

Metro Corridor Impact Statement

**201 Elizabeth St, Sydney
Stage 1 DA**

Prepared for DEXUS Property Group / January 2017

151162

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1.0 Executive Summary

As requested by DEXUS Property Group, Taylor Thomson Whitting (TTW) have contacted the relevant authorities in regards to the proposed development at 201 Elizabeth St, Sydney and the potential impacts on the interim rail corridor, including the CBD Rail Line, CBD Metro Line, Sydney Metro and Sydney Metro Southwest, in accordance with Part 3, Division 15, Subdivision 2 of the SEPP (Infrastructure) 2007.

The proposed development located at 201 Elizabeth St, Sydney is adjacent to the proposed Pitt Street Station for the Sydney Metro.

The preliminary review and assessment shows that:

- The proposed development will not affect the CBD Rail Line or CBD Metro projects.
- Ongoing correspondence with Sydney Trains will be required to understand the potential impacts on the future rail projects of Sydney Metro and Sydney Metro Southwest.
- Initial comments have indicated that the basement and foundations of the development will impact the proposed location of the Pitt Street Metro Station. Further analysis on the foundation design, shoring design and excavation methodology will be required to determine the extent of the impact.

2.0 Introduction

This report addresses the impacts that may be required to be considered for the proposed development at 201 Elizabeth St, Sydney in relation to the proposed future Sydney Metro Pitt St Station on Castlereagh St and Metro rail corridor adjacent to the site.

The 201 Elizabeth St development comprises several zones including Residential, Commercial, Retail and Hotel operations.

The new Sydney Metro is proposed to run along the Western boundary of the site below Pitt St and Castlereagh St with the new Sydney Metro Pitt St Station platform proposed alongside the Western boundary.

Taylor Thomson Whitting corresponded with Transport for NSW (TfNSW) and Mecone Consulting in July 2016 to discuss the proposed development and the key issues relating to the future metro expansion. The correspondence suggested that significant co-ordination and consideration would be required due to the close proximity of the station boxes and tunnels.

This report highlights the interface with the proposed infrastructure and outlines the key issues which will need to be considered as part of the design.

3.0 Infrastructure Coordination

3.1 Station Box

An indicative section showing the position of the proposed development and the Metro station cavern has been provided by Mecone (Figure 1). The proposed development involves the construction of four basement levels. The lowest basement will be at RL 8.65m. This will extend below the existing basement by approximately 4.1m.

It is assumed that excavations will extend below RL 8.65 to allow for slab and foundations. It is also assumed that the excavation will extend to the site boundary. This will result in the proposed development impacting on the metro station. Examples of potential impacts include stress redistribution and additional loading on the station cavern depending on the foundation design and methodologies selected for the excavation of the Elizabeth St site.

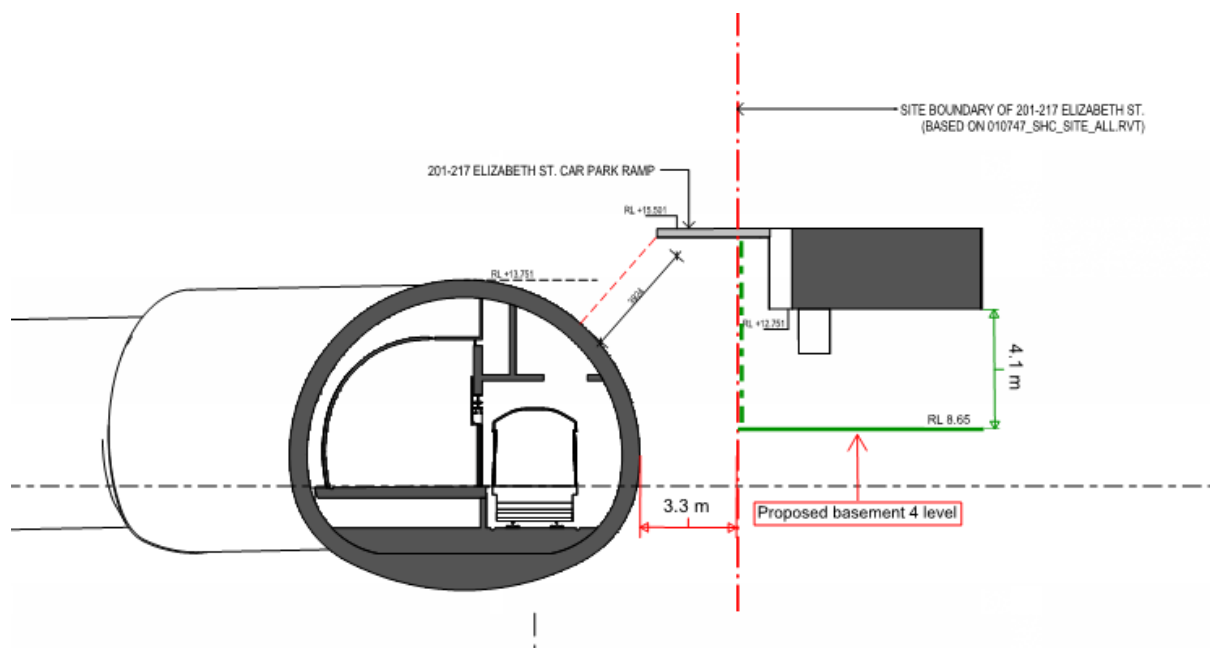


Figure 1: Indicative cross section through proposed development and Metro station cavern

Further consideration and analysis will be required as the design for 201 Elizabeth St is developed.

3.2 Key Issues

The correspondence held with TfNSW and Mecone Consulting in regards to this development and other similar developments in the CBD has highlighted the following key issues which would need to be addressed as part of the development:

- a) Foundation forces
- b) Vibrations from rail tunnel construction
- c) Vibrations from the rail corridor
- d) Electrolysis, stray currents, Electromagnetic fields
- e) Noise
- f) Maintenance and access

It is anticipated that these aspects of the design will be addressed as broadly outlined below.

- a) **Foundation Forces.** The proposed foundation scheme for the buildings will need to take into account the proximity of metro tunnels and station caverns. As the design develops, rock modelling could be used to demonstrate the impact that the building will have on the future Metro.
- b) **Rail Tunnel Construction Vibrations.** The rail tunnel will not exist during construction of the new building. During construction of the rail tunnel, the building can be assessed for any ground borne vibrations.
- c) **Vibrations from the rail corridor.** If the building is not proposed to be isolated as part of the overall design, it will be reliant on Sydney Metro isolating their own system.
- d) **Electrolysis and stray currents.** The use of DC can have an impact on buried structures and may lead to an increased risk of corrosion. The provisions for this will be required to be considered during the design process.
- e) **Noise.** Due to the depth of the tunnel, noise is unlikely to be an issue for the new structure. Low frequency sound will be required to be considered as part of the design in a similar means to the vibration assessment.
- f) **Maintenance and Access.** Due to the proximity to the tunnel, access for maintenance and emergency works to the tunnel may need to be provided. Although the depth of the lines would largely prohibit the use of any maintenance from ground level, the zone around the cavern is to be kept clear as part of the design.

4.0 Conclusions

Based on the design undertaken at present and the discussions held with TfNSW and Mecone Consulting, the design team will need to understand the design constraints associated with the future provisions for the Metro tunnels. Our preliminary investigation suggests that the construction of the building could impact on the future transport infrastructure. However, through further design and analysis the impacts of the development in relation to the following issues can be mitigated:

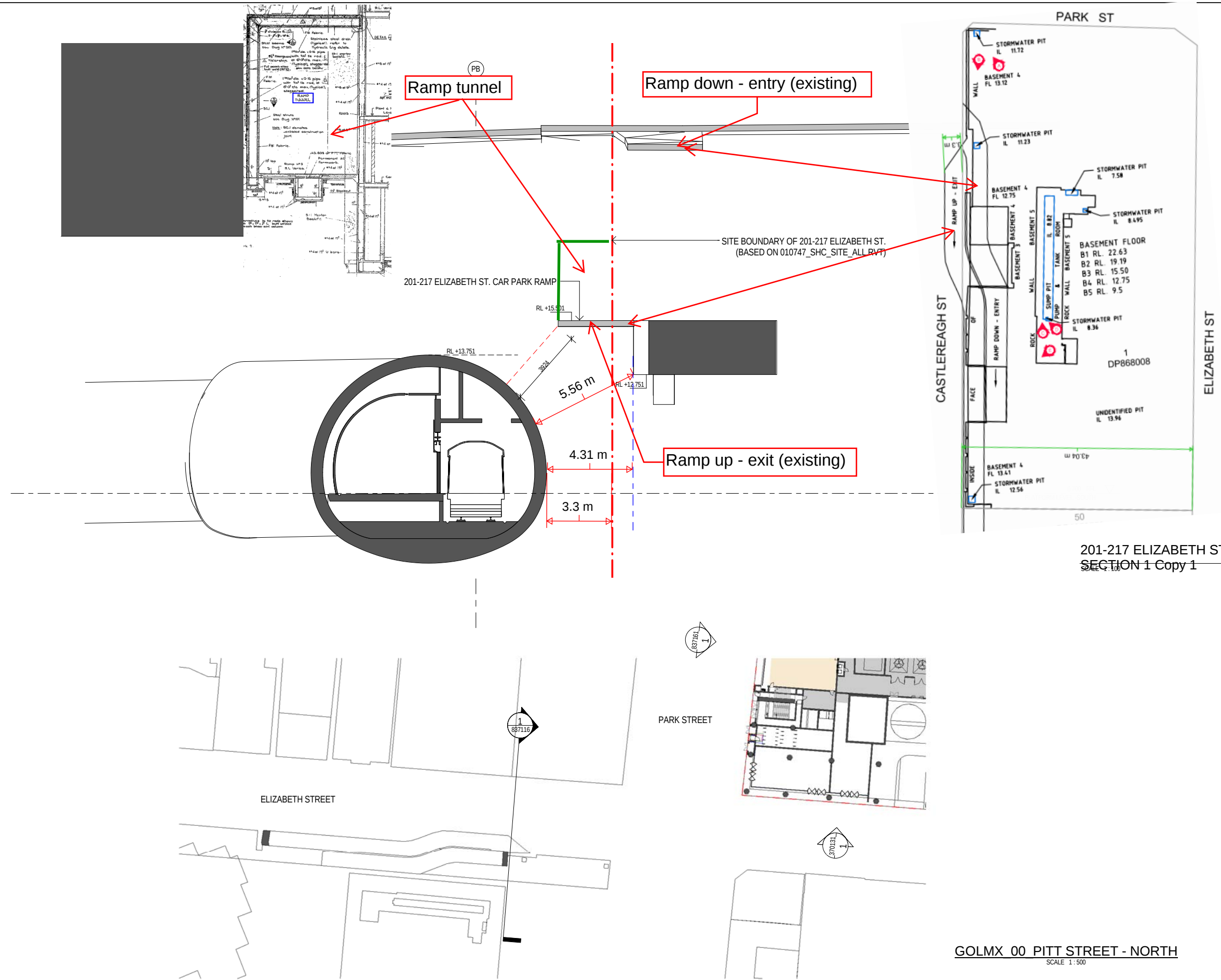
- Foundation forces
- Rail corridor construction vibrations
- Vibrations from the rail corridor
- Electrolysis, stray currents, Electromagnetic fields
- Noise
- Maintenance and access

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Appendix A

TfNSW Sketches

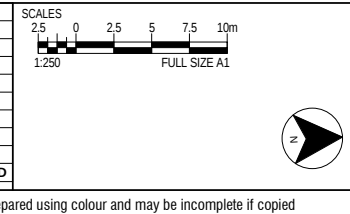
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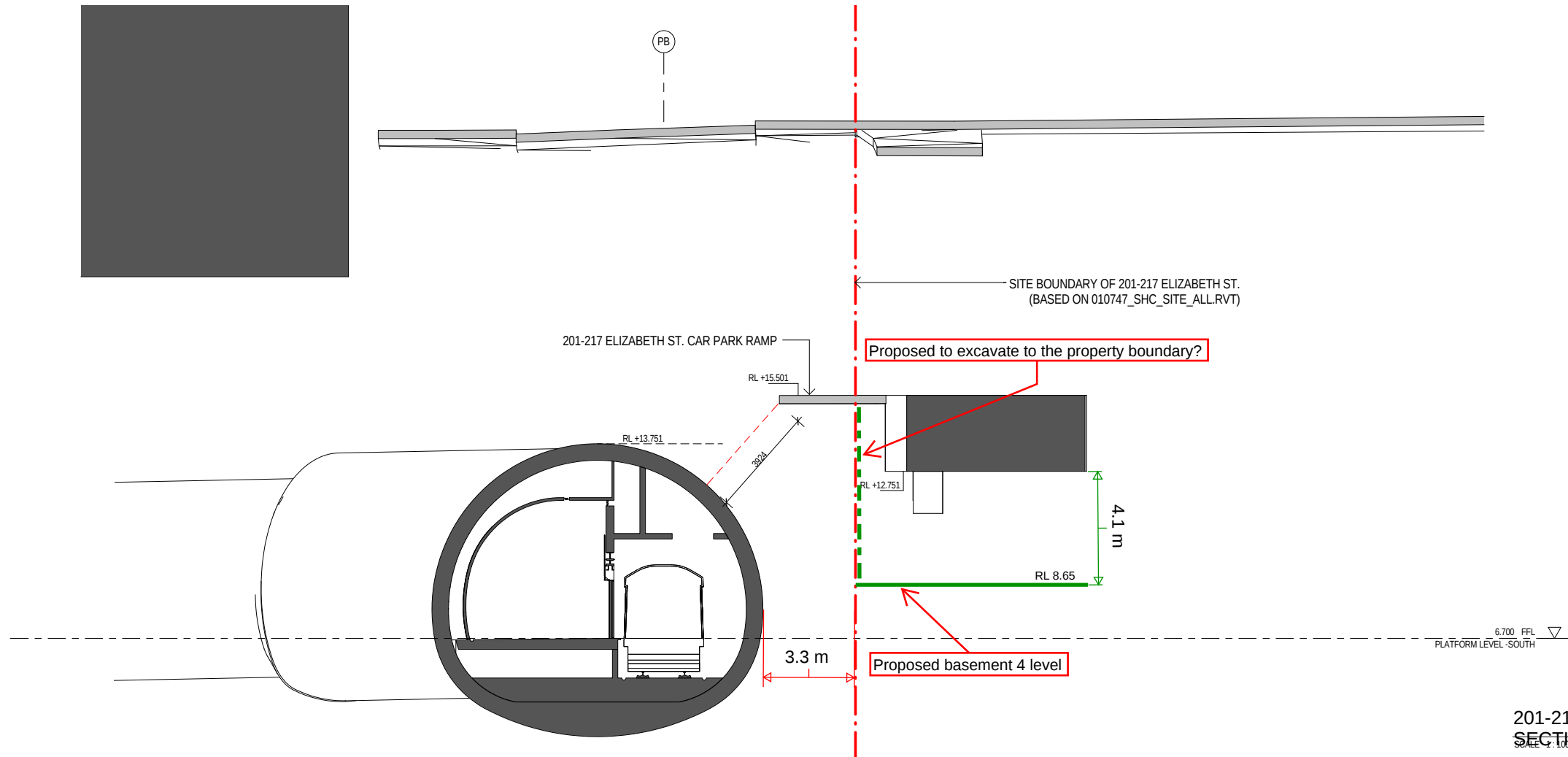
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PITT STREET STATION
201-217 ELIZABETH ST. CAR PARK RAMP PROXIMITY

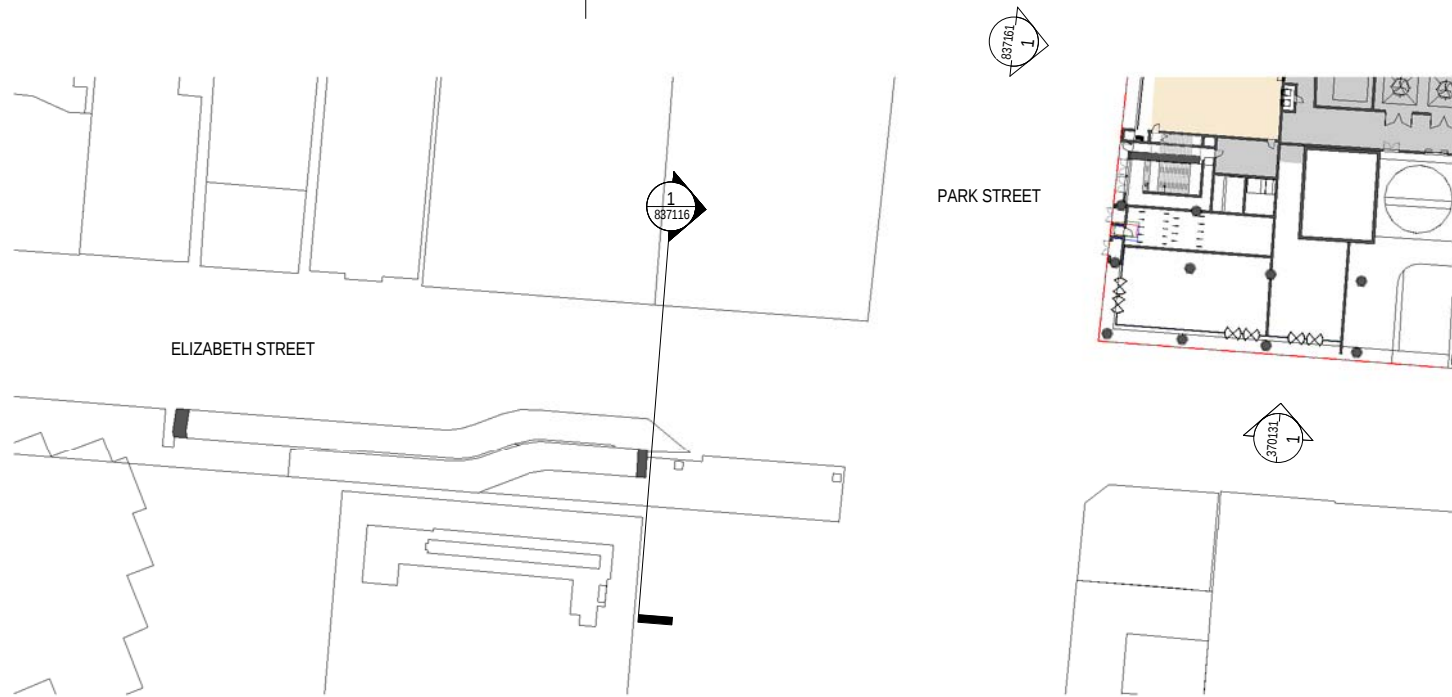
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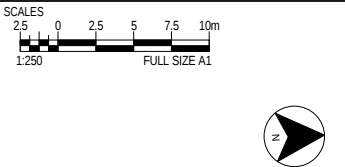
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