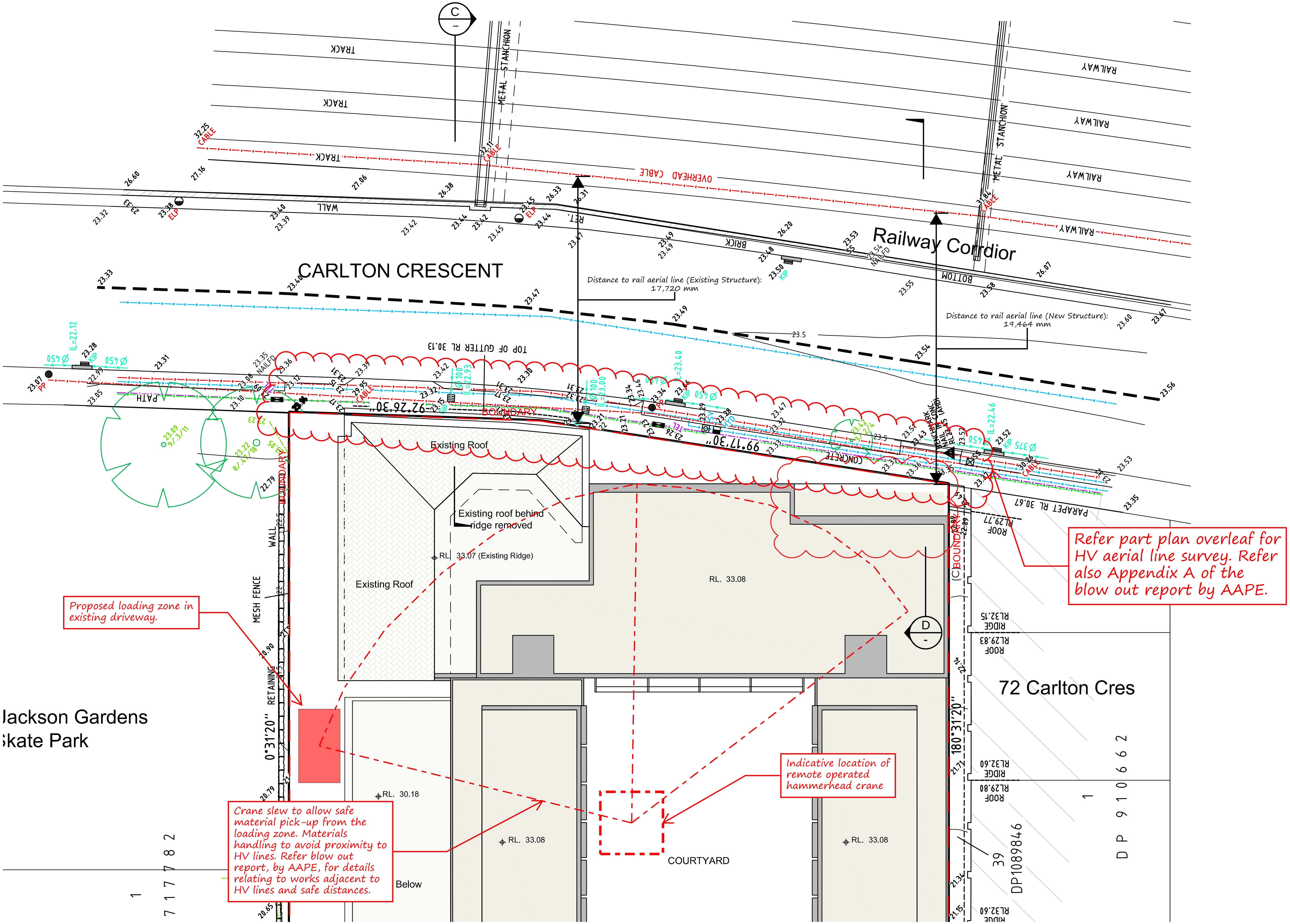
*The final construction methodology should address the issues raised in Sections 3.4.1 and 3.4.2 of the Construction Methodology Report relating to works adjacent to Sydney Trains assets.

FIRST FLOOR RETENTION

Taylor Thomson Whitting

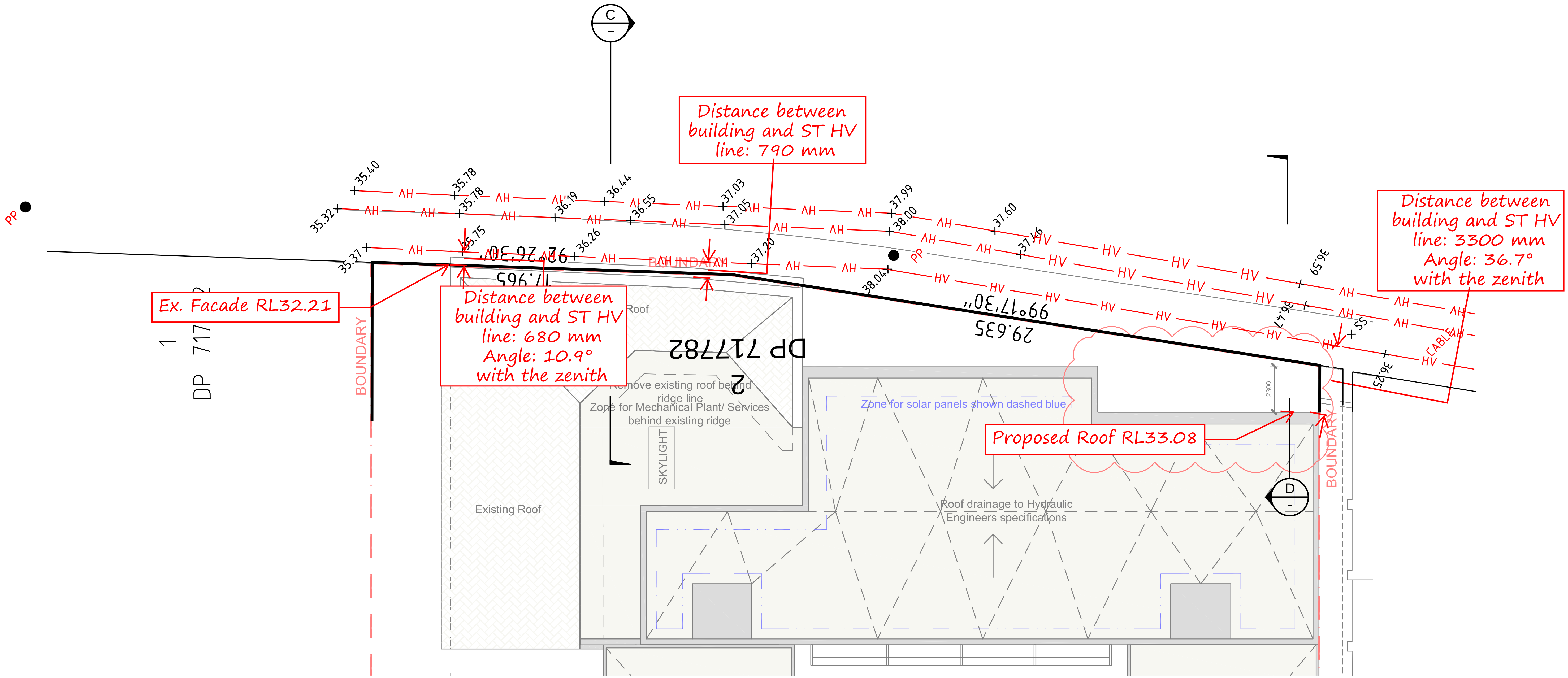
Appendix C

Rail Corridor Assessment Drawings



SURVEY PLAN OF PROPOSED DEVELOPMENT

1:250@A3



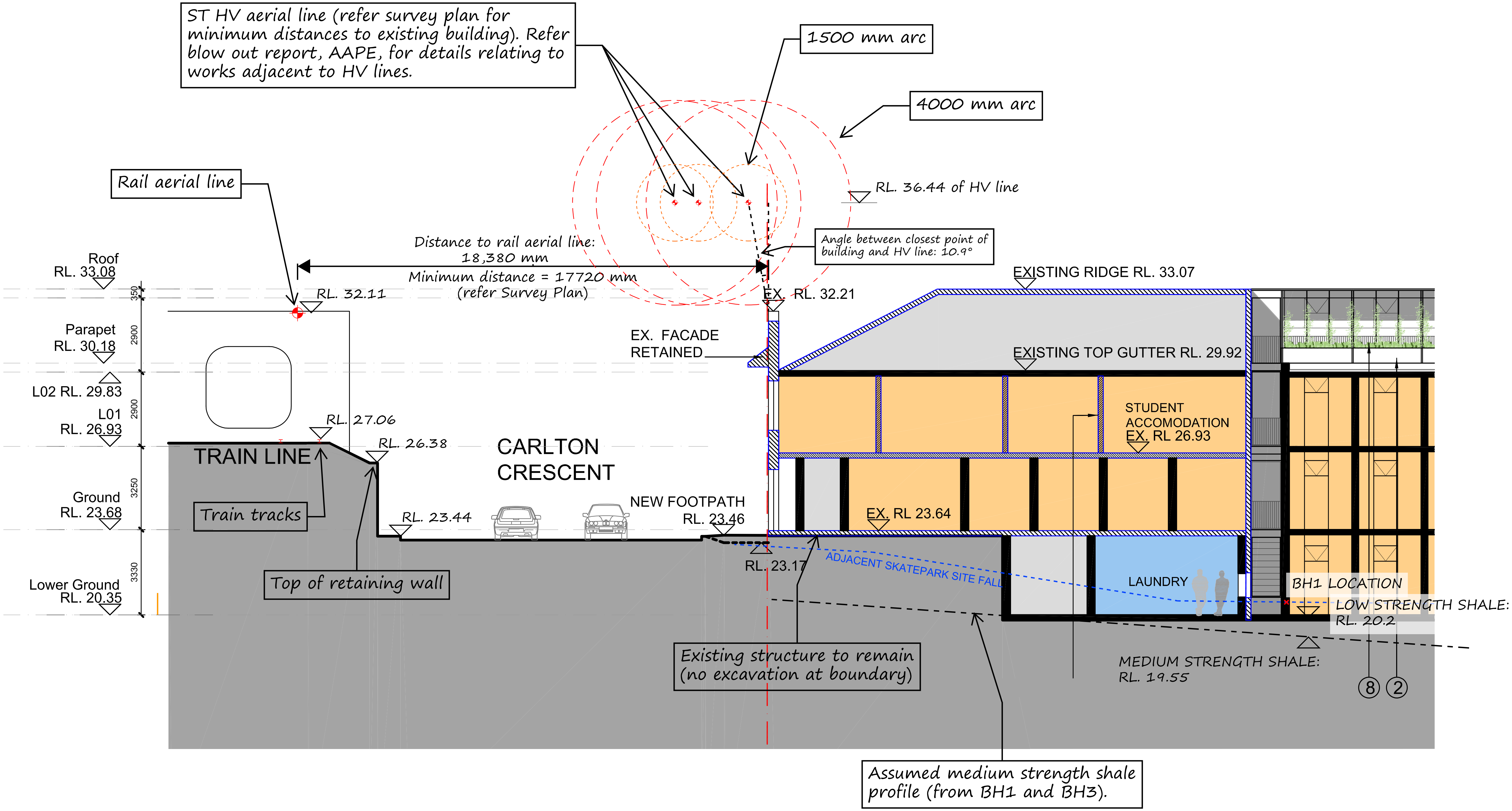
SURVEY PLAN OF PROPOSED DEVELOPMENT (HV AERIAL PART PLAN)

1:200@A3

N.B. distances noted are horiztonal distances
HV - High Voltage Line
PP - Power pole

TTW Taylor Thomson Whitting

N.B. refer also to Appendix A of the blow out report by AAPE.



SECTION C

1:150@A3

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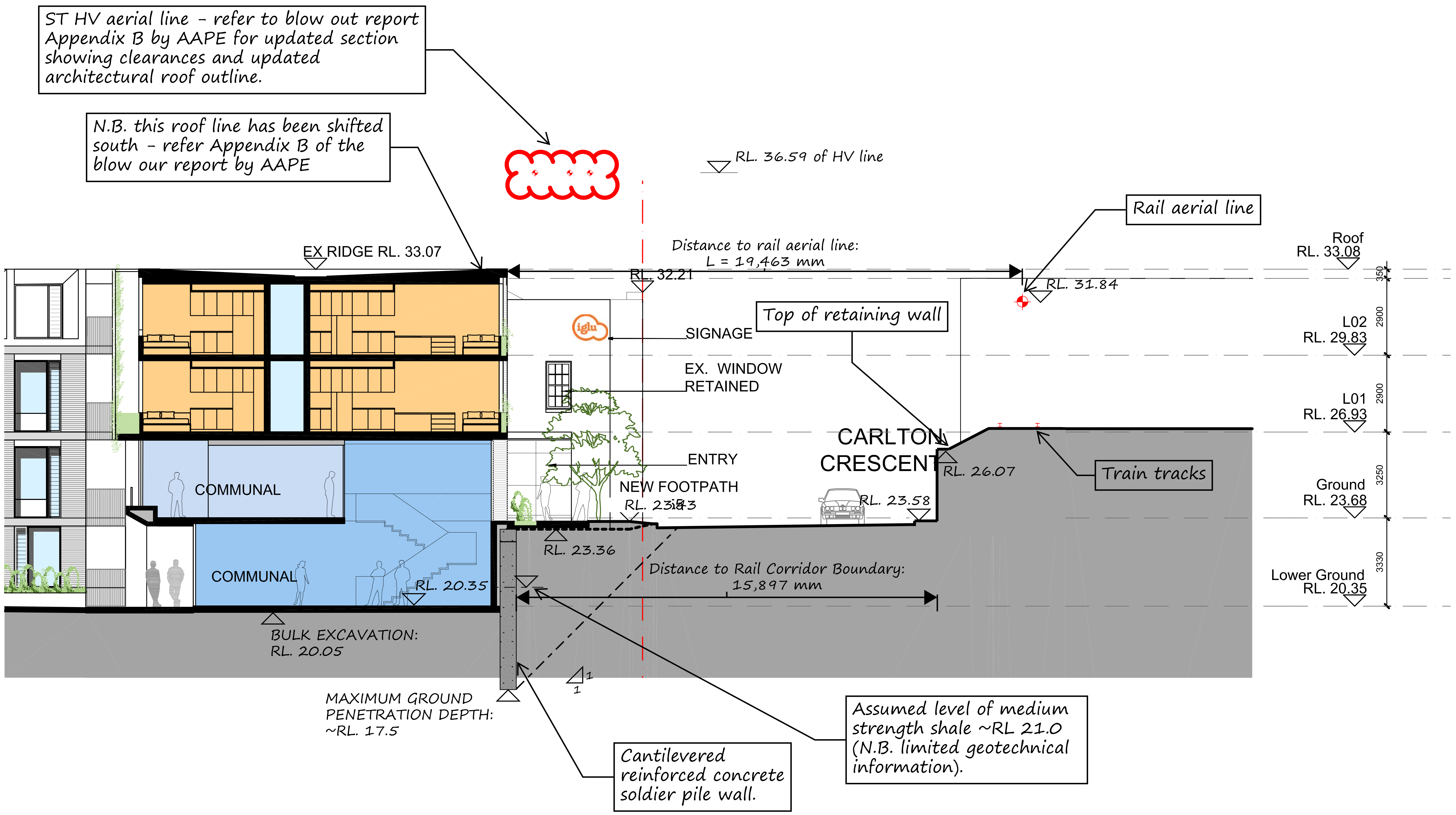

SECTION D

1:150@A3

Taylor Thomson Whitting