

Pymont Station (eastern entrance)

Supplement to Submissions Report

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Author: Sydney Metro
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Contents

1	Introduction	1
1.1	Purpose	1
1.2	Background	1
1.3	Stakeholder submissions	2
2	Preferred Pymont Station design	3
2.1	Proposal	3
2.2	Justification	3
2.3	Environmental Issues	4
3	Conclusions and Recommendation	6
3.1	Conclusions	6
3.2	Recommendation	6

Appendix A - Preferred Pymont Station design



1 Introduction

1.1 Purpose

The purpose of this report is to present the preferred reference design for the eastern entrance of the metro Pymont Station as a supplement to the Submissions Report. This report serves to support the Sydney Metro Network Stage 1 (Central to Rozelle) project approval application, under Part 3A of the *Environmental Planning and Assessment Act 1979*

1.2 Background

Sydney Metro is seeking project approval of the Sydney Metro Network Stage 1 (Central to Rozelle) (the 'project'), which includes a metro station at Pymont. Pymont Station includes a western entrance located at the corner of Miller and Mount streets and an eastern entrance located at the corner of Pymont and Union Streets.

The station location and design at Pymont has been the focus of considerable contention within the local community throughout the development of the reference design. In responding to these concerns, Sydney Metro has sought to reduce the likely environmental impacts at this location during both construction and operation, whilst maintaining an eastern entrance at this location, which is seen as integral to achieving the optimal service.

As a result, an option was developed for the eastern entrance, which retained the majority of the terraced buildings at 3 - 9 Union Street, and located the primary entry point at the corner at 11 Union Street. This was identified as Alternative 2 within the Environmental Assessment, and confirmed to be the preferred station location.

The retention of the buildings at this location was possible through an extension of the construction site to the rear of the buildings and also an extension to the front, out onto Union Street. As shown in Figure 5.3 of the Submissions Report, this would have conserved all but the very rear of the buildings, retaining a large majority of buildings.

Further detail of the elements forming the station design at Pymont is provided in section 5.1.4 of the Submissions Report. As detailed, a key aspect of this option was the use of open-cut construction methods within Union Street in order to access the station cavern and by doing so required up to 1230m² for the temporary worksite, with much of this area taken from Union Street. This worksite would have placed hoarding within approximately 3 metres of the properties and businesses on the northern side of Union Street. Although vehicle traffic would be removed from the eastern end of Union Street and rerouted from Paternoster Row to the west, both pedestrian and cyclist traffic would be required to share the portion of Union Street between the worksite boundary and the northern terraced properties, during approximately 4-years during construction.

1.3 Stakeholder submissions

Submissions referencing matters relating to the location of the Pymont Station and its potential to impact on businesses and residents of the Pymont area during construction were received from a significant number of community members. These included Form Letters 2, 4 and 5 which all raised concerns regarding the impact construction would have on businesses. These concerns were shared by key stakeholders including City of Sydney (submission 1806) and the State Member for Sydney (submission 1870/2539), whom requested that Sydney Metro look for ways to minimise the impact to Union Street during construction (as detailed in section 3.10 and section 3.13) of the Submissions Report.

2 Preferred Pymont Station design

2.1 Proposal

In response to the concerns raised in submissions Sydney Metro has investigated opportunities to reconfigure the construction worksite within Union Street. A reduction in the area of the worksite has been made possible through the adoption of alternative construction methodology and further design development. The alternative construction methods would involve excavation of the station shaft at the eastern entrance and excavation of the service adits and vertical transport deep (approximately 15-20 m) below the buildings at 3-9 Union Street and below Paternoster Row. This scheme is shown in Appendix A.

In addition to this change in construction methods, station services and access has continued to be refined. This design refinement has resulted in changes to the layout of the of the 'back-of-house' service components for the station. Consequently, changes have been introduced to the layout design, which includes:

- Locating a lift shaft within Union Street down to the unpaid concourse.
- Reconfiguration of the rear lane access to the buildings at 3-9 Union Street.

The worksites for Pymont Station (as detailed in Appendix A) have been separated into three main sites for ease of reference with regard to construction work required, the duration of occupation and the differing contractor activities. These show that there may be a requirement to extend the worksite marginally into Union Street in front of the buildings at 3 - 9 so that minor activities such as material storage may occur. In addition, there would need to be a relatively small worksite located within Union Street in order to construct the lift shaft to the concourse. It is envisaged that this worksite would be short term, being required for 12 months or less.

Further design details for the revised reference scheme and for the changes worksite configuration and duration of occupation are provided within Appendix A.

2.2 Justification

The rationale for the selection of the design and construction scheme layout shown in Appendix A is described as follows.

The alternative methods for construction reconfiguration of the services would:

- Substantially reduce the size of the worksite within Union Street.
- Allow room for access though Union Street on the south side and to the northern side.
- Allow continued use by business of the paved areas to the north, resulting in a significant reduction on business the viability impacts.
- Minimise the time required to have a construction presence within Union Street for construction of the lift over a much reduced length of time.
- Have the potential to maintain trees on both sides of Union Street during construction.

- No longer require sub-strata services below properties on the northern side of Union Street.
- Minimised relocation of utility services (power, water, fibre optics) below Union Street.

2.3 Environmental Issues

Key environmental impacts of the Sydney Metro Network Stage 1 (Central to Rozelle) relate to construction impacts pertaining to spoil management, traffic, noise and vibration and non-indigenous heritage; and operational impacts pertaining to improved local and regional transport, noise and vibration, social and land use impacts and changes to the public domain.

Environmental issues relating to the change in construction methods and location of certain service elements as altered to the reference design presented within the Environmental Assessment are summarised in Table 2.1.

Table 2.1 Summary of environmental impacts of preferred design

Category	Item	Pymont Station preferred design	Environmental outcome over the Reference Scheme
Construction impacts	Spoil management	No material change to quantities of tailings produced or method of transportation.	No change
	Traffic and transport	No change to number of truck movements required. Ability to maintain substantial access east west for pedestrians and bicyclists, reducing the degree of conflicts that would ensure with the previous larger worksite.	No change Minor positive
	Noise and vibration	Reduced intervention of excavated areas below properties on the northern side of Union Street. Resulting in reduced likelihood of noise and vibration impacts affecting these residents and businesses. Shorter construction period within Union Street resulting in reduced noise impacts.	Minor positive
	Non-indigenous heritage	Protection of the majority of the building structures. Similar risk as noted previously regarding the potential for ground settlement affecting these buildings.	Minimal changes
	Socio-economic and land use	Reduced footprint of worksite, thereby reducing the degree and length of disruption and disturbance for businesses and residents, particularly those fronting Union Street. Reduced likelihood of interruptions to significant utility services within Union Street.	Positive
Operational impacts	Traffic and transport	Pedestrian and cyclist access through Union Street is maintained.	Minimal changes

Category	Item	Pymont Station preferred design	Environmental outcome over the Reference Scheme
	Non-indigenous heritage	Lift structure within Union Street has potential to affect the setting of the heritage conservation area, however this would be designed cognisant of this issue and in accordance with the heritage design principles that would govern the design of the station entrance.	Minor negative
	Noise and vibration	Whilst changed configuration, it is not envisaged as being any change in impacts for noise or vibration affecting sensitive receivers.	No change
	Social and land use impacts	Whilst changed configuration, it is not envisaged as being any change in impacts for noise or vibration affecting sensitive receivers.	No change



3 Conclusions and Recommendation

3.1 Conclusions

The preferred reference scheme for the Pymont Station is identified within this report. The justification for these changes is that on balance the outcome for the station is improved in terms of access and function of the station. Also in the short term, construction impacts to the businesses and residences and users of Union Street are likely to be impacted less than would be the case for the station design and construction worksite layout, as previously identified in section 5.1.4 of the Submissions Report.

3.2 Recommendation

Sydney Metro seeks planning approval for Pymont Station (eastern entrance) with the construction and operational design as described within this supplementary report, as part of the Sydney Metro Network Stage 1 (Central to Rozelle) project.

Appendix A Preferred Pymont Station design





A wide-angle photograph of the Sydney city skyline as seen from the water. The sky is clear blue. The skyline includes several prominent skyscrapers, including the Sydney Tower (Coca-Cola Tower) on the right. In the foreground, the dark blue water of the harbor is visible, with some smaller buildings and a pier along the shoreline.

Pymont Option 32A

Constructability and Review of Worksites - 3 December 2009 (Rev 2)
(DRAFT FOR DISCUSSION PURPOSES ONLY)

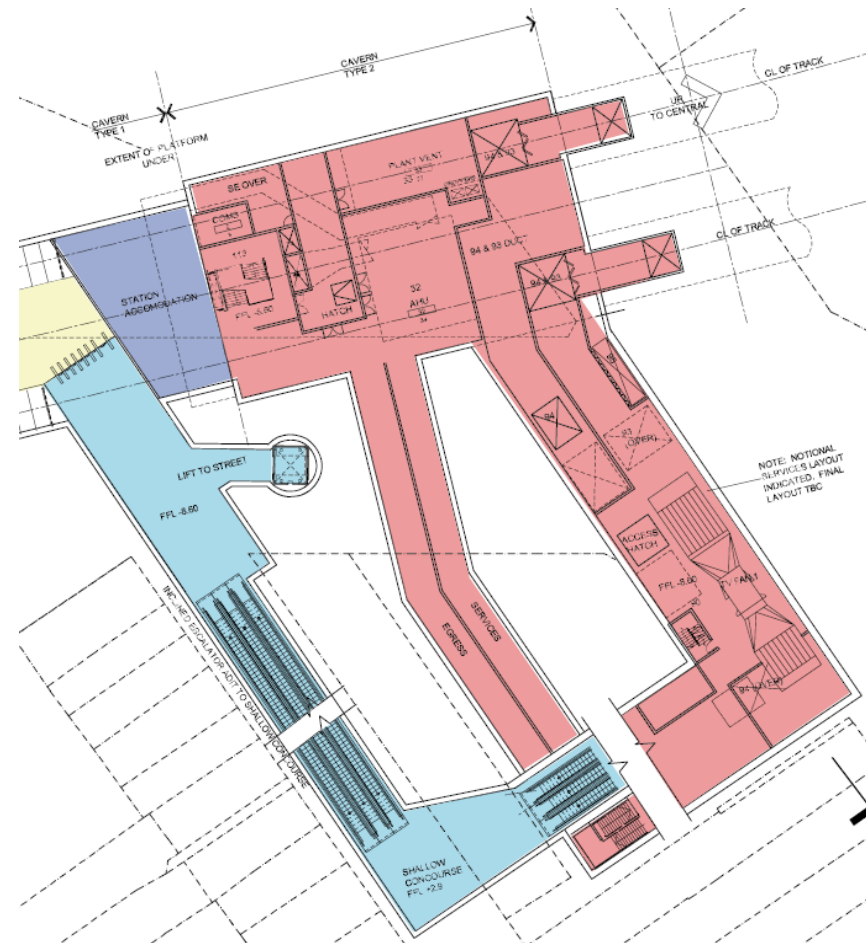


SydneyMetro

Concept Plans



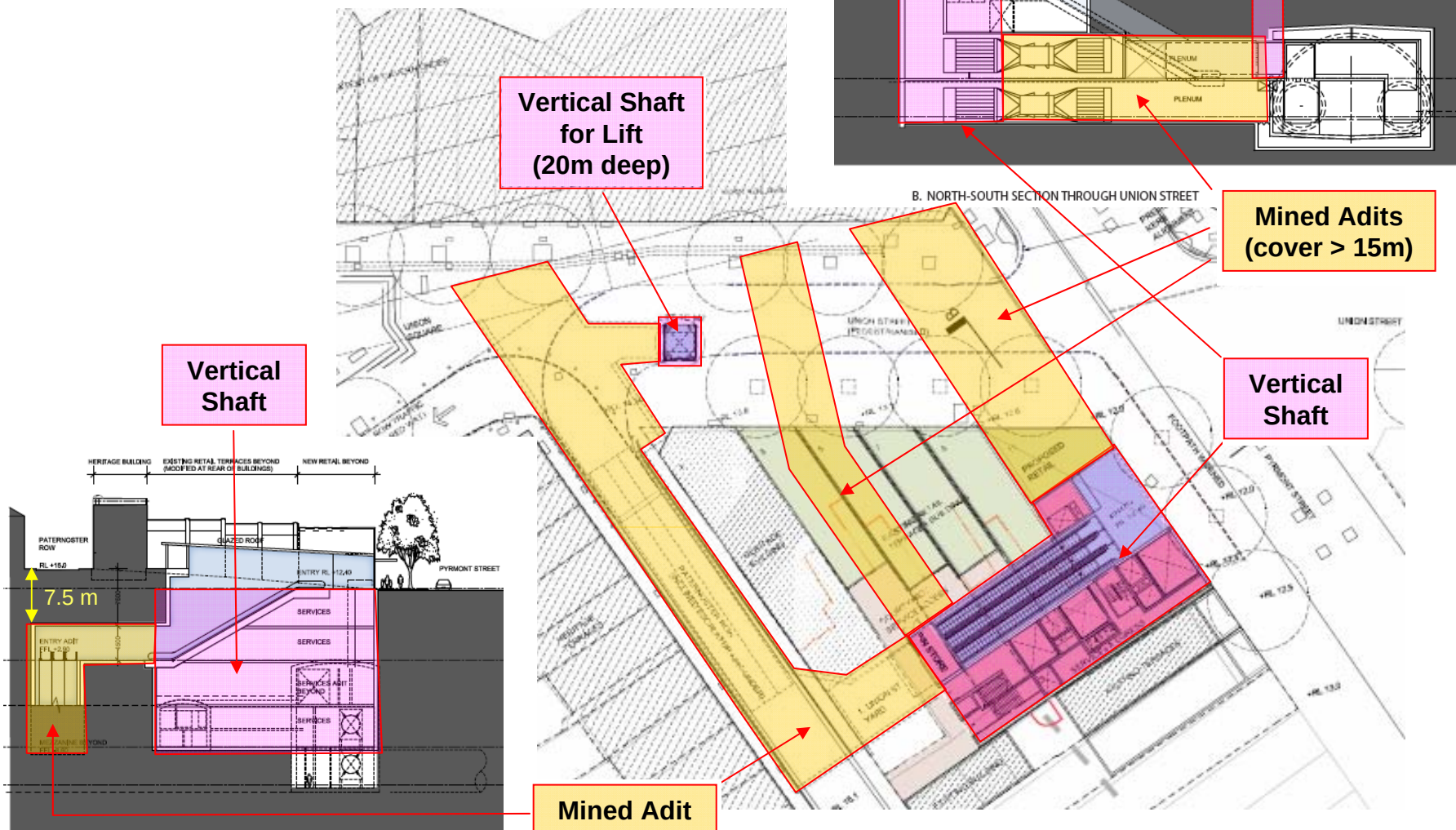
Street Level Plan



Concourse Level Plan

Indicative Only

Excavations for Shafts & Adits



A. EAST - WEST SECTION THROUGH ENTRY

B. NORTH-SOUTH SECTION THROUGH UNION STREET

Indicative Only

Proposed Worksites

Note Worksites are not shown for possible other temp. works including utilities diversion works, and public domain works.

Worksite Area C

Duration: To be determined (in the order of 9 - 12 months)

PRI – Utilities investigation & adjustments, shaft construction (3 – 6 months)

IMO – Shaft structure, lift installation & fitout (6 months)

Opportunities – Investigate scope split (all works by IMO) to minimise worksite duration (with a late site access date for construction works); use of raise bore drilling method to minimise surface impacts

Worksite Area A

Duration: Q3 2010 – end 2011

PRI – Demolish rear of buildings, modify structure & replace rear walls and other building works; undertake building restoration works then handback to Sydney Metro

IMO – No scope / no access required

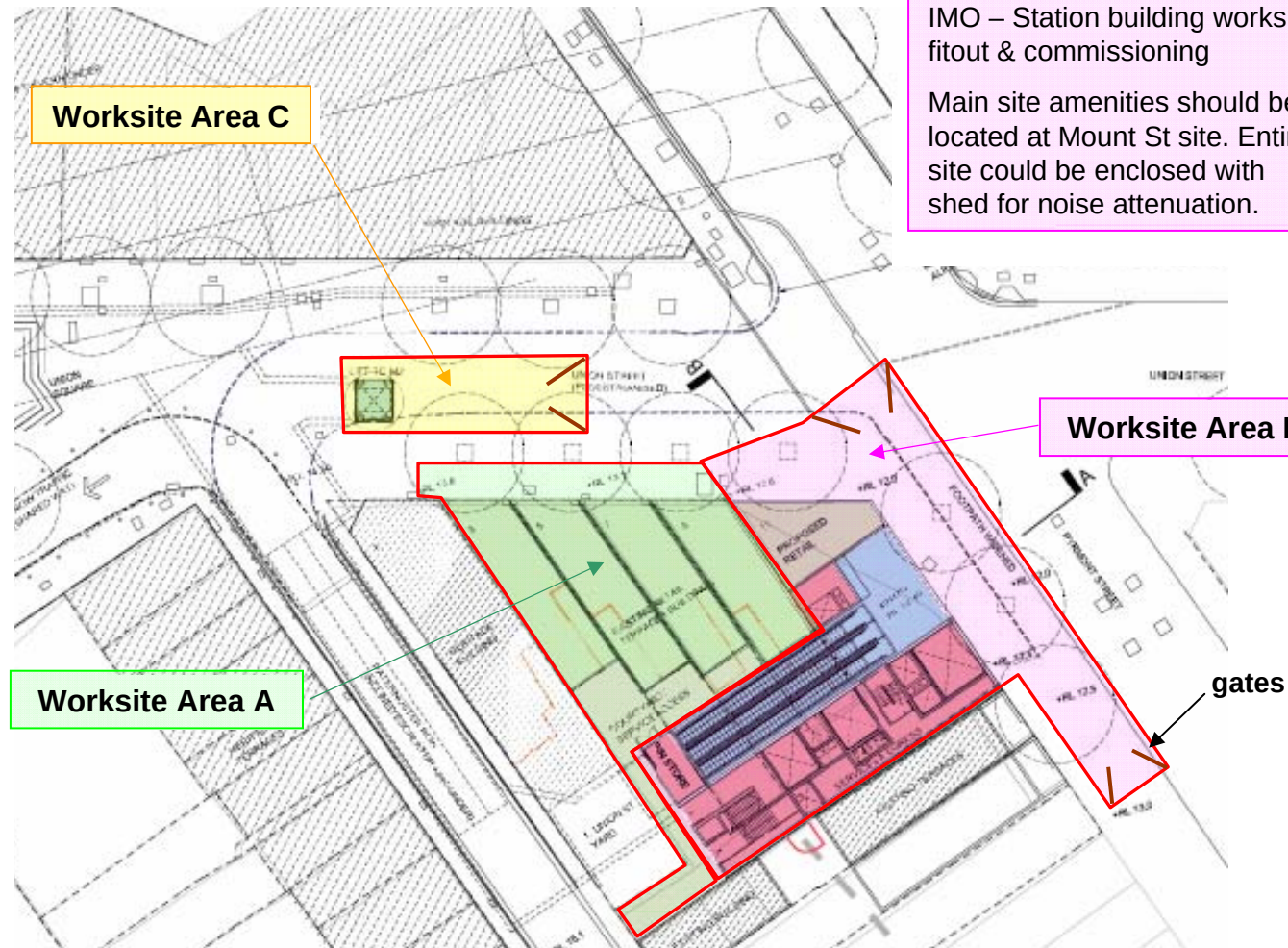
Worksite Area B

Duration: Q3 2010 – mid 2015

PRI – Shaft excavation, and mining of adits

IMO – Station building works, fitout & commissioning

Main site amenities should be located at Mount St site. Entire site could be enclosed with shed for noise attenuation.



Indicative Only

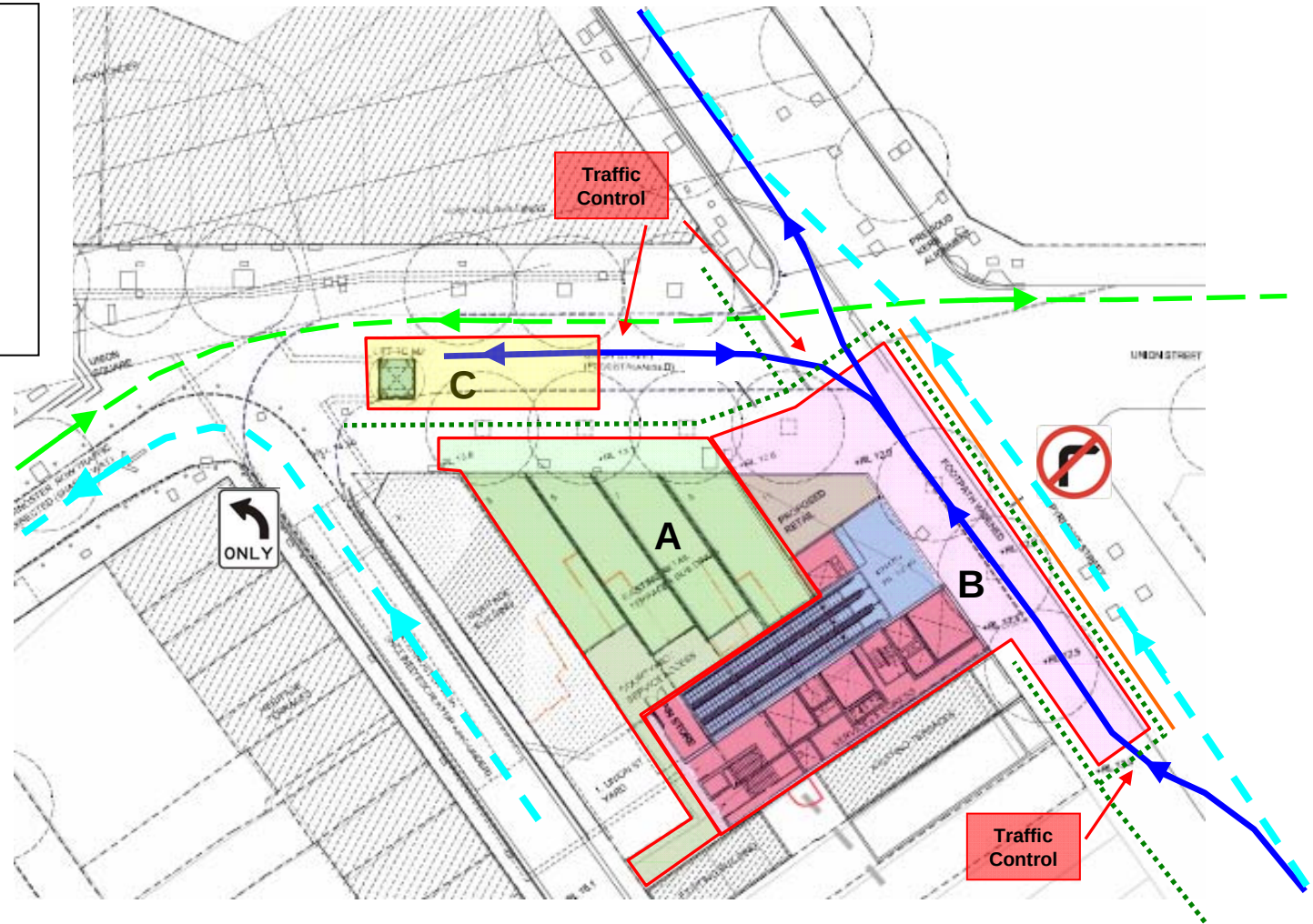
Traffic, Bicycles & Peds Management Principles

Legend

- pedestrians routes
- 2-way bicycles
- local traffic
- construction traffic
- peds/traffic barrier (Pymont Street)

Heavy Vehicle Access Route

Proposed route is in via Pymont Bridge Road - left into Pymont St – SITE – Pymont St - right at Jones Bay Rd - right at Pirrama Rd - right at Pymont Bridge Rd

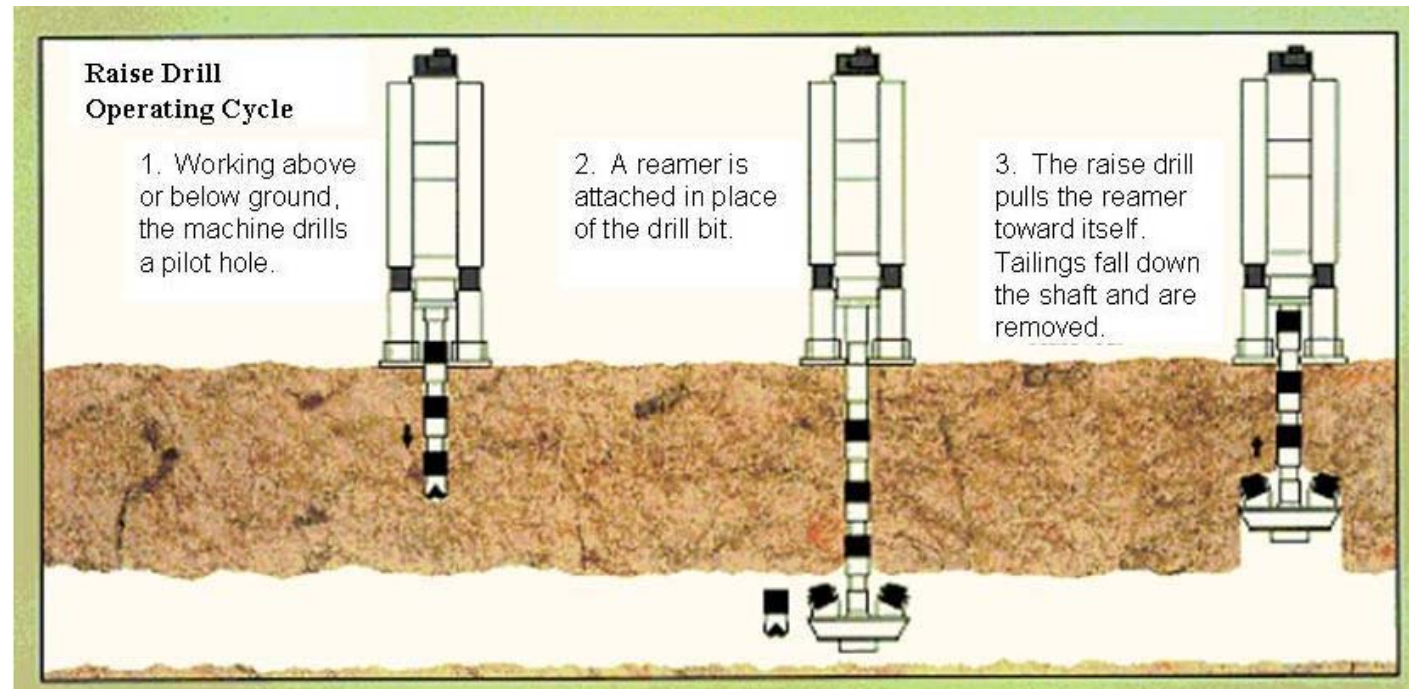


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Raise Bore Drilling – A Potential Excavation Method for the Lift Shaft

Description

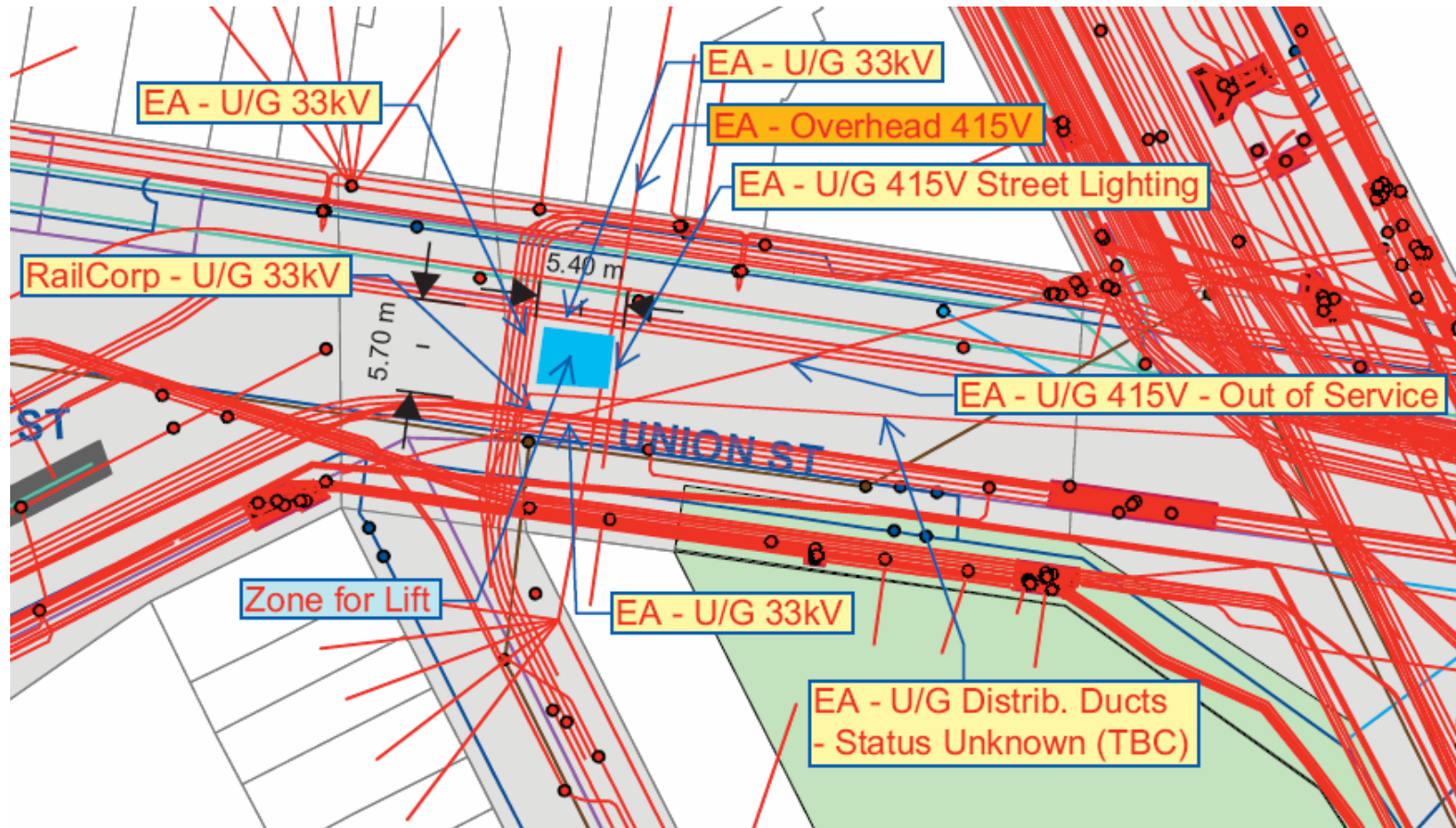
Raise bore drilling is a method of mechanical excavation of shafts used primarily in the mining industry with application in congested urban areas.



Construction Method To create a shaft the raise bore machine is assembled on top of a concrete pad and steel deck. It first drills a pilot hole (min. 300mm dia.) with a drill bit. Additional lengths of drill pipe are added as the drill bit goes deeper. Once the drill bit reaches the desired depth below street surface (approx. 20m for lift shaft), the bit is removed and a drill reamer is attached. The reamer is then rotated and pulled towards the surface with the machine grinding away at the rock. The drill pipe lengths are removed as the reamer gets closer and closer to the surface. The excavated material (also called tailings) fall to the floor of the shaft and can be removed via the mined adit (which must be excavated first). The use of the raise bore drilling method minimises surface impacts that would otherwise be caused by open cut (top down) excavation, including minimising construction noise, vibration, dust and construction traffic impacts.

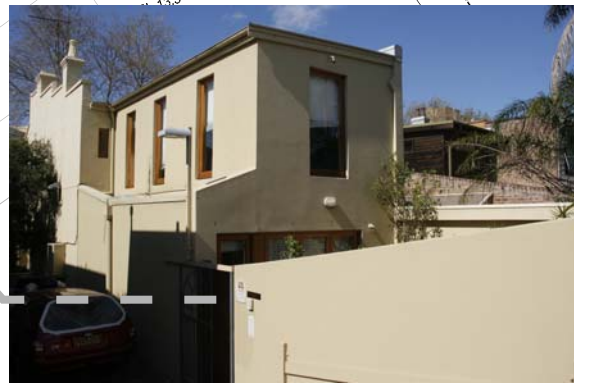
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Lift Shaft – Location & Utilities



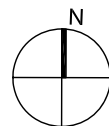
The final design location of the lift shaft in Union Street will be subject to the location of underground services which will need to be carefully located/potholed on site. Based on existing services data / information, the 415V street lighting supply adjacent to the east side of the lift zone shown would be easily relocated compared to the 33kV feeders to the north and west sides. There would therefore appear to be some flexibility to extend the lift zone further towards the east if required.

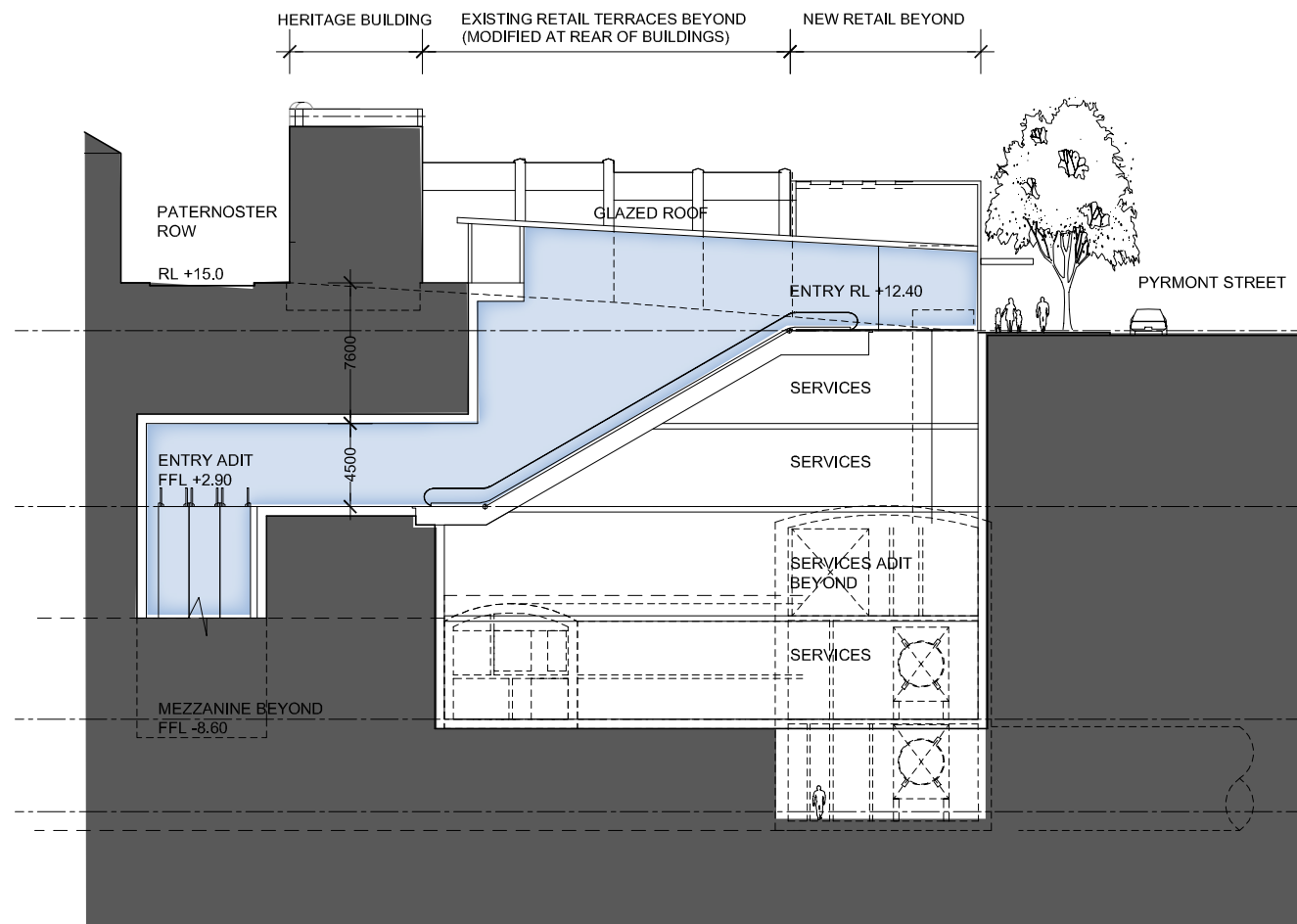
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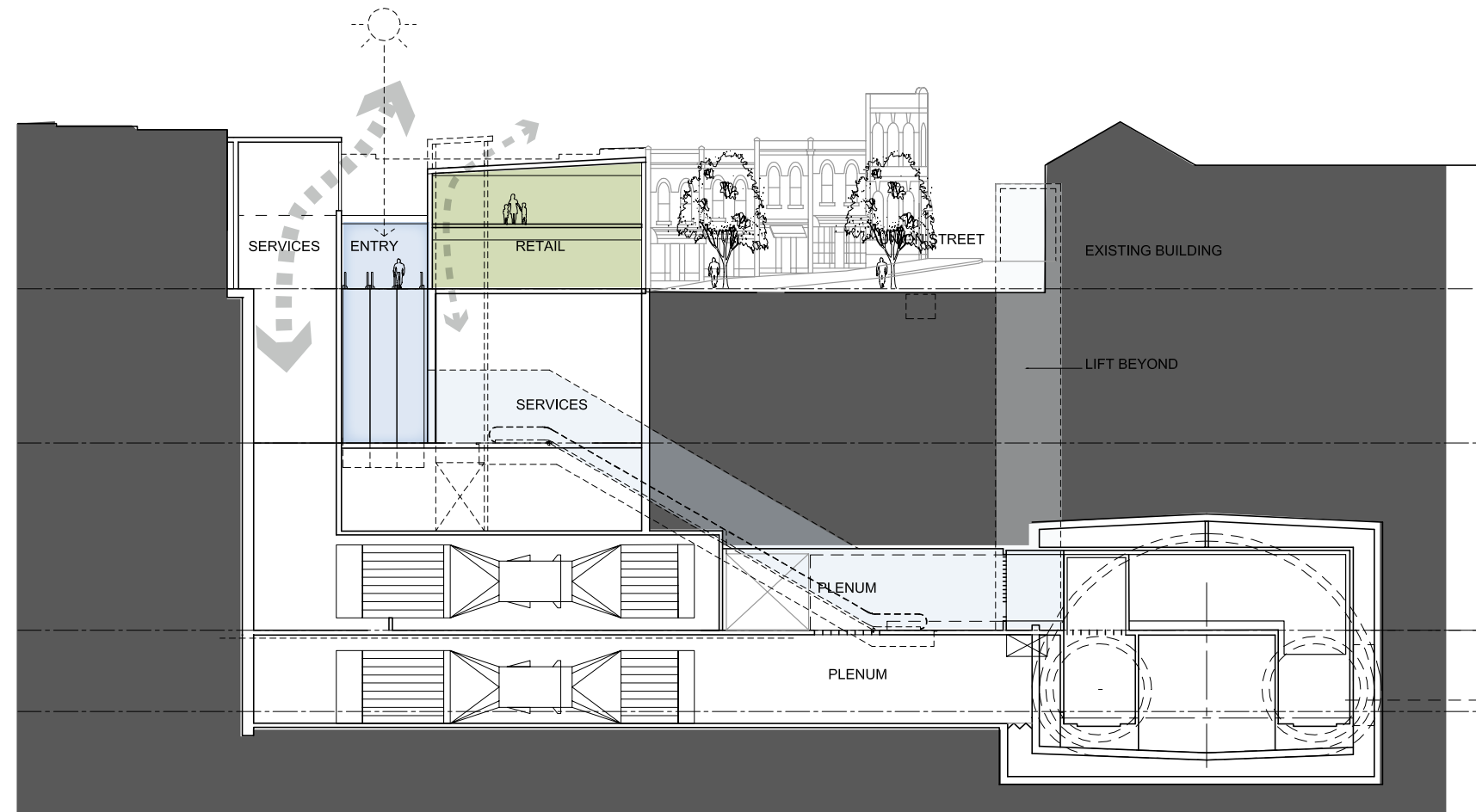
EXISTING ENTRY OFF LANEWAY

DRAFT





A. EAST - WEST SECTION THROUGH ENTRY



B. NORTH-SOUTH SECTION THROUGH UNION STREET