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Our Ref: PSM3828-008L REV1

13 December 2022

Associate
JBS&G
Level 1
50 Margeret Street
Sydney NSW 2000
MHodgins@jbsg.com.au

Attention: Mitchell Hodgins

Dear Mitchell

RE: RYDE HOSPITAL REDEVELOPMENT
RESULTS OF GEOTECHNICAL INVESTIGATION

1. Introduction

This report has been prepared in response to the submissions and agency advice received for SSD-36778089, being the Ryde Hospital Redevelopment (Concept and Stage 1). This report also provides an assessment of the design changes made to the development following SSDA lodgement. The design changes include the following:

- Stage 1 Works:
  - Minor expansion of Stage 1 Works area.
  - Removal of temporary decanting structure
  - Removal of some civil works to the at-grade car park and existing loading dock area.
- Concept Proposal:
  - Refinements to the podium and tower building envelopes to reflect further design development
  - Relocation of the indicative canopy areas
  - Removal of the multi-deck car park building envelope located along the Ryedale Road frontage and replacement with at-grade car parking
  - Introduction of a new building envelope to accommodate a low-height multi-deck car park located along the Denistone Road frontage
  - Inclusion of a single basement level to accommodate car parking below ground.

For further description of the changes refer to the Submissions Report prepared by Ethos Urban and the Architectural Drawings prepared by STH.

This letter presents the results of the geotechnical investigation and slope stability analysis undertaken by Pells Sullivan Meynink (PSM) for the proposed re-development of Ryde Hospital, Eastwood. The investigation was undertaken in accordance with our proposal PSM3828-007L, dated 10 May 2022. Approval to proceed was provided in an email from Mitchell Hodgins dated 14 June 2022.

To assist us in preparing this proposal, we were provided with the following document:

- Request for Quotation – Geotechnical & Contamination (ref. HIxxx dated April 2022).

2. Geotechnical Investigation

The fieldwork was undertaken between 1 and 3 August 2022. The works occurred under the full-time supervision of a PSM geotechnical engineer, who undertook the following tasks:

- Setting out the investigation locations
- Directing the reinstatement of concrete and asphalt surfaces where required
- Preparing engineering logs of the materials encountered
- Collection of disturbed samples for laboratory testing.

Prior to the investigation, on-site service location “scans” were undertaken by a licensed service locator under the direction of PSM.

Ten (10) boreholes (BH01A to BH10A) were drilled at the site, locations presented on Figure 1. Drilling was undertaken using a track mounted drill rig. The investigation locations of boreholes were recorded with a hand-held GPS unit with a horizontal accuracy of approximately +/- 5 m.

Boreholes were drilled to depths of 6m. Boreholes were advanced initially using a V-bit in soil units and very low strength rock before changing over to a TC-bit in more competent rock units.

Engineering borehole logs are included in Appendix A.

Figures 2 to 4 present some selected site photographs of the fieldwork.

On 24 August 2022 a Principal Geotechnical Engineer and a Geotechnical Engineer from PSM completed a site walkover of the land south of the Hospital Site. The purpose of the inspection was to assess the geotechnical condition and performance of the steep slope immediately south of the Hospital Site. Access to the steep batter immediately south of the site was limited due to dense vegetation and uneven ground. This batter is referred to herein as the **Southern Fill Batter**.

3. Geotechnical Laboratory Testing

Five (5) bulk soil samples from the site were recovered for California Bearing Ratio (CBR) testing at an accredited geotechnical laboratory.

The following sample preparation was undertaken for the CBR testing:

- Compact to 98% standard MDD, at optimum moisture content (OMC)
- Four (4) day-soaked sample; and
- 4.5 kg surcharge.

Table 1 presents a summary of the CBR test results. The test result sheets are included in Appendix B.

Table 1 – CBR Test Results

Sample ID (Depth)	Material Description	Soaked CBR (%)	OMC (%)	Standard Maximum Dry Density (t/m^3)	Swell (%)
BH03A (0.5m – 1.1m)	CLAY trace gravel trace sand	2.5	19.0	1.71	1.0
BH05A (0.5m – 1.2m)	CLAY with gravel	4.0	18.0	1.72	0.5
BH06A (0.3m – 0.8m)	CLAY	1.5	21.4	1.63	3.0
BH08A (0.6m – 1.3m)	Gravelly CLAY	7.0	17.2	1.76	0.0
BH09A (0.3m – 1.1m)	CLAY with gravel	5.0	15.8	1.82	0.5

4. Site Conditions

4.1 Geological Setting

The 1:100,000 Sydney Geological Map indicates the site is underlain by Ashfield Shale of the Wianamatta group (Rwa) which consists of black to dark-grey shale and laminite. Inset 1 presents an indicative site locality on the geological map.

Inset 1: Sydney geological map indicating approximate site location

4.2 Surface Conditions

The site is currently occupied by existing buildings, internal roads and various carparking areas with either asphalt or concrete pavement surfaces. The site is bounded by Fourth Avenue to the north, Denistone Road to the east and Ryedale Road to the west.

An ecological endangered community, the Blue Gum high forest, is located at the south of the site.

The site is sloped from the northeast boundary towards the southwest with a steep slope at the southern boundary, the Southern Fill Batter.

The level pads for buildings and carparks appear to have been formed by permanent cuts on the high side and fill platforms on the low side. The cuts are in residual clay and shale and were observed to be performing satisfactorily.

The downhill portions of the fill platforms are either retained by small retaining walls or are shaped to form a permanent batter. Along the southern boundary with the nature reserve, the Southern Fill Batter is inferred to have been formed by pushing fill over a steep natural batter comprising of shallow colluvium overlying residual clay overlying shale.

The Southern Fill Batter occurs immediately south of the Hospital site with an approximate 10 m change in elevation over a 20 m horizontal distance down to the bottom of the gully. During our inspection the following observations were made:

- The batter immediately south of the Site was heavily vegetated and was thus not able to be inspected
- At some locations the batter was estimated to be sloping between 1H:1V and 1.5H:1V
- The ground is generally uneven with some significant erosion gullies observed at location of preferential surface flows
- Significant amounts of debris including construction rubble was observed on the surface
- No significant land slips or instability was observed
- Evidence of surficial movement of the slope was observed.

Figures 5 and 6 present the existing slope and batter conditions.

4.3 Subsurface Conditions

The subsurface conditions are summarised in Table 2 and the depth at which each unit was encountered are summarised in Table 3.

Table 2 – Summary of Inferred Subsurface Conditions Encountered in the Boreholes

Inferred Geotechnical Unit	Material Description
CONCRETE / ASPHALT	CONCRETE/ ASPHALT: Up to 0.3 m thick
FILL	ROADBASE: Gravelly SAND: fine to coarse grained, light brown, gravel is sub-angular to sub-rounded up to 20mm CLAY trace / with gravel with sand: medium to high plasticity, brown, gravel is sub-angular up to 20mm, sand is fine to medium grained
NATURAL	CLAY: medium to high plasticity, brown mottled grey and red
BEDROCK	SHALE: light grey to grey, extremely weathered to highly weathered, very low strength to low strength

Table 3 – Approximate Depth to Top of Inferred Geotechnical units Encountered in the Boreholes

BH ID	Elevation to Top of Inferred Unit (RL m AHD)				
	ASPHALT/ CONCRETE/ TOPSOIL	**FILL**	**NATURAL**	**BEDROCK**	**EOH[1]**
BH01A	93.03	92.93	89.43	N/E	87.03
BH02A	92.69	92.59	91.29	89.39	86.69
BH03A	92.16	92.16	90.46	88.96	86.16
BH04A	96.05	95.95	95.35	91.85	90.05
BH05A	94.68	94.68	N/E	N/E	88.68
BH06A	100.00	99.84	99.20	99.10	94.00
BH07A	97.69	97.65	97.49	96.19	91.69
BH08A	95.16	95.06	91.36	N/E	89.16
BH09A	95.39	95.30	92.19	N/E	89.39
BH10A	93.81	93.63	91.51	90.41	87.81

[1] EOH = End of Hole

[2] N/E = Not Encountered

[3] Elevations are approximated from survey plans by Monteath & Powys with an estimated accuracy of approximately ±0.02 m

4.4 Groundwater

No groundwater monitoring was conducted for this investigation.

5. Slope Stability Analysis

We have completed global stability analysis of the Southern Fill Batter to determine the suitability and safety of the proposed road in this area.

5.1 Background

5.1.1 Documents Reviewed

The following documents were provided to PSM:

- Fire Trail Sections by ACOR Consultants Pty Ltd (ref. NSW210886-SK-CI-FIRE-TRAIL-SECTIONS dated 8 July 2022)
- Fire Trail Levels of section A and B by ACOR Consultants Pty Ltd (ref. NSW210886-SK-CI-FIRE-TRAIL-01-LEVELS dated 8 July 2022)
- Fire Trail Levels of section C by ACOR Consultants Pty Ltd (ref. NSW210886-SK-CI-FIRE-TRAIL-02-LEVELS dated 8 July 2022)
- Lower Ground EEC Line and Survey Contours by STH Consultants (ref. 10520, RHR-ARC-DR-SK_0031 dated 24 February 2022)
- Detail Survey and Services Plan of Ryde Hospital by Monteath & Powys (ref. 21/0247 Sheet 1-5 dated 9 July 2021).

Based on the reviewed documents, we understand the following:

- The final top of embankment level of the development is at RL97.0 m
- We understand the proposed development in the drawing provided by STH Consultants is likely not the final design of the road and is a preliminary concept
- There are no changes planned envisaged for the Southern Fill Batter as access to this area is constrained by environmental issues.

6. Global Stability Assessment

Two-dimensional (2D) limit equilibrium stability analyses were undertaken using the commercial software package Slide2 v9.019 by Rocscience.

6.1 Geological Model

The geological model was developed based on the geotechnical investigation undertaken by PSM in 2019 (ref. PSM3828-002R) and 2022 (ref. PSM3828-008L) and our observations of the slope topography and condition.

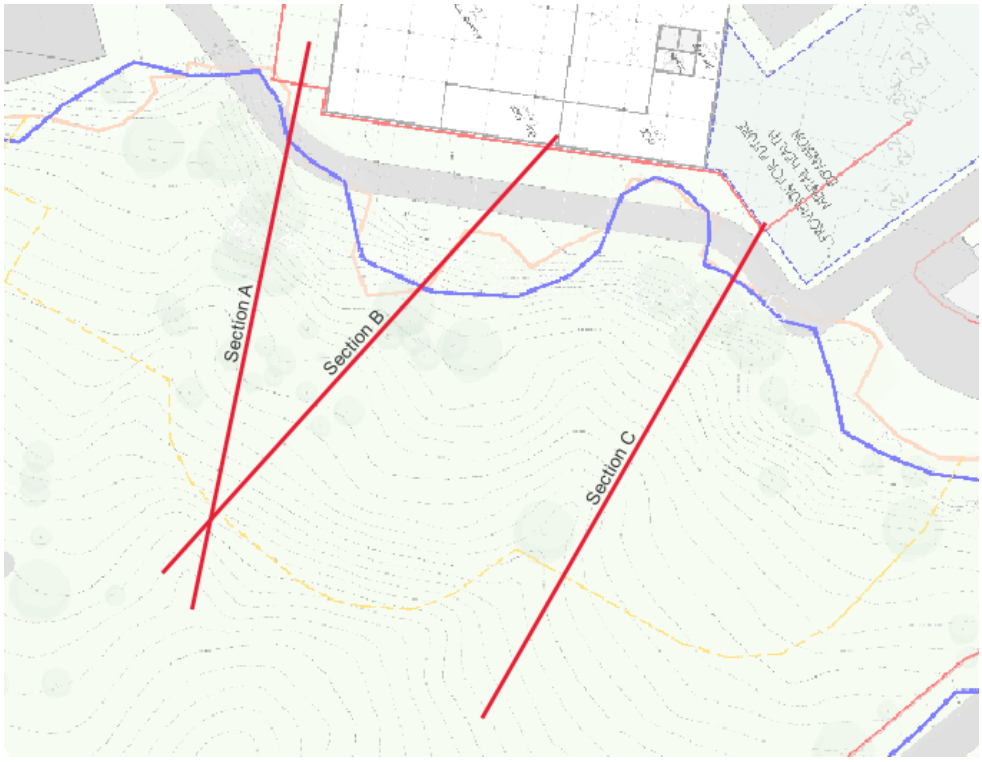
The inferred ground conditions varied across the Site. The general ground conditions from the top of the slope comprise:

- Up to 0.3 m of ASPHALT/ CONCRETE/ TOPSOIL overlying
- Up to 6.0 m of existing FILL overlying
- Up to 1.0 m of NATURAL overlying
- Up to 12.0 m Class IV/ V Bedrock overlying
- Class III Bedrock.

We note that the deepest completed borehole over both geotechnical investigations was 11.27 m.

6.2 Analysis Sections

In this analysis, we have assessed three separate sections deemed critical along the preliminary geometry of the road. Inset 2 presents the locations of the analysed sections. The ground conditions of the sections have been assessed using borehole data from both geotechnical investigations. At other locations the road is located further than 7 m from the crest of the Southern Fill Batter and are thus considered less critical.



Inset 2: Analysed section for future development.

Geometry of the sections were derived using the commercially available data package Elvis Elevation and Depth – Foundation Spatial Data portal. From the reviewed documents, the FFL of the development is deemed to be at RL97.0 m hence geometry of the proposed road was assumed to be at RL 97.00 with a 2H:1V batter.

Insets 3 to 5 show the inferred subsurface conditions at the sections which have been adopted in the analysis.

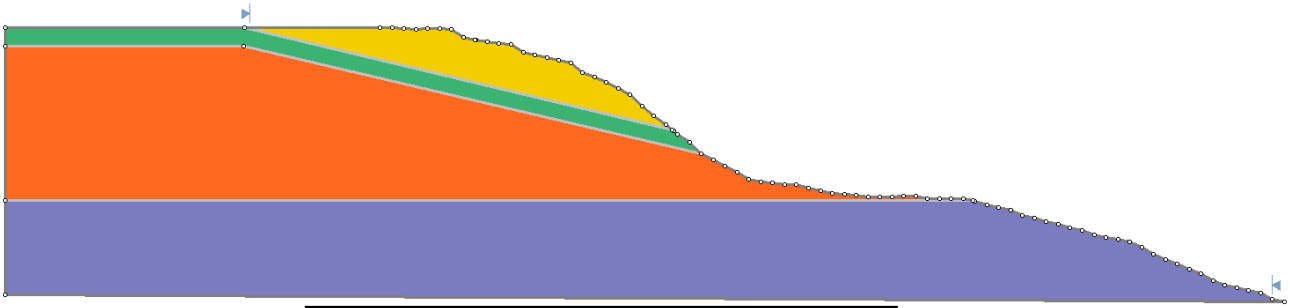
6.3 Analysis Inputs and Assumptions

6.3.1 General

The following analysis inputs and assumptions were adopted in the assessment:

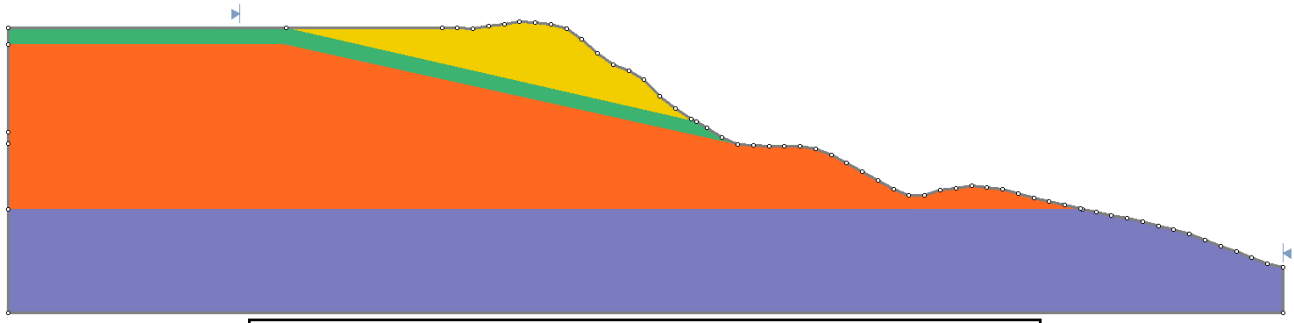
- The analyses above were undertaken assuming dry conditions (fully drained) for the slope. We understand that the previous investigation has conducted groundwater monitoring at boreholes located within the hospital and not around the slope area. Groundwater was not observed in the drilling of boreholes over both investigations. Furthermore, from observations on Site, we note that drainage of surface flows occurs over the face of the existing slope
- The following surcharge loads were adopted in the analyses:
  - 20 kPa along the location of the proposed road to be constructed.
- Deformations have not been assessed, nor their effects on adjacent structures e.g., proposed buildings etc.

Inset 3 to 5 present the base geometry adopted for each Section.



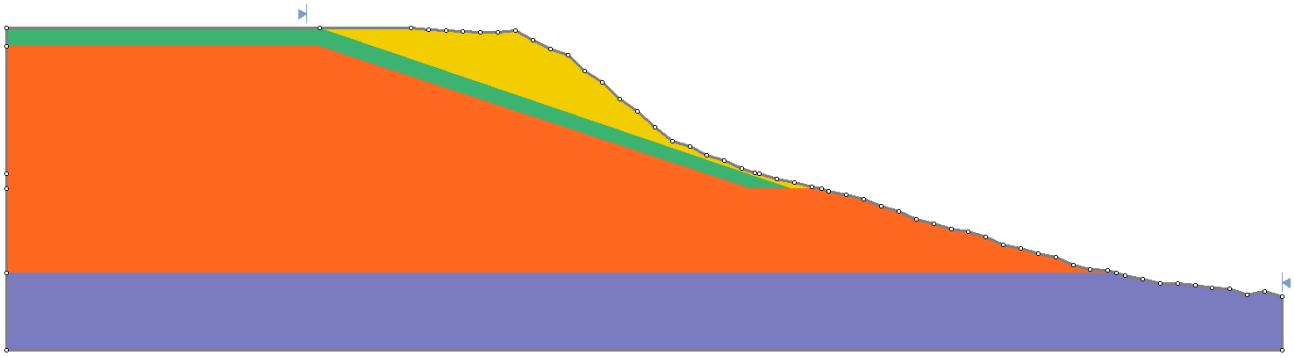
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (deg)	Water Surface
Fill		18	Mohr-Coulomb	4	25	None
Residual		18	Mohr-Coulomb	4	25	None
Bedrock A		22	Mohr-Coulomb	10	30	None
Bedrock B		22	Mohr-Coulomb	20	30	None

Inset 3: Base Geometry for Section A



Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (deg)	Water Surface
Fill		18	Mohr-Coulomb	4	25	None
Residual		18	Mohr-Coulomb	4	25	None
Bedrock A		22	Mohr-Coulomb	10	30	None
Bedrock B		22	Mohr-Coulomb	30	30	None

Inset 4: Base Geometry for Section B



Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (deg)	Water Surface
Fill		18	Mohr-Coulomb	4	25	None
Natural		18	Mohr-Coulomb	4	30	None
Bedrock A		22	Mohr-Coulomb	10	30	None
Bedrock B		22	Mohr-Coulomb	30	30	None

Inset 5: Base Geometry for Section C

6.3.2 Geotechnical Parameters

Table 4 presents the summary of geotechnical parameters adopted for the stability analyses. The selected parameters are consistent with our general experience and also result in marginal stability of the steep portions of the Southern Fill Batter. This is consistent with the observed performance of these batters.

Table 4 - Summary of Adopted Geotechnical Parameters

Unit Name	Unit Weight, γ (kN/m^3)	Effective Cohesion, c' (kPa)	Effective Friction Angle, φ' (°)
ENGINEERED FILL	18	0	30
FILL	18	4	25
RESIDUAL	18	4	25
CLASS IV/V BEDROCK	22	10	30
CLASS III BEDROCK	22	20	30

[1] Values have been adopted conservatively

6.4 Results of Global Stability Analyses

In our analysis we have explored the effect of the road embankment and traffic loads on the stability of the fill batter by analysing a road position between 1 and 10 m from the crest of the batter. The intention is to locate the distance at which the presence of the road embankment and traffic loads has close to no effect on the batter stability. We have assessed this to be where the FOS affecting the road embankment is more than 1.5 for the selected parameters, geometry, and groundwater conditions.

Table 5 presents the minimum required horizontal offsets of each section. The slip surfaces with FOS less than 1.5 at the minimum distance from the crest of the batter are presented in Appendix C for each section.

Table 5 – Summary of Required Horizontal Offsets

Section	Model Description	Minimum distance required from crest of batter (m)
Section A	• Groundwater not considered • Circular surface search method	6
Section B	• Groundwater not considered • Circular surface search method	7
Section C	• Groundwater not considered • Circular surface search method	7

7. Discussion

7.1 Recommendations for road embankment

The purpose of this investigation and analysis has been to investigate the conditions of the steep fill batter located at the south of the site and the effect of a proposed road embankment at this location. We understand that it is not possible for environmental reasons to complete any stabilising works south of the boundary.

The slope in its current condition is marginally stable.

Following the results of the investigation and analyses in order to have negligible effects on the stability of this slope, we recommend that:

- A detailed survey of the boundary be completed identifying clearly the crest of the batter.
- Where a road embankment is proposed, this is located a minimum horizontal distance 7 m from the crest of the batter of the slope. This assumes that the road embankment is no higher than RL97.0m.
- Stormwater drainage be designed to capture surface flow on the site and thus reduce surface into the neighbouring site and particularly over the batter slope.

Alternatively, the road could be built on a "bridge" supported on piles founded in the Bedrock unit. In this case the road could be closer to the crest. Should this option be pursued specific geotechnical advice should be sought. Preliminary sizing of the piles should be based on advice below.

7.2 Piles (Compression)

Where piles are required, they should be designed in accordance with the requirements of an appropriate standard, such as AS 2159-2009, *Piling – Design and Installation*.

The parameters provided in Table 6 may assist in the preliminary design of piles BEDROCK A and B unit. INCLUDE ULTIMATE

Table 6 - Foundation Engineering Parameters of Inferred Geotechnical Units

Inferred Unit	Bulk Unit Weight (kN/m^3)	Ultimate Shaft Adhesion (kPa) (1), (4)	Ultimate Bearing Pressure(3)	Allowable Bearing Pressure (2), (3)	Typical Long-Term Young's Modulus (MPa)	Poisson's Ratio
BEDROCK A	22	200	3000	1000	100	0.3
BEDROCK B	24	400	6000	3,500	700	0.25

Notes:

1. Assumes clean socket with roughness category R2 or better, to be verified during construction.
2. End bearing pressure associated with a settlement of <1% of minimum pile dimension (assuming a clean pile base, to be verified during construction).
3. Under vertical centric loading in compression only.
4. Coincidence of shaft adhesion and end bearing to be considered in design.

For settlement of bored piles founded in BEDROCK, the following should be noted:

- Where the pile is sized using the serviceable end bearing pressure in Table 6 (i.e. assuming all the serviceability load is carried by the base), the settlement would be expected to be less than 1% of the pile diameter, and
- Where the design utilises the shaft resistance of socketed piles in rock, Pells (1999)[1] provides guidance on methods to assess settlements for such piles.

The location of the pile toes relative to the batter slope shall be reviewed by a suitably qualified geotechnical engineer to confirm the road is not affected by global stability issues.

Pile inspections to confirm the foundation conditions and verify the assumed design parameters are recommended. The inspection should be performed by a suitably qualified geotechnical engineer prior to pouring concrete. Details of the inspection regime are to be finalised once loading and construction details are finalised by the designer.

Where adjacent foundation details differ (e.g. pile and pad, differing loads or ground conditions) differential settlement should be assessed.

[1] P.J.N. Pells (1999), State of Practice For the Design of Socketed Piles in Rock

7.3 Pavement advice

Subgrade CBR for pavement design depends on the material at the finished subgrade levels. Based on the CBR tests undertaken by PSM, we recommend a design subgrade CBR of 2.0% be adopted for the pavement design at the site. Should a higher design CBR be required, further testing at specific locations may be required and further advice should be sought.

Should there be any questions, please do not hesitate to contact the undersigned.

Yours Sincerely

KEN TONG LEE
GEOTECHNICAL ENGINEER

DAVID PICCOLO
PRINCIPAL

Encl.

Figure 1	Geotechnical Investigation Site Locality Plan
Figure 2	Selected Site Photos (1 of 5)
Figure 3	Selected Site Photos (2 of 5)
Figure 4	Selected Site Photos (3 of 5)
Figure 5	Selected Site Photos (4 of 5)
Figure 6	Selected Site Photos (5 of 5)
Appendix A	Engineering Borehole Logs
Appendix B	CBR Results
Appendix C	Results of Slope Stability Analyses

Legend

Approximate Site Boundary

Borehole Locations

Notes

Aerial image sourced from Nearmap dated 17 May 2022.

Scale 1:1,000

N 0 25 50 m

Map Projection:
Horizontal Datum:
Grid: EPSG:7856

P S M	Created By: PSM	Revision: A	
	Date: 16 Aug 2022	Paper Size: A3	

JBS&G
Ryde Hospital
Denistone Rd, Eastwood NSW

GEOTECHNICAL INVESTIGATION
SITE LOCALITY PLAN

PSM3828-008L | Figure 1

Photo 1: General site photo looking north west from BH02A

Photo 2: General site photo looking south around BH07A

JBS&G

Ryde Hospital

Denistone Road, Eastwood NSW

SELECTED SITE PHOTOGRAPHS (1 OF 5)

01/08/2022, 03/08/2022 and 24/08/2022

PSM3828-008L	FIGURE 2

Photo 3: Typical FILL material encountered

Photo 4: Typical NATURAL material encountered

JBS&G

Ryde Hospital

Denistone Road, Eastwood NSW

SELECTED SITE PHOTOGRAPHS (2 OF 5)

01/08/2022, 03/08/2022 and 24/08/2022

PSM3828-008L	FIGURE 3

Photo 5: Typical BEDROCK unit encountered

Photo 6: Rig used for drilling

JBS&G

Ryde Hospital

Denistone Road, Eastwood NSW

SELECTED SITE PHOTOGRAPHS (3 OF 5)

01/08/2022, 03/08/2022 and 24/08/2022

PSM3828-008L	FIGURE 4

Photo 7: Southern slope batter with dense vegetation

Photo 8: Southern slope looking North at Ryde Hospital

JBS&G

Ryde Hospital

Denistone Road, Eastwood NSW

SELECTED SITE PHOTOGRAPHS (4 OF 5)

01/08/2022, 03/08/2022 and 24/08/2022

PSM3828-008L	FIGURE 5

Photo 9: Exposed cut face at slope

Photo 10: Cracks and Deformations present on footpath

JBS&G

Ryde Hospital

Denistone Road, Eastwood NSW

SELECTED SITE PHOTOGRAPHS (5 OF 5)

01/08/2022, 03/08/2022 and 24/08/2022

PSM3828-008L	FIGURE 6

Appendix A
Engineering Borehole Logs

Borehole ID

BH01A

Engineering Log - Non Cored Borehole

Project No.: PSM3828

Client:	JBS&G	Commenced:	01/08/2022
Project Name:	Ryde Hospital Redevelopment	Completed:	01/08/2022
Hole Location:	Refer to Figure 1	Logged By:	KTL/SD
Hole Position:	323260.0 m E 6258747.0 m N MGA94 Zone 56	Checked By:	AS

Drill Model and Mounting:	Geoprobe 7822DT	Inclination:	-90°	RL Surface:	93.03 m		
Hole Diameter:	120 mm	Bearing:		Datum:	AHD	Operator:	Terratest

Drilling Information								Soil Description					Observations
Method	Penetration	Support	Water	Samples Tests Remarks	Recovery	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description SOIL NAME: Plasticity, behaviour or particle characteristics of primary component, colour, secondary components, additional observations	Moisture Condition	Consistency / Relative Density	Hand Penetrometer UCS (kPa) 100 200 300 400 500	Structure, Zoning, Origin, Additional Observations
AD/T		N								ASPHALT: Approx. 100mm.t.				
										ROADBASE: Gravelly SAND: fine to coarse grained, light brown, gravel is sub-angular to sub-rounded up to 20mm and of SHALE origin.	D			0.10: INFERRED FILL
				SPT 0.50-0.95 m 5,9,12 N=21		92.0	1			CLAY with gravel: medium to high plasticity, brown, gravel is sub-angular up to 20mm.		VSt		
AD/V		N	Not Observed	SPT 1.50-1.95 m 5,5,7 N=12		91.0	2				D	St		1.50: SHALE PRESENT AT BOTTOM OF SPT
				SPT 3.00-3.45 m 4,5,7 N=12		90.0	3		CH	CLAY: high plasticity, brown.				3.60: INFERRED NATURAL
						89.0	4				D	H		
AD/T				SPT 4.50-4.95 m 20,31,37 N=68										

Method
AD/T - Auger drilling TC bit
AD/V - Auger drilling V bit
WB - Washbore
SPT - Standard penetration test
PT - Push tube
AS - Auger screwing
CT - Continuous push tube 1.5m long 76mm diameter

Penetration
No resistance
Refusal

Water
Inflow
Partial Loss
Complete Loss

Samples and Tests
U - Undisturbed Sample
D - Disturbed Sample
SPT - Standard Penetration Test
ES - Environmental Sample
TW - Thin Walled
LB - Large Disturbed Sample

Moisture Condition
D - Dry
M - Moist
W - Wet

Consistency/Relative Density
VS - Very soft
S - Soft
F - Firm
St - Stiff
VSt - Very stiff
H - Hard
VL - Very loose
L - Loose
MD - Medium dense
D - Dense
VD - Very dense
Ce - Cemented
C - Compact

Logged in accordance with AS 1726:2017 Geotechnical site investigations

Engineering Log - Non Cored Borehole

Project No.: PSM3828

Client:	JBS&G	Commenced:	01/08/2022
Project Name:	Ryde Hospital Redevelopment	Completed:	01/08/2022
Hole Location:	Refer to Figure 1	Logged By:	KTL/SD
Hole Position:	323260.0 m E 6258747.0 m N MGA94 Zone 56	Checked By:	AS

Drill Model and Mounting:	Geoprobe 7822DT	Inclination:	-90°	RL Surface:	93.03 m		
Hole Diameter:	120 mm	Bearing:		Datum:	AHD	Operator:	Terratest

Drilling Information								Soil Description					Observations
Method	Penetration	Support	Water	Samples Tests Remarks	Recovery	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description SOIL NAME: Plasticity, behaviour or particle characteristics of primary component, colour, secondary components, additional observations	Moisture Condition	Consistency / Relative Density	Hand Penetrometer UCS (kPa) 100 200 300 400 500	Structure, Zoning, Origin, Additional Observations
AD/T			Not Observed						CH	CLAY: high plasticity, brown. *(continued)*	D	H		
						87.0	6			Hole Terminated at 6.00 m Target depth				
						86.0	7							
						85.0	8							
						84.0	9							

Method
AD/T - Auger drilling TC bit
AD/V - Auger drilling V bit
WB - Washbore
SPT - Standard penetration test
PT - Push tube
AS - Auger screwing
CT - Continuous push tube 1.5m long 76mm diameter

Penetration
No resistance
Refusal

Water
Inflow
Partial Loss
Complete Loss

Samples and Tests
U - Undisturbed Sample
D - Disturbed Sample
SPT - Standard Penetration Test
ES - Environmental Sample
TW - Thin Walled
LB - Large Disturbed Sample

Moisture Condition
D - Dry
M - Moist
W - Wet

Consistency/Relative Density
VS - Very soft
S - Soft
F - Firm
St - Stiff
VSt - Very stiff
H - Hard
VL - Very loose
L - Loose
MD - Medium dense
D - Dense
VD - Very dense
Ce - Cemented
C - Compact

Logged in accordance with AS 1726:2017 Geotechnical site investigations

Borehole ID

BH02A

Engineering Log - Non Cored Borehole

Project No.: PSM3828

Client:	JBS&G	Commenced:	01/08/2022
Project Name:	Ryde Hospital Redevelopment	Completed:	01/08/2022
Hole Location:	Refer to Figure 1	Logged By:	KTL/SD
Hole Position:	323304.0 m E 6258747.0 m N MGA94 Zone 56	Checked By:	AS

Drill Model and Mounting:	Geoprobe 7822DT	Inclination:	-90°	RL Surface:	92.69 m		
Hole Diameter:	120 mm	Bearing:		Datum:	AHD	Operator:	Terratest

Drilling Information								Soil Description					Observations
Method	Penetration	Support	Water	Samples Tests Remarks	Recovery	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description SOIL NAME: Plasticity, behaviour or particle characteristics of primary component, colour, secondary components, additional observations	Moisture Condition	Consistency / Relative Density	Hand Penetrometer UCS (kPa) 100 200 300 400 500	Structure, Zoning, Origin, Additional Observations
AD/T		N								ASPHALT: Approx. 100mm.t.				0.10: INFERRED FILL
										ROADBASE: Gravelly SAND: coarse grained, dark brown, gravel is sub-angular to sub-rounded up to 15mm.	D			
				SPT 0.50-0.95 m 4,5,7 N=12						CLAY trace gravel: high plasticity, brown and red, gravel is sub-angular up to 15mm.	M	St		
						91.7	1			SAND: coarse grained, yellow.	D	MD		
AD/V		N	Not Observed	SPT 1.50-1.95 m 2,2,3 N=5		90.7	2		CH	CLAY: high plasticity, dark brown. Becomes brown mottled grey	M	F		1.40: INFERRED NATURAL
				SPT 3.00-3.45 m 14,37,40 HB N=77		89.7	3					H		3.00: 'V' BIT REFUSAL
AD/T		N				88.7	4			SHALE: grey, extremely weathered, very low strength.				
										SHALE: grey, highly weathered, low strength.				4.50: INCREASED RESISTANCE

Method
AD/T - Auger drilling TC bit
AD/V - Auger drilling V bit
WB - Washbore
SPT - Standard penetration test
PT - Push tube
AS - Auger screwing
CT - Continuous push tube 1.5m long 76mm diameter

Penetration
No resistance
Refusal

Water
Inflow
Partial Loss
Complete Loss

Samples and Tests
U - Undisturbed Sample
D - Disturbed Sample
SPT - Standard Penetration Test
ES - Environmental Sample
TW - Thin Walled
LB - Large Disturbed Sample

Moisture Condition
D - Dry
M - Moist
W - Wet

Consistency/Relative Density
VS - Very soft
S - Soft
F - Firm
St - Stiff
VSt - Very stiff
H - Hard
VL - Very loose
L - Loose
MD - Medium dense
D - Dense
VD - Very dense
Ce - Cemented
C - Compact

Logged in accordance with AS 1726:2017 Geotechnical site investigations

Engineering Log - Non Cored Borehole

Project No.: PSM3828

Client:	JBS&G	Commenced:	01/08/2022
Project Name:	Ryde Hospital Redevelopment	Completed:	01/08/2022
Hole Location:	Refer to Figure 1	Logged By:	KTL/SD
Hole Position:	323304.0 m E 6258747.0 m N MGA94 Zone 56	Checked By:	AS

Drill Model and Mounting:	Geoprobe 7822DT	Inclination:	-90°	RL Surface:	92.69 m		
Hole Diameter:	120 mm	Bearing:		Datum:	AHD	Operator:	Terratest

Drilling Information								Soil Description					Observations
Method	Penetration	Support	Water	Samples Tests Remarks	Recovery	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description SOIL NAME: Plasticity, behaviour or particle characteristics of primary component, colour, secondary components, additional observations	Moisture Condition	Consistency / Relative Density	Hand Penetrometer UCS (kPa) 100 200 300 400 500	Structure, Zoning, Origin, Additional Observations
AD/T		N	Not Observed			86.7	6			SHALE: grey, highly weathered, low strength. *(continued)*				
										Hole Terminated at 6.00 m Target depth				
						85.7	7							
						84.7	8							
						83.7	9							

Method
AD/T - Auger drilling TC bit
AD/V - Auger drilling V bit
WB - Washbore
SPT - Standard penetration test
PT - Push tube
AS - Auger screwing
CT - Continuous push tube 1.5m long 76mm diameter

Penetration
No resistance
Refusal

Water
Inflow
Partial Loss
Complete Loss

Samples and Tests
U - Undisturbed Sample
D - Disturbed Sample
SPT - Standard Penetration Test
ES - Environmental Sample
TW - Thin Walled
LB - Large Disturbed Sample

Moisture Condition
D - Dry
M - Moist
W - Wet

Consistency/Relative Density
VS - Very soft
S - Soft
F - Firm
St - Stiff
VSt - Very stiff
H - Hard
VL - Very loose
L - Loose
MD - Medium dense
D - Dense
VD - Very dense
Ce - Cemented
C - Compact

Logged in accordance with AS 1726:2017 Geotechnical site investigations

Borehole ID

BH03A

Engineering Log - Non Cored Borehole

Project No.: PSM3828

Client:	JBS&G	Commenced:	01/08/2022
Project Name:	Ryde Hospital Redevelopment	Completed:	01/08/2022
Hole Location:	Refer to Figure 1	Logged By:	KTL/SD
Hole Position:	323358.0 m E 6258745.0 m N MGA94 Zone 56	Checked By:	AS

Drill Model and Mounting:	Geoprobe 7822DT	Inclination:	-90°	RL Surface:	92.16 m		
Hole Diameter:	120 mm	Bearing:		Datum:	AHD	Operator:	Terratest

Drilling Information								Soil Description					Observations
Method	Penetration	Support	Water	Samples Tests Remarks	Recovery	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description SOIL NAME: Plasticity, behaviour or particle characteristics of primary component, colour, secondary components, additional observations	Moisture Condition	Consistency / Relative Density	Hand Penetrometer UCS (kPa) 100 200 300 400 500	Structure, Zoning, Origin, Additional Observations
AD/T		N	Not Observed	SPT 0.50-0.95 m 3,2,5 N=7 CBR 0.50-1.10 m		91.2	1			CLAY with silt trace sand: medium plasticity, grey mottled brown, sand is fine to medium grained, rootlets present.	M			0.00: INFERRED FILL
AD/V		N		SPT 1.50-1.95 m 2,4,6 N=10		90.2	2		CH	CLAY trace gravel trace sand: medium plasticity, dark brown mottled brown and grey, sand is fine grained, gravel is fine to medium grained. CLAY: high plasticty, light grey and light brown, rootlets present.	M M	F St		1.70: INFERRED NATURAL
				SPT 3.00-3.45 m 1,7,16 N=23		89.2	3			SHALE: light grey and light brown, extremely weathered, very low strength, with clay bands.	D	VSt		
AD/T		N		SPT 4.50-4.90 m 3,22,32/100mm N=R		88.2	4			SHALE: grey, highly weathered, very low to low strength.				4.50: 'V' BIT REFUSAL

Method
AD/T - Auger drilling TC bit
AD/V - Auger drilling V bit
WB - Washbore
SPT - Standard penetration test
PT - Push tube
AS - Auger screwing
CT - Continuous push tube 1.5m long 76mm diameter

Penetration
No resistance
Refusal

Water
Inflow
Partial Loss
Complete Loss

Samples and Tests
U - Undisturbed Sample
D - Disturbed Sample
SPT - Standard Penetration Test
ES - Environmental Sample
TW - Thin Walled
LB - Large Disturbed Sample

Moisture Condition
D - Dry
M - Moist
W - Wet

Consistency/Relative Density
VS - Very soft
S - Soft
F - Firm
St - Stiff
VSt - Very stiff
H - Hard
VL - Very loose
L - Loose
MD - Medium dense
D - Dense
VD - Very dense
Ce - Cemented
C - Compact

Logged in accordance with AS 1726:2017 Geotechnical site investigations

Engineering Log - Non Cored Borehole

Project No.: PSM3828

Client:	JBS&G	Commenced:	01/08/2022
Project Name:	Ryde Hospital Redevelopment	Completed:	01/08/2022
Hole Location:	Refer to Figure 1	Logged By:	KTL/SD
Hole Position:	323358.0 m E 6258745.0 m N MGA94 Zone 56	Checked By:	AS

Drill Model and Mounting:	Geoprobe 7822DT	Inclination:	-90°	RL Surface:	92.16 m		
Hole Diameter:	120 mm	Bearing:		Datum:	AHD	Operator:	Terratest

Drilling Information								Soil Description					Observations
Method	Penetration	Support	Water	Samples Tests Remarks	Recovery	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description SOIL NAME: Plasticity, behaviour or particle characteristics of primary component, colour, secondary components, additional observations	Moisture Condition	Consistency / Relative Density	Hand Penetrometer UCS (kPa) 100 200 300 400 500	Structure, Zoning, Origin, Additional Observations
AD/T		N	Not Observed			86.2	6			SHALE: grey, highly weathered, very low to low strength. *(continued)*				
										Hole Terminated at 6.00 m Target depth				
						85.2	7							
						84.2	8							
						83.2	9							

Method
AD/T - Auger drilling TC bit
AD/V - Auger drilling V bit
WB - Washbore
SPT - Standard penetration test
PT - Push tube
AS - Auger screwing
CT - Continuous push tube 1.5m long 76mm diameter

Penetration
No resistance
Refusal

Water
Inflow
Partial Loss
Complete Loss

Samples and Tests
U - Undisturbed Sample
D - Disturbed Sample
SPT - Standard Penetration Test
ES - Environmental Sample
TW - Thin Walled
LB - Large Disturbed Sample

Moisture Condition
D - Dry
M - Moist
W - Wet

Consistency/Relative Density
VS - Very soft
S - Soft
F - Firm
St - Stiff
VSt - Very stiff
H - Hard
VL - Very loose
L - Loose
MD - Medium dense
D - Dense
VD - Very dense
Ce - Cemented
C - Compact

Logged in accordance with AS 1726:2017 Geotechnical site investigations

Borehole ID

BH04A

Engineering Log - Non Cored Borehole

Project No.: PSM3828

Client:	JBS&G	Commenced:	01/08/2022
Project Name:	Ryde Hospital Redevelopment	Completed:	01/08/2022
Hole Location:	Refer to Figure 1	Logged By:	KTL/SD
Hole Position:	323271.0 m E 6258811.0 m N MGA94 Zone 56	Checked By:	AS

Drill Model and Mounting:	Geoprobe 7822DT	Inclination:	-90°	RL Surface:	96.05 m		
Hole Diameter:	120 mm	Bearing:		Datum:	AHD	Operator:	Terratest

Drilling Information								Soil Description					Observations
Method	Penetration	Support	Water	Samples Tests Remarks	Recovery	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description SOIL NAME: Plasticity, behaviour or particle characteristics of primary component, colour, secondary components, additional observations	Moisture Condition	Consistency / Relative Density	Hand Penetrometer UCS (kPa) 100 200 300 400 500	Structure, Zoning, Origin, Additional Observations
AD/T		N								ASPHALT: Approx. 100mm.t.				
										ROADBASE: Gravelly SAND: dark grey, fine to medium grained.	D			0.10: INFERRED FILL
										CLAY: high plasticity, red brown mottled brown, trace of ash.	D	VSt		
				SPT 0.50-0.95 m 4,8,12 N=20					CH	CLAY: high plasticity, red brown.				0.70: INFERRED NATURAL
						95.1	1							
				SPT 1.50-1.95 m 5,6,11 N=17						Becomes light grey mottled orange brown.		VSt		
AD/V		N	Not Observed			94.1	2				D			
				SPT 3.00-3.45 m 6,14,24 N=38		93.1	3					H		
						92.1	4			SHALE: light grey, extremely weathered, very low strength.				
AD/T		N		SPT 4.50-4.95 m 2,30,32 N=62										4.50: 'V' BIT REFUSAL

Method
AD/T - Auger drilling TC bit
AD/V - Auger drilling V bit
WB - Washbore
SPT - Standard penetration test
PT - Push tube
AS - Auger screwing
CT - Continuous push tube 1.5m long 76mm diameter

Penetration
No resistance
Refusal

Water
Inflow
Partial Loss
Complete Loss

Samples and Tests
U - Undisturbed Sample
D - Disturbed Sample
SPT - Standard Penetration Test
ES - Environmental Sample
TW - Thin Walled
LB - Large Disturbed Sample

Moisture Condition
D - Dry
M - Moist
W - Wet

Consistency/Relative Density
VS - Very soft
S - Soft
F - Firm
St - Stiff
VSt - Very stiff
H - Hard
VL - Very loose
L - Loose
MD - Medium dense
D - Dense
VD - Very dense
Ce - Cemented
C - Compact

Logged in accordance with AS 1726:2017 Geotechnical site investigations

Engineering Log - Non Cored Borehole

Project No.: PSM3828

Client:	JBS&G	Commenced:	01/08/2022
Project Name:	Ryde Hospital Redevelopment	Completed:	01/08/2022
Hole Location:	Refer to Figure 1	Logged By:	KTL/SD
Hole Position:	323271.0 m E 6258811.0 m N MGA94 Zone 56	Checked By:	AS

Drill Model and Mounting:	Geoprobe 7822DT	Inclination:	-90°	RL Surface:	96.05 m		
Hole Diameter:	120 mm	Bearing:		Datum:	AHD	Operator:	Terratest

Drilling Information							***Soil Description***				***Observations***
Method	Penetration	Support	Water	Samples Tests Remarks	Recovery	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description SOIL NAME: Plasticity, behaviour or particle characteristics of primary component, colour, secondary components, additional observations	Moisture Condition	Consistency / Relative Density	Hand Penetrometer UCS (kPa) 100 200 300 400 500	Structure, Zoning, Origin, Additional Observations
AD/T		N	Not Observed			90.1	6			SHALE: light grey, extremely weathered, very low strength. *(continued)* SHALE: grey, highly weathered, low to medium strength				
						89.1	7			Hole Terminated at 6.00 m Target depth				
						88.1	8							
						87.1	9							

Method
AD/T - Auger drilling TC bit
AD/V - Auger drilling V bit
WB - Washbore
SPT - Standard penetration test
PT - Push tube
AS - Auger screwing
CT - Continuous push tube 1.5m long 76mm diameter

Penetration
No resistance
Refusal

Water
Inflow
Partial Loss
Complete Loss

Samples and Tests
U - Undisturbed Sample
D - Disturbed Sample
SPT - Standard Penetration Test
ES - Environmental Sample
TW - Thin Walled
LB - Large Disturbed Sample

Moisture Condition
D - Dry
M - Moist
W - Wet

Consistency/Relative Density
VS - Very soft
S - Soft
F - Firm
St - Stiff
VSt - Very stiff
H - Hard
VL - Very loose
L - Loose
MD - Medium dense
D - Dense
VD - Very dense
Ce - Cemented
C - Compact

Logged in accordance with AS 1726:2017 Geotechnical site investigations

Borehole ID

BH05A

Engineering Log - Non Cored Borehole

Project No.: PSM3828

Client:	JBS&G	Commenced:	01/08/2022
Project Name:	Ryde Hospital Redevelopment	Completed:	01/08/2022
Hole Location:	Refer to Figure 1	Logged By:	KTL/SD
Hole Position:	323161.0 m E 6258780.0 m N MGA94 Zone 56	Checked By:	AS

Drill Model and Mounting:	Geoprobe 7822DT	Inclination:	-90°	RL Surface:	94.68 m		
Hole Diameter:	120 mm	Bearing:		Datum:	AHD	Operator:	Terratest

Drilling Information								Soil Description					Observations
Method	Penetration	Support	Water	Samples Tests Remarks	Recovery	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description SOIL NAME: Plasticity, behaviour or particle characteristics of primary component, colour, secondary components, additional observations	Moisture Condition	Consistency / Relative Density	Hand Penetrometer UCS (kPa) 100 200 300 400 500	Structure, Zoning, Origin, Additional Observations
AD/T		N	Not Observed	SPT 0.50-0.95 m 1,1,1 N=2 CBR 0.50-1.20 m		93.7	1			CLAY with gravel: medium plasticity, dark grey brown, gravel is fine to coarse grained.	M	S		0.00: INFERRED FILL
AD/V		N		SPT 1.50-1.95 m 1,2,2 N=4		92.7	2			CLAY trace gravel: medium plasticity, dark grey brown, gravel is fine to medium grained, deteterious materials and rootlets present.		F		
				SPT 3.00-3.45 m 10,7,3 N=10		91.7	3				M	St		3.30: BANDED 'V' BIT RESISTANCE FROM THE DELETERIOUS MATERIALS IN FILL
				SPT 4.50-4.95 m 2,2,3 N=5		90.7	4			CLAY with gravel: low plasticity, dark grey brown, gravel is fine to medium grained, deleterious materials present.	M	F		

Method
AD/T - Auger drilling TC bit
AD/V - Auger drilling V bit
WB - Washbore
SPT - Standard penetration test
PT - Push tube
AS - Auger screwing
CT - Continuous push tube 1.5m long 76mm diameter

Penetration
No resistance
Refusal

Water
Inflow
Partial Loss
Complete Loss

Samples and Tests
U - Undisturbed Sample
D - Disturbed Sample
SPT - Standard Penetration Test
ES - Environmental Sample
TW - Thin Walled
LB - Large Disturbed Sample

Moisture Condition
D - Dry
M - Moist
W - Wet

Consistency/Relative Density
VS - Very soft
S - Soft
F - Firm
St - Stiff
VSt - Very stiff
H - Hard
VL - Very loose
L - Loose
MD - Medium dense
D - Dense
VD - Very dense
Ce - Cemented
C - Compact

Logged in accordance with AS 1726:2017 Geotechnical site investigations

Engineering Log - Non Cored Borehole

Project No.: PSM3828

Client:	JBS&G	Commenced:	01/08/2022
Project Name:	Ryde Hospital Redevelopment	Completed:	01/08/2022
Hole Location:	Refer to Figure 1	Logged By:	KTL/SD
Hole Position:	323161.0 m E 6258780.0 m N MGA94 Zone 56	Checked By:	AS

Drill Model and Mounting:	Geoprobe 7822DT	Inclination:	-90°	RL Surface:	94.68 m		
Hole Diameter:	120 mm	Bearing:		Datum:	AHD	Operator:	Terratest

Drilling Information								***Soil Description***				***Observations***
Method	Penetration	Support	Water	Samples Tests Remarks	Recovery	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description SOIL NAME: Plasticity, behaviour or particle characteristics of primary component, colour, secondary components, additional observations	Moisture Condition	Consistency / Relative Density	Hand Penetrometer UCS (kPa) 100 200 300 400 500	Structure, Zoning, Origin, Additional Observations
AD/V		N	Not Observed			88.7	6			CLAY with gravel: low plasticity, dark grey brown, gravel is fine to medium grained, deleterious materials present. *(continued)*	M	F		
										Hole Terminated at 6.00 m Target depth				
						87.7	7							
						86.7	8							
						85.7	9							

Method
AD/T - Auger drilling TC bit
AD/V - Auger drilling V bit
WB - Washbore
SPT - Standard penetration test
PT - Push tube
AS - Auger screwing
CT - Continuous push tube 1.5m long 76mm diameter

Penetration
No resistance
Refusal

Water
Inflow
Partial Loss
Complete Loss

Samples and Tests
U - Undisturbed Sample
D - Disturbed Sample
SPT - Standard Penetration Test
ES - Environmental Sample
TW - Thin Walled
LB - Large Disturbed Sample

Moisture Condition
D - Dry
M - Moist
W - Wet

Consistency/Relative Density
VS - Very soft
S - Soft
F - Firm
St - Stiff
VSt - Very stiff
H - Hard
VL - Very loose
L - Loose
MD - Medium dense
D - Dense
VD - Very dense
Ce - Cemented
C - Compact

Logged in accordance with AS 1726:2017 Geotechnical site investigations

Borehole ID

BH06A

Engineering Log - Non Cored Borehole

Project No.: PSM3828

Client:	JBS&G	Commenced:	02/08/2022
Project Name:	Ryde Hospital Redevelopment	Completed:	02/08/2022
Hole Location:	Refer to Figure 1	Logged By:	KTL/SD
Hole Position:	323183.0 m E 6258887.0 m N MGA94 Zone 56	Checked By:	AS

Drill Model and Mounting:	Geoprobe 7822DT	Inclination:	-90°	RL Surface:	100.00 m		
Hole Diameter:	120 mm	Bearing:		Datum:	AHD	Operator:	Terratest

Drilling Information								Soil Description					Observations
Method	Penetration	Support	Water	Samples Tests Remarks	Recovery	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description SOIL NAME: Plasticity, behaviour or particle characteristics of primary component, colour, secondary components, additional observations	Moisture Condition	Consistency / Relative Density	Hand Penetrometer UCS (kPa) 100 200 300 400 500	Structure, Zoning, Origin, Additional Observations
AD/T		N	Not Observed	CBR 0.30-0.80 m SPT 0.50-0.95 m 1,10,43 N=53						ASPHALT: Approx. 160mm.t				
										Sandy CLAY with gravel: low plasticity, brown, sand is fine to medium grained, gravel is fine to medium grained, brick fragments present.				0.16: INFERRED FILL
										CLAY: medium plasticity, grey brown mottled light grey.	M	H		
AD/V		N				99.0	1		CI-CH	CLAY: medium to high plasticity, light grey mottled orange brown.	M	VSt - H		0.80: INFERRED NATURAL
										SHALE: grey, distinctly weathered, very low strength to low strength				1.10: 'V' BIT REFUSAL
						98.0	2							
AD/T		N				97.0	3			SHALE: grey, distinctly weathered, low to medium strength, with fine grained light grey sandstone laminae and clay bands.				3.10: 'TC' BIT RESISTANCE DROPS OFF DUE TO THE CLAY BANDS
										SHALE: grey, highly weathered, very low to low strength.				
						96.0	4							

Method
AD/T - Auger drilling TC bit
AD/V - Auger drilling V bit
WB - Washbore
SPT - Standard penetration test
PT - Push tube
AS - Auger screwing
CT - Continuous push tube 1.5m long 76mm diameter

Penetration
No resistance
Refusal

Water
Inflow
Partial Loss
Complete Loss

Samples and Tests
U - Undisturbed Sample
D - Disturbed Sample
SPT - Standard Penetration Test
ES - Environmental Sample
TW - Thin Walled
LB - Large Disturbed Sample

Moisture Condition
D - Dry
M - Moist
W - Wet

Consistency/Relative Density
VS - Very soft
S - Soft
F - Firm
St - Stiff
VSt - Very stiff
H - Hard
VL - Very loose
L - Loose
MD - Medium dense
D - Dense
VD - Very dense
Ce - Cemented
C - Compact

Logged in accordance with AS 1726:2017 Geotechnical site investigations

Engineering Log - Non Cored Borehole

Project No.: PSM3828

Client:	JBS&G	Commenced:	02/08/2022
Project Name:	Ryde Hospital Redevelopment	Completed:	02/08/2022
Hole Location:	Refer to Figure 1	Logged By:	KTL/SD
Hole Position:	323183.0 m E 6258887.0 m N MGA94 Zone 56	Checked By:	AS

Drill Model and Mounting:	Geoprobe 7822DT	Inclination:	-90°	RL Surface:	100.00 m		
Hole Diameter:	120 mm	Bearing:		Datum:	AHD	Operator:	Terratest

Drilling Information								***Soil Description***				***Observations***
Method	Penetration	Support	Water	Samples Tests Remarks	Recovery	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description SOIL NAME: Plasticity, behaviour or particle characteristics of primary component, colour, secondary components, additional observations	Moisture Condition	Consistency / Relative Density	Hand Penetrometer UCS (kPa) 100 200 300 400 500	Structure, Zoning, Origin, Additional Observations
AD/T		N	Not Observed			94.0	6			SHALE: grey, highly weathered, very low to low strength. *(continued)*				
										Hole Terminated at 6.00 m Target depth				
						93.0	7							
						92.0	8							
						91.0	9							

Method
AD/T - Auger drilling TC bit
AD/V - Auger drilling V bit
WB - Washbore
SPT - Standard penetration test
PT - Push tube
AS - Auger screwing
CT - Continuous push tube 1.5m long 76mm diameter

Penetration
No resistance
Refusal

Water
Inflow
Partial Loss
Complete Loss

Samples and Tests
U - Undisturbed Sample
D - Disturbed Sample
SPT - Standard Penetration Test
ES - Environmental Sample
TW - Thin Walled
LB - Large Disturbed Sample

Moisture Condition
D - Dry
M - Moist
W - Wet

Consistency/Relative Density
VS - Very soft
S - Soft
F - Firm
St - Stiff
VSt - Very stiff
H - Hard
VL - Very loose
L - Loose
MD - Medium dense
D - Dense
VD - Very dense
Ce - Cemented
C - Compact

Logged in accordance with AS 1726:2017 Geotechnical site investigations

Borehole ID

BH07A

Engineering Log - Non Cored Borehole

Project No.: PSM3828

Client:	JBS&G	Commenced:	02/08/2022
Project Name:	Ryde Hospital Redevelopment	Completed:	02/08/2022
Hole Location:	Refer to Figure 1	Logged By:	KTL/SD
Hole Position:	323118.0 m E 6258900.0 m N MGA94 Zone 56	Checked By:	AS

Drill Model and Mounting:	Geoprobe 7822DT	Inclination:	-90°	RL Surface:	97.69 m		
Hole Diameter:	120 mm	Bearing:		Datum:	AHD	Operator:	Terratest

Drilling Information								Soil Description					Observations
Method	Penetration	Support	Water	Samples Tests Remarks	Recovery	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description SOIL NAME: Plasticity, behaviour or particle characteristics of primary component, colour, secondary components, additional observations	Moisture Condition	Consistency / Relative Density	Hand Penetrometer UCS (kPa) 100 200 300 400 500	Structure, Zoning, Origin, Additional Observations
AD/T		N								ASPHALT: Approx. 40mm.t	M			0.04: INFERRED FILL
									CI-CH	ROADBASE: Sandy GRAVEL, fine to medium grained, dark grey, sand is fine to medium grained.				0.20: INFERRED NATURAL
										CLAY: medium to high plasticity, red brown				
AD/V		N		SPT 0.50-0.95 m 3,3,5 N=8		96.7	1			Becomes orange brown.	M	F		
										Becomes light grey.				
				SPT 1.50-1.88 m 7,17,20/80mm N=R						SHALE: light grey, extremely weathered, very low strength.				
			Not Observed			95.7	2							1.80: 'V' BIT REFUSAL
AD/T		N								SHALE: grey and brown, highly weathered, very low to low strength.				
						94.7	3							
						93.7	4							

Method
AD/T - Auger drilling TC bit
AD/V - Auger drilling V bit
WB - Washbore
SPT - Standard penetration test
PT - Push tube
AS - Auger screwing
CT - Continuous push tube 1.5m long 76mm diameter

Penetration
No resistance
Refusal

Water
Inflow
Partial Loss
Complete Loss

Samples and Tests
U - Undisturbed Sample
D - Disturbed Sample
SPT - Standard Penetration Test
ES - Environmental Sample
TW - Thin Walled
LB - Large Disturbed Sample

Moisture Condition
D - Dry
M - Moist
W - Wet

Consistency/Relative Density
VS - Very soft
S - Soft
F - Firm
St - Stiff
VSt - Very stiff
H - Hard
VL - Very loose
L - Loose
MD - Medium dense
D - Dense
VD - Very dense
Ce - Cemented
C - Compact

Logged in accordance with AS 1726:2017 Geotechnical site investigations

Engineering Log - Non Cored Borehole

Project No.: PSM3828

Client:	JBS&G	Commenced:	02/08/2022
Project Name:	Ryde Hospital Redevelopment	Completed:	02/08/2022
Hole Location:	Refer to Figure 1	Logged By:	KTL/SD
Hole Position:	323118.0 m E 6258900.0 m N MGA94 Zone 56	Checked By:	AS

Drill Model and Mounting:	Geoprobe 7822DT	Inclination:	-90°	RL Surface:	97.69 m		
Hole Diameter:	120 mm	Bearing:		Datum:	AHD	Operator:	Terratest

Drilling Information								Soil Description					Observations
Method	Penetration	Support	Water	Samples Tests Remarks	Recovery	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description SOIL NAME: Plasticity, behaviour or particle characteristics of primary component, colour, secondary components, additional observations	Moisture Condition	Consistency / Relative Density	Hand Penetrometer UCS (kPa) 100 200 300 400 500	Structure, Zoning, Origin, Additional Observations
AD/T		N	Not Observed			91.7	6			SHALE: grey and brown, highly weathered, very low to low strength. *(continued)* Becomes dark grey and brown, with clay bands				
						90.7	7			Hole Terminated at 6.00 m Target depth				
						89.7	8							
						88.7	9							

Method
AD/T - Auger drilling TC bit
AD/V - Auger drilling V bit
WB - Washbore
SPT - Standard penetration test
PT - Push tube
AS - Auger screwing
CT - Continuous push tube 1.5m long 76mm diameter

Penetration
No resistance
Refusal

Water
Inflow
Partial Loss
Complete Loss

Samples and Tests
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S - Soft
F - Firm
St - Stiff
VSt - Very stiff
H - Hard
VL - Very loose
L - Loose
MD - Medium dense
D - Dense
VD - Very dense
Ce - Cemented
C - Compact

Logged in accordance with AS 1726:2017 Geotechnical site investigations

Borehole ID

BH08A

Engineering Log - Non Cored Borehole

Project No.: PSM3828

Client:	JBS&G	Commenced:	02/08/2022
Project Name:	Ryde Hospital Redevelopment	Completed:	02/08/2022
Hole Location:	Refer to Figure 1	Logged By:	KTL/SD
Hole Position:	323132.0 m E 6258809.0 m N MGA94 Zone 56	Checked By:	AS

Drill Model and Mounting:	Geoprobe 7822DT	Inclination:	-90°	RL Surface:	95.16 m		
Hole Diameter:	120 mm	Bearing:		Datum:	AHD	Operator:	Terratest

Drilling Information								Soil Description					Observations
Method	Penetration	Support	Water	Samples Tests Remarks	Recovery	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description SOIL NAME: Plasticity, behaviour or particle characteristics of primary component, colour, secondary components, additional observations	Moisture Condition	Consistency / Relative Density	Hand Penetrometer UCS (kPa) 100 200 300 400 500	Structure, Zoning, Origin, Additional Observations
AD/T	AD/V	N N	Not Observed	SPT 0.50-0.95 m 2,4,5 N=9 CBR 0.60-1.30 m SPT 1.50-1.95 m 2,3,3 N=6 SPT 3.00-3.45 m 1,2,1 N=3 SPT 4.50-4.95 m 2,5,8 N=13		94.2 93.2 92.2 91.2	1 2 3 4		CI	ASPHALT: Approx. 100mm.t. Gravelly SAND: fine to medium grained, dark brown, gravel is fine to medium grained. Gravelly CLAY: low to medium plasticity, dark brown, gravel is fine to medium grained, concrete fragments present. SAND trace gravel: fine to coarse grained, dark grey brown, gravel is fine to medium grained, slag and glass fragments present. CLAY trace gravel: low to medium plasticity, dark grey mottled orange brown and light grey, gravel is fine to medium grained. CLAY with sand: medium plasticity, light grey mottled orange brown, sand is fine grained.	M M M M M	St St L - MD S St		0.10: INFERRED FILL 3.80: INFERRED NATURAL

Method
AD/T - Auger drilling TC bit
AD/V - Auger drilling V bit
WB - Washbore
SPT - Standard penetration test
PT - Push tube
AS - Auger screwing
CT - Continuous push tube 1.5m long 76mm diameter

Penetration
No resistance
Refusal

Water
Inflow
Partial Loss
Complete Loss

Samples and Tests
U - Undisturbed Sample
D - Disturbed Sample
SPT - Standard Penetration Test
ES - Environmental Sample
TW - Thin Walled
LB - Large Disturbed Sample

Moisture Condition
D - Dry
M - Moist
W - Wet

Consistency/Relative Density
VS - Very soft
S - Soft
F - Firm
St - Stiff
VSt - Very stiff
H - Hard
VL - Very loose
L - Loose
MD - Medium dense
D - Dense
VD - Very dense
Ce - Cemented
C - Compact

Logged in accordance with AS 1726:2017 Geotechnical site investigations

Engineering Log - Non Cored Borehole

Project No.: PSM3828

Client:	JBS&G	Commenced:	02/08/2022
Project Name:	Ryde Hospital Redevelopment	Completed:	02/08/2022
Hole Location:	Refer to Figure 1	Logged By:	KTL/SD
Hole Position:	323132.0 m E 6258809.0 m N MGA94 Zone 56	Checked By:	AS

Drill Model and Mounting:	Geoprobe 7822DT	Inclination:	-90°	RL Surface:	95.16 m
Hole Diameter:	120 mm	Bearing:		Datum:	AHD

Operator: Terratest

Drilling Information								Soil Description					Observations
Method	Penetration	Support	Water	Samples Tests Remarks	Recovery	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description SOIL NAME: Plasticity, behaviour or particle characteristics of primary component, colour, secondary components, additional observations	Moisture Condition	Consistency / Relative Density	Hand Penetrometer UCS (kPa) 100 200 300 400 500	Structure, Zoning, Origin, Additional Observations
AD/V		N	Not Observed			89.2	6		Cl	CLAY with sand: medium plasticity, light grey mottled orange brown, sand is fine grained. *(continued)*	M	St		
										Hole Terminated at 6.00 m Target depth				
						88.2	7							
						87.2	8							
						86.2	9							

Method
AD/T - Auger drilling TC bit
AD/V - Auger drilling V bit
WB - Washbore
SPT - Standard penetration test
PT - Push tube
AS - Auger screwing
CT - Continuous push tube 1.5m long 76mm diameter

Penetration
No resistance
Refusal

Water
Inflow
Partial Loss
Complete Loss

Samples and Tests
U - Undisturbed Sample
D - Disturbed Sample
SPT - Standard Penetration Test
ES - Environmental Sample
TW - Thin Walled
LB - Large Disturbed Sample

Moisture Condition
D - Dry
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Consistency/Relative Density
VS - Very soft
S - Soft
F - Firm
St - Stiff
VSt - Very stiff
H - Hard
VL - Very loose
L - Loose
MD - Medium dense
D - Dense
VD - Very dense
Ce - Cemented
C - Compact

Logged in accordance with AS 1726:2017 Geotechnical site investigations

Borehole ID

BH09A

Engineering Log - Non Cored Borehole

Project No.: PSM3828

Client:	JBS&G	Commenced:	02/08/2022
Project Name:	Ryde Hospital Redevelopment	Completed:	02/08/2022
Hole Location:	Refer to Figure 1	Logged By:	KTL/SD
Hole Position:	323216.0 m E 6258778.0 m N MGA94 Zone 56	Checked By:	AS

Drill Model and Mounting:	Geoprobe 7822DT	Inclination:	-90°	RL Surface:	95.39 m		
Hole Diameter:	120 mm	Bearing:		Datum:	AHD	Operator:	Terratest

Drilling Information								Soil Description					Observations
Method	Penetration	Support	Water	Samples Tests Remarks	Recovery	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description SOIL NAME: Plasticity, behaviour or particle characteristics of primary component, colour, secondary components, additional observations	Moisture Condition	Consistency / Relative Density	Hand Penetrometer UCS (kPa) 100 200 300 400 500	Structure, Zoning, Origin, Additional Observations
AD/T		N								ASPHALT: Approx. 90mm.t.				
										ROADBASE: Gravelly SAND, fine to medium grained, dark grey brown, gravel is fine to medium grained.	M			0.09: INFERRED FILL
				CBR 0.30-1.10 m SPT 0.50-0.95 m 1,2,2 N=4		94.4	1			CLAY with gravel: medium plasticity, dark brown mottled light grey and orange brown, gravel is fine to medium grained, ash present.	D	F		
AD/V		N	Not Observed	SPT 1.50-1.95 m 2,4,2 N=6		93.4	2			CLAY trace gravel: low to medium plasticity, dark grey brown, gravel is fine to medium grained, slag present.	M	F		
				SPT 3.00-3.45 m 4,7,8 N=15		92.4	3		CI	CLAY: medium plasticity, light grey mottled orange brown.				3.20: INFERRED NATURAL
						91.4	4				D	VSt		
AD/T		N		SPT 4.50-4.95 m 5,8,15 N=23										

Method
AD/T - Auger drilling TC bit
AD/V - Auger drilling V bit
WB - Washbore
SPT - Standard penetration test
PT - Push tube
AS - Auger screwing
CT - Continuous push tube 1.5m long 76mm diameter

Penetration
No resistance
Refusal

Water
Inflow
Partial Loss
Complete Loss

Samples and Tests
U - Undisturbed Sample
D - Disturbed Sample
SPT - Standard Penetration Test
ES - Environmental Sample
TW - Thin Walled
LB - Large Disturbed Sample

Moisture Condition
D - Dry
M - Moist
W - Wet

Consistency/Relative Density
VS - Very soft
S - Soft
F - Firm
St - Stiff
VSt - Very stiff
H - Hard
VL - Very loose
L - Loose
MD - Medium dense
D - Dense
VD - Very dense
Ce - Cemented
C - Compact

Logged in accordance with AS 1726:2017 Geotechnical site investigations

Engineering Log - Non Cored Borehole

Project No.: PSM3828

Client:	JBS&G	Commenced:	02/08/2022
Project Name:	Ryde Hospital Redevelopment	Completed:	02/08/2022
Hole Location:	Refer to Figure 1	Logged By:	KTL/SD
Hole Position:	323216.0 m E 6258778.0 m N MGA94 Zone 56	Checked By:	AS

Drill Model and Mounting:	Geoprobe 7822DT	Inclination:	-90°	RL Surface:	95.39 m		
Hole Diameter:	120 mm	Bearing:		Datum:	AHD	Operator:	Terratest

Drilling Information								Soil Description					Observations
Method	Penetration	Support	Water	Samples Tests Remarks	Recovery	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description SOIL NAME: Plasticity, behaviour or particle characteristics of primary component, colour, secondary components, additional observations	Moisture Condition	Consistency / Relative Density	Hand Penetrometer UCS (kPa) 100 200 300 400 500	Structure, Zoning, Origin, Additional Observations
AD/T		N	Not Observed			89.4	6		CI	CLAY: medium plasticity, light grey mottled orange brown, with extremely weathered shale bands.	D	VSt		
										Hole Terminated at 6.00 m Target depth				
						88.4	7							
						87.4	8							
						86.4	9							

Method
AD/T - Auger drilling TC bit
AD/V - Auger drilling V bit
WB - Washbore
SPT - Standard penetration test
PT - Push tube
AS - Auger screwing
CT - Continuous push tube 1.5m long 76mm diameter

Penetration
No resistance
Refusal

Water
Inflow
Partial Loss
Complete Loss

Samples and Tests
U - Undisturbed Sample
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SPT - Standard Penetration Test
ES - Environmental Sample
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LB - Large Disturbed Sample

Moisture Condition
D - Dry
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Consistency/Relative Density
VS - Very soft
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VSt - Very stiff
H - Hard
VL - Very loose
L - Loose
MD - Medium dense
D - Dense
VD - Very dense
Ce - Cemented
C - Compact

Logged in accordance with AS 1726:2017 Geotechnical site investigations

Borehole ID

BH10A

Engineering Log - Non Cored Borehole

Project No.: PSM3828

Client:	JBS&G	Commenced:	02/08/2022
Project Name:	Ryde Hospital Redevelopment	Completed:	02/08/2022
Hole Location:	Refer to Figure 1	Logged By:	KTL/SD
Hole Position:	323051.0 m E 6258818.0 m N MGA94 Zone 56	Checked By:	AS

Drill Model and Mounting:	Geoprobe 7822DT	Inclination:	-90°	RL Surface:	93.81 m		
Hole Diameter:	120 mm	Bearing:		Datum:	AHD	Operator:	Terratest

Drilling Information								Soil Description					Observations
Method	Penetration	Support	Water	Samples Tests Remarks	Recovery	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description SOIL NAME: Plasticity, behaviour or particle characteristics of primary component, colour, secondary components, additional observations	Moisture Condition	Consistency / Relative Density	Hand Penetrometer UCS (kPa) 100 200 300 400 500	Structure, Zoning, Origin, Additional Observations
AD/V		N	Not Observed	SPT 0.50-0.95 m 2,5,5 N=10		92.8	1			CONCRETE: 185mm.t				
										ROADBASE: Gravelly SAND, fine to medium grained, dark brown, gravel is fine to medium grained.	M			0.19: INFERRED FILL
										CLAY with sand trace gravel: medium plasticity, dark brown and brown, sand is fine to medium grained, gravel is fine to medium grained, concrete fragments present.		St		
				SPT 1.50-1.95 m 2,1,2 N=3		91.8	2				M			
										CLAY: low plasticity, dark grey brown mottled orange brown, rootlets present.		S		
									CI	CLAY trace gravel: medium plasticity, grey mottled orange brown, gravel is fine to medium grained, rootlets present.	M	VSt		2.30: INFERRED NATURAL
				SPT 3.00-3.45 m 2,8,21 N=29		90.8	3				D			
AD/T		N								SHALE: light grey, extremely weathered, very low strength, with occasional clay bands.				
				SPT 4.50-4.95 m 10,15,21 N=36		89.8	4							

Method
AD/T - Auger drilling TC bit
AD/V - Auger drilling V bit
WB - Washbore
SPT - Standard penetration test
PT - Push tube
AS - Auger screwing
CT - Continuous push tube 1.5m long 76mm diameter

Penetration
No resistance
Refusal

Water
Inflow
Partial Loss
Complete Loss

Samples and Tests
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LB - Large Disturbed Sample

Moisture Condition
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W - Wet

Consistency/Relative Density
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St - Stiff
VSt - Very stiff
H - Hard
VL - Very loose
L - Loose
MD - Medium dense
D - Dense
VD - Very dense
Ce - Cemented
C - Compact

Logged in accordance with AS 1726:2017 Geotechnical site investigations

Engineering Log - Non Cored Borehole

Project No.: PSM3828

Client:	JBS&G	Commenced:	02/08/2022
Project Name:	Ryde Hospital Redevelopment	Completed:	02/08/2022
Hole Location:	Refer to Figure 1	Logged By:	KTL/SD
Hole Position:	323051.0 m E 6258818.0 m N MGA94 Zone 56	Checked By:	AS

Drill Model and Mounting:	Geoprobe 7822DT	Inclination:	-90°	RL Surface:	93.81 m		
Hole Diameter:	120 mm	Bearing:		Datum:	AHD	Operator:	Terratest

Drilling Information								Soil Description					Observations
Method	Penetration	Support	Water	Samples Tests Remarks	Recovery	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description SOIL NAME: Plasticity, behaviour or particle characteristics of primary component, colour, secondary components, additional observations	Moisture Condition	Consistency / Relative Density	Hand Penetrometer UCS (kPa) 100 200 300 400 500	Structure, Zoning, Origin, Additional Observations
AD/T		N	Not Observed			87.8	6			SHALE: light grey, extremely weathered, very low strength, with occasional clay bands. *(continued)*				
										Hole Terminated at 6.00 m Target depth				
						86.8	7							
						85.8	8							
						84.8	9							

Method
AD/T - Auger drilling TC bit
AD/V - Auger drilling V bit
WB - Washbore
SPT - Standard penetration test
PT - Push tube
AS - Auger screwing
CT - Continuous push tube 1.5m long 76mm diameter

Penetration
No resistance
Refusal

Water
Inflow
Partial Loss
Complete Loss

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Logged in accordance with AS 1726:2017 Geotechnical site investigations

Appendix B
CBR Results

115 Wicks Road
Macquarie Park, NSW 2113
Telephone: 02 9888 5000
Facsimile: 02 9888 5001

SOIL TEST SERVICES
ABN 43 002 145 173

FOUR DAY SOAKED CALIFORNIA BEARING RATIO TEST REPORT

Client: Pells Sullivan Meynink
PSM Job No.: **PSM3828**
Location: Ryde Hospital

Report No.: L4800 - 1
Report Date: 9/08/2022
Page 1 of 1

BOREHOLE NUMBER	BH 03	BH 05	BH 06	BH 08	BH 09
DEPTH (m)	0.50 - 1.10	0.50 - 1.20	0.30 - 0.80	0.60 - 1.30	0.30 - 1.10
Surcharge (kg)	4.5	4.5	4.5	4.5	4.5
Maximum Dry Density (t/m^3)	1.71 STD	1.72 STD	1.63 STD	1.76 STD	1.82 STD
Optimum Moisture Content (%)	19.0	18.0	21.4	17.2	15.8
Moulded Dry Density (t/m^3)	1.68	1.69	1.60	1.72	1.77
Sample Density Ratio (%)	98	98	98	98	98
Sample Moisture Ratio (%)	96	100	101	100	105
Moisture Contents					
Insitu (%)	20.4	20.9	27.3	16.5	15.8
Moulded (%)	18.3	17.9	21.6	17.2	16.6
After soaking and					
After Test, Top 30mm(%)	28.6	25.0	33.3	26.9	21.7
Remaining Depth (%)	22.4	20.3	24.7	21.2	18.8
Material Retained on 19mm Sieve (%)	0	7*	2*	1*	1*
Swell (%)	1.0	0.5	3.0	0.0	0.5
C.B.R. value: @2.5mm penetration			1.5	7	5
@5.0mm penetration	2.5	4.0			

NOTES: Sampled and supplied by client. Samples tested as received.

- Refer to appropriate Borehole logs for soil descriptions
- Test Methods : AS 1289 6.1.1, 5.1.1 & 2.1.1.
- Date of receipt of sample: 01/08/2022 & 02/08/2022.
- * Denotes not used in test sample.

NATA Accredited Laboratory Number:1327

Accredited for compliance with ISO/IEC 17025 - Testing.
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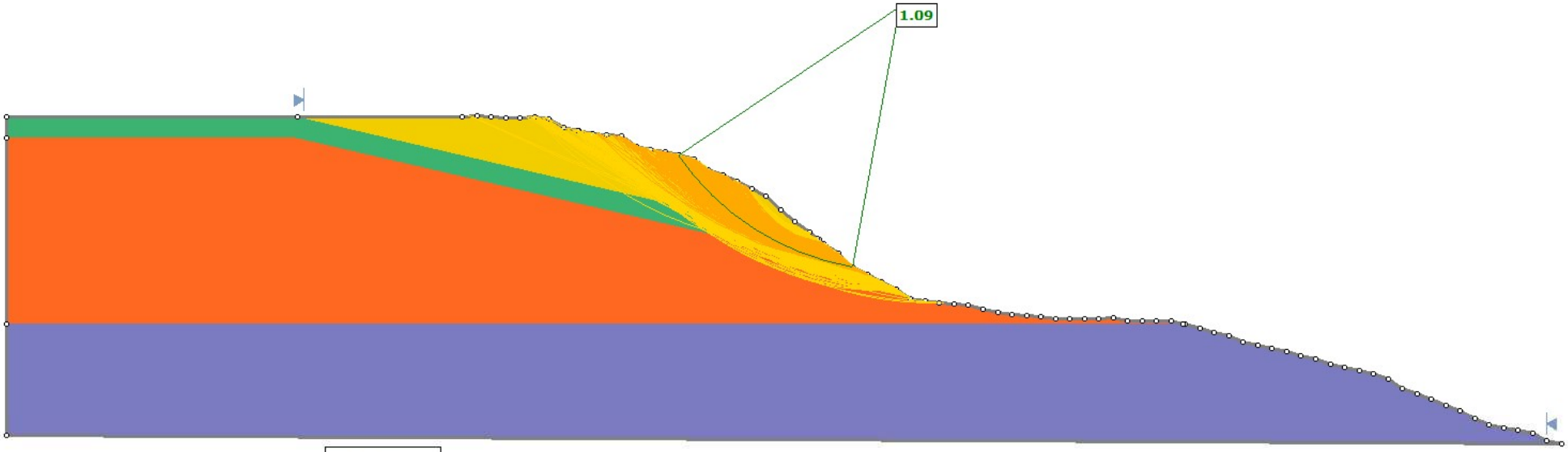
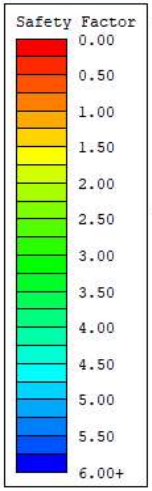
In full without approval of the laboratory. Results relate only to the items tested or sampled.

09/08/2022
Authorised Signature / Date
(D. Treweek)

Appendix C
Results of Slope Stability Analyses





Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (deg)	Water Surface
Fill		18	Mohr-Coulomb	4	25	None
Residual		18	Mohr-Coulomb	4	25	None
Bedrock A		22	Mohr-Coulomb	10	30	None
Bedrock B		22	Mohr-Coulomb	20	30	None

JBS&G

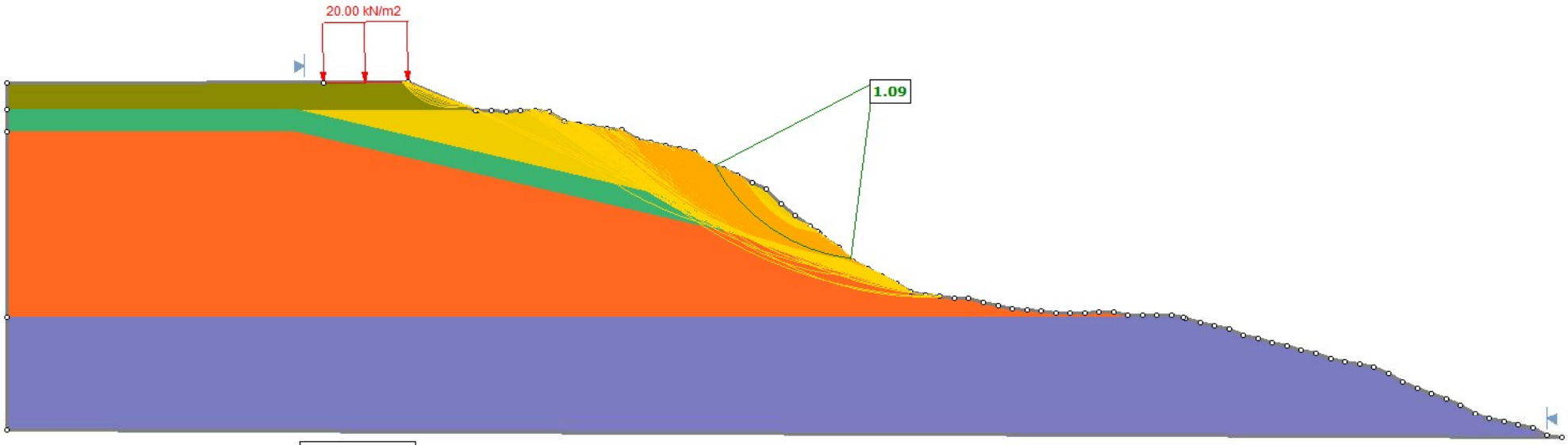
Ryde Hospital

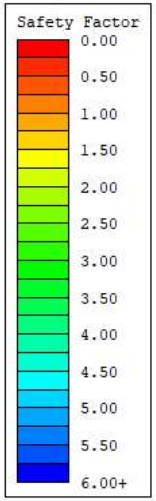
Denistone Rd, Eastwood NSW

SECTION A

BASE MODEL

PSM3828-008L | **Appendix C**





Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (deg)	Water Surface
Fill		18	Mohr-Coulomb	4	25	None
Residual		18	Mohr-Coulomb	4	25	None
Bedrock A		22	Mohr-Coulomb	10	30	None
Bedrock B		22	Mohr-Coulomb	20	30	None
Engineered FILL		18	Mohr-Coulomb	0	30	None

JBS&G

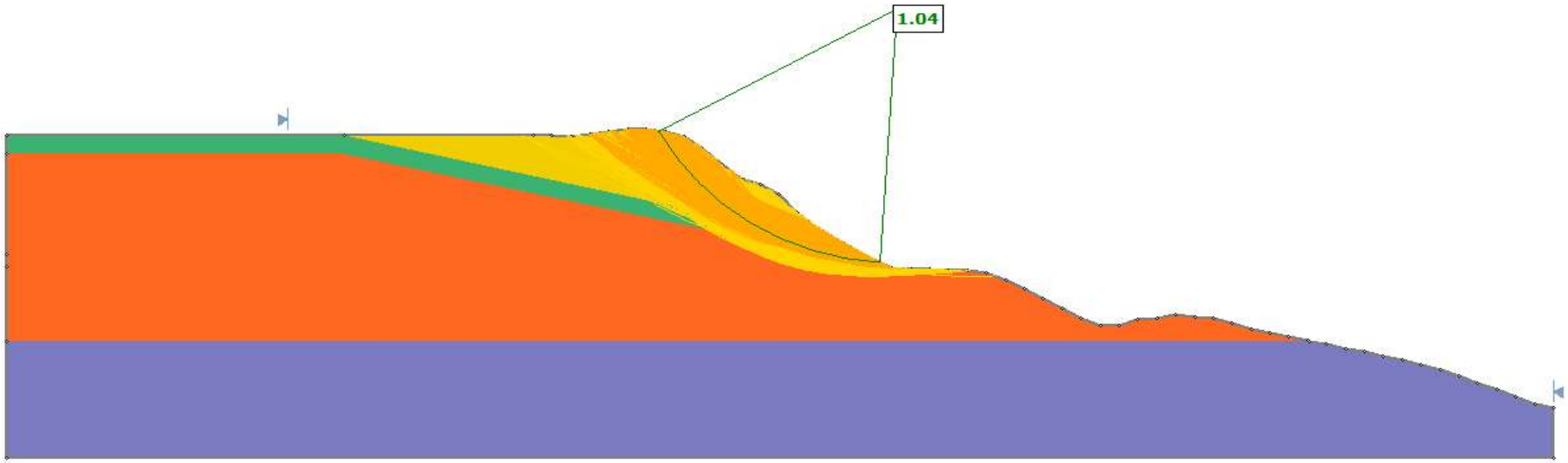
Ryde Hospital

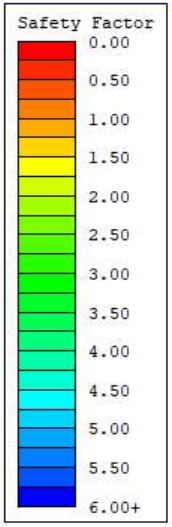
Denistone Rd, Eastwood NSW

SECTION A

SLIP SURFACES AT 6m OFFSET

PSM3828-008L | **Appendix C**





Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (deg)	Water Surface
Fill		18	Mohr-Coulomb	4	25	None
Residual		18	Mohr-Coulomb	4	25	None
Bedrock A		22	Mohr-Coulomb	10	30	None
Bedrock B		22	Mohr-Coulomb	30	30	None

JBS&G

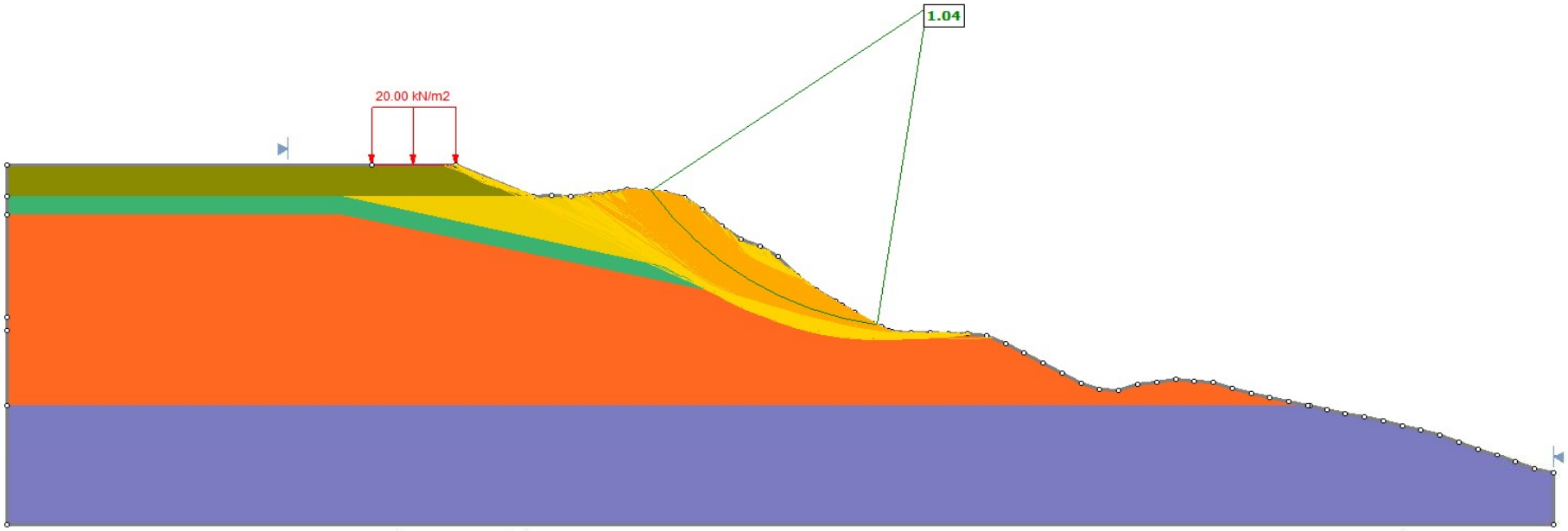
Ryde Hospital

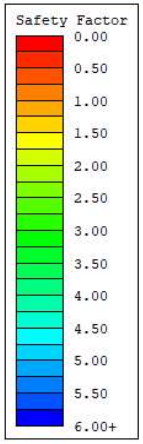
Denistone Rd, Eastwood NSW

SECTION B

BASE MODEL

PSM3828-008L | **Appendix C**





Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (deg)	Water Surface
Fill		18	Mohr-Coulomb	4	25	None
Residual		18	Mohr-Coulomb	4	25	None
Bedrock A		22	Mohr-Coulomb	10	30	None
Bedrock B		22	Mohr-Coulomb	30	30	None
Engineered FILL		18	Mohr-Coulomb	0	30	None

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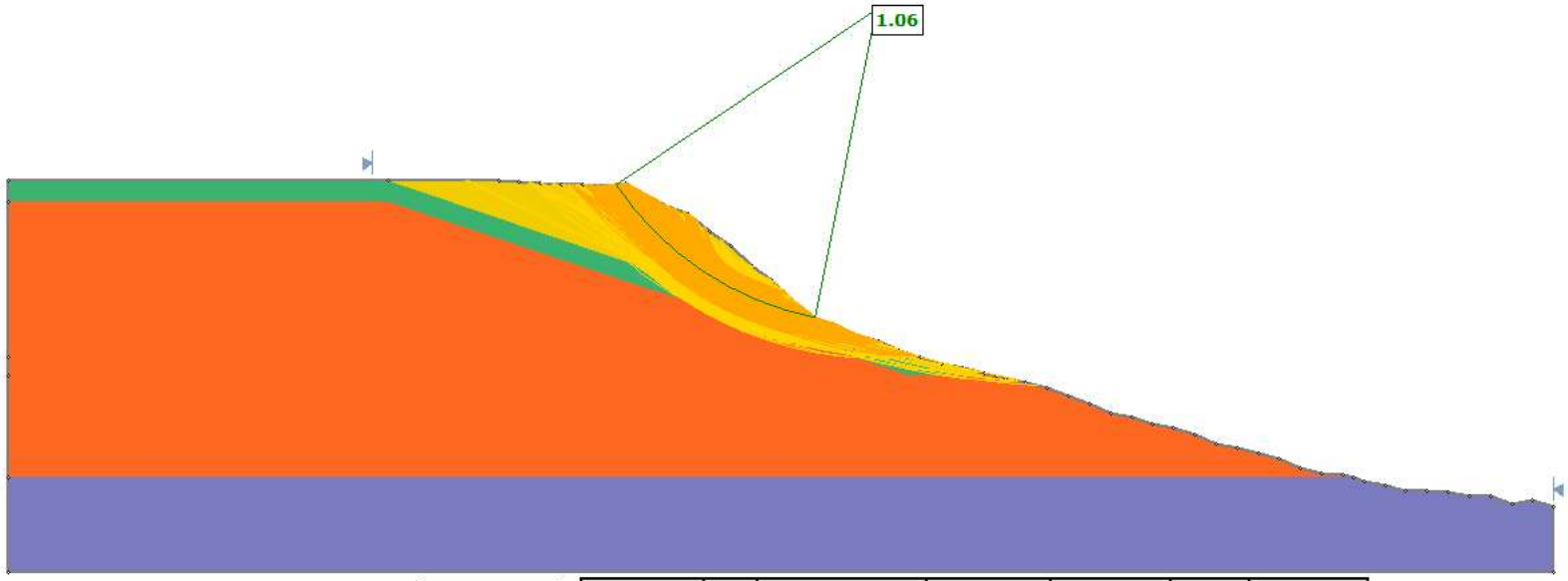
Ryde Hospital

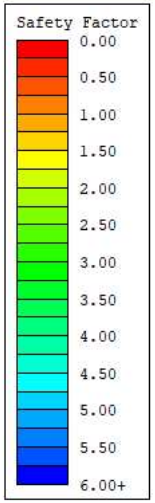
Denistone Rd, Eastwood NSW

SECTION B

SLIP SURFACES AT 7m OFFSET

PSM3828-008L	Appendix C





Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (deg)	Water Surface
Fill		18	Mohr-Coulomb	4	25	None
Residual		18	Mohr-Coulomb	4	30	None
Bedrock A		22	Mohr-Coulomb	10	30	None
Bedrock B		22	Mohr-Coulomb	30	30	None

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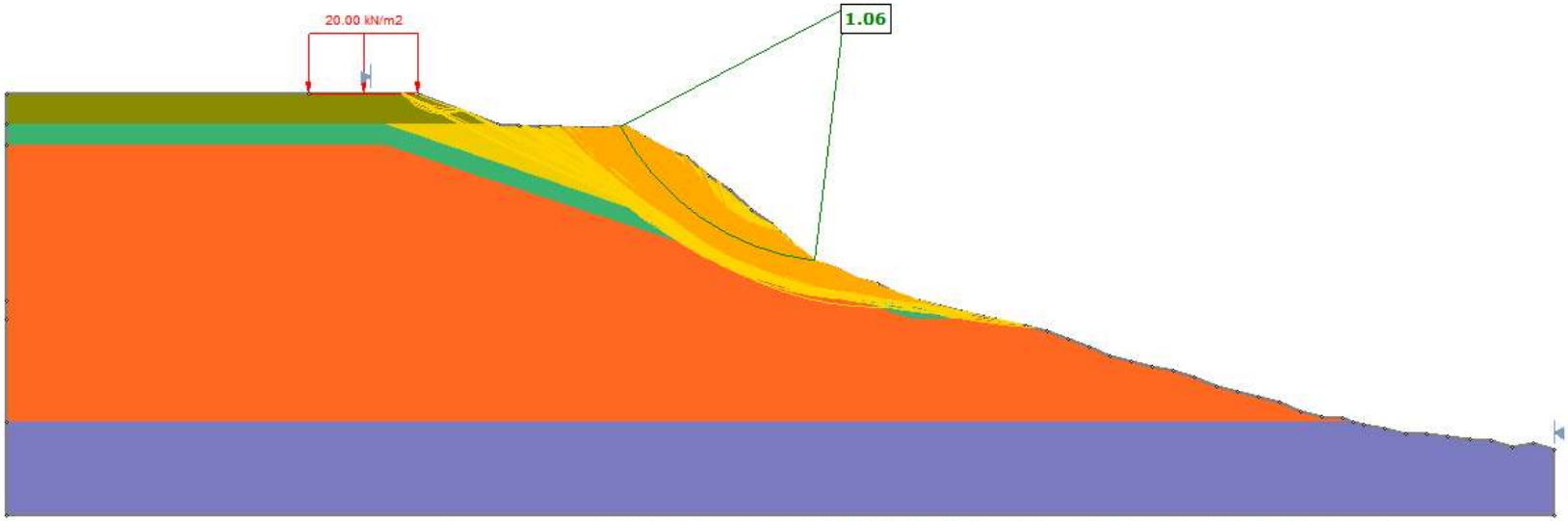
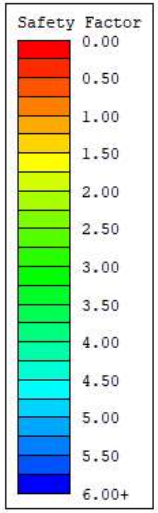
SECTION C

BASE MODEL

PSM3828-008L	Appendix C





Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (deg)	Water Surface
Fill		18	Mohr-Coulomb	4	25	None
Residual		18	Mohr-Coulomb	4	30	None
Bedrock A		22	Mohr-Coulomb	10	30	None
Bedrock B		22	Mohr-Coulomb	30	30	None
Engineered FILL		18	Mohr-Coulomb	0	30	None

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SECTION C

SLIP SURFACES AT 7m OFFSET

PSM3828-008L	Appendix C