

Attachment A14

Rail Corridor Impact Report – Commercial Scheme

Stockland

Piccadilly Redevelopment

Rail Corridor Impact Assessment – Commercial Scheme

Reference:

| 29 July 2025

This report takes into account the particular instructions and requirements of our client. It is not intended for and should not be relied upon by any third party and no responsibility is undertaken to any third party.

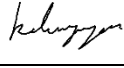
Job number 295375

Arup Australia Pty Ltd | ABN 76 625 912 665

Arup Australia Pty Ltd
Level 5
151 Clarence Street
Sydney
NSW, 2000
Australia
arup.com

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Appendix A

Rail Interaction and Shoring Drawings

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1. Introduction

This rail corridor impact assessment report accompanies a planning proposal seeking to amend the Sydney Local Environmental Plan 2012 (the LEP) relevant to the land known as ‘Stockland Piccadilly Complex’ located at 133-145 Castlereagh Street, Sydney (the site) and legally described as Lot 10 in DP828419.

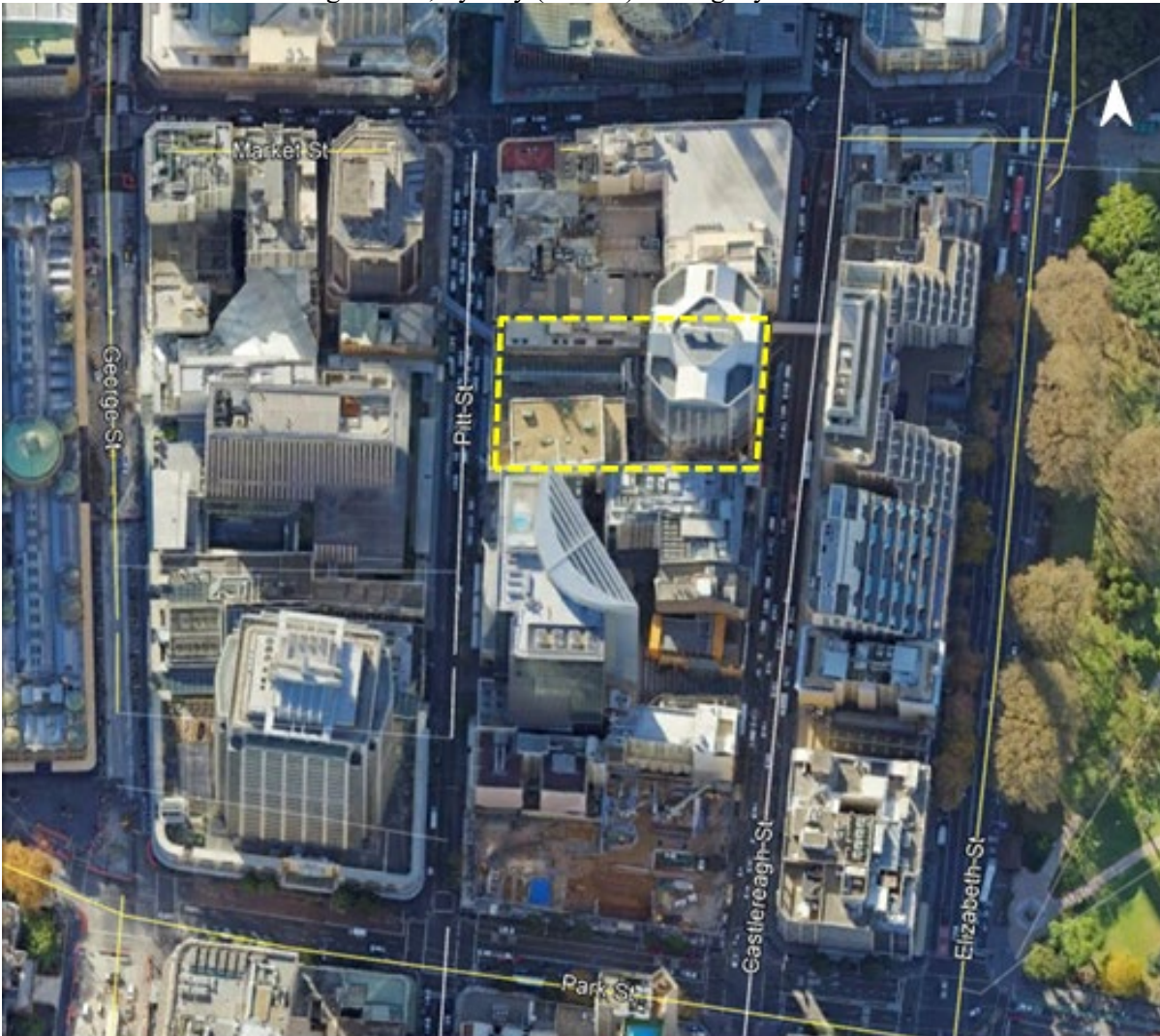


Figure 1 133-145 Castlereagh Street, Sydney - Stockland Piccadilly Complex

The planning proposal seeks to prescribe site specific LEP provisions, including amending the floor space ratio development standard, as well as concurrently preparing a site specific Development Control Plan (DCP) to guide the future development. The DCP will establish building envelopes for the site, as well as other key assessment criteria including the establishment of a through-site link and parking and vehicular access.

The intended outcome of the proposed amendments to the LEP and DCP is to facilitate the redevelopment of the site for either an all commercial development or a mixed-use development, together with an activated ground plane, basement car parking and associated facilities. The proposal will retain the structure of the majority of the existing commercial tower as well as the basement structure. The proposal facilitates additional commercial floor space capacity in Central Sydney while also delivering improved public domain outcomes. Such outcomes will include a rectified Solar Access Plane breach to Hyde Park, a northerly aligned direct through-site link between Pitt and Castlereagh Street and enhanced pedestrian amenity and activation at the ground plane.

2. Project overview

2.1 Location

The site sits within the Sydney CBD and includes the adjacent 133 Castlereagh and 220 Pitt Street properties on the block bounded by Pitt, Market, Castlereagh, and Park Street. The site is accessible from through Pitt (West) and Castlereagh (East) with 196-204 Pitt and 65-77 Market Street to the Northern boundary and 226-230 Pitt and 147-153 Castlereagh Street to the South.

2.2 Existing Buildings

The site currently comprises three existing buildings known as the ‘Piccadilly Complex’ completed in 1991 which has been the subject of progressive improvements to upgrade selected elements within the building. The buildings currently occupying the site are detailed in Table 1.

Table 1 Description of Existing Buildings

Building	Description
222 Pitt Street (Piccadilly Court)	Comprises a 14-storey office building completed in 1975 and first refurbished in 1991 with frontage to Pitt Street.
210 Pitt Street (Piccadilly Shopping Centre)	Comprises a 3-storey retail building and entry to the Wesley Mission facilities. A footbridge over Pitt Street connects the building to 55 Market Street to the west.
133 Castlereagh Street (Piccadilly Tower)	Comprises a 31-storey commercial building comprising office floor space and end of trip facilities. A footbridge over Castlereagh Street connects the building to the Sheraton On the Park located to the east of the site.
Basement	A 5-level shared basement extends across the footprints of Piccadilly Tower and Shopping Centre with a single level basement below 222 Pitt Street. Basement use comprises of the Wesley Mission facilities (in the upper basement levels) and parking levels (in the lower levels). Entry and exits are via ramps on Castlereagh St. Wesley Mission facilities include the Wesley Church, Lyceum, Wesley Theatre and supporting office space.

2.3 Scope of proposed development

The proposed development consists of:

- 5 levels of shared basement for loading dock, parking, retail, Wesley Mission facilities, end of trip facilities and substation
- 44 level commercial tower (133 Castlereagh St) composed of:
- 14 level commercial tower (222 Pitt St) including Wesley offices
- A through site link at ground floor aligned East-West between Pitt and Castlereagh Streets with Retail tenancies



Figure 2 Reference Design Ground Floor Plan



Figure 3 Reference Design Typical Commercial Floor Plan

The scope of the development involves:

- Retaining and reuse of the existing basement (up to ground floor) and the 133 Castlereagh Street tower structure including existing foundations, columns, floor framing (including ramps) and cores.
- Demolition of the shopping centre arcade and 222 Pitt Street, with a new 14 storey commercial building over the demolished footprint.
- Stripping of the 133 Castlereagh Street tower back to primary structure then extending the commercial floorplate towards the west over the new 222 Pitt St building, as well as extending vertically up by 12

floors over existing levels. New columns to support 222P and enlarged 133C floorplate to extend and be founded under Basement 5 level.

- A new satellite core within the existing footprint of 222 Pitt Street to provide lateral support to both new 222 Pitt Street building and extended portion of 133 Castlereagh to be locally excavated and founded at roughly RL13.5m
- Strengthening of existing foundations at Basement level 5 to enable the extension of the structure vertically.
- Improvements to the public domain, including removal of the parallel access ramp to Castlereagh Street and redeveloping the though site link between Pitt St and Castlereagh Street.

3. Ground Conditions

3.1 Site Geology

A geotechnical desktop assessment report has been prepared by Douglas and Partners (D&P), ref: 86990.00.R001 rev 3, dated November 2019. The D&P report is based on D&P investigations on sites in close proximity including neighbouring sites 194-204 Pitt Street and 65-77 Market Street which are located immediately to the north of the project site. Limited shallow bore hole information from these sites is available.

The site typically has 4-5 metres of soil/fill or weathered rock below the foot path level, followed by medium to high strength rock below

A summary of expected ground conditions from existing ground level as provided by DP is summarised in Table 2

Table 2: Expected ground profile from RL17.5, average existing slab level (Douglas Partners)

Geological Unit	Layer	Description
1	Fill	Fill – generally building rubble and gravelly sand up to 0.5m.
2	Weathered rock	Extremely low to low strength, extremely to slightly weathered sandstone over medium strength sandstone with very low strength bands to depths of 3 to 4m.
3	Sandstone	Medium to high strength sandstone, slightly weathered to fresh sandstone to depths of 6 to 7m over high strength, fresh sandstone with occasional medium strength bands.

A geological feature known as the Martin Place Joint Swarm passes through the site. The joint swarm zone comprises closely spaced steeply dipping joints in otherwise medium to high strength rock. Excavating vertical faces in this material may require a retention system or rock bolting to secure any potentially unstable rock wedges.

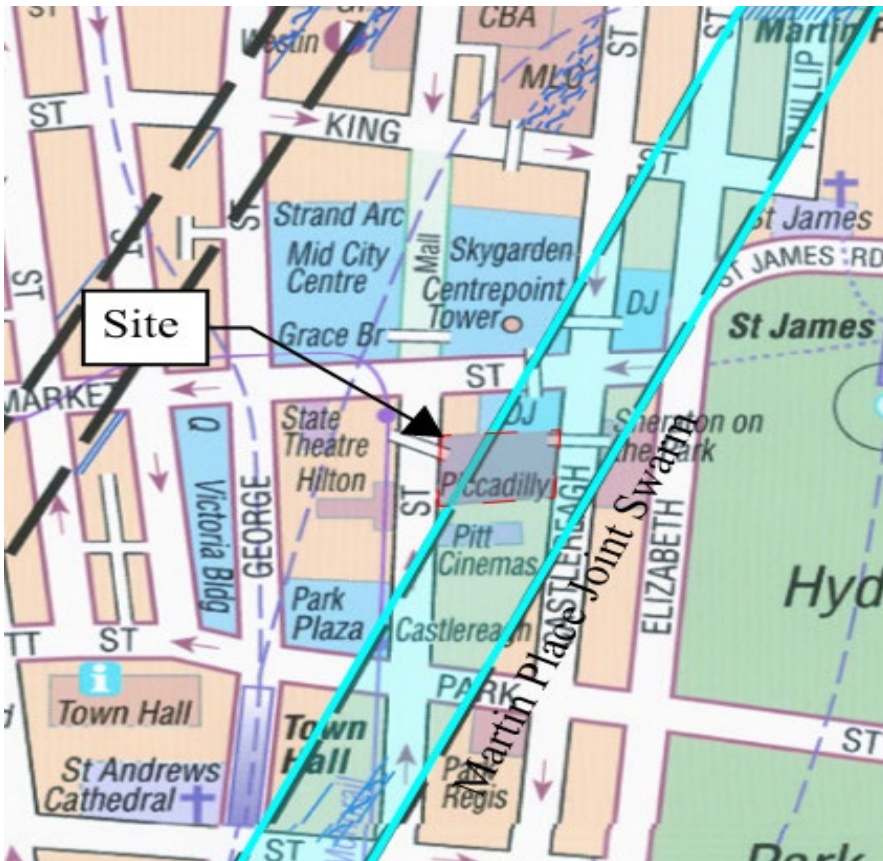


Figure 4 Site relative to the Martin Place Joint Swarm

At the 65-77 Market Street site, a clay seam in the bedrock was present in all bore holes. At the bore hole location nearest to the 133 Castlereagh site, the clay seam is 80mm thick and located at a depth of 5.55 m (RL3.9 m). The new foundations found below this level, however this seam may dip lower within the site potentially affecting foundation bearing.

Founding for the tower columns and cores is expected to otherwise be located in medium to high strength sandstone.

3.2 Site Topography

The site slopes upwards towards the East, rising approximately 3.1 m from Pitt Street (RL 19.5) to Castlereagh Street (RL 22.6m).

The majority of the site is currently excavated to RL 3.6 accommodating five basement levels. The Piccadilly Court area of the site is currently excavated to approximately RL16.8 accommodating a single basement level.

4. Excavation and Shoring

The proposed scheme relies on the reuse of the existing basement structure below ground including retention structures without the need for any further excavations at the site boundaries.

4.1 Existing Excavation and Retention

The current excavation and the existing retention systems were constructed prior to 1991 and any stress relief in the surrounding rock would have occurred before the tunnelling works and construction of the Sydney Metro tunnels. Below is a summary of the existing shoring systems on site that support the vertical excavated faces.

- Castlereagh and Pitt: Steel soldiers cast into top of rock level and restrained by temporarily ground anchors into the rock/soil until permanently propped by the basement slabs. Horizontal whaler beams are then used to span between these soldiers. Below B1, sandstone is assumed to be self-retaining and has been cut without additional retention. On the Castlereagh Street side, the parallel access ramp is on fill and the wall stem supporting Castlereagh Street cantilevers from the ramp base.
- Northern boundary: The existing footings under buildings to the north have been previously underpinned. No shoring is required along this face due to the neighbouring basement
- Southern Boundary (Western End): No retention has been assumed as current excavation level (RL16.8m) has been documented to be above the neighbouring basement level

4.2 Proposed Excavation and Retention

There is no additional excavation proposed along the existing site boundaries or adjacent the rail tunnels.

A new excavation is required to reach the base of the satellite core raft and column pad footings (at roughly RL 13.5m from existing RL 16.8m). The raft sits inboard of the southern and western boundaries and a buffer from the excavation will be kept to the neighbouring 226-230 Pitt Street Banking House and Pitt St avoiding any new retention.

A local excavation within the satellite core raft is required for 2 lift shafts to reach down to Parking Level 4 (RL 6.2m) providing lift access to the residential parking levels. The rock is expected to be of sufficient strength to not require additional retention.

5. Sydney Metro Rail Corridors and Interaction

The site is bounded by both tunnels of the Sydney Metro – City & Southwest metro line to the east and the west, with tunnels running underneath Castlereagh and Pitt Street respectively. The newly constructed Gadigal station is located to the south of the site on the same block.

For Sydney Metro tunnels, protection requirements will be accordance with the Sydney Metro Underground Corridor Protection Technical Guidelines.

5.1 Protection Reserves

The first and second reserves are defined in Sydney Metro Underground Corridor Protection Technical Guidelines as protection reserves around metro underground infrastructure.

The first reserve encompasses the ground that immediately surround the underground metro infrastructure that must not be encroached upon by any proposed development and its construction. The second reserve covers areas where proposed developments have the potential to adversely impact on the performance of the support elements of underground infrastructure, metro operations or the feasibility of planned metro infrastructure.

The guidelines define the dimensions of the first and second reserves around a tunnel as per Figure 5.

Transport for NSW Sydney Metro – Technical Services
Sydney Metro Underground Corridor Protection
Technical Guidelines

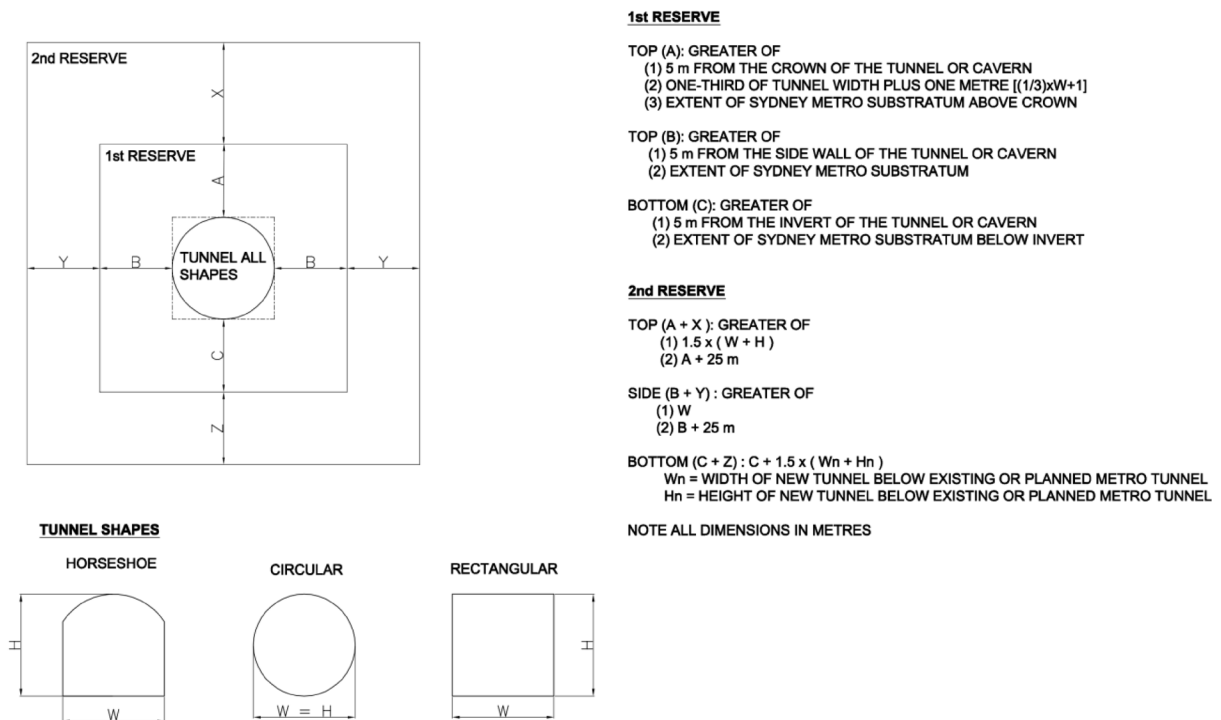


Figure 4.1 Protection reserves for metro tunnels and caverns

Figure 5: Rail protection reserves around tunnels to the Sydney Metro Underground Corridor Protection Technical Guidelines

The types of construction allowed in each reserve (subject to conditions) for Sydney Metro Tunnels have been listed in Table 3 below.

Table 3 Types of construction allowed within the Sydney Metro First and Second Reserves to the Sydney Metro Underground Corridor Protection Technical Guidelines

Types of construction	First Reserve	Second Reserve
Excavations for basements, footings	Not Allowed	Excavations less than 2.0m depth from surface level, assessment not required. Excavations greater than 2.0m 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	Allowed away from support zone. Assessment required.	Allowed, subject to assessment

5.2 Foundation interaction with Sydney Metro

The centres of the metro tunnels run at ~RL 2.7m towards the south ends of the site, diving down to RL 0.5m at the north of the site. The tunnels are roughly aligned with the lowest existing basement level (B5 at RL 3.6m). The tunnel bends towards the east causing the first reserve to overlap with the existing excavation at the northwestern boundary corner. The tunnel approaches within 1.5m from the western site boundary at its closest. On the east, the proposed development remains clear of the first reserve in plan with the tunnel at least 8.5m from the eastern site boundary.

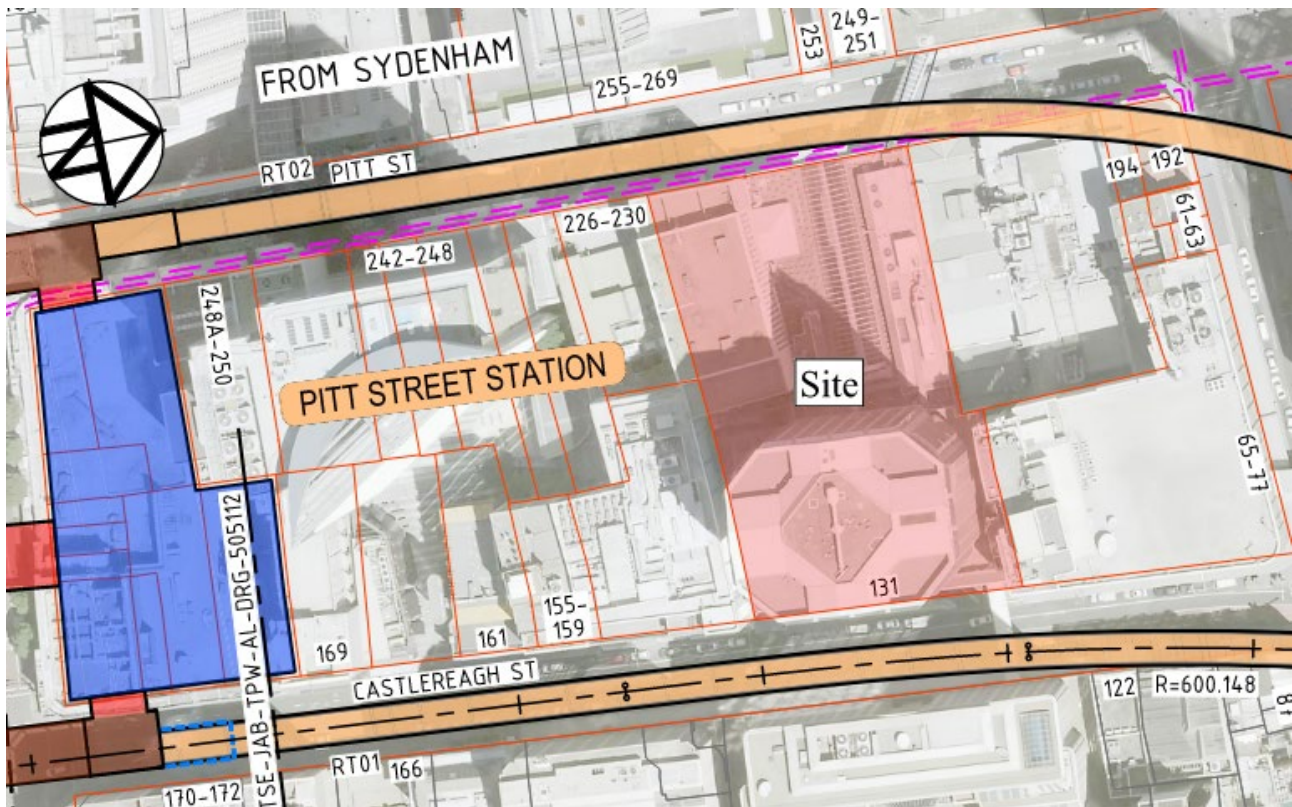


Figure 6 Site Relative to Sydney Metro City and Southwest Tunnels

Between basement levels B1 to B5, the proposed excavation extent in plan remains unchanged from the existing condition, however new pad footings for new columns and the strengthening of existing pad footings within the existing footprint will be required. These will result in localised excavations at the lowest basement level that will be located outside of the first reserve of both tunnels however will encroach into the second reserves.

The existing foundations are expected to undergo a cycle of unloading during demolition followed by reloading with increased loads under gravity to accommodate the new development.

The satellite core raft and new footings for 222 Pitt St perimeter columns down to RL13.5 will sit within the second reserve of the western tunnel.

Refer to Appendix A for sketches showing new and existing excavations and foundation locations.

5.3 Retention and Excavation Interaction with Sydney Metro

Existing retention along the site boundaries is to be retained without any additional retention proposed. The existing retention and excavation do not impact the performance of the Sydney Metro tunnels.

New excavation has been limited to new and strengthened foundations at B5 level inboard of the boundaries, and for the new satellite core. The new core excavation is minimal and well above the western Sydney Metro tunnel with no significant stress relief expected.

The extent of new core excavation has been located inside the site boundaries to Pitt St and the heritage building at 226-230 Pitt St on the southern boundary. The intent is to bench the sandstone excavation such that no new shoring is required

6. Sydney Trains Rail Corridors and Interaction

The site is also in proximity to the Eastern Suburbs Rail Line (ESR), which runs along the West of the site under the adjacent block.

Technical protection requirements and procedures shall be in accordance with TSA Standards T HR CI 12051 ST and T HR CI 12090 ST for City Circle (CCL), Eastern Suburb Rail (ESR) and Airport Line (APL) tunnels.

6.1 Protection Reserves

The first and second reserves are defined in TASA Standard T HR CI 12051 ST as protection reserves around the rail tunnel to ensure protection of the tunnels and rail infrastructure during construction and operation of adjacent developments.

The first reserve generally comprises of the immediate surrounds of the tunnel that shall not be encroached upon. The second reserve comprises of the areas where development works have the potential to impact the performance of the tunnel support elements and the operation of the tunnel. The boundary definitions which dimension the first and second reserves are found in the Standard and have been used in this assessment.

The types of construction allowed in each reserve (subject to conditions) have been listed in Table 4 below.

Table 4: Types of construction allowed within the ESR First and Second Reserves to TASA Standard T HR CI 12051 ST

Types of construction	First Reserve	Second Reserve
Excavations for basements, footings	Not Allowed	Excavations less than 2.0m depth from surface level, assessment not required. Excavations greater than 2.0m 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	Allowed away from support zone. Assessment required.	Allowed, subject to assessment

6.2 Foundation Interaction with Eastern Suburbs Rail Line

With reference to historical documents and survey information provided by Sydney Trains, the existing underground rail corridors and operational tunnels for the Eastern Suburbs Rail line exist to the West of the site.

Based on the definition for the first and second reserve widths provided in TASA Standard T HR CI 12051 ST, it is determined that the proposed foundation works will not encroach into the 1st and 2nd reserves of the Eastern Suburbs Line.

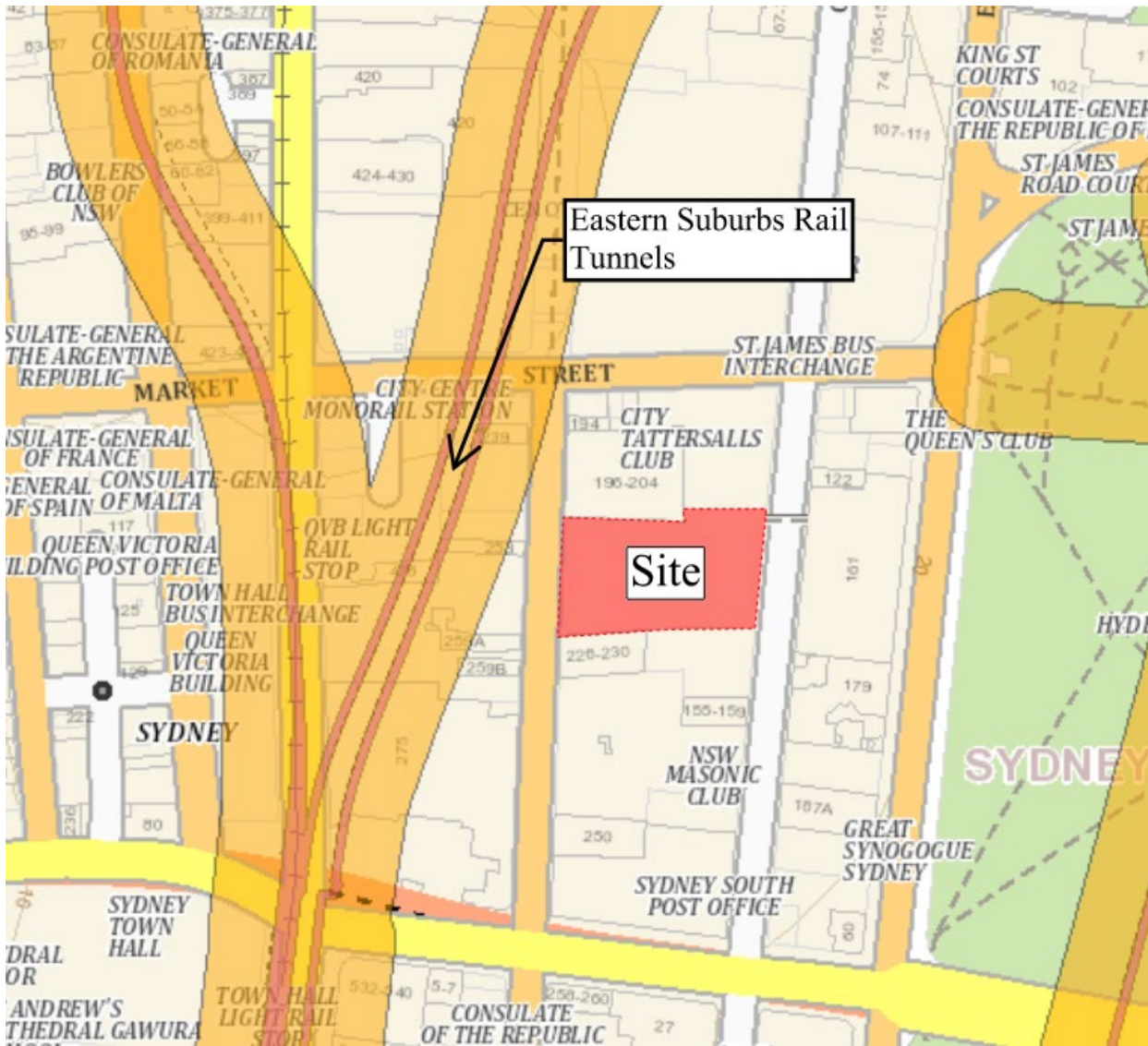


Figure 7 Site on plan in relation to the indicative location of Eastern Suburbs Rail tunnels and corridor protection zones

6.3 Retention and Excavation Interaction with Eastern Suburbs Rail Line

The existing retention and new excavation works are outside of the 1st and 2nd reserves of the Eastern Suburbs Line. Interaction between these works and the tunnels is expected to be negligible.

7. Noise, Vibration and Stray Currents

Refer to the Arup Acoustic report: 295375-AC01_v2 for recommendations on managing noise and vibration.

Protection from stray electrical currents is provided by insulating structural steel and reinforcing steel with adequate cover concrete. Typically, this is achieved to the reinforced concrete foundation and shoring elements with a minimum cover of 50mm for 32 MPa concrete that is in contact with the ground.

8. Conclusion

The proposed structure has been designed such that any new excavations, foundations or retention structures are outside of the first reserves of the Sydney Metro Tunnels.

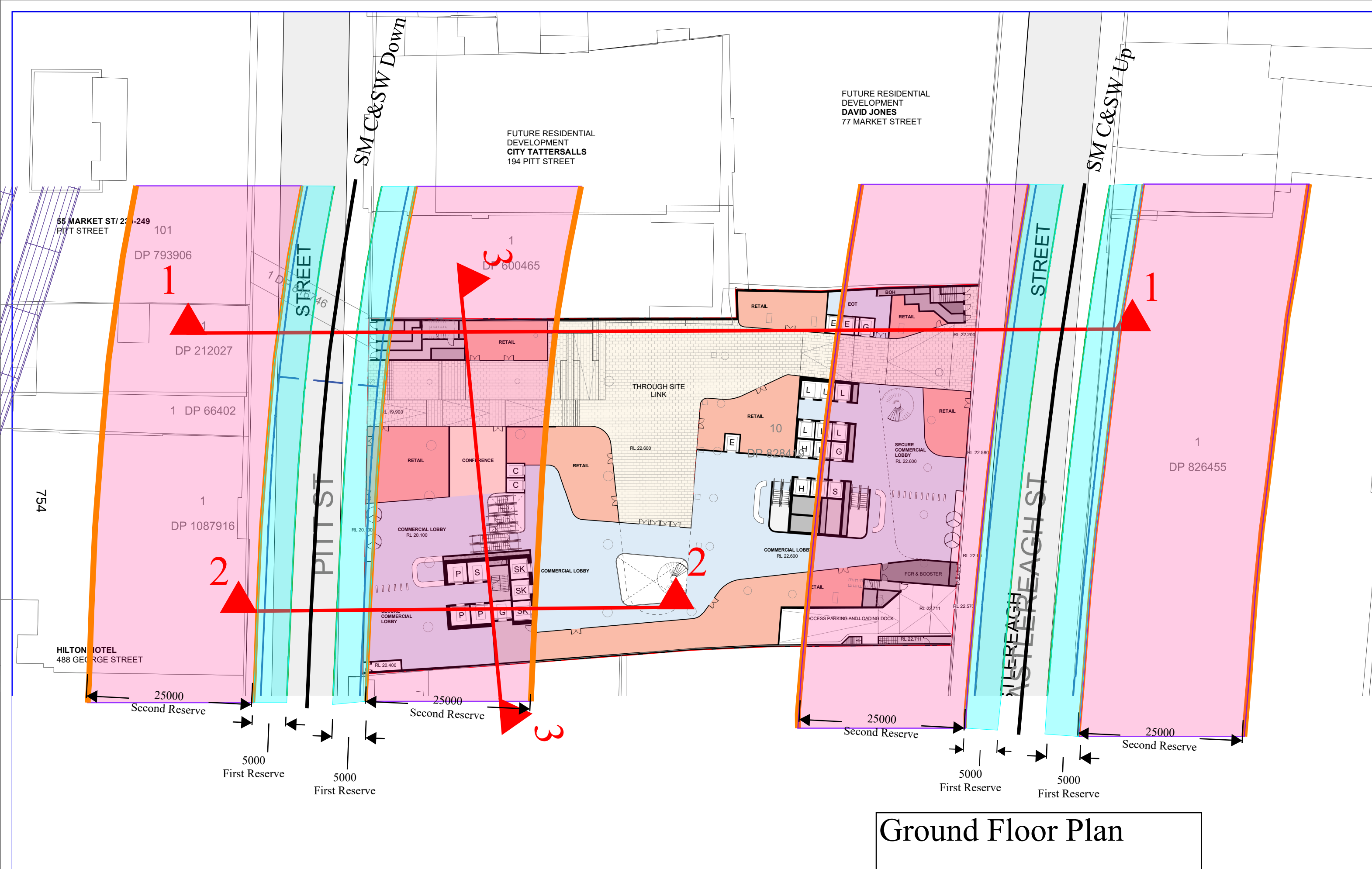
Based on a preliminary empirical analysis, the impact of the structure will achieve a total of less than 10mm movement in the adjacent metro rail infrastructure. This is to be expected given there are no new major excavations near the depth of the tunnels.

If required, a three-dimensional geotechnical analysis model of the rock substratum can be prepared to assess the impact of the development on the metro rail tunnels at a future stage. The analysis model will require a non-linear staged analysis, and that sensitivity analyses are also run to envelope a realistic range of input parameters.

Based on sufficient distance from the Sydney Trains ESL we do not believe further analysis to study the impact of the development on the underground tunnels.

Appendix A

Rail Interaction and Shoring Drawings



SM C&SW Down

SM C&SW Up

1

3

1

2

2

3

755

SITE BOUNDARY

SITE BOUNDARY

BASEMENT P5
73 CAR SPACES
RL 3.600

UP RAMP
TO P4

STORE

BOH

G

G

PLANT

DOWN RAMP
FROM P4

25000
Second Reserve

5000
First Reserve

5000
First Reserve

25000
Second Reserve

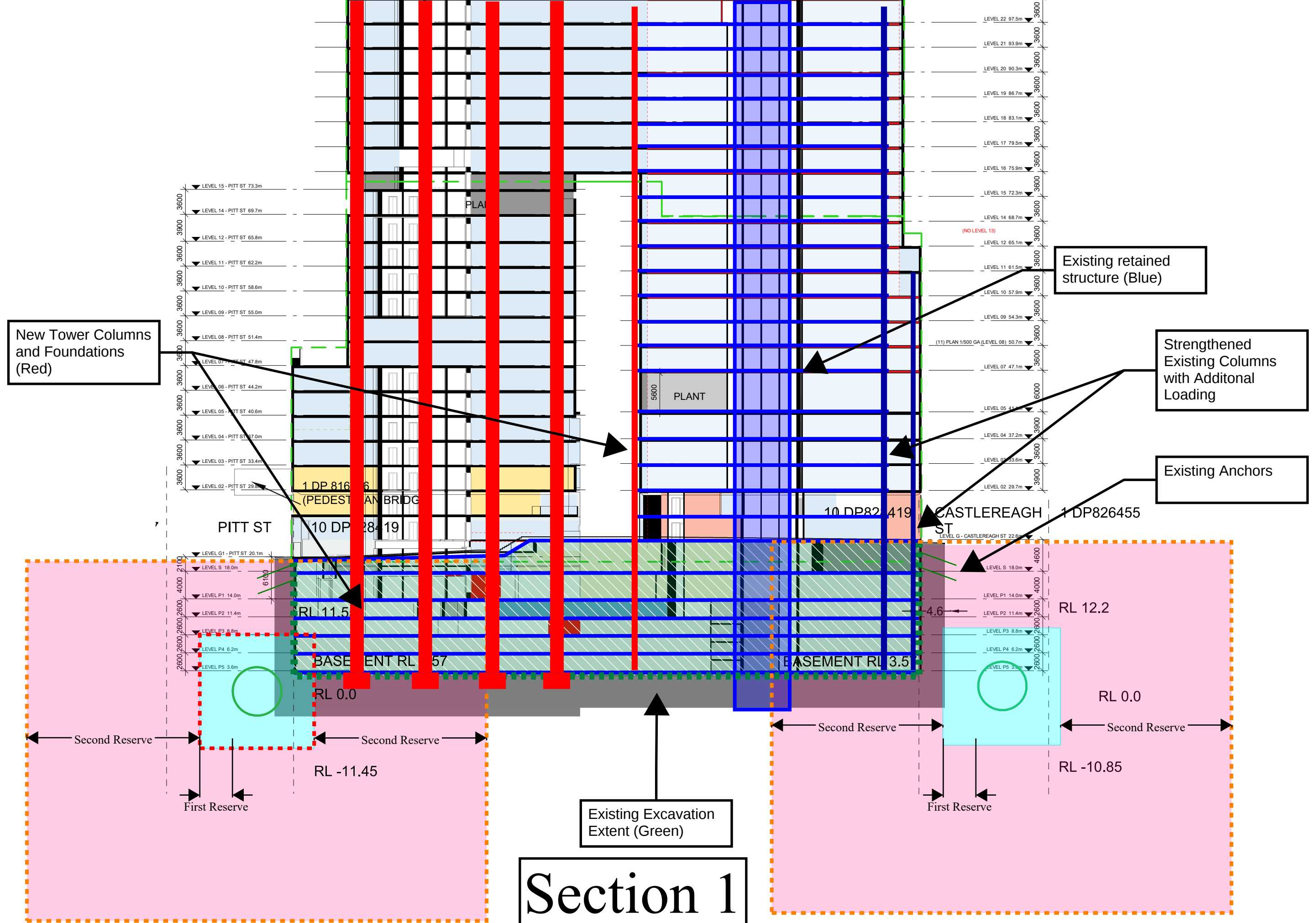
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Second Reserve

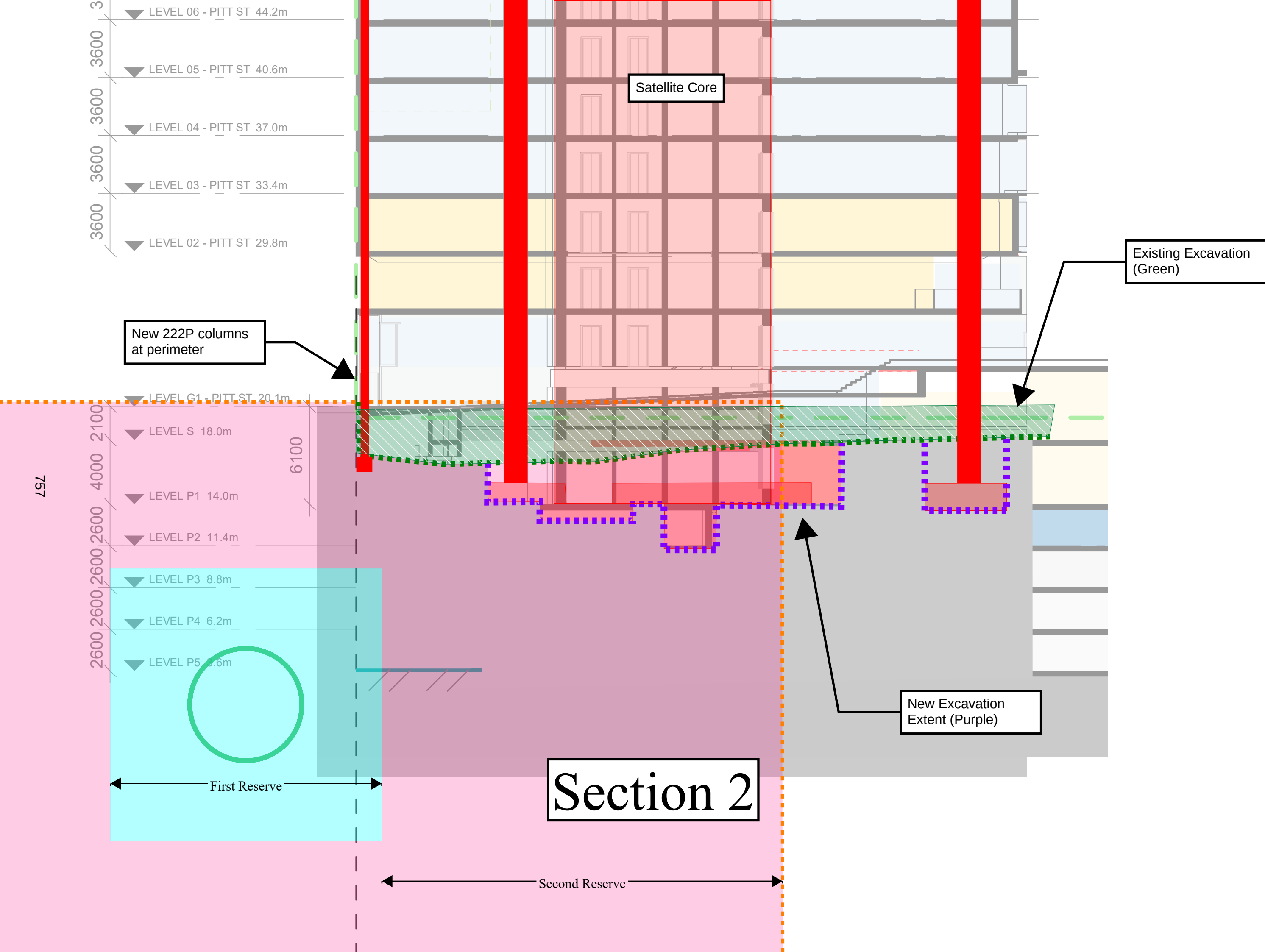
5000
First Reserve

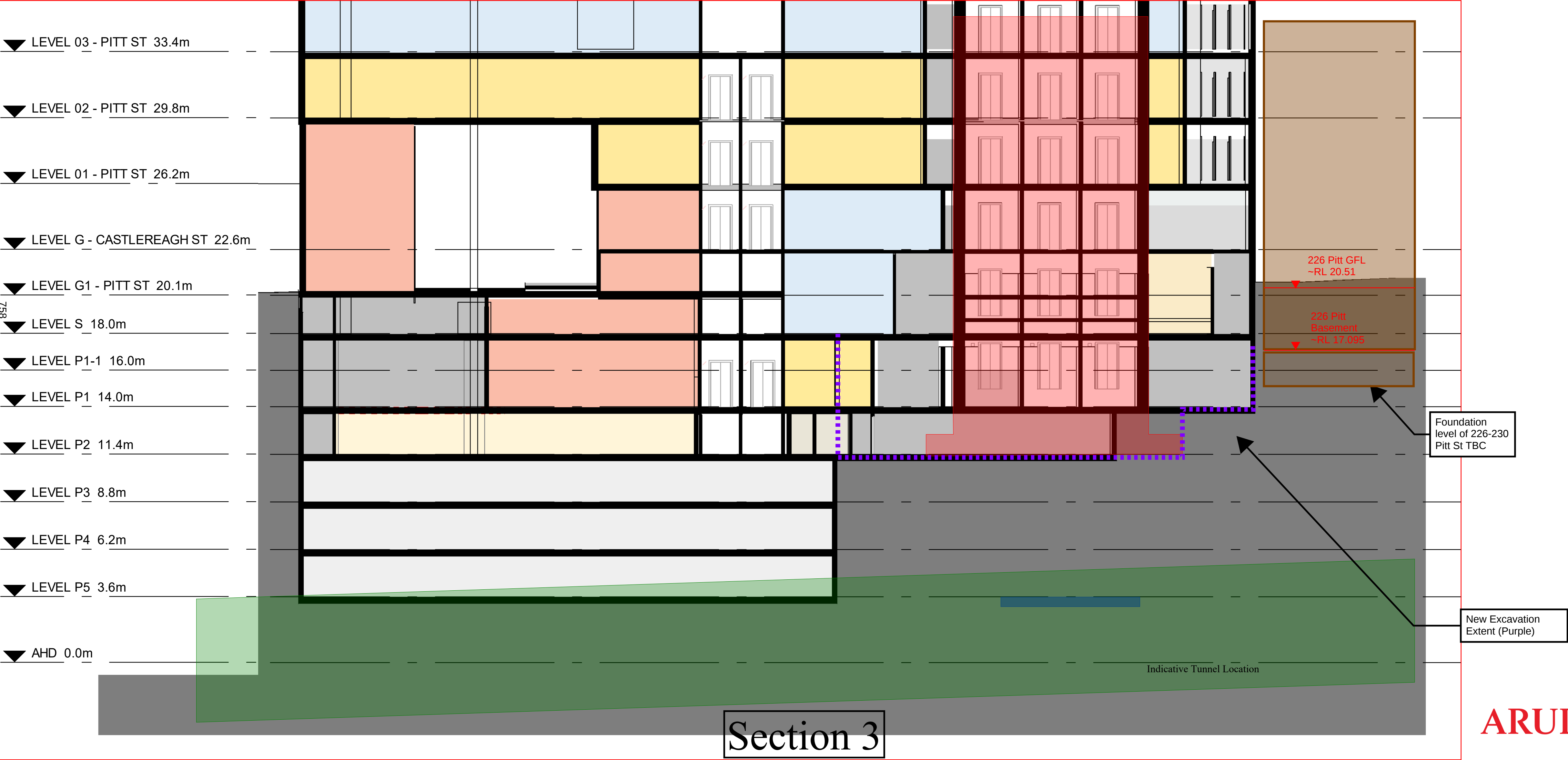
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First Reserve

25000
Second Reserve

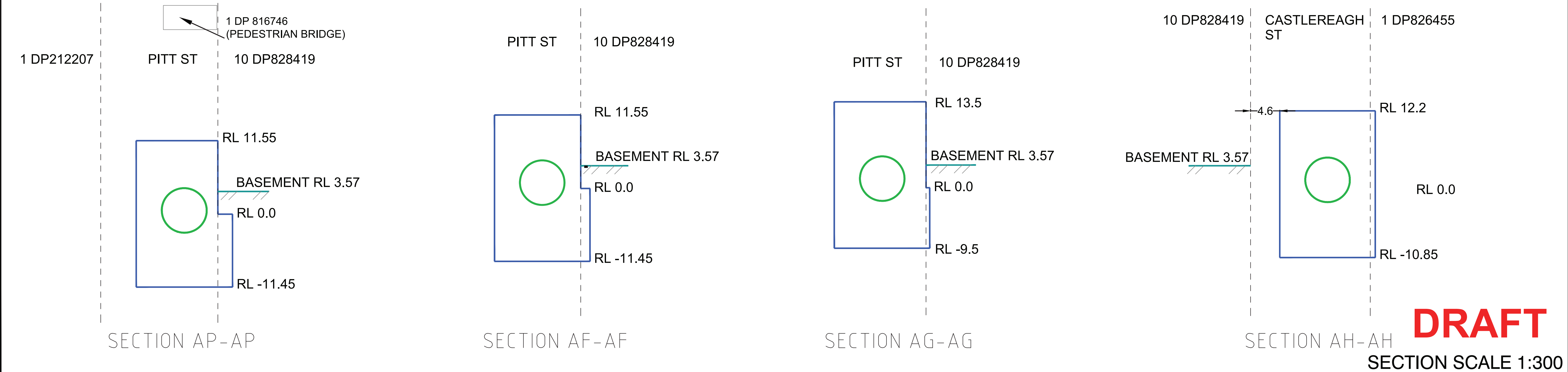
Basement Level 5 Plan







760



REVISIONS

No.	DATE	REVISION DETAILS	DRAWN	CHK	APP
K	21.07.2017	ADDITION OF NEW SECTIONS	HAK	DWF	DWF
J	17.05.2017	MULTIPLE AMENDMENTS	HAK	DWF	DWF
I	10.05.2017	SECTION B-B UPDATED, ADDITION OF SECTIONS NN-NNTD 00-00	HAK	DWF	DWF
H	04.05.2017	MARTIN PLSECTIONS UPDATED	HAK	DWF	DWF
G	24.03.2015	ADDITION OF SECTIONS GG-GG TO JJ-JJ	HAK	DWF	DWF

HORIZ. SCALE:

1:300

VERT. SCALE:

N/A @ A1

COORDINATES:

MGA

DATUM:

AHD

ORIGIN:

ORIGIN:

SCALE IN METRES AT ORIGINAL REDUCTION RATIO

0

3

6

9

12

15

18

NOTES

CLIENT:

NSW

GOVERNMENT

Transport

for NSW

SURVEY:

DRAWN:

ZHY

CHECKED:

DWF

APPROVED:

DWF

DATE OF SURVEY:

DATE OF PLAN:

23.08.2016

DATE LAST SAVED:

08.08.2017

DATE APPROVED:

23.08.2016

TITLE

SYDNEY METRO CITY AND SOUTH WEST
SECTIONS SHOWING LAND TAKE
INTERFACE WITH 133 CASTLEREAGH ST

DRAWING No

Alignment 14 Sections-k.dwg

JOB No

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SHEET

37 OF 43 SHEETS

SIZE

A1

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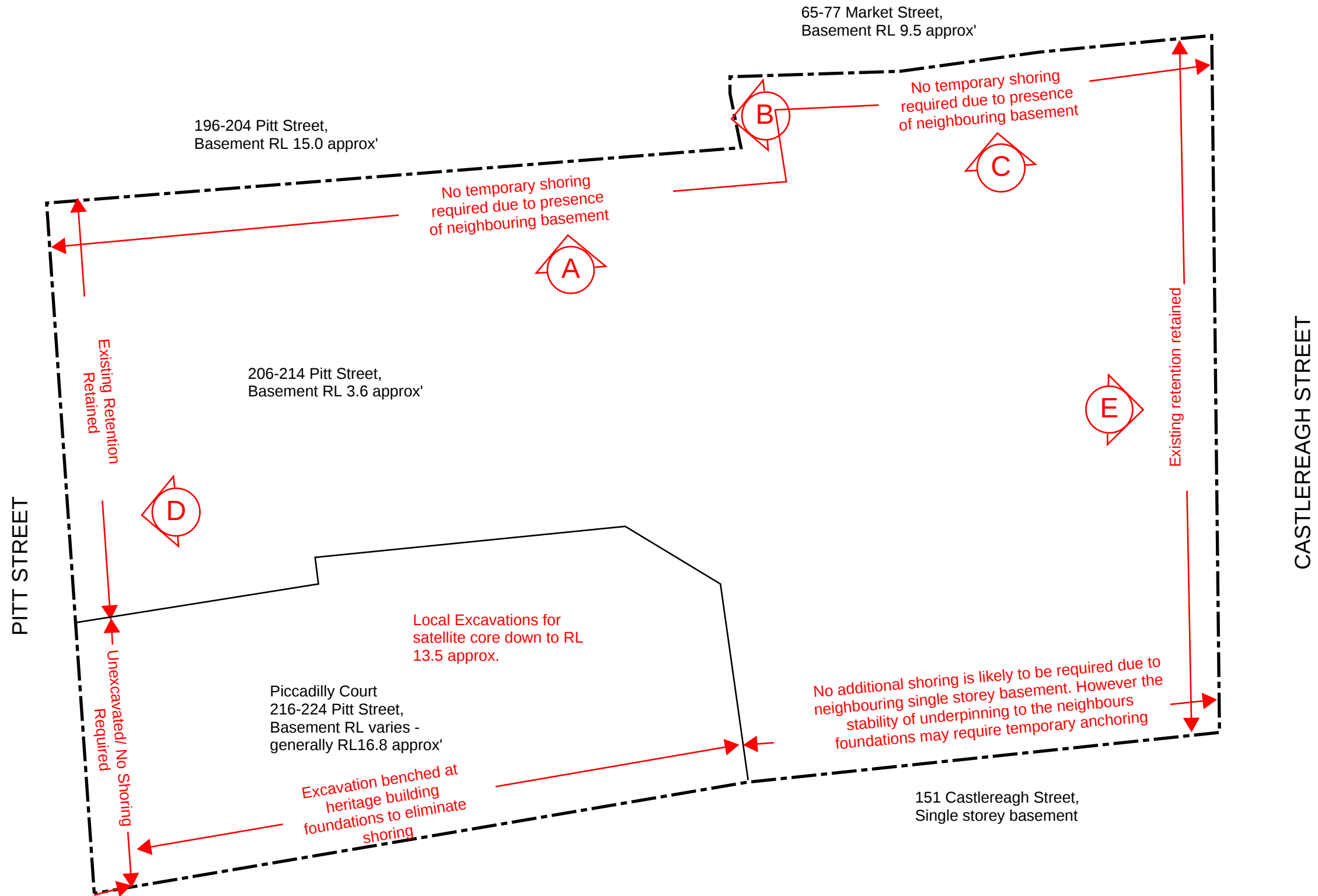
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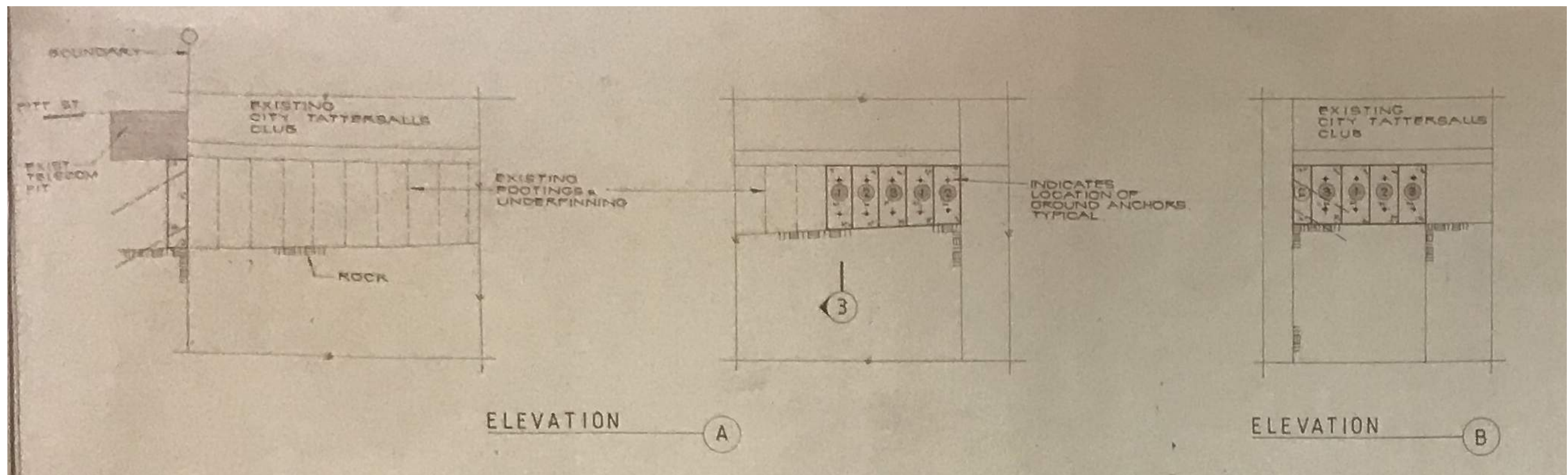
creativepeople

making a difference

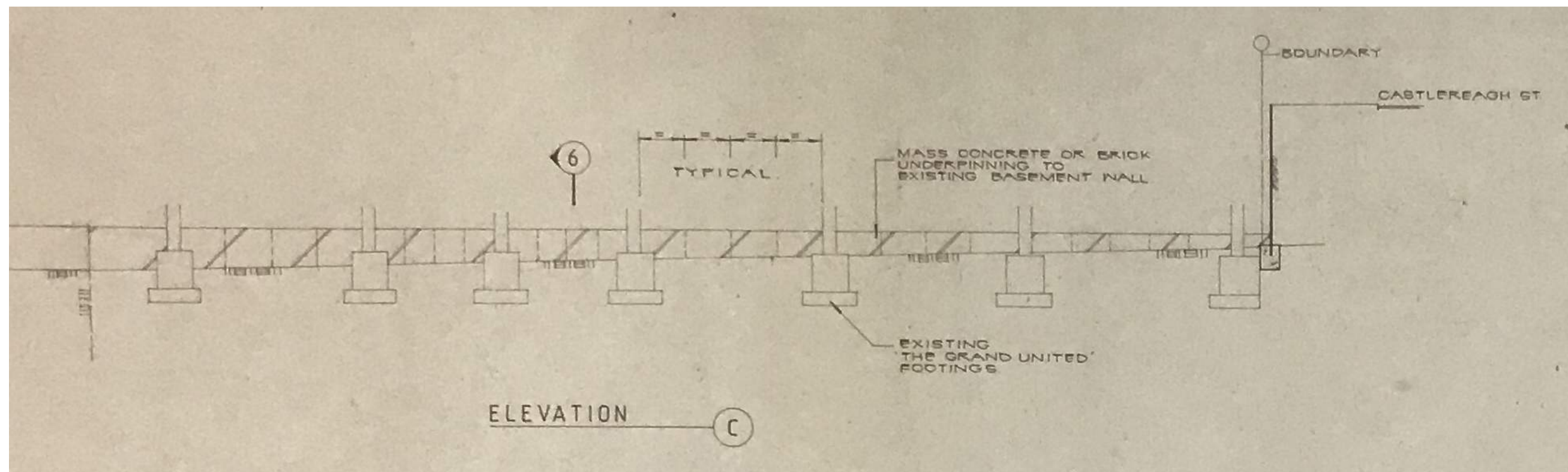
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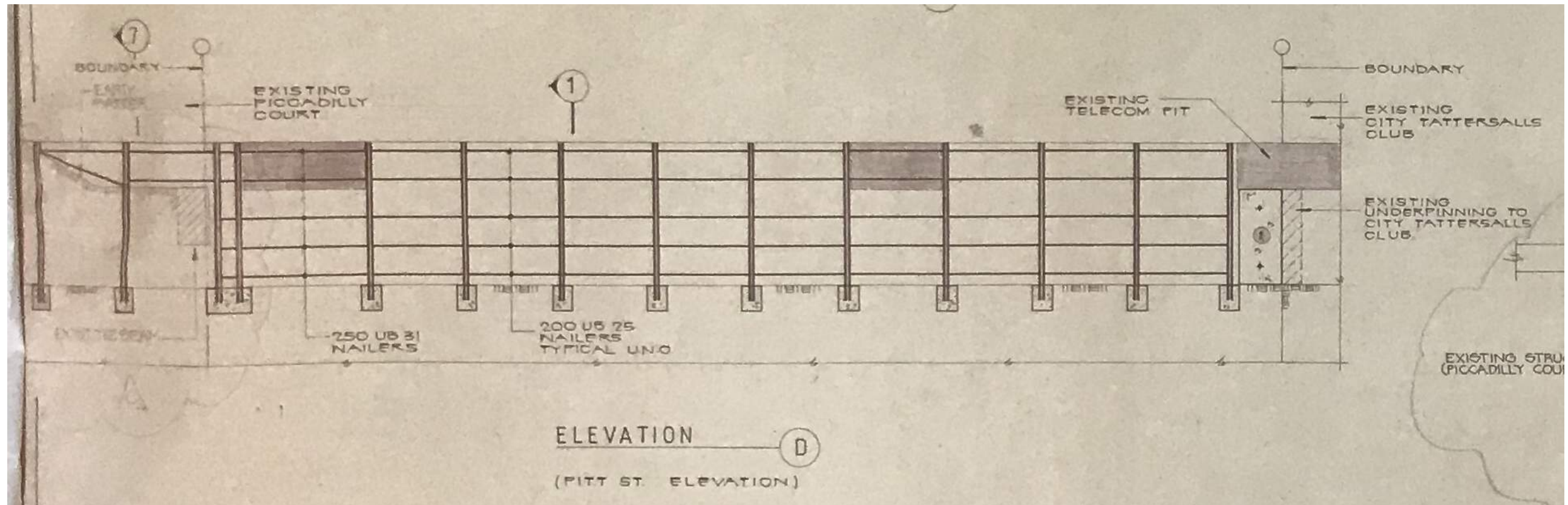




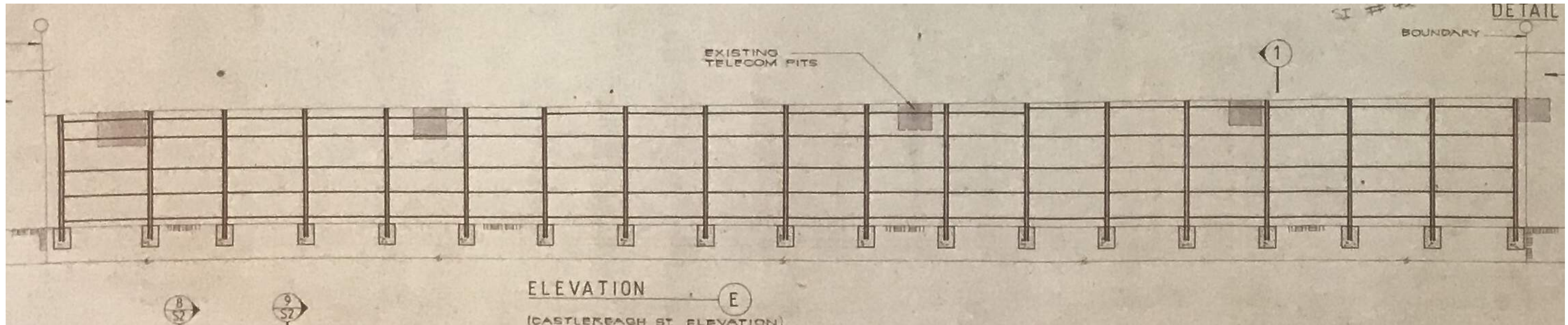
NORTH BOUNDARY ELEVATIONS -
Underpinning to neighbouring building at 196-204 Pitt Street



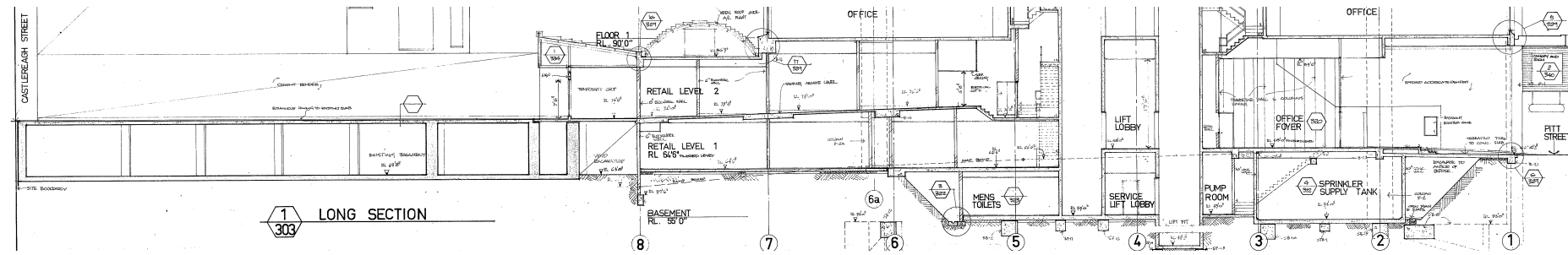
NORTH BOUNDARY ELEVATION -
Underpinning to neighbouring building at 65-77 Market Street



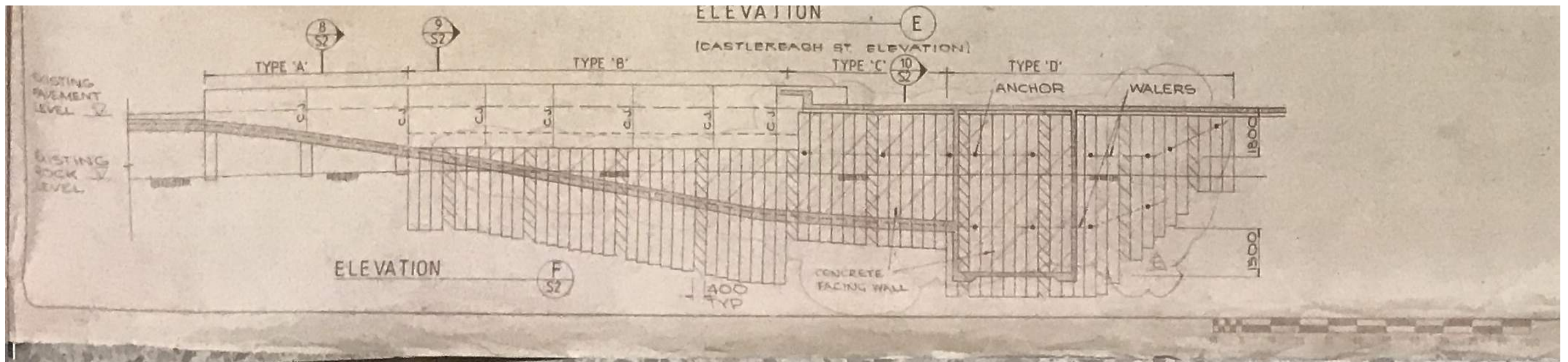
WEST BOUNDARY ELEVATION -
Existing shoring to Pitt Street boundary



EAST BOUNDARY ELEVATION -
Existing shoring to Castlereagh Street boundary



SECTION THROUGH PICCADILLY COURT



SHORING / UNDERPINNING - Castlereagh St Parallel Ramp