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Hanlon Industries Pty Ltd
22 Clevedon Street
Botany, NSW 2019

224958.00
29 September 2023
223256.00.R.001.Rev1
AD:hb

Attention: Sujith Reddy

Email: sujith.b@hanlonindustries.com.au

Preliminary Geotechnical Assessment
Proposed Digital Billboard Structure
Sydney Park Road (near intersection of King Street, Erskineville

1. Introduction

A digital billboard sign supported by a 0.61 m diameter monopole with stainless steel cladding supported by a 750 mm diameter foundation pile is proposed to be installed on the Sydney Park Road near the corner of King Street, Erskineville. This geotechnical assessment has been prepared by Douglas Partners Pty Ltd (DP) and it is understood that it will be used to support a Development Application (DA) for the site.

This preliminary geotechnical assessment has included 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 investigation 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 be constructed within the rail corridor along the southern side of the Illawarra Line and to the north of Sydney Park Road. The rail cutting at this location is about 10 m high (levels taken from survey drawings provided) with a steep 80 to 85° lower section and a shallower (30-35°) upper slope where the sign is proposed. The upper slope is vegetated with medium-dense low shrubs and several trees. The lower level of the slope is retained by a blockwork faced retaining wall with the upper section left exposed. An aerial photograph showing the indicative location is given in Figure 1.

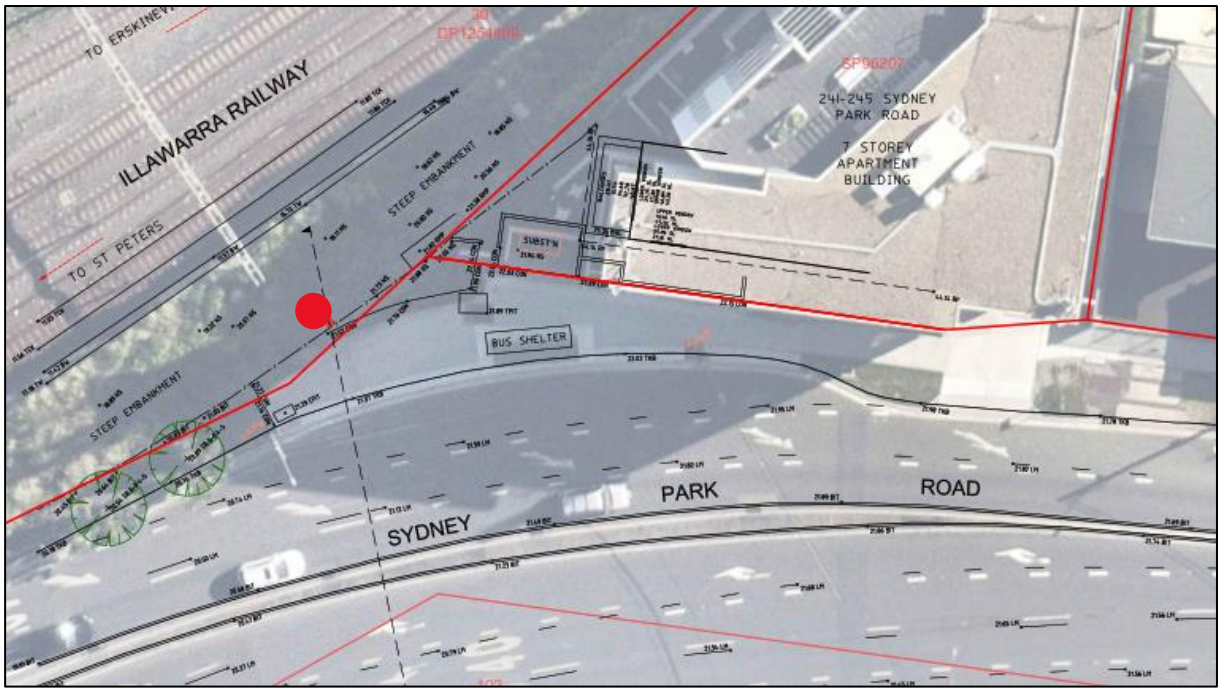


Figure 1: Photograph of the site area (red mark).

Figure 2: Streetview of the site location (taken June 2023).

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 sulphate soils, NSW Department of Environment and Climate Change based on published 1:25,000 Acid Sulphate Soil Risk Mapping, 1994-1998.
- Sydney 1:100 000 Soils Landscape Mapping Sheet, Soil Conservation Service of NSW.
- Sydney 1:100 000 Geological Series Sheet, Geological Survey of NSW.
- Geotechnical Investigation Report, 'Report on Proposed Amenities Block, St Peters Depot Sydney Park Road, Erskineville, Douglas Partners Pty Ltd (Ref: 43253, dated September 2005).
- Geotechnical Investigation Report, 'Report on Proposed Residential Development, 221-229 Sydney Park Road, Erskineville, Douglas Partners Pty Ltd (Ref: 30278, dated March 2002).
- General Arrangement & Site Plan prepared by DBCE, Drawing No DA01 Rev

4. Review of Information

A review of the available information indicates the following:

- The drawings indicate the proposed structure is approximately 5.6 m tall from street level and is located adjacent to a rail cutting for Illawarra Rail line.
- The geological series sheet indicates that the general area is underlain by the Ashfield Shale formation of Triassic Age (comprising shale, siltstone and laminate members, with minor layers of carbonaceous material).
- The soil landscape map sheet indicates that the general area is underlain by residual soils of the Glenorie Group (clays and silty clays). It is flagged as having a high soil erosion hazard, localised impermeable highly plastic subsoil and is moderately reactive.
- Acid sulphate soil (ASS) risk maps indicate that the site is within an area of no known occurrence of acid sulphate soils.
- Based on a review of the nearby geotechnical investigations (closest is about <50m away), the general ground profile in the area would comprise residual clays overlying very low and low strength siltstone/laminite over medium to high strength siltstone/laminite. From our general knowledge of the Ashfield Shale in Sydney, there is likely to be both steeply dipping NNE-SSW and ESE-WNW joints and random low angle joints (typically about 45°) in addition to clay seams and decomposed weak seams in the shale rock.

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:

- Fill, possibly gravely and clayey to a shallow depth, maybe up to 1 m; over,
- Fairly deep residual clay and silty clay up to 6 or 7 m in depth; over,
- Extremely weathered and highly weathered, typically ranging from very low strength to low strength Ashfield Shale (siltstone/laminite) possibly up to 25 m; over,
- Moderately weathered to fresh typically ranging from medium strength to high strength Ashfield Shale (siltstone/laminite).

6. Geotechnical Constraints

The geotechnical constraints requiring further consideration are:

- The site of the proposed structure is located towards the top of 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 a piling rig, could potentially cause stability issues at the top of the cutting and would require careful assessment and analysis. In the long term, the effect of lateral movement of the structure due to earthquake or wind loading on the cutting stability would also need to be taken into consideration.
- The Sydney 1:100 000 Soils Landscape Mapping Sheet indicates that the soil may have a high soil erosion hazard, localised impermeable highly plastic subsoil and is moderately reactive. Soil sampling should be undertaken in a future investigation to confirm conditions and factor in these characteristics to foundation design as applicable.
- Groundwater was encountered at approximately RL[1] 8 m in a nearby investigation (about 3 to 4 m below the base of the rail cutting. Water sampling and soil testing for aggressivity to concrete should be included in the geotechnical investigation should the foundation pile extend deeper than say 10 m (i.e. to RL 11 to 12) to allow for ground water fluctuation with time. Alternatively a conservative aggressivity value should be assumed by the pile designer. Water level should also be taken into consideration when designing the foundation pile.
- The proposed sign location is about 4 to 5 m back from the top of the blockwork faced retaining wall at the top of a relatively shallow 30 to 35° slope. As a result of the sloping surface, the capacity of the ground to resist lateral forces will be reduced above the base of the pile, above the base of the soil layer, and further reduced where bedding planes occur in the rock.
- The pile design/location should take into account any ground anchors/support that may exist behind the blockwork faced retaining wall and the upper slope. Details of the design of the cutting and support should be obtained. This information will be required for both the geotechnical investigation and for the pile design.

[1] Reduced Level in metres relative to Australian Height Datum

- Depth to low strength siltstone/laminite could be in the order of 6 to 7 m and the depth to medium strength siltstone/laminite in the order of 20 m below road surface level and 10 m below the rail lines based on the ground conditions encountered in the nearby sites.
- Working close to the crest of the rail cutting may apply load to the existing batter and a suitable distance should be kept from the crest to prevent surcharging. (Access constraints and requirements of Sydney Trains for working at the top of a cutting should be investigated by Hanlon).
- During design, analysis will be required to assess the stability of the cutting due to the new structure.

7. Foundation

The proposed foundation system is understood to comprise a 750 mm diameter pile. Preliminary design of bored piles subjected to axial compression may be based on the parameters provided in Table 1.

Table 1: Preliminary Design Parameters for Piles (after Pells et al[2])

Foundation Stratum	Maximum Allowable Pressure		Field Elastic Modulus (MPa)
	End Bearing (kPa)	Shaft Adhesion (Compression)[1] (kPa)	
Stiff Residual Clay	100	5	15
Very low strength to low strength Siltstone/Laminite	1000	100	100
Medium strength and medium to high strength Siltstone/Laminite	3500	350	700

Note: (1) Values shown are for compression. Shaft adhesion values for uplift (tension) may be taken as being equal to 70% of the values for compression, provided that adequate socket roughness is achievable.

Foundations proportioned on the basis of the allowable bearing pressures in Table 1 would be expected to experience total settlements of less than 1% of the pile diameter under the applied working load.

Taking the pile to a depth below the rail cutting base should be considered, and the socket material decided depending on the results of further investigation. The depth of the pile can only be determined based on confirmed parameters resulting from a detailed geotechnical investigation involving a borehole. The effect of such a foundation on the stability of the cutting would also need to be considered in more detail.

[2] Classification of Sandstones and Shales in the Sydney Region: A Forty Year Review, Pells et al AGS 2019

8. Geotechnical-Related Risks

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

- the potential presence of buried services;
- working close to existing rail batter and infrastructure;
- possible train exclusion zones or other management measures, if construction work is to proceed outside of a track possession period;
- risk of surcharging the batter slope during piling;
- impact of the proposed construction equipment on the global stability of the existing rail cutting.

Note there may be other risks depending on equipment, methodology etc that are not included in the above.

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 strata depths. The borehole should extend to a minimum of 3 m into medium strength siltstone/laminite, which may in the order of 25 to 30 metres based on nearby investigation information.
- Mapping of the existing rail cutting to identify any areas of potential instability. Any such mapping may 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 the corner of Sydney Park Road near the corner of King Street, Erskineville in accordance with DP's proposal 224958.00.P.001.Rev0. Acceptance was received from Hanlon Industries via an email dated 05 September 2023. The work was carried out under Hanlon Industries NSW Terms and Conditions. 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, a previous DP report 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.

Douglas Partners Pty Ltd

Alan Duong
Geotechnical Engineer

Reviewed by

Hugh Burbidge
Principal

Attachments: About this Report
Drawing 23073-DA01-[B]
Drawing 22346sitePlan1

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.

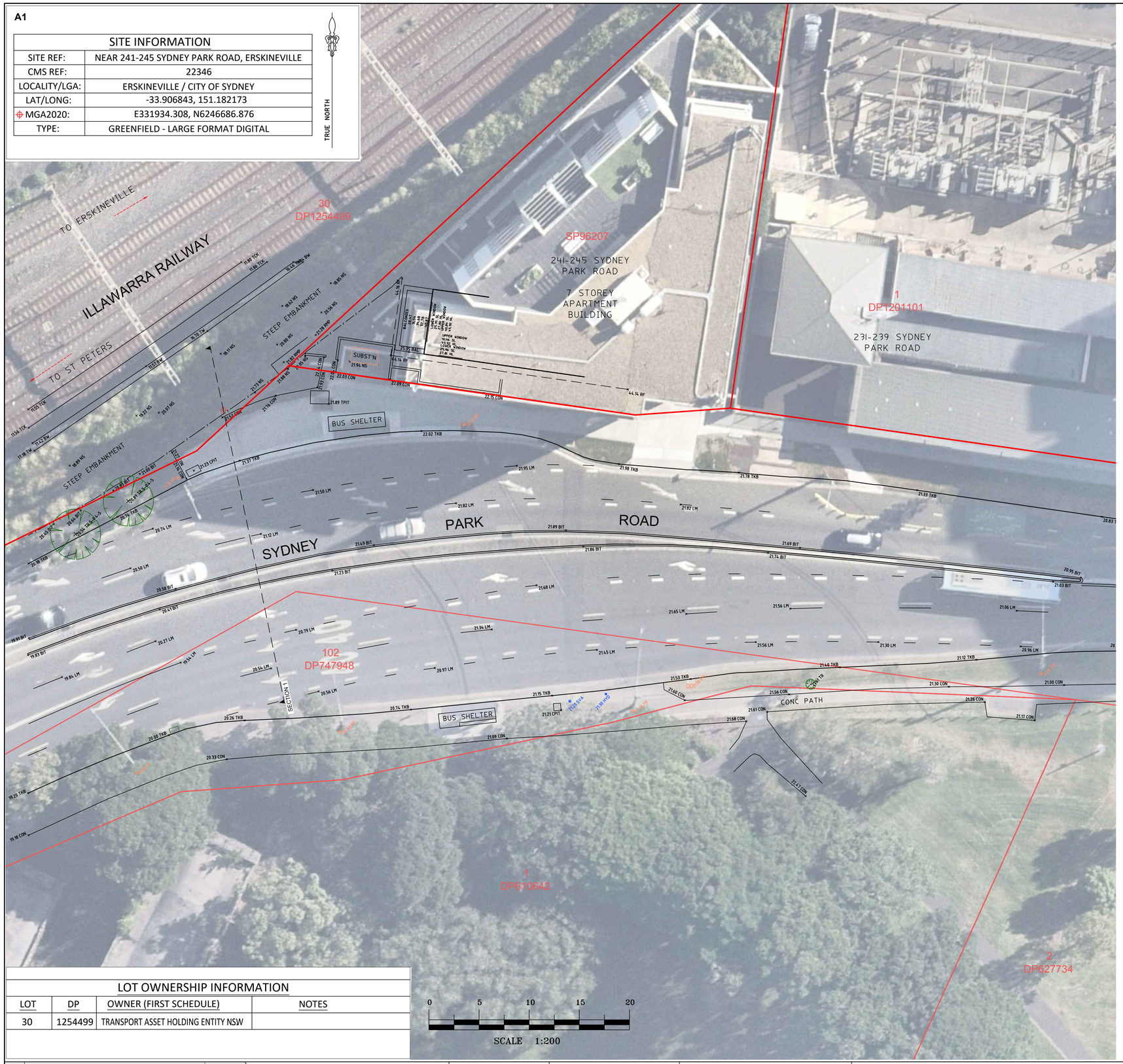
Site Inspection

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.

A1

SITE INFORMATION	
SITE REF:	NEAR 241-245 SYDNEY PARK ROAD, ERSKINEVILLE
CMS REF:	22346
LOCALITY/LGA:	ERSKINEVILLE / CITY OF SYDNEY
LAT/LONG:	-33.906843, 151.182173
MGA2020:	E331934.308, N6246686.876
TYPE:	GREENFIELD - LARGE FORMAT DIGITAL

TRUE NORTH



LOT OWNERSHIP INFORMATION

LOT	DP	OWNER (FIRST SCHEDULE)	NOTES
30	1254499	TRANSPORT ASSET HOLDING ENTITY NSW	

PERSPECTIVE - LOOKING WEST AT LOCATION OF PROPOSED SIGN (DISTANT)

PERSPECTIVE 2 - LOOKING WEST AT POSITION OF PROPOSED SIGN (CLOSE)

LEGEND

BAL = BALCONY
BIT = BITUMEN
BW = BOTTOM WALL
CON = CONCRETE
CPIT = COMMUNICATIONS PIT
EPIL = ELECTRICITY PILLAR
HL = WINDOW HEAD LEVEL
HYD = HYDRANT
LM = LINE MARKING
LP = LIGHT POLE
NS = NATURAL SURFACE
PIT = TOP OF PIT
PP = POWER POLE
RF = TOP OF ROOF
RMP = RAMP
SL = WINDOW SILL LEVEL
SVA = STOP VALVE
TCK = TRACK
TKB = TOP OF KERB
TPIT = TELSTRA PIT
TR = TREE
TW = TOP OF WALL

= DIGITAL CADASTRAL DATABASE BOUNDARY - INDICATIVE POSITION ONLY
= BOUNDARY BY BASIC BOUNDARY INVESTIGATION

NOTES

- BOUNDARY INFORMATION SHOWN AS PER LEGEND. DCDB BOUNDARY POSITIONS ARE APPROXIMATE ONLY AND ARE SUBJECT TO FURTHER BOUNDARY INVESTIGATION
- RELATIONSHIP OF FEATURES TO BOUNDARIES IS INDICATIVE ONLY
- IF CONSTRUCTION IS INTENDED TO BE UNDERTAKEN ON OR ADJACENT TO PROPERTY BOUNDARIES THE BOUNDARIES OF THE LAND MUST BE MARKED.
- THIS SURVEY IS FOR DEVELOPMENT APPLICATION PURPOSES FOR SIGNAGE PROJECT ONLY. THIS PLAN MUST NOT BE USED FOR ANY OTHER MATTER, PURPOSE OR CONSTRUCTION SETOUT.
- THIS PLAN HAS BEEN PREPARED FOR THE EXCLUSIVE USE OF JC DECAUX
- RELATIONSHIP OF IMPROVEMENTS TO BOUNDARIES IS DIAGRAMMATIC ONLY. WHERE OFFSETS ARE CRITICAL THEY SHOULD BE CONFIRMED BY FURTHER SURVEY.
- AERIAL PHOTOGRAPHS ARE SUBJECT TO DISTORTION – USE WITH CAUTION
- DIAL BEFORE YOU DIG SERVICES (ph 1100) SHOULD BE USED AND A FULL UTILITY INVESTIGATION, INCLUDING A UTILITY LOCATION SURVEY, SHOULD BE UNDERTAKEN BEFORE CARRYING OUT ANY CONSTRUCTION ACTIVITY IN OR NEAR THE SURVEYED AREA.
- CRITICAL SPOT LEVELS SHOULD BE CONFIRMED WITH SURVEYOR.
- THE INFORMATION IS ONLY TO BE USED AT A SCALE ACCURACY OF 1:100 OR AS NOTED.
- DO NOT SCALE OFF THIS PLAN / FIGURED DIMENSIONS TO BE TAKEN IN PREFERENCE TO SCALED READINGS.
-
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- ANY PERMITTED DOWNLOADING, ELECTRONIC STORAGE, DISPLAY, PRINT, COPY OR REPRODUCTION OF THIS SURVEY SHOULD CONTAIN NO ALTERATION OR ADDITION TO THE ORIGINAL SURVEY.
- THIS NOTICE MUST NOT BE ERASED.

1	FIRST ISSUE	24/04/2023

HORIZONTAL DATUM:
CO-ORDINATE SYSTEM: MGA-GDA2020
MARKS ADOPTED: SSM 52690 - SSM 207965

VERTICAL DATUM:
DATUM: AUSTRALIAN HEIGHT DATUM (AHD)
B.M. ADOPTED: SSM 52690
R.L. 17.601
SOURCE: S.C.I.M.S. 31/03/2023

BEFORE YOU DIG www.byda.com.au Zero Damage - Zero Harm

CLIENT:
JCDECAUX AUSTRALIA TRADING PTY LTD

LGA: SYDNEY

SURVEY PLAN SHOWING SITE DETAILS AT PROPOSED SIGNAGE SITE SYDNEY PARK ROAD (NEAR INTS'N OF KING STREET) ERSKINEVILLE, NSW, 2043

CMS SURVEYORS PTY LTD
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☎ (02) 9971 4802
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SURVEYED	DRAWN	CHECKED	APPROVED
PB	AS/PB	CL	CL

SURVEY INSTRUCTION	SCALE	DATE OF SURVEY
22346	1:200@A1	05/04/2023

DRAWING NAME **22346sitePlan** SHEET 1 OF 2 ISSUE **1**

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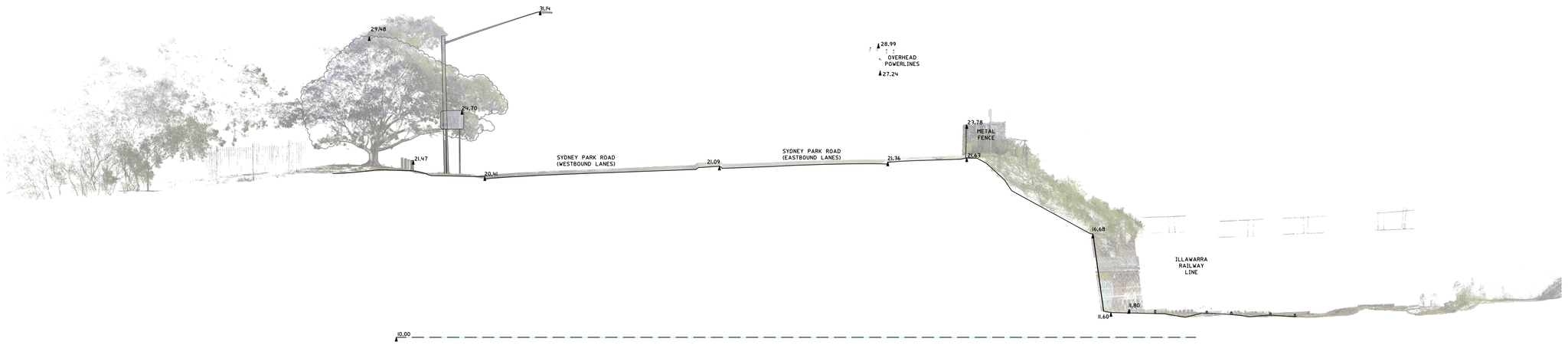
A1

SECTION 1 - LOOKING WEST

NOTE: SECTION IS NOT PERPENDICULAR TO ROAD - ROAD WIDTHS ARE DISTORTED



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SCALE 1:100

1	FIRST ISSUE	24/04/2023	

HORIZONTAL DATUM:
CO-ORDINATE SYSTEM: MGA-GDA2020
MARKS ADOPTED: SSM 52690 - SSM 207965

VERTICAL DATUM:
DATUM: AUSTRALIAN HEIGHT DATUM (AHD)
B.M. ADOPTED: SSM 52690
R.L. 17.601
SOURCE: S.C.I.M.S. 31/03/2023

BEFORE YOU DIG www.byda.com.au Zero Damage - Zero Harm

CLIENT:
JCDECAUX AUSTRALIA TRADING PTY LTD

LGA: SYDNEY

SURVEY PLAN SHOWING SITE DETAILS AT PROPOSED SIGNAGE SITE SYDNEY PARK ROAD (NEAR INTS'N OF KING STREET) ERSKINEVILLE, NSW, 2043

CMS SURVEYORS

CMS SURVEYORS PTY LTD
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SURVEYED	DRAWN	CHECKED	APPROVED
PB	AS/PB	CL	CL

SURVEY INSTRUCTION	SCALE	DATE OF SURVEY
22346	1:100@A1	05/04/2023

DRAWING NAME **22346sitePlan**
SHEET 2 OF 2
ISSUE **1**
CAD FILE 22346sitePlan 1.dwg

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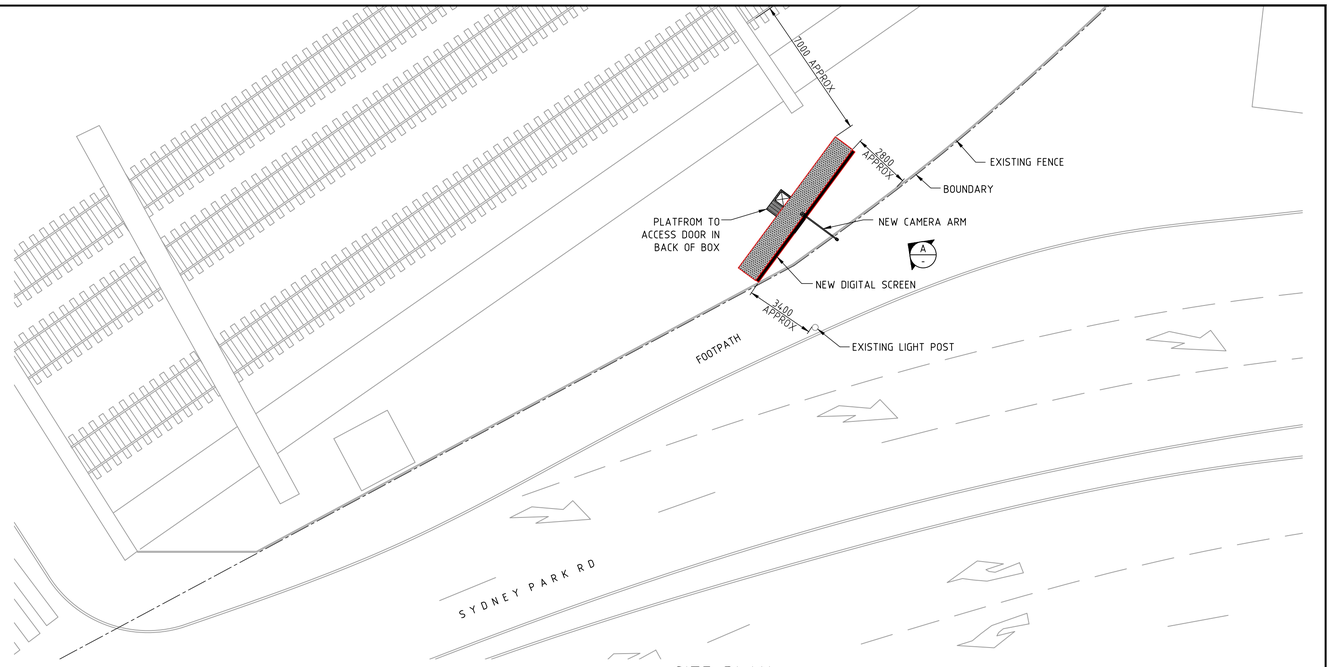
NTS



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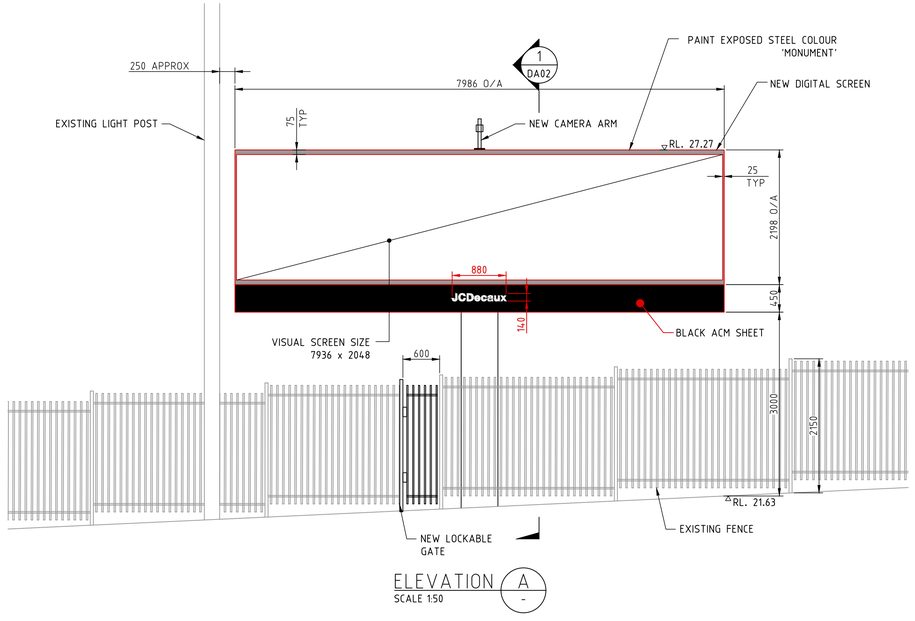

ELEVATION A
SCALE 1:50

NOT FOR CONSTRUCTION

ISS	DATE	COMMENT
A	06/04/23	ISSUED FOR APPROVAL
B	09/05/23	ISSUED FOR APPROVAL
C	07/07/23	ISSUED FOR APPROVAL
D	07/09/23	ISSUED FOR APPROVAL

Dennis Bunt
Suite 1, Building 8, 49 Frenchs Forest Road East,
Frenchs Forest, NSW 2086
P.O. Box 652, Forestville, NSW 2087
Ph: 02 9451 3455 Fax: 02 9451 3466
Email: info@dbce.com.au
ABN 23 039 013 724

CLIENT: JCDecaux

PROJECT: SYDNEY PARK RD, ERSKINEVILLE, SYDNEY TRAINS

TITLE: PROPOSED DIGITAL SIGN GENERAL ARRANGEMENT & SITE PLAN

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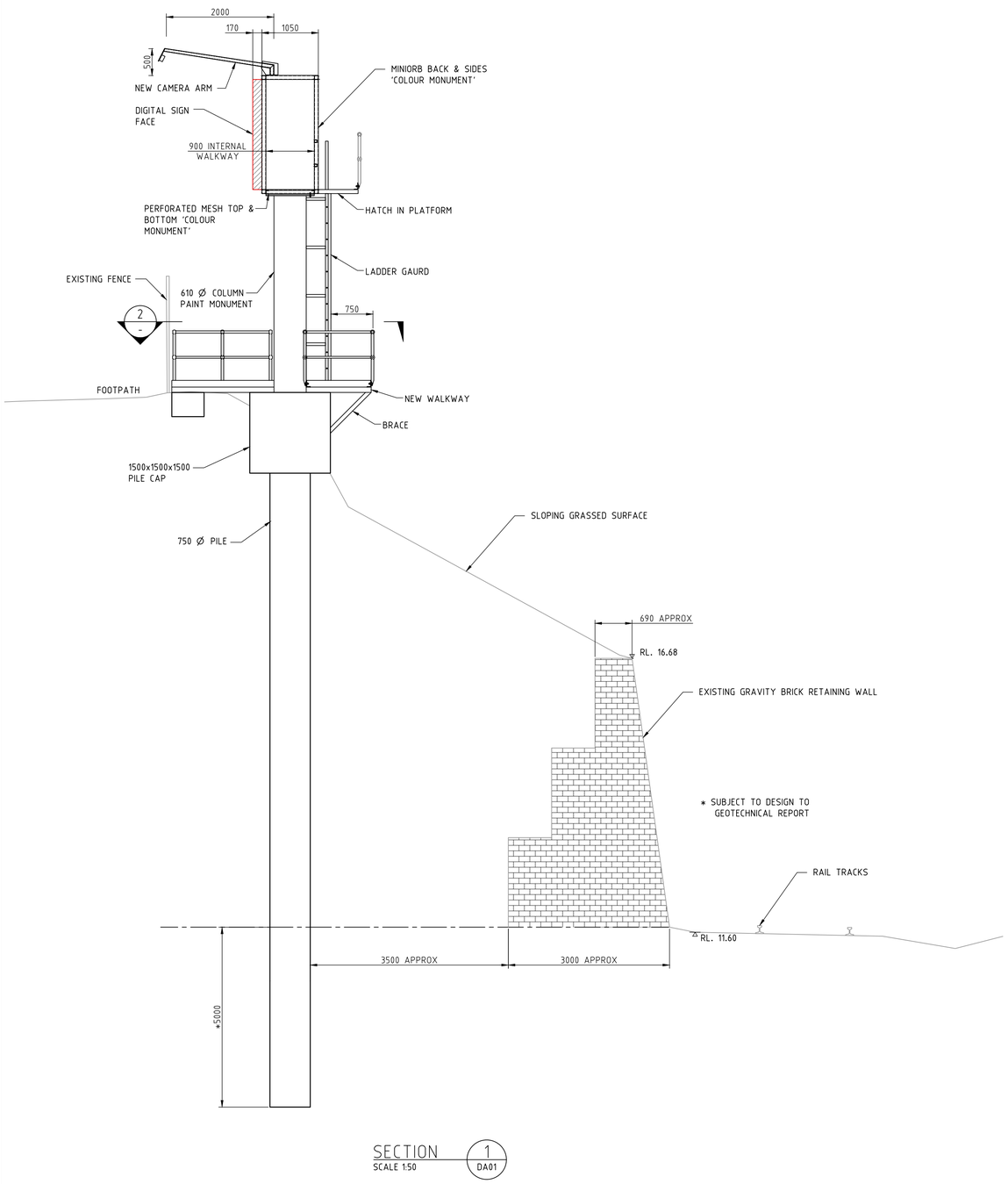

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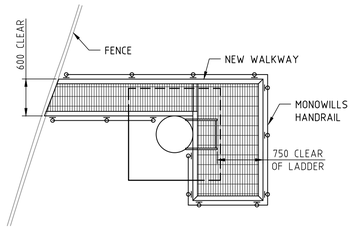

SECTION 2
SCALE 1:50 -

NOT FOR CONSTRUCTION

ISS	DATE	COMMENT
A	07/09/23	ISSUED FOR APPROVAL

Dennis Bunt Consulting Engineers Pty Ltd
Suite 1, Building 8, 49 Frenchs Forest Road East,
Frenchs Forest, NSW 2086
P.O. Box 652, Forestville, NSW 2087
Ph: 02 9451 3455 Fax: 02 9451 3466
Email: info@dbce.com.au
ABN 23 039 013 724

CLIENT: JCDecaux

PROJECT: SYDNEY PARK RD, ERSKINEVILLE, SYDNEY TRAINS

TITLE: PROPOSED DIGITAL SIGN SECTIONS

DRAWN A.T	DESIGN J.L	DATE: APR'23
JOB NO: 23073		DWG NO: DA02
SCALE @ A1: AS SHOWN		REV: A