Date: 8 February 2023
Ref: 33618Ylet3

Reform Projects Pty Ltd
15/108 Dunning Ave
ROSEBERY NSW 2018

Attention: Alex Swiney
Email: aswiney@reformprojects.com.au

GEOTECHNICAL INVESTIGATION
THICKNESS OF SHOTCRETE PANEL AND NATURE OF MATERIAL PRESENT BEHIND IT
1102 BARRENJOEY ROAD, PALM BEACH, NSW

1 INTRODUCTION

This letter has been prepared to present the results of an investigation into the thickness of the shotcrete and mesh panel located below the large boulder on the southern boundary (B1) and the nature of the materials present behind it. This investigation was commissioned by Mr Alex Swiney of Reform Projects Pty Ltd and was completed in accordance with our proposal (Ref: P58050Y, dated 24 January 2023).

2 INVESTIGATION METHODOLOGY

The investigation was completed on 31 January 2023 and comprised the drilling of eight horizontal core holes through the shotcrete and mesh facing. All holes were initially drilled using a 0.1m diameter diatube. Following the penetration of the shotcrete and mesh panel, a hand auger was then used to horizontally penetrate the soils present behind the panel. Where bedrock was encountered and could not be penetrated with the hand auger. a screw driver was used to obtain a sample of the bedrock.

Test locations were positioned on three section lines and were progressively drilled from below the underside of B1. Where bedrock was not encountered immediately below B1 another hole was drilled at a slightly lower level. This process was repeated until bedrock was exposed. Due to the elevated nature of B1, scaffold was used to drill the upper holes. Figure 1 shows the position of the section lines on which the test locations were positioned while Figure 2 presents sections showing the soil and bedrock profile present behind the shotcrete and mesh panel. The table presented below in *Section 2 Results*, details the materials encountered at each of the test locations.

The investigation was completed in the full time presence of our Principal Associate, Mr Woodie Theunissen. Where clayey soils where present behind the shotcrete and mesh panel, hand penetrometer tests were

completed to assess the strength of the soils. For more information on the nature of the materials present and their strength, reference should be made to the table below and Figure 2.

3 RESULTS

The table below presents the results of the investigation. This table details the location of the test holes below the underside of B1, the thickness of the shotcrete, whether drainage was present behind the panel and a description of the soil and bedrock present.

Thickness of Shotcrete and Mesh Panel and Nature of Materials Present Behind the Panel				
Test	Height Below Underside of B1 (mm)	Thickness of Shotcrete and Mesh Panel (mm)	Is Drainage Present Behind the Shotcrete and Mesh Panel	Description of Materials Present Behind Shotcrete and Mesh Panel
1 Section C-C	0.25	90	Yes	Silty Clay: Medium to high plasticity, grey and orange brown (MC>PL) (VSt) (HP=240kPa)
2 Section C-C	0.5	120	Yes	Siltstone: Grey and Orange Brown (DW) (VL-L)
3 Section B-B	0.5	110	No	Silty Clay: Medium to high plasticity, grey and orange brown (MC>PL) (St) (HP=120kPa)
4 Section B-B	1.0	140	No	Silty Clay: Medium to high plasticity, yellow brown (MC>PL) (VSt) (HP=160kPa)
5 Section B-B	1.4	140	Yes	Sandy Clay: Medium plasticity, grey and yellow brown (MC>PL) (VSt) (HP=180kPa)
6 Section B-B	1.8	160	No	Sandstone: fine grained, yellow brown (H) (EL)
7 Section A-A	1.05	150	No	Sandstone: Fine to medium grained, yellow and orange brown (DW) (M)
8 Section A-A	0.75	130	No	Sandstone: Fine to medium grained, yellow and orange brown (DW) (M)

A graphical representation of the results detailed in the above table is presented in Figure 2.

4 COMMENTS AND RECOMMENDATIONS

The results of the investigation indicate that, as found in earlier investigations, the subsurface conditions below B1 typically comprises a limited depth of soil overlying an interbedded siltstone and sandstone bedrock, which initially appears of poor quality. Where B2 is present below B1, it appears that there is similarly only a very limited amount of soil present between the two boulders.

The soils and poorer quality bedrock will require support both in the short and long term. The better quality bedrock will also require support, should adverse defects be present within the bedrock. In our letter

(Ref: 33618Ylet2rev3, dated 31 January 2023), we have outlined the proposed construction methodology, which includes the installation of a soldier pile wall with infill shotcrete and mesh panels to support the materials through which the excavation will be completed, in both the short and long term. The installation of such a retention system will be suitable for this site. This wall will either be anchored or internally propped in the short term with long term support provided by the building. Our geotechnical report (Ref: 33618YJrptrev3, dated 16 September 2022) provides geotechnical design parameters that may be adopted for the design of these retention system that will support these materials.

Should you require any further information regarding the above, please do not hesitate to contact the undersigned.

Yours faithfully
For and on behalf of
JK GEOTECHNICS

Woodie Theunissen
Principal Associate | Geotechnical Engineer
Encl: Figure 1 – Plan Showing Location of Sections
Figure 2 - Sections

BARRENJOEY

(BITUMEN FORMATION)

APPROXIMATE OUTLINE OF PROPOSED BASEMENT LEVEL FFL RL-0.615m TO RL-0.65m

BENCH MARK
NAIL IN KERB
RL 2.35 (AHD)

1m LENGTH, 0.8m VERTICAL CUT IN FILL (GRAVELLY SILTY SAND)

B3 LARGE BOULDER

B2 LARGE SANDSTONE BOULDER LOWER 0.7m TO 1.3m

SLOPE IS SHOTCRETED BELOW BOULDER AREA

30 TO 35°

B1 UPPER LARGE BOULDER

MAXIMUM 1m TO 1.5m DEEP OVERHANG

101

102

3

1

2

A A'

B B'

C C'

No.1100
2 STOREY
CLAD HOUSE
METAL ROOF

No.1102-1104
RENDERED, TIMBER
& GLASS SHOP
"PALM BEACH FISH & CHIPS"

No.1108
RENDERED BUILDING
TILE ROOF
"BARRENJOEY HOUSE"

D.P.1207743
1138m² CALC.

PAVED AREA UNDER ROOF

CONTAINER

CONTAINER

41
D.P.6746

103
D.P.1256016

102
D.P.1256016

45°

45°

45°

GRASS SLOPE

SOLDIER PILE WALL

FLAT GRASS AREA

LEGEND

- BOREHOLE AND WELL (JK GEOTECHNICS, 2020)
- BOREHOLE AND WELL (WITT CONSULTING, 2019)
- A A' CROSS SECTION

SCALE 1:200 @A3 METRES
0 2 4 6 8 10

This plan should be read in conjunction with the JK Geotechnics report.

Title:	**PLAN SHOWING LOCATION OF SECTIONS**
Location:	1102 - 1106 BARRENJOEY ROAD, PALM BEACH, NSW
Report No:	33618YJrptrev2
Figure No:	1

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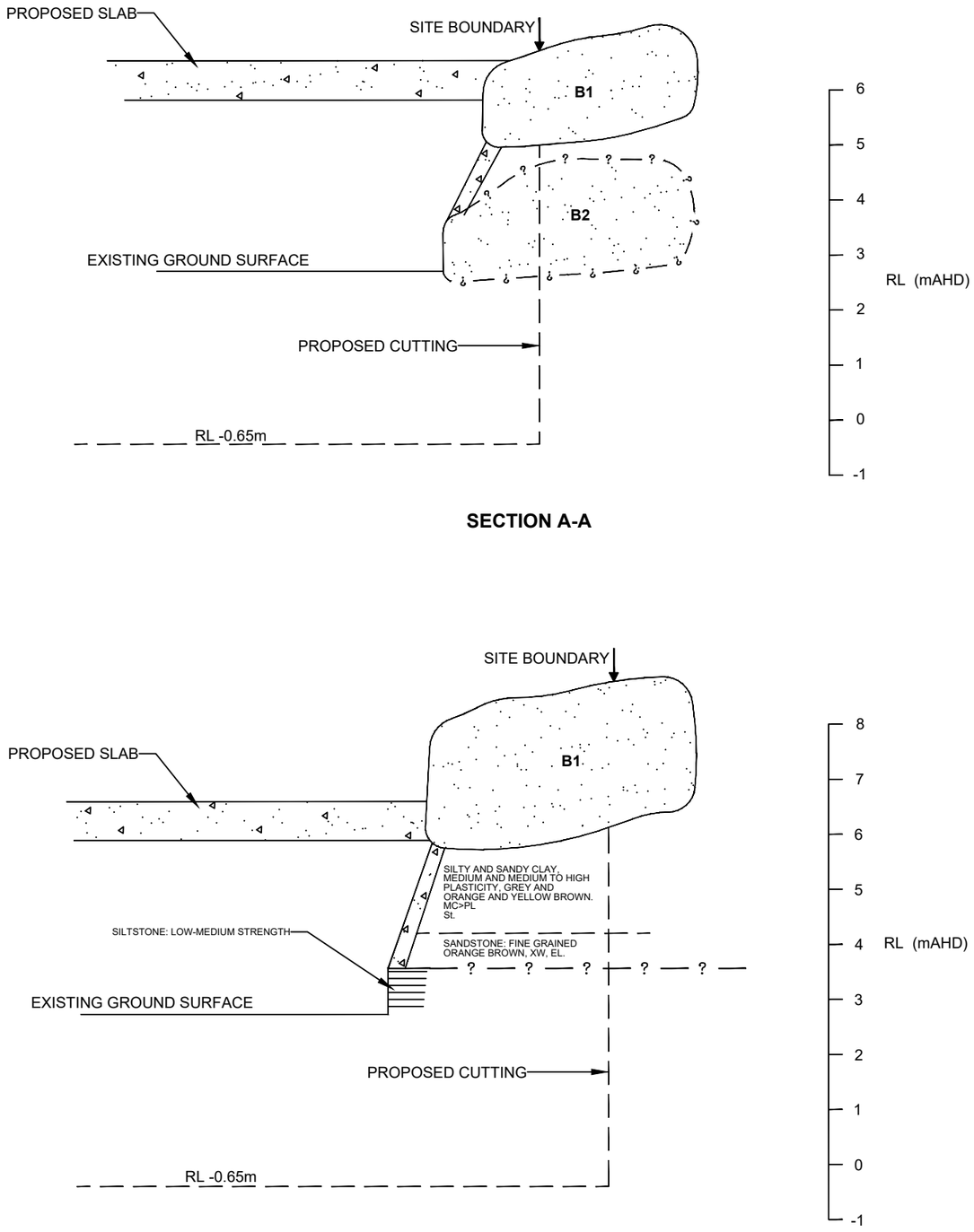
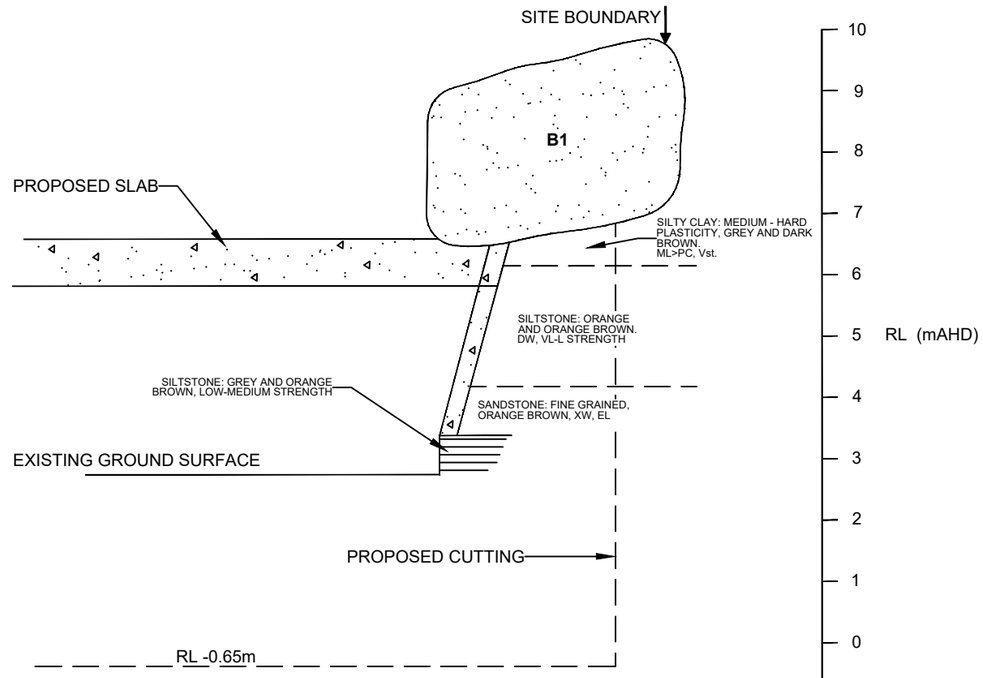
PLOT DATE: 1/02/2023 10:43:34 AM DWG FILE: S:\6 GEOTECHNICAL\6F GEOTECHNICAL JOBS\33000'S\33618YJ PALM BEACH\CAD\33618YJRPTREV2.DWG



SECTION A-A



SECTION C-C

SECTION B-B

0 1 2 3 4 5

SCALE 1:100 @A3 METRES

This plan should be read in conjunction with the JK Geotechnics report.

Title: **SECTION VIEWS**

Location: 1102 - 1106 BARRENJOEY ROAD, PALM BEACH, NSW

Report No: 33618YJrptrev2

Figure No: 2

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PLOT DATE: 1/02/2023 10:43:49 AM DWG FILE: S:\6 GEOTECHNICAL\6F GEOTECHNICAL JOBS\33000'S\33618YJ PALM BEACH\CAD\33618YJRPTREV2.DWG