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Project 218669.00
27 October 2022
R.002.Rev0
ECB:gl

Attention: Sujith Reddy

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Preliminary Geotechnical Assessment
Proposed Billboard Structure
Corner of Saunders Street and Miller Street,
Western Distributor North, Pyrmont

1. Introduction

A digital billboard sign supported by a 0.45 m diameter monopole with stainless steel cladding and founded with a concrete pad footing is proposed to be installed on the north-eastern side of the L1 Dulwich Hill Line (light rail), within land controlled by Sydney Trains on the corner of Saunders Street and Miller Street on the north side of the Western Distributor, Pyrmont. This geotechnical assessment has been prepared by Douglas Partners Pty Ltd (DP) to support a Development Application (DA) for the site.

This preliminary geotechnical assessment has included a site inspection (from nearby vantage points outside of the rail corridor), a review of published information, and a review of DP archives for site investigations completed near to the site.

This advice is intended to provide a general overview of the subsurface geotechnical conditions likely to be encountered at the proposed structure location. Detailed site investigations will be required at a later stage of the project to provide detailed geotechnical information for design and construction purposes.

2. Site Description

The proposed structure is to replace a pre-existing structure within the rail corridor to the north of the Western Distributor and on the northern side of Pyrmont Bridge Road. The current structure is located on top of a vegetated benched sandstone area at the corner of the rail corridor boundary fence and the edge of the rail rock cutting. The area is vegetated with several trees. A sandstone rock cutting was observed from the bridge on Miller Street. An aerial photograph showing the indicative location is given in Figure 1. Based on provided design, the current structure is likely to be founded on a strip footing (see attached drawings).

Figure 1: Aerial photograph of the site area (red mark).

The rail cutting at the proposed location is approximately 3 m to 6 m high (see attached Photoplate). The lower approximate 3 m is sub-vertical with exposed massive sandstone bedrock which appears to be medium to high strength (closely spaced pre-split blast holes are visible on the face). Above this face, it appears as if the upper part of the profile is a stepped rock bench that has been covered with colluvium and vegetation. Rock face may be located next to inner black fence but obstructed by vegetation. The area above the cutting crest is covered by soil and semi-dense to dense vegetation consisting of scrub and several trees. The footpath is set back from the cut face by two fences and up to approximately 2 m of soil coverage.

Street level view from the corner of Saunders Street and Miller Street of the location with the pre-existing structure is shown in Figure 2.

Figure 2: Streetview of the site location.

3. Data Sources

Data sources reviewed for this preliminary geotechnical assessment included:

- Topographic maps with elevation contours, NSW Department of Lands (obtained April 2009);
- Mapping data of the distribution of potential acid sulfate soils, NSW Department of Land and Water Conservation, 1:25 000 Acid Sulfate Soil Risk Map for Prospect-Parramatta River (Edition 2, December 1997);
- Sydney 1:100 000 Soils Landscape Mapping Sheet, Soil Conservation Service of NSW;
- Sydney 1:100 000 Geological Series Sheet, Geological Survey of NSW;
- Preliminary Geotechnical Assessment, 'Proposed Billboard Sign Monopole, Western Distributor North, Pyrmont', Douglas Partners Pty Ltd (Ref: 99739.00.R.002.Rev1, dated March 2021);
- Geotechnical Investigation Summary Report, 'Multi-Storey Housing Development, 134-164 Bulwara Road, Pyrmont', D.J. Douglas and Partners Pty Ltd (Ref: 19969, dated April 1994); and
- Geotechnical Investigation Report, 'Report on Geotechnical Investigation for Commercial Re-development', 100-132 Bulwara Road, Pyrmont', D.J. Douglas and Partners Pty Ltd (Ref: 12248, dated July 1989).

4. Review of Information

A review of the available information indicates the following:

- The proposed structure is proposed to be approximately 8.2 m tall and is located above the crest of an approximate 4 m to 6 m high railway cutting and is proposed to have about a 0.45 m diameter monopole base, founding on a concrete pad footing;
- The geological series sheet indicates that the site is underlain by Hawkesbury Sandstone of Triassic Age;
- The soil landscape map sheet indicates that residual sandy clay soils of the Gymea group are likely to be present at the site, which are described as shallow to moderately deep (0.3-1 m) Yellow Earths and Earthy Sands on crests and inside of benches;
- Acid sulphate soil (ASS) risk maps indicate that ASS is not likely to be present at the site; and
- Inspection of the exposures in the railway cutting, together with nearby geotechnical investigations indicate that the typical sub-surface profile (excluding imported fill materials and potential colluvium) is residual clayey sand overlying low strength sandstone (with some extremely low strength bands and seams), over medium to high strength sandstone (see attached Photoplates).

5. Likely Subsurface Profile

Based on the available geotechnical information and the site inspection, the subsurface profile at the proposed location of the structure is likely to be:

- Imported fill up to 1 m in depth;
- Very low strength sandstone with extremely low strength bands and seams to about 1 m depth; over
- Medium to high strength sandstone.

6. Geotechnical Constraints

Access for machinery and personnel to the proposed location is possible from Saunders Street and Miller Street corner due to widened footpath. The geotechnical constraints requiring consideration would be:

- The site of the proposed structure is located above an existing rail cutting. The impact of the project on the stability of the rail cutting needs to be considered both during construction and in the long term. During construction, temporary loads from construction plant such as an excavator, could potentially cause stability issues at the top of the cutting and in the rock face, and would require careful assessment if used. In the long term, the effect of lateral movement of the structure due to earthquake or wind loading on the cutting stability would need to be taken into consideration;

- The capacity of the ground to resist both vertical and lateral forces will be reduced above the base of the cutting, above the base of the soil layer (if present), and further reduced where bedding planes occur; and
- The general location around the billboard foundation will have to be cleared of the current structure, vegetation and possibly a tree(s) to allow access for plant and equipment to construct the foundation.

7. Possible Foundation System Options

The current foundation system being considered as understood from provided drawings is a concrete pad footing.

The bearing requirements for a pad footing are dependent on structural engineers requirements (lateral forces, settlement etc.), as well as the geological conditions confirmed with further investigation. Deepening the footing should be considered depending on the results of further investigation, as embedding in rock would improve passive resistance. This is dependent on whether and at what depth suitable rock is found. The effect of such a footing on the stability of the cutting would also need to be considered in more detail.

8. Risks and Opportunities

Risks that should be considered during design and construction at this site include:

- the potential presence of buried services;
- working close to existing rail infrastructure;
- possible train exclusion zones or other management measures, if construction work is to proceed outside of a track possession period;
- risk of rockfall or debris slide from the batter slope during excavation work;
- access for drilling machinery, concrete supply, and removal of spoil, including the need for devegetation above the cutting crest;
- pedestrian and traffic management along the nearby footpath at Saunders Street and Miller Street;
- impact of the proposed construction equipment on the global stability of the existing rail cutting; and
- depending on excavation depth, the need for temporary support (temporary batters/benching or shoring boxes).

9. Recommendations for Further Investigation

The following detailed site investigation is recommended at this site:

- Drilling a cored borehole at the structure location to determine the strata depths. The borehole should extend at least 4 m into rock;
- Mapping of the existing rock cutting to identify any areas of potential instability. Any such mapping would have to be carried out during a track possession; and
- Stability assessment of the rail cutting.

10. Limitations

Douglas Partners (DP) has prepared this report for this project at Western Distributor North (Pyrmont Bridge Road), Pyrmont, in accordance with DP's proposal SYD200574 dated 11 October 2022. Acceptance was received from Hanlon Industries via an email dated 11 October 2022. The work was carried out under DP's Conditions of Engagement. This report is provided for the exclusive use of Hanlon Industries or their agents for this project only and for the purposes as described in the report. It should not be used by or be relied upon for other projects or purposes on the same or other site or by a third party. Any party so relying upon this report beyond its exclusive use and purpose as stated above, and without the express written consent of DP, does so entirely at its own risk and without recourse to DP for any loss or damage. In preparing this report DP has necessarily relied upon information provided by the client and/or their agents.

DP's advice is based upon published information sources and the conditions observed during a site inspection from outside of the rail corridor boundary fence. The accuracy of the advice provided by DP in this report may be affected by undetected variations in ground conditions across the site and may also be limited by site accessibility.

This report must be read in conjunction with all of the attached pages and should be kept in its entirety without separation of individual pages or sections. DP cannot be held responsible for interpretations or conclusions made by others unless they are supported by an expressed statement, interpretation, outcome or conclusion stated in this report.

This report, or sections from this report, should not be used as part of a specification for a project, without review and agreement by DP. This is because this report has been written as advice and opinion for development application purposes rather than instructions for construction.

The scope for work for this report did not include the assessment of surface or sub-surface materials or groundwater for contaminants, within or adjacent to the site. Should evidence of filling of unknown origin be noted in the report it should be recognised that there may be some risk that such filling may contain contaminants and hazardous building materials.

The contents of this report do not constitute formal design components such as are required, by the Health and Safety Legislation and Regulations, to be included in a Safety Report specifying the hazards likely to be encountered during construction and the controls required to mitigate risk. This design

process requires risk assessment to be undertaken, with such assessment being dependent upon factors relating to likelihood of occurrence and consequences of damage to property and to life. This, in turn, requires project data and analysis presently beyond the knowledge and project role respectively of DP. DP may be able, however, to assist the client in carrying out a risk assessment of potential hazards contained in the Comments section of this report, as an extension to the current scope of works, if so requested, and provided that suitable additional information is made available to DP. Any such risk assessment would, however, be necessarily restricted to the geotechnical components set out in this report and to their application by the project designers to project design, construction, maintenance and demolition.

Please contact the undersigned if you have any questions on this matter.

Yours faithfully
Douglas Partners Pty Ltd

Emily Benjamin
Geologist

Reviewed by

Hugh Burbidge
Principal

Attachments: About this Report
Architectural DA Drawings
Photoplates from Site Walkover

About this Report

Douglas Partners

Introduction

These notes have been provided to amplify DP's report in regard to classification methods, field procedures and the comments section. Not all are necessarily relevant to all reports.

DP's reports are based on information gained from limited subsurface excavations and sampling, supplemented by knowledge of local geology and experience. For this reason, they must be regarded as interpretive rather than factual documents, limited to some extent by the scope of information on which they rely.

Copyright

Borehole and Test Pit Logs

The borehole and test pit logs presented in this report are an engineering and/or geological interpretation of the subsurface conditions, and their reliability will depend to some extent on frequency of sampling and the method of drilling or excavation. Ideally, continuous undisturbed sampling or core drilling will provide the most reliable assessment, but this is not always practicable or possible to justify on economic grounds. In any case the boreholes and test pits represent only a very small sample of the total subsurface profile.

Interpretation of the information and its application to design and construction should therefore take into account the spacing of boreholes or pits, the frequency of sampling, and the possibility of other than 'straight line' variations between the test locations.

Groundwater

Where groundwater levels are measured in boreholes there are several potential problems, namely:

- In low permeability soils groundwater may enter the hole very slowly or perhaps not at all during the time the hole is left open;
- A localised, perched water table may lead to an erroneous indication of the true water table;
- Water table levels will vary from time to time with seasons or recent weather changes. They may not be the same at the time of construction as are indicated in the report; and
- The use of water or mud as a drilling fluid will mask any groundwater inflow. Water has to be blown out of the hole and drilling mud must first be washed out of the hole if water measurements are to be made.

More reliable measurements can be made by installing standpipes which are read at intervals over several days, or perhaps weeks for low permeability soils. Piezometers, sealed in a particular stratum, may be advisable in low permeability soils or where there may be interference from a perched water table.

Reports

The report has been prepared by qualified personnel, is based on the information obtained from field and laboratory testing, and has been undertaken to current engineering standards of interpretation and analysis. Where the report has been prepared for a specific design proposal, the information and interpretation may not be relevant if the design proposal is changed. If this happens, DP will be pleased to review the report and the sufficiency of the investigation work.

Every care is taken with the report as it relates to interpretation of subsurface conditions, discussion of geotechnical and environmental aspects, and recommendations or suggestions for design and construction. However, DP cannot always anticipate or assume responsibility for:

- Unexpected variations in ground conditions. The potential for this will depend partly on borehole or pit spacing and sampling frequency;
- Changes in policy or interpretations of policy by statutory authorities; or
- The actions of contractors responding to commercial pressures.

If these occur, DP will be pleased to assist with investigations or advice to resolve the matter.

About this Report

Site Anomalies

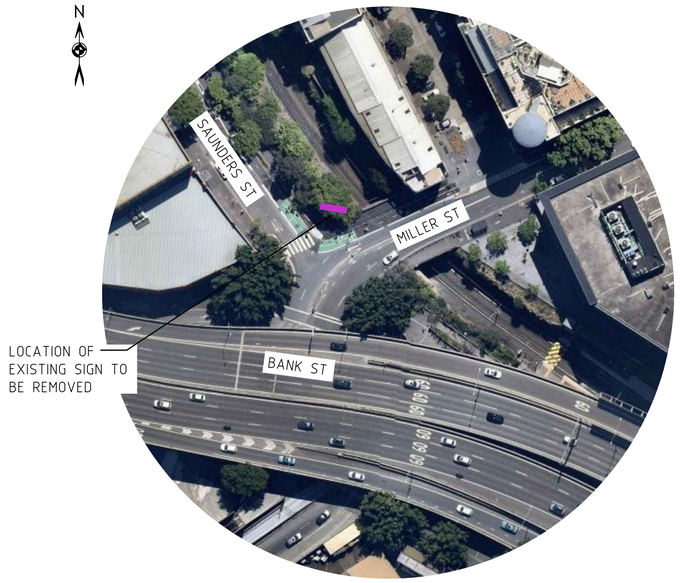
In the event that conditions encountered on site during construction appear to vary from those which were expected from the information contained in the report, DP requests that it be immediately notified. Most problems are much more readily resolved when conditions are exposed rather than at some later stage, well after the event.

Information for Contractual Purposes

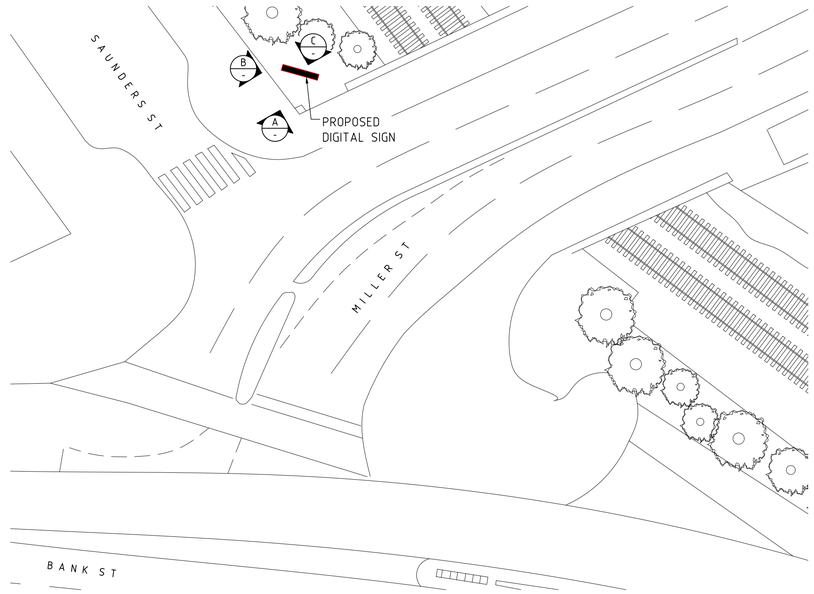
Where information obtained from this report is provided for tendering purposes, it is recommended that all information, including the written report and discussion, be made available. In circumstances where the discussion or comments section is not relevant to the contractual situation, it may be appropriate to prepare a specially edited document. DP would be pleased to assist in this regard and/or to make additional report copies available for contract purposes at a nominal charge.

Site Inspection

The company will always be pleased to provide engineering inspection services for geotechnical and environmental aspects of work to which this report is related. This could range from a site visit to confirm that conditions exposed are as expected, to full time engineering presence on site.



AERIAL PHOTO
NTS



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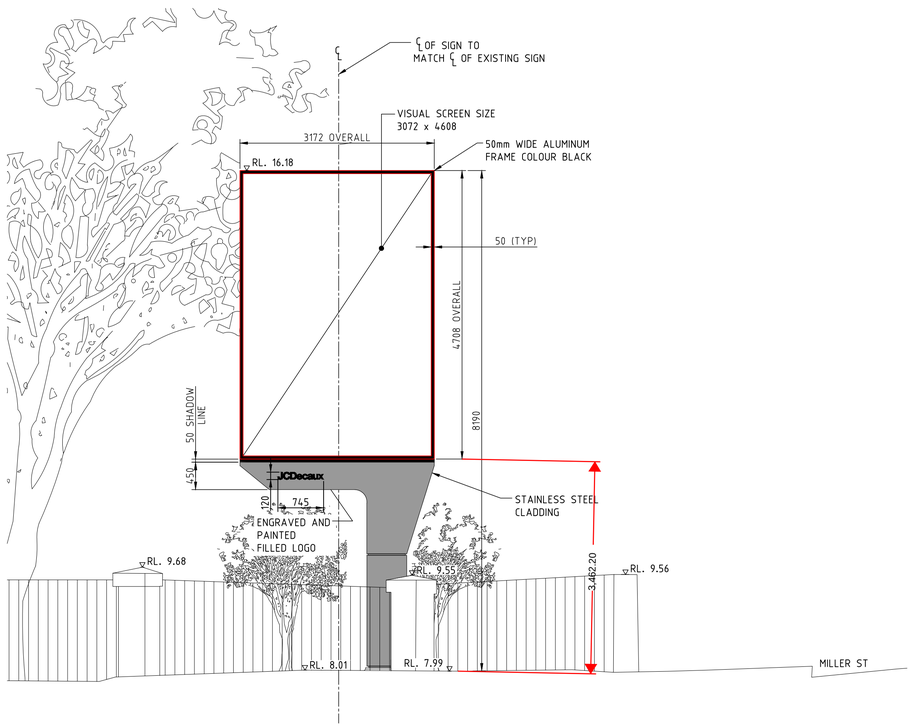

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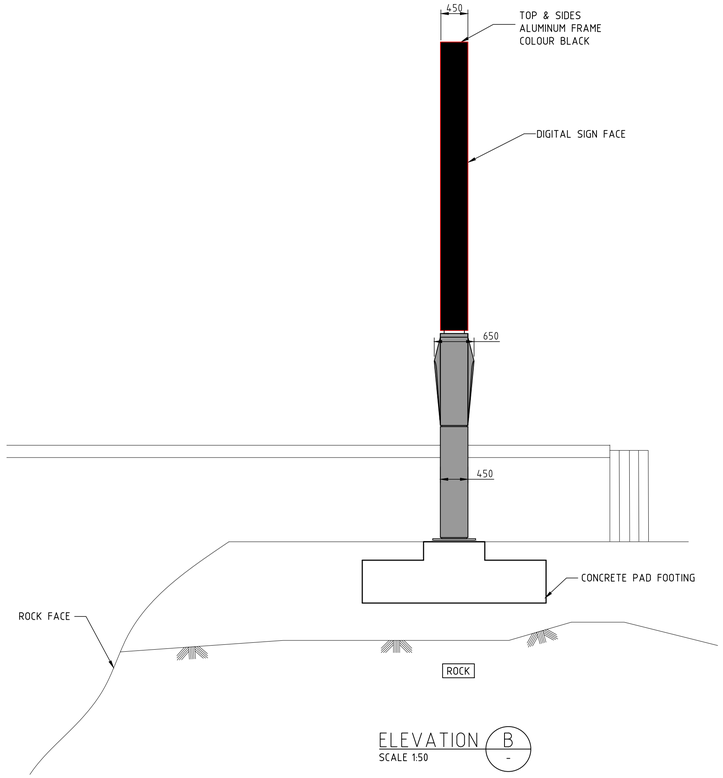

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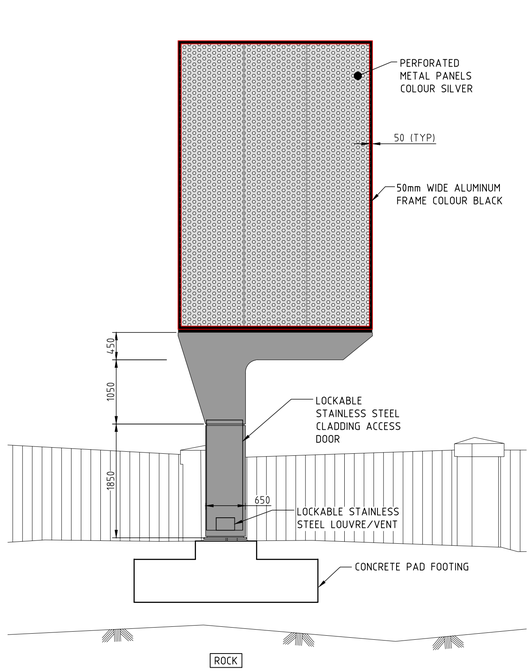

ELEVATION C
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NOT FOR CONSTRUCTION

ISS	DATE	COMMENT
A	14/12/21	ISSUED FOR APPROVAL
B	25/02/22	ISSUED FOR APPROVAL
C	03/03/22	ISSUED FOR APPROVAL
D	21/09/22	ISSUED FOR APPROVAL
E	13/10/22	ISSUED FOR APPROVAL

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ABN 23 039 013 724

CLIENT: JCDecaux

PROJECT: SAUNDERS ST & MILLER ST, PYRMONT, PORTRAIT 50

TITLE: PROPOSED DIGITAL SIGN GENERAL ARRANGEMENT & SITE PLAN

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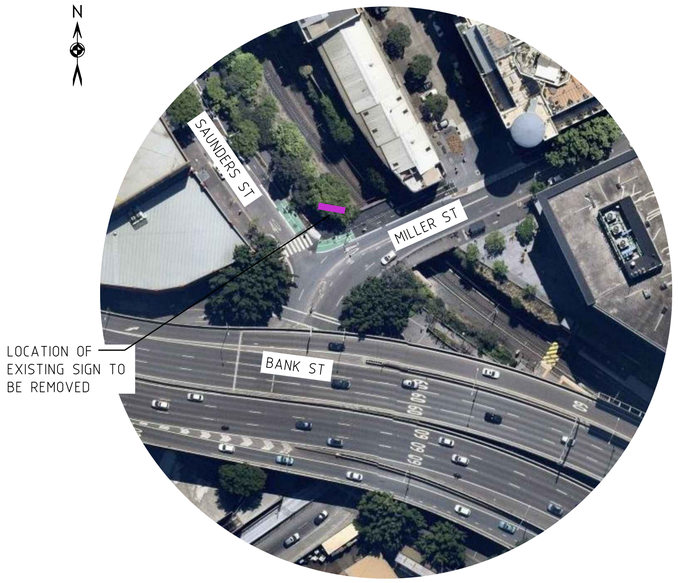
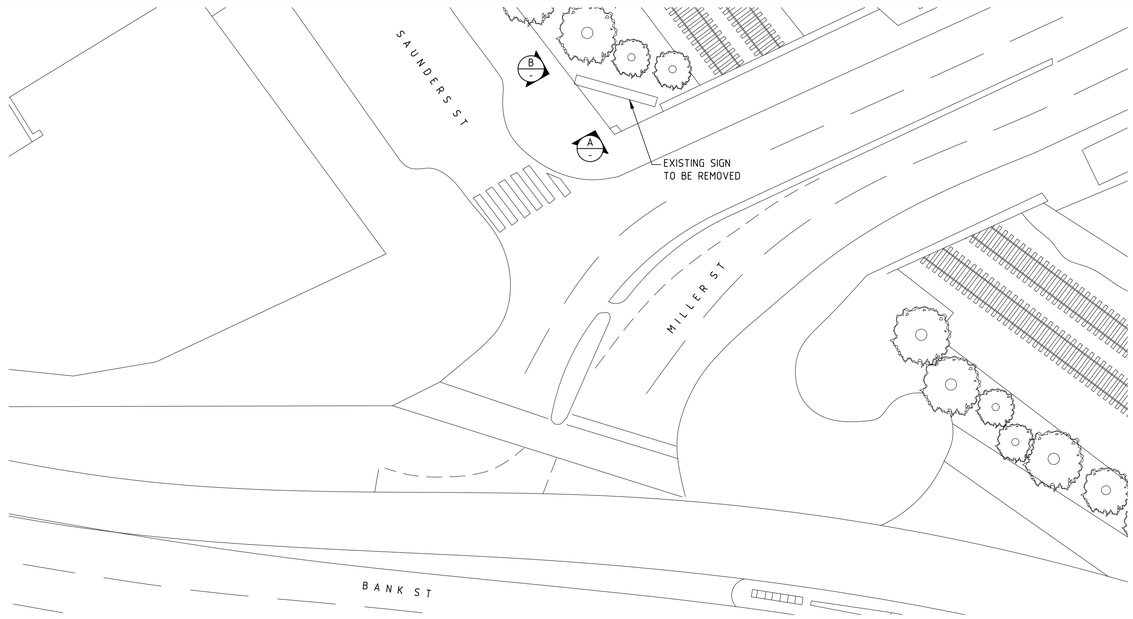


AERIAL PHOTO
NTS



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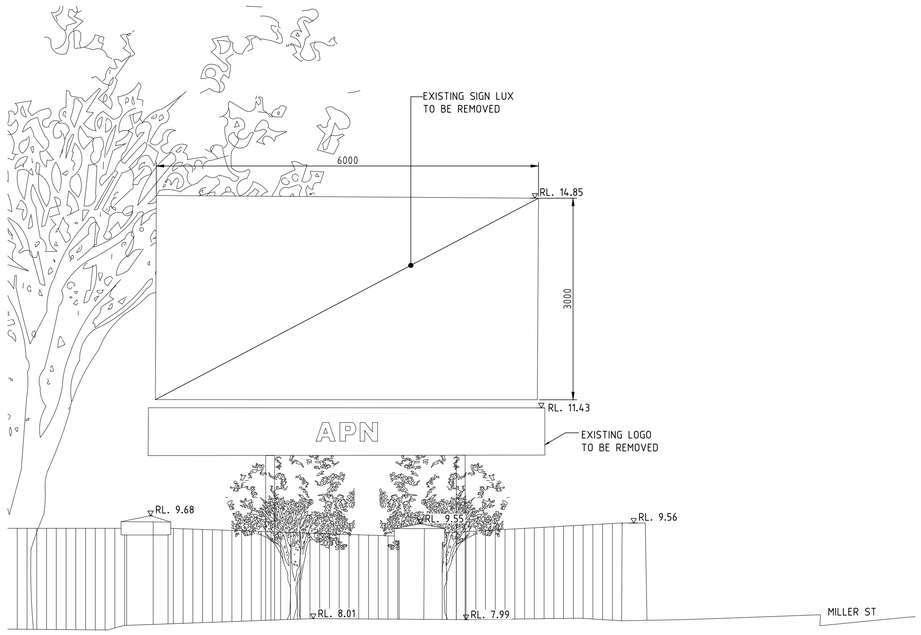

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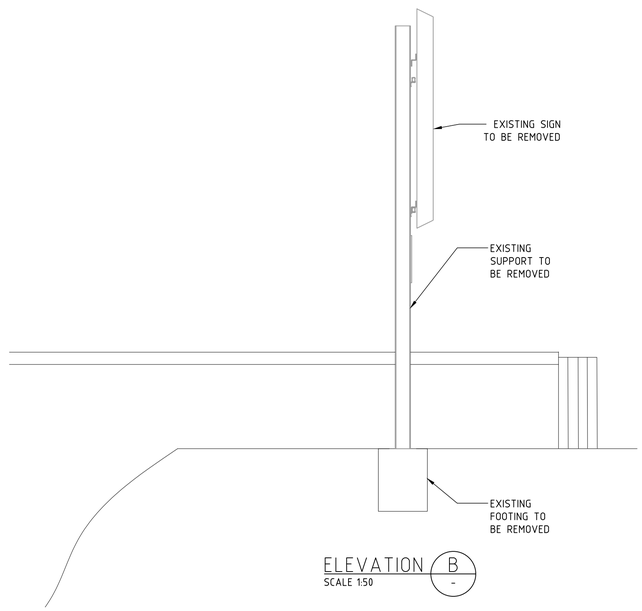

ELEVATION B
SCALE 1:50

NOT FOR CONSTRUCTION

ISS	DATE	COMMENT
A	14/12/21	ISSUED FOR APPROVAL
B	25/02/22	ISSUED FOR APPROVAL
C	03/03/22	ISSUED FOR APPROVAL

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DRAWN A.T	DESIGN J.L	DATE: OCT 21
JOB NO: 21254		DWG NO: DA01
SCALE @ A1: AS SHOWN		REV: C

Proposed Location

Douglas Partners Geotechnics / Environment / Groundwater	CLIENT:	Hanlon Industries	TITLE:	**Site Walkover Photographs**	PROJECT No: 218669
	OFFICE:	Sydney		**Corner of Saunders Street and Miller Street**	PHOTOPLATE No: 1
	DATE:	26.10.2022		**Pyrmont, Sydney**	REVISION: 0