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Our Ref: PSM3759-002L

29 January 2019

Pepper Property Advisory Pty Ltd 28/2 Chifley Square SYDNEY NSW 2000

Attention: Greg Carmichael

By email: gcarmichael@pepper.com.au

Dear Greg

RE: KAMBALA GIRLS SCHOOL, ROSE BAY, NSW GEOTECHNICAL AND ENVIRONMENTAL INVESTIGATION

1. Introduction

This letter presents the results of the geotechnical investigation undertaken by Pells Sullivan Meynink (PSM) at Kambala Girls School, Rose Bay, NSW. Figure 1 presents the locality plan of the site.

The work was undertaken in accordance with the PSM proposal dated 10 December 2018 (Ref. PSM3759-001L), as approved by email on 13 December 2018.

Prior to the work, PSM was supplied with the following documents:

- Allen Jack + Cottier Architects drawings and sketches "Kambala Sports Precinct Summary".
- Allen Jack + Cottier Architects drawings SK_181130-1 and SK_181130-2 "Site Plan and Sections".
- RPS Group survey plan sheets 1 7.
- Douglas Partners Geotechnical Report (Ref. 37034.04), dated June 2012 (Douglas Partners Report).

Based on the email request and the documents provided above, we understand that:

- The existing sports oval adjacent to New South Head Road is to be excavated to a lower level, including a
 portion of the adjacent bank.
- The excavation will be up to 8 m below the existing ground level.
- A raised sports field will be constructed above the excavated oval.
- Two (2) retaining walls will be constructed to support the excavation, one of which comprises a contiguous pile wall.

2. Geotechnical Site Investigation

2.1 Outline

Prior to testing, on-site service location "scans" were undertaken by a service locator in the presence of a PSM geotechnical engineer to assess if the test locations were free from buried utilities.

A total of seven (7) boreholes were drilled on the 8th and 9th November 2018, with two of these being cored. The fieldwork was undertaken simultaneously with JBS&G's environmental investigation. The boreholes were organised such that they meet both geotechnical and environmental requirements of the project.

All 7 boreholes were situated on the southern end of the existing sports field directly on the grass. A trackmounted rig was used for the auger drilling. The boreholes were drilled to target depth required for geotechnical assessments or until practical refusal by auger drilling using a Tungsten Carbide (TC) drill bit to a final depth of between 1.0 m and 5.2 m. Samples were taken directly from the auger and using hand augering techniques by JBS&G. Two cored boreholes, BH04 and BH06, were cored from TC bit refusal up to a final depth of 5.0 m and 7.2 m respectively.

The fieldwork was undertaken under the full time supervision of a PSM geotechnical engineer, who undertook the following tasks:

- Preparing field logs of material encountered in the boreholes
- Collecting samples for laboratory testing

The investigation locations were recorded with a hand-held GPS unit with a horizontal accuracy of ± 5 m. Approximate PSM borehole locations are shown on Figure 1. The existing ground levels at borehole locations were based on the survey plan provided by Allen Jack + Cottier Architects.

Geotechnical engineering logs of the boreholes are presented in Attachment A.

2.2 Testing

Point load tests on the core were performed at approximately one metre intervals. Results are tabulated in Attachment B.

2.3 Environmental Testing and Method of Disposal

A contamination assessment was undertaken by environmental consultants JBS&G and the report prepared by JBS&G will be sent out when received.

As part of the contamination assessment, JBS&G completed a desktop study and sampling during the drilling works for contamination testing.

3. Site Conditions

3.1 Geological Setting

The 1:100,000 Sydney Geological map (1991) indicates the site is underlain by Hawkesbury Sandstone of the Wianamatta Group formation comprising medium to coarse-grained quartz sandstone, very minor shale and laminate lenses.

3.2 Surface Conditions

The site comprises an existing school with concrete pathways, sealed bitumen surfaces and some grassed and landscaped areas. A number of free-standing buildings occupy the school area. The site is bounded by New South Head Road to the east and south, Bayview Hill Road to the north, and Tivoli Avenue to the west and south. At the time of the fieldwork, the following observations were made:

- The area in which the boreholes are located was an existing sports field with grass on the surface.
- The site boundaries consisted of an existing retaining wall to the north and a permanent batter to the east both supporting New South Head Road. The southern boundary of the field contains a retaining wall supporting the sports field whilst the western boundary contains other sports courts.

Figure 2 presents selected photos taken during the fieldwork.

3.3 Subsurface Conditions Encountered

The subsurface conditions encountered in the boreholes are summarised in Table 1. The subsurface conditions were consistent with the information in published the geological map and the Douglas Partners Report.

Inferred Unit	Encountered Depth to Top of Inferred Unit (m)	Typical Description
FILL	0.0 to 5.1	Silty SAND: grey to dark brown, fine to medium grained; trace of gravel and minor lenses of clay, low plasticity clay, sub-angular gravel up to 3mm, roots and rootlets observed down to approximately 0.2m, occasional crushed sandstone gravel encountered, generally loosely compacted and moist.
NATURAL SOIL	1.2 to 5.1	SAND: grey, brown and orange, fine to medium, with some silt and clay, low plasticity clay, generally loose to medium dense consistency and moist to wet.
WEATHERED ROCK	1.9 to 4.0	SANDSTONE: orange/red and light grey, medium to coarse grained, extremely weathered to moderately weathered and medium to high strength.
FRESH ROCK	3.3 to 7.0	SANDSTONE: light grey and black, medium to coarse grained, slightly weathered and high to very high strength.

Table 1 – Summary of Inferred Subsurface Conditions Encountered in PSM Boreholes

The boreholes that were not cored were terminated at TC bit refusal which is inferred to be bedrock. There was a variability of ground conditions (e.g. thickness of geotechnical units) between investigation locations, which should be considered during the design process.

Figure 3 presents the core photographs of BH04 and BH06.

Table 2 presents the depths of the inferred geotechnical units encountered in the PSM boreholes.

Table 2 – Depth to Top of Inferred Geotechnical Units Encountered in PSM Boreholes

	Depth to Top of Inferred Geotechnical Units [m Depth]												
ыпл	Fill	Natural Soil	Weathered Rock	Fresh rock	ЕОН								
BH03	0.0	1.2	N.E.	N.E.	2.7 ⁽¹⁾								
BH04	0.0	1.3	1.9	3.3	5.0								
BH06	0.0	3.6	4.0	7.0	7.6								
BH07	0.0	4.0	N.E.	N.E.	4.2 ⁽¹⁾								
BH08	0.0	5.1	N.E.	N.E.	5.2 ⁽¹⁾								
BH09	0.0	3.5	N.E.	N.E.	4.0 ⁽¹⁾								
BH10	0.0	N.E.	N.E.	N.E.	1.0 ⁽¹⁾								

Note: (1) Borehole was terminated at Bedrock EOH = End of hole N.E. = Not Encountered

3.4 Groundwater

We noted that the cuttings from boreholes BH06, BH07, BH08 and BH10 became wet towards the end of each hole. This suggests there is a possibility of a perched groundwater table exists in this area from 0.8m in BH10 down to 5.2m in BH08.

We also noted that based on the Douglas Partners Report, no groundwater was observed within the depth of augering. This suggests a variability of the groundwater condition on the site.

4. Discussion and Recommendations

4.1 Bulk Excavation Conditions

We understand that the excavation to depths of up to 8 m may be required for the proposed works. Based on the geotechnical investigation, excavation will include FILL, NATURAL SOIL, WEATHERED ROCK and FRESH ROCK units. Excavation in FILL and NATURAL SOIL should be achievable using conventional earth moving equipment. Excavation of ROCK units may require the use of hydraulic impact breakers, rock saws and/or rock grinders and must be undertaken by contractors with suitable experience in rock excavation close to existing structures. Auger TC bit refusal was encountered in all boreholes. BH04 and BH06 shows the sandstone cores expected on site.

Prospective contractors should make their own assessment of excavatability based on the borehole logs (this report and the Douglas Partners Report) and their site inspection and experience. It is our experience that excavatability is heavily dependent on both the operator and the plant used. Heavy rock breaking equipment will generate vibrations that may impact on neighbouring structures. Where controls on vibrations are required, the contractor should consider the use of smaller hammers, rock saws and grinders to undertake the excavation. The use of "pre-split" cuts along the boundaries using a rock saw can provide a "buffer" for vibrations.

It is noted that potential dewatering in the excavation may be required in some areas of the site due to possible seepage from perched water in the fill / natural soils and weathered sandstone layers; such inflows should be manageable by sump pumping. Settlements associated with such dewatering should be minor.

4.2 Site Classification

Based on the field observations and the inferred geotechnical units from the boreholes, we recommend that structures within scope of AS2870 be designed for a site classification of Class "P". This is due to the presence of very loose sand and fill layer deeper than 1.0 m over the majority of the site. Portions of the building founded in excavations in rock can be considered to be on a Class A site classification.

4.3 Temporary and Permanent Batters

The batter slope angles shown in Table 3 are recommended for the design of batters up to a nominal 8 m height; subject to the following recommendations:

- 1. All batters shall be protected from erosion. Permanent batters will need face support such as vegetation or shotcrete.
- 2. Permanent batters shall be drained for a distance behind the faces at least equal to the height.
- 3. Temporary batters shall not be left unsupported for more than 1 month without further advice, and inspection by a geotechnical engineer should be undertaken following significant rain events.
- 4. Where loads are imposed or structures/services are located within one batter height of the crest of the batter, further advice should be sought.

If the conditions above cannot be met, further advice should be sought.

Steeper batters may be possible subject to further advice, likely including inspection during construction.

Table 3 – Batter Slope Angles

Control Unit	Tem	Permanent			
Geolechnical Onit	Personnel entry	No personnel entry**	Fernanent		
Fill / Natural Soil	1.75H : 1V*	1.5H : 1V***	3H : 1V		
Weathered Rock/Fresh Rock****	Vertical	Vertical	1H : 1V or steeper		

Note: *: Where the unit is less than 1.5 m thick, then a temporary batter slope of 1H:1V can be adopted

**: Shall not be left unsupported for more than 3 days without further advice

***: Material riling is more likely on the batter surface

****: Subject to support of localised adverse conditions, subject to design and inspection.

The batters (temporary with personnel entry and permanent) should be inspected by an experienced geotechnical engineer or engineering geologist during excavation to confirm the batter advice provided and assess the need for localised support, such as rock bolting to control adverse jointing and mesh and/or shotcreting for overall face support or soft seams etc.

4.4 Retention

4.4.1 General

Cuts in the Soil and Rock units steeper than the recommended permanent batter slopes in Table 3 will need to be supported by an appropriate retaining structure.

An appropriate shoring system for vertical faces could be contiguous piles or reinforced concrete soldier piles, or steel soldier piles with concrete encasement or a plug or sheet piles, with the piles supported laterally by anchors and/or props bonded in Fresh Rock. Given that Fresh Rock is anticipated 3 metres or so above the bulk excavation level (excavation to 8m deep), founding the piles on a ledge of Fresh Rock instead on founding them below the bulk excavation level is a valid option if desired but is accompanied by both design and inspection complexities. For non-vertical faces steeper than the recommended slopes in Table 3, other shoring system such as rock bolts could be appropriate.

The design of these structures should be based on the following geotechnical properties:

- Effective soil strength parameters in Table 4.
- Surcharge loads behind the retention.

• Water pressure (depending on the type of structure).

Note that design of retention systems may be based on either K_a or K_o earth pressures. Design using active earth pressures (K_a) provides the minimum lateral earth pressure that must be supported to avoid failure and requires a wall that can rotate or translate to allow the pressures to reduce to these values (vertical and lateral movements up to 2% of height may occur, typical movements will be much less).

Where the design is based on K_o pressures, construction should be carefully controlled to avoid unwanted effects. It should be noted that designing for K_o pressures does not, of itself, ensure that movement does not occur. Movements are also influenced by the construction method, especially sequence. Further, construction related ground movements can include sand flighting during pile excavation, surface settlement due to drilling of ground anchor holes, collapse settlements of very loose sands, movements due to sequencing of the excavation during retaining construction and movement due to loss of material between the shoring piles.

Very low SPT "N" values were recorded in some of the tests in the Fill and Natural Soil units, these indicate that collapse settlements are possible behind the retention structure. Face support between piles should be provided in soils, with particular consideration given to how to prevent cohesionless soils from flowing into the excavation.

Where excavations are proposed in the vicinity of existing structures, including the existing retaining walls mentioned in Section 3.2, designers should consider the effects of the excavation including horizontal and vertical deflections on the neighbouring structures and infrastructure (e.g. roads and services). Excavation near existing buildings should not undermine the existing footings and structures.

Both surface and sub-surface drainage needs to be designed and constructed properly to prevent pore water pressures from building up behind the retaining walls or appropriate water pressures must be included in the design. Water pressures in design should consider the possibility of broken water services behind the wall (if applicable)

4.4.2 Wallap analysis

PSM will undertake the global stability analyses for the proposed retaining walls once we receive the detailed information for the retaining walls. Table 4 presents the geotechnical parameters recommended for the design of retention systems, in a Wallap analysis or similar. These parameters are unfactored and relate to working stress design.

ltem	Parameter	Unit	Recommended design value	Note
	Cohesion	kPa	0	
	Friction Angle	0	25	1
	Unit weight	kN/m ³	18	
Fill/Natural soli	Young's modulus	kPa	5,000	
	Poisson's ratio	-	0.25	
	Skin friction (pile/soil interface)	kPa	0	2
	Cohesion	kPa	20	
	Friction Angle	0	30	1
M(a ath and D a al-	Unit weight	kN/m ³	18	
vveathered Rock	Young's modulus	kPa	50,000	
	Poisson's ratio	-	0.25	
	Skin friction (pile/soil interface)	kPa	0	2

Table 4 – Geotechnical Parameters for Wallap analysis

ltem	Parameter	Unit	Recommended design value	Note
	Unit weight	kN/m ³	24	
	Allowable passive resistance (pile socket)	kPa	3,000	3
Fresh Rock	Lateral earth pressure	kPa	10	4
	Young's modulus	kPa	600,000	5
	Ultimate Skin friction	kPa	800	6
	Minimum bond length	m	4	
Anchor	Maximum bond length	m	10	
	Minimum free length	m	3	7

Notes:

- 1. Can be used to calculate lateral earth pressure coefficients (*K*_o, *K*_a). Does not imply a maximum possible passive pressure, for scenarios where passive pressure is a load.
- 2. Value does not represent negative skin friction effects due to fill settlement.
- 3. Relates to rectangular projection in front of piles, and only applies during excavation, because following completion of excavation there will be no rock in front of the piles above final excavation level. Presence of defects or weak rock mass may significantly reduce lateral and vertical bearing capacity.
 - Approximately equivalent to a Wallap cohesion parameter of 1,500 kPa x (pile diameter/pile spacing).
- 4. Considering potential localised rock wedges above pile toe level.
- 5. Young's modulus is highly dependent on scale and strain level, this value is only applicable for shoring design in a Wallap or similar analysis.
- 6. For anchor design and downwards vertical loading of piles. Ignore skin friction for pile uplift. If required to utilise skin friction between pile and rock for vertical capacity of piles (i.e. if end bearing provides insufficient vertical capacity), seek further geotechnical advice.
- 7. Free length at least extending beyond the theoretical 'active wedge'.
- 8. Designer to specify geotechnical construction verification requirements appropriate to its design.

4.5 Foundations

4.5.1 Shallow Footings and Allowable Bearing Pressure (ABP)

Pad footings can be proportioned on the basis of an allowable bearing pressure (ABP) for centric vertical loads provided in Table 5.

We recommend that shallow footings should not be founded on or within the Fill unit. If required to be founded on or within Fill, seek a further geotechnical advice.

We note that an allowable bearing pressure (ABP) is not a soil property. It depends on many factors such as the size of the footings, the embedment depth, the load direction and eccentricity, the stiffness of the footing, the adopted factor of safety (FOS), the settlement limit, as well as the soil properties. As footings get bigger or deeper the capacity increases rapidly, as the load gains eccentricity or becomes inclined, the capacity reduces rapidly.

Settlements in the Natural Soil unit can be estimated using the elastic parameters provided in Table 5. Foundation conditions at shallow pad footing locations should be inspected by a suitably qualified geotechnical engineer prior to the pouring of concrete.

4.5.2 Piles

We envisage that piles would be founded within the Fresh Rock unit.

Piles should be designed in accordance with the requirements in AS 2159 (2009), Piling – Design and Installation. The parameters provided in Table 5 may be adopted in the design of piles founded in the Fresh Rock unit.

The designer should note the following with regards to the pile design:

- The ABP needs to be confirmed by a geotechnical engineer during a pile/footing inspection; this can be difficult if CFA piles are adopted and it may be appropriate to adopt a lower ABP of 6 MPa with a lesser inspection requirement.
- Under permanent load, the contribution of side adhesion for soils including Fill and Natural Soil should be ignored.
- Deflection needs to be checked using the recommended elastic parameters in Table 5.

The bearing capacities provided are contingent on piles or footings being vertically and centrally loaded. Further advice should be sought if the footings are not vertically centrically loaded. Should higher bearing capacities be required in Fresh Rock, this may be available subject to further advice.

With regards to the pile design we recommend that:

- A geotechnical strength reduction factor, $\Phi_g = 0.60$ (AS2159 CL. 4.3.2) be adopted for a high redundancy system for an assessed average risk rating (ARR) between 2.5 and 3.0. This should be reviewed to suit the specific design and appropriate pile testing proposed by the structural designers in accord with the requirements of AS2159.
- It may be possible to increase the strength reduction factors, if the details of the proposed pile installation procedures indicate a high level of quality control with regards to concrete placement, base cleanliness, etc.
- If a geotechnical strength reduction factor, $\Phi_g = 0.40$ is adopted then no pile testing will be required (AS2159 Clause 8.2.4 (b)).

Table 5 – Foundation Parameters of Inferred Geotechnical Units

	Pulk Linit	Soil Effecti Strength P	ve arameters	Ultimate Bearing	Allowable Bearing Pressure (ABP)	Illiimata Shaft	Elastic Parameters			
Inferred Unit	Weight (kN/m ³)	<i>c'</i> (kPa)	φ' (deg)	Vertical Centric Loading ³ (kPa)	under Vertical Centric Loading (kPa)	Adhesion (kPa)	Long Term Vertical Young Modulus (MPa)	Poisson's Ratio		
Notural Sail	10	0	25	200	70 ¹	N/A	F	0.05		
Natural Soli	18	0	25	300	95 ²	N/A	5	0.25		
Weathered Rock	18	20	30	10,000	5,000	N/A	350	0.25		
Fresh Rock (not on ledge)	24	N/A	N/A	60,000	10,000 ^{4,5}	250	1100	0.25		
Fresh Rock (on ledge)	24	N/A	N/A	10,000 ⁶	3,000 ^{4,5}	N/A	900	0.25		

Note: 1. Pad footings (for ABP of 70 kPa) should have a minimum horizontal dimension of 1.0 m and a minimum embedment depth of 0.5 m. Corresponds to FOS = 3 on ultimate capacities. Designer to also assess the settlements as this may instead govern the design.

2. Pad footings (for ABP of 95 kPa) should have a minimum horizontal dimension of 1.5 m and a minimum embedment depth of 0.7 m. Corresponds to FOS = 3 on ultimate capacities. Designer to also assess the settlements as this may instead govern the design.

3. Ultimate values occur at large settlement (>5% of minimum footing / pile dimensions)

4. Assuming a sufficiently clean pile base.

5. End bearing pressure associated with settlement of <1% of minimum footing / pile dimension.

6. Assuming a cleanly cut ledge with no overbreak, adversely oriented discontinuities or rock mass disturbance, and a sufficiently clean pile base. It is possible substantial dental support may be required following inspection.

5. General

If at any time, the conditions are found to vary from those described in this report, further advice should be sought.

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

For and on behalf of PELLS SULLIVAN MEYNINK

amony

STEPHANIE SALIM GEOTECHNICAL ENGINEER

GARRY MOSTYN PRINCIPAL

Encl.

Figure 1Locality PlanFigure 2Selected site photographsFigure 3Core photographs of BH04 and BH06Attachment AEngineering Borehole LogsAttachment BGeotechnical & Analytical Laboratory Testing Results





PHOTO 1 - GENERAL SITE PHOTO (FACING NORTH WEST)



PHOTO 2 - TC BIT DRILLING (BH03)

Pepper Property Pty Ltd Kambala Girls School 794 New South Head Rd, Rose Bay SELECTED SITE PHOTOGRAPHS (SHEET 1 OF 1)



Pells Sullivan Meynink

PSM3759-002L

Figure 2



BH04 - 2.1m to 5.0m



BH06 - 4.1m to 7.6m



Pepper Property Pty Ltd Kambala Girls School 794 New South Head Rd, Rose Bay CORE PHOTOS BH04 & BH06 (SHEET 1 OF 1)

Pells Sullivan Meynink

PSM3759-002L

Figure 3

Attachment A Engineering Borehole Logs



BH03

E	Eng	gin	ee	rin	g Log - N	or	n Co	ored	Во	reho	le	Project N	No.:		PSM	3759	
	Client: Pepper Property Advisory Pty Ltd Commenced: 09/01/20 Project Name: Kambala Girls School Completed: 09/01/20 Hole Location: Rose Bay Logged By: SS Hole Position: 340237.0 m E 6251473.0 m N MGA94 Zone 56 Checked By: GM													1/201 1/201	9 9		
	Dr Ho	ill M ble D	odel)iam	anc eter	l Mounting:	CR 130	P 155) mm	5 Trac	k Mou	inted	Inclination: -90° Bearing:	RL Surfa Datum:	ace:	39 A⊦	.70 m ID	0	perator: BG Drilling
			I	Drill	ing Informatio	on					Soil Descript	ion					Observations
	Method	Penetration	Support	Water	Samples Tests Remarks	Recovery	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description SOIL NAME: Colour, structu plasticity, additional	re,	Moisture Condition	Consistency / Relative Density	Ha Penetro UC (kF	nd ometer S Pa)	r Structure and Additional Observations
.00.2 2015-10-23 Ptr PSM 2.01 2015-04-07	AUI				1.50: SPT - 15, 23, 21, N = 44		37.7 38.7	- - - 1- - - - - - - - - - -		SC	SILTY SAND: dark brown, medium ; sand, roots and rootlets observed d m. SAND: light brown, medium grained SAND: dark brown, medium grained trace clay low plasticity. Becomes light grey and orange brow grained at 2.0 m.	yrained wrn to 0.2 sand sand sand,	M M M	C D		9 4 0	0.00: FILL 1.20: Inferred residual.
CORE_BH_MZ_AU ROSE BAY.GPJ < <chrawingfile>> 17/01/2019 11:02 10.0.000 Dathel Lab and in Situ Tool - DGD Litb: PSM </chrawingfile>	Image: Second secon													2.70: TC bit refusal on inferred bedrock.			
PSM 3.00.2 LIB.GLB Log IS_AU_NONC	AD/T - Auger drilling TC bit AD/V - Auger drilling V bit WB - Washbore No resistance through to refusal Inflow U - Undisturbed Sample D - Dry VS - Very soft VB - Washbore Partial Loss Partial Loss D - Disturbed Sample M - Moist S - Soft PT - Push tube AS - Auger Screwing Complete Loss Complete Loss EN - Environmental Sample W Wet St - Stiff WB - Washbore S - Soft F Firm - Environmental Sample W Wet St - Very loss PT - Push tube AS - Auger Screwing Complete Loss Es - Environmental Sample VL - Very losse Classification symbols L - Loose - Loose MD - Medium dense and soil descriptions MD - Wery losse MD - Dense D - Very dense See Evaluation Violes for datalls of abbreviations and basis of descriptions Classification System Ce - Comment																



BH04

E	Eng	jin	ee	rin	g Log - I	Nor	n Co	ored	Bo	reho	le Project	No.:		PSM375	9
	Client:Pepper Property Advisory Pty LtdCommenced:08/01/2019Project Name:Kambala Girls SchoolCompleted:08/01/2019Hole Location:Rose BayLogged By:MB/SSHole Position:340249.0 m E 6251450.0 m N MGA94 Zone 56Checked By:GM														119 119
	Dril Hol	l M e D	odel liam	ano eter	d Mounting:	CF 13	RP 15 0 mm	5 Trac	k Mou	inted	Inclination: -90° RL Sur Bearing: Datum	face:	39 Al	9.70 m HD (Operator: BG Drilling
			I	Drill	ling Informat	ion					Soil Description				Observations
	Ivietnoa	Penetration	Support	Water	Samples Tests Remarks	Recovery	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description SOIL NAME: Colour, structure, plasticity, additional	Moisture Condition	Consistency / Relative Density	Hand Penetromet UCS (kPa)	er Structure and Additional Observations
E C	AUI				1.50: SPT - 2, 8, N = 15.	7,	38.7			sc	SILTY SAND: dark brown, fine grained sand, roots and rootlets observed down to 0.2 m. Becomes light grey at 0.40 m. CLAYEY SAND: orange brown, fine grained sand, clay low plasticity	M 	C MD	-	0.00: FILL 1.30: Inferred residual.
015-04-07							2	-			Continued on cored borehole sheet				1.90: TC bit refusal on bedrock.
H_NZ_AU ROSE BAY.GPJ < <drawingfile>> 17/01/2019 11:02 10.0.000 Datget Lab and In Situ Tool - DGD Lib. PSM 3.00.2 2015-10-23 Prj. PSM 2.0</drawingfile>							35.7 36.7 3								
PSM 3.00.2 LIB.GLB Log IS_AU_NONCORE_E	AD/ AD/ WB SPT PT AS	7 - 7 V - 7 -W I -St - Pt - At	etho Auge Auge ashb anda ush tu uger	er dril er dril oore ard po ube Scre	lling TC bit ling V bit enetration test wing details of abbreviatio	Pe	Anetra No re thro re basis of	tion esistanc ugh to fusal description	e 18.	₩ D Inflo Q Par Cor	ater Samples and Tests w U - Undisturbed Sample D - Disturbed Sample SPT - Standard Penetration Te SPT - Standard Penetration Te ES - Environmental Sample TW - Thin Walled LB - Large Disturbed Samples and soil descriptions based on Unified Soil Classification System	st	Moistu D W V	rre Conditio - Dry 1 - Moist / - Wet	n 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 C - Cemented C - Compact



BH04

Page 2 of 2

Ε	ngi	nee	erin	g Log	g - C	ore	d Bo	orehole		Ρ	roject	t No.:	PSM3759	
Client: Pepper Property Advisory Pty Ltd Project Name: Kambala Girls School Hole Location: Rose Bay Hole Position: 340249.0 m E 6251450.0 m N MGA94 Zone 56											omm ompl oggeo	enced: eted: d By: ed By:		
	Drill Barre	Mode el Typ	el ano pe ar	d Mounti Id Lengt	ing: h:	CRP	155 T	rack Mounted Ir B	nclination: -90° earing:	R D	L Sui	rface: 39.7 : AHI	70 m D Oper	rator: BG Drilling
		Dril	ling l	Informat	tion		Rock Substance						R	ock Mass Defects
Method	Water	TCR (%)	RQD (%)	SAMPLES & FIELD TESTS	RL (m)	Depth (m)	Graphic Log	Material De ROCK TYPE: Colour, (texture, fabric, mineral o alteration, cementatio	escription grain size, structure composition, hardness, n, etc as applicable)	Weat	hering ≧ ⊗ ⊾	Strength Is(50) ● - Axial O - Diametral ^{C0} 0 - Diametral U - Diametral	Defect Spacing (mm)	Defect Descriptions / Comments Description, alpha/beta, infilling or coating, shape, roughness, thickness, other
					38.7	- - - 1 - -		Continued from non-corec	l borehole sheet					
ool - DGD Lib: PSM 3.00.2.2015-10-23 Pg; PSM 2.01 2015-04-07				2.67m ls(50) d=1.5 a=2.1 MPa	36.7 37.7	2		No core; 100mm loss. SANDSTONE: Orange-re grained, poorly developed	d, fine to medium bedding.					- BP 0° CN CU RF =0 mm
: BAY/GPU < <urammerie> 17/07/2019 11:04 10.0.000 DatgetLab and in situ NML C</urammerie>		26	96	3.68m is(50) d=1.4 a=1.5 MPa 4.51m is(50) d=1.8 a=1.8 MPa	35.7			SANDSTONE: Light grey, bedding.	fine grained, developed					— BP 10° SN UN RF =0 mm — BP 8° CL PR S =2 mm
PSM 3.00.2 LIB.GLB Log IS_AU_CORE_BH_PSM ROSE	AD/ AD/ WB HQ SP PT PT	M (T - Aug (7 - Aug 3 - Wia 3 - Wir 3 - Wir T - Sta - Pus natory N	ethoo ger drill ger drill shbore eline c eline c ndard j sh tube otes for	ring TC bit ing V bit ore (63.5 m ore (85.0 m penetration details of abb	m) m) test	Grap Grap	Inflo Parti Com Core indica No cc s of desc	atelete Terminated at 5.00 m w al Loss plete Loss og/Core Loss recovered (hatching tes material) re recovery riptions.	Weathering EW Extremely Weathere HW Highly Weathered MW Moderately Weathered Stightly Weathered F F Fresh Strength EL EL Extremely Low VL Very Low L Low M Medium H High VH Very High	red	De FT - SS - SZ - BP - SM - IS - IS - IS - CO - CZ - VN - FZ - BSH - DB -	Contact Contact Contact Contact Contact Contact Contact Contact Crushed Zone Bedding Shear Done Bedding Shear Drilling Break	I I I I I Infilling/Coa CN - Clean SN - Stain VN - Veneer CO - Coating RF - Rock fr G - Gravel S - Sand Z - Silt CA - Calcite CL - Clay FE - Iron QZ - Quartz X - Carbonz	DB DB ting Roughness SL - Slickensided POL - Polished S - Smooth RF - Rough VR - Very Rough Shape PR - Planar CU - Curved UN - Undulating ST - Stepped IR - Irregular



BH06

E	ngi	nee	rin	g Log - N	lor	n Co	ored	Βοι	reho	le	Project N	lo.:		PS	M37	'59	
(Client: Pepper Property Advisory Pty Ltd Commenced: 08/01/20 Project Name: Kambala Girls School Completed: 08/01/20 Hole Location: Rose Bay Logged By: MB/SS Hole Position: 340204.0 m E 6251459.0 m N MGA94 Zone 56 Checked By: GM													2019 2019	9 9		
I	Drill I Hole	Mode Diarr	l an ietei	d Mounting:	CR 130	P 159) mm	5 Trac	k Mou	inted	Inclination: -90° Bearing:	RL Surfa Datum:	ice:	39 AH	.50 r I D	n	Op	perator: BG Drilling
			Dril	ling Informati	on					Soil Descript	tion						Observations
Method	Penetration	Support	Water	Samples Tests Remarks	Recovery	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description SOIL NAME: Colour, structu plasticity, additional	ıre,	Moisture Condition	Consistency / Relative Density	Fene	Hand etrom UCS kPa)	eter	Structure and Additional Observations
							-			SILTY SAND: brown, fine grained s roots and rootlets observed down t minor lenses of clay. SILTY SAND: grey, fine grained sar	and, o 0.2 m, 	м	L	1			0.00: FILL
						 38.5	- 1 -										
.2 2015-10-23 Prj: PSM 2.01 2015-04-07 AD/T				1.50 m SPT - 0, 0, 0, 0, N = 0.		1 37.5	2			Becomes dark brown at 2.0 m.		М	VL				
0 Datgel Lab and In Situ Tool - DGD Lib: PSM 3.00				3.00 m SPT - 0, 2, 2, N = 4		 36.5	- 3- -					M to					3.00: Water observed.
7/01/2019 11:02 10.0.00						 5.5	- 4-	× × × × × × ×	SM	SILTY SAND: grey and yellow-brow medium grained sand, with clay low	n, fine to plasticity	M to W	с				3.60: Inferred residual.
M 300.2LIB GLB Log IS_AU_NONCORE_BH_NZ_AU_ROSE BAY GPJ < <drawingfile>> 1</drawingfile>	AD/T AD/T AD/T AD/T SPT - PT - AS -	Metho Augu Augu Stand Push t	od er dri er dri oore ard p ube Scre	lling TC bit lling V bit enetration test wing	Pee	netrat No re throu ref	tion sistance ugh to usal	e [W > Infle ⊲ Par ◀ Cor	ater Samples and w U - Undisturbed S tial Loss D - Disturbed Sam nplete Loss ES - Environmental TW - Thin Walled LB - Large Disturbe Classification s and soil descr based on Unifi Classification	I Tests ample iple stration Test Sample d Sample symbols iptions ied Soil System	 :	loistu D M W	re Cc - D - M 7 - W	onditi Pry Ioist Vet	ion	Consistency/Relative Density VS - Very soft S - Soft F - Firm St - Stiff VSt - Very sliff H - Hard VL - Very lose L - Loose MD - Medium dense D - Dense VD - Very dense Ce - Cermented



BH06

Page 2 of 3

Engineering Log - Cored Borehole											Proje	ct No.:	PSM3759	
Client:Pepper Property Advisory Pty LtdProject Name:Kambala Girls SchoolHole Location:Rose BayHole Position:340204.0 m E 6251459.0 m N MGA94 Zone 56												menced: bleted: ed By: ked By:	08/01/2019 08/01/2019 MB/SS GM	
Drill Model and Mounting:CRP 155 Track MountedInclination:-90°Barrel Type and Length:Bearing:											RL Si Datur	urface: 39. m: AH	50 m D Ope	rator: BG Drilling
		Drill	ing l	nformat	ion		Rock Substance						ŀ	Rock Mass Defects
Mathed	Water	TCR (%)	RQD (%)	SAMPLES & FIELD TESTS	RL (m)	Depth (m)	Graphic Log	Material E ROCK TYPE: Colou (texture, fabric, mineral alteration, cementati	Description r, grain size, structure composition, hardness on, etc as applicable)	s, W	eatherin ≩ ≩ ⊗ ,	Strength Is(50) ng ●-Axial O-Diametral	Defect Spacing (mm) ⊞ ೪ ⊛ ೪ ೪ ೪	Defect Descriptions / Comments Description, alpha/beta, infilling or coating, shape, roughness, thickness, other
19 11:04 100.000 DageLab and In Stu Tool - DGD Lb: PSM 3.00.2.2015-10-23 Prj; PSM 2.01 2015-04-07					5.5 36.5 37.5 38.5 38.5	- - - - - - - - - - - - - - - - - - -		Continued from non-core	ed borehole sheet					
J < <drawingfile>> 17/01/20</drawingfile>		83	100			-		100 mm core loss. SANDSTONE: Orange a grained, poorly-develope	nd red, fine to medium d to developed bedding]. 				- SM 6° CL CU RF 2 mm
M ROSE BAY.GF		100	93	4.83m Is(50) d=0.7 a=0.8		-		SANDSTONE: Grey, me bedding.	dium grained, develope	ed 				
PSM 3.00.2 LIB.GLB Log IS_AU_CORE_BH_PS	AD. AD. WE HQ PQ SP PT	Ma /T - Aug /V - Aug /V - Aug /- Wa 3- Win 3- Win 7- Stal - Pus natory N	ethod ler drilli shbore eline co eline co ndard p h tube	ing TC bit ing V bit ore (63.5 mr ore (85.0 mr benetration i	n) n) test reviations	Gral	King Constant C	Ater W al Loss plete Loss og/Core Loss recovered (hatching tes material) re recovery riptions.	Weathering EW - Extremely Weath HW - Highly Weathers MW - Moderately Weat SW - Slightly Weathers F - Fresh Strength EL - Extremely Low VL - Very Low L - Low M - High H - High VH - Very High EH - Extremely High	nered d thered ed	FT - SS - SZ - BP - SM - IS - JT - CC - CZ - VN - FZ - BSH DB -	Defect Type - Fault - Shear Surface - Shear Surface - Shear Zone - Bedding parting - Seam - Infilled Seam - Joint - Contact - Contact - Crushed Zone - Vein - Fracture Zone - Bedding Shear - Drilling Break	Infilling/Coa CN - Clean SN - Stain VN - Veneer CO - Coating RF - Rock fr G - Gravel S - Sand Z - Silt CA - Calcite CL - Clay FE - Iron QZ - Quartz X - Carbon	A Standard S



BH06

Page 3 of 3

E	ngi	nee	rin	g Log	g - C	ore	d Bo	orehole		Project	No.:	PSM3759	
	Clier Proje Hole Hole	nt: ect Na Loca Posi	ame: ition: tion:	Pe Ka Ro 34	epper ambal ose Ba 10204	Prope a Girls ay .0 m E	erty Ac S Scho E 6251	lvisory Pty Ltd pol 459.0 m N MGA94 Zone 5	Commo Comple Logged Checke	enced: eted: d By: ed By:	08/01/2019 08/01/2019 MB/SS GM		
Drill Model and Mounting:CRP 155 Track MountedInclination:-90°Barrel Type and Length:Bearing:											face: 39.5 AHD	0 m) Oper	rator: BG Drilling
		Drill	ing l	nforma	tion		Rock Substance					R	ock Mass Defects
Method	Water	TCR (%)	RQD (%)	SAMPLES & FIELD TESTS	RL (m)	Depth (m)	Graphic Log	Material Descri ROCK TYPE: Colour, grai (texture, fabric, mineral comp alteration, cementation, ef	al Description lour, grain size, structure ral composition, hardness, tation, etc as applicable)		Strength Is(50) ● - Axial O - Diametral	Defect Spacing (mm)	Defect Descriptions / Comments Description, alpha/beta, infilling or coating, shape, roughness, thickness, other
NMLC		100	93	MPa Is(50) d=1.1 a=1.6 MPa	33.5			SANDSTONE: Grey, medium bedding. <i>(continued)</i> Becomes light red and mediur at 5.6 m.	grained, developed				 BP 10° CL PR RF 2 mm SM 7° CL CU RF 10 mm BP 18° CN PR RF 0 mm BP 0° X CU RF 5 mm BP 10° CL UN RF 0 mm SM 10° CL PR S 5 mm
5-10-23 Prj: PSM 2.01 2015-04-07				6.94m Is(50) d=0.6 a=0.9 MPa 7.53m Is(50)	32.5			Becomes black and coarse gr	ained at 7.0 m.				[™] BP 0° CL PR S 1 mm
M. ROSE BAY GPJ < <drawingfile> 17/01/2019 11:04 10.000 DageLab and in Stu Tod - DGD Lb: PSM 3.00 2.2015</drawingfile>				u-3.4 a= 3 .5 MPa	30.5 31.5			Hole Terminated at 7.60 m					
PSM 3.00.2 LIB.GLB Log IS_AU_CORE_BH_PS	Method AD/T - Auger drilling TC bit AD/V - Auger drilling V bit WB - Washbore HQ3- Wireline core (63.5 mm) PQ3- Wireline core (85.0 mm) SPT - Standard penetration test PT - Push tube						King Constant C	Inter v al Loss blete Loss bg/Core Loss ecovered (hatching tes material) re recovery iptions.	Weathering EW Extremely Weathered HW Moderately Weathered WS Moderately Weathered Strength Strength Strength L EL Extremely Low VL Very Low L Low M Medium H High H High H Very High EH Extremely High	Dee d FT - 1 SS - 3 BP - 1 SM - 3 SM - 3 SM - 3 CO - 1 CO - 1 CZ - 1 BSH - 1 DB - 1 DB - 1	fect Type fault Shear Surface Shear Zone Bedding parting Seam Joint Crushed Zone Vein Fracture Zone Bedding Shear Joilling Shear	Infilling/Coal CN - Clean SN - Stain VN - Veneer CO - Coating RF - Rock fra G - Gravel S - Sand Z - Silt CA - Calcite CL - Clay FE - Iron QZ - Quartz X - Carbone	ting Roughness SL - Slickensided POL - Polished S - Smooth RF - Rough VR - Very Rough Shape PR - Planar CU - Curved UN - Undulating ST - Stepped IR - Irregular



BH07

Ε	Engineering Log - Non Cored Borehole Project No												: PSM3759					
	Clie Proj Hole Hole	ent: ject e Lo e Po	Nar ocati	ne: on: on:	Pepper Kambal Rose B 340227	Pro a G ay .0 m	perty irls So n E 62	Advis chool 25146:	ory Pt 3.0 m	y Ltd N MG	Comme Comple Logged A94 Zone 56 Checke	nced: ted: By: d By:	(((09/01/20 ⁻ 09/01/20 ⁻ SS GM	19 19			
	Drill Hole	Mo e Di	del ame	and eter:	Mounting:	CR 130	P 159) mm	5 Trac	k Mou	inted	Inclination: -90° RL Surf Bearing: Datum:	ace:	39.6 AHD	0 m • C	Operator: BG Drilling			
			Ľ	Drilli	ng Informati	on					Soil Description				Observations			
Method		Penetration	Support	Water	Samples Tests Remarks	Recovery	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description SOIL NAME: Colour, structure, plasticity, additional	Moisture Condition	Consistency / Relative Density	Hand enetromete UCS (kPa)	er Structure and Additional Observations			
							38.6	- - 1 -			SILTY SAND: dark brown, fine grained sand, roots and rootlets observed down to 0.2 m.	м	VL		0.00: FILL			
5-10-23 Prj: PSM 2.01 2015-04-07 AD/T					1.50 m SPT - 0, 2, 2, N = 2.		37.6	2			SILTY SAND: dark brown, fine grained sand, trace gravel sub-angular up to 3mm.	M	VL					
10.0.000 Datgel Lab and In Situ Tool - DGD Lib: PSM 3.00.2 2015-10					3.00 m SPT - 1, 0, 0, N = 0.			3			SILTY SAND: dark brown, fine grained sand, trace clay low plasticity.	M to W	 VL		2.50: Water observed.			
<pre>DSE BAY.GPJ <<drawingfile>> 17/01/2019 11:0 </drawingfile></pre>					4.20 m SPT - Refusal		35.6	4		SM	SILTY SAND: light grey and brown, fine grained sand, minor lenses of clay. Hole Terminated at 4.20 m	M to W	VL		4.00: Inferred residual. 4.20: TC bit refusal on inferred bedrock.			
Method Penetration Water Samples and Tests Moistu AD/T - Auger drilling TC bit No resistance Inflow U - Undisturbed Sample D SPT - Standard penetration test No resistance Complete Loss See Explanatory Notes for details of abbreviations and basis of descriptions. Mater U - Undisturbed Sample D See Explanatory Notes for details of abbreviations abbreviations Absistic complete Loss Classification System Moisture											loisture D - M - W -	Condition Dry Moist Wet	Consistency/Relative Density VS - Very soft S - Soft F - Firm St - Suft VSt - Very soft VSt - Very soft VSt - Very soft H - Hard VL - Very soft H - Hard VL - Very loose L - Loose MD - Medium dense D - Dense VD - Very dense Ce - Cemented C - Compact					



BH08

E	Engineering Log - Non Cored Borehole Project N										lo.:	o.: PSM3759							
	Client: Pepper Property Advisory Pty Ltd Comment Project Name: Kambala Girls School Complete Hole Location: Rose Bay Logged B Hole Position: 340212.0 m E 6251447.0 m N MGA94 Zone 56 Checked Drill Model and Mounting: CRD 155 Track Mounted Indication: 20%												ced: 08/01/2019 d: 08/01/2019 y: MB/SS By: GM						
	Drill M Hole D	odel Diam	and eter:	Mounting:	CR 130	P 158) mm	5 Trac	k Mou	inted	Inclination: -90° Bearing:	RL Surfa Datum:	ce:	39 AH	.40 m ID	0	perator: BG Drilling			
		L	Drilli	ing Informatio	on			Soil Description								Observations			
Method	Penetration	Support	Water	Samples Tests Remarks	Hecovery s		Depth (m)	Mate NAN JIOS Isalq Isalq Balton Solution Solution Solution Solution Solution		Material Description SOIL NAME: Colour, structu plasticity, additional	al Description :: Colour, structure, ity, additional		Consistency / Relative Density	Consistency / Consistency / Relative Density and the consistency / Consistency / Consi		r Structure and Additional Observations			
0.23 Pr. PSM 2.01 2015-0+07				1.50 m SPT - 2, 3, 4, N = 7.		37.4 38.4				SILTY SAND: dark brown, fine grain sand, roots and rootlets observed o 0.15 m, minor lenses of clay. Becomes light brown at 1.3 m.	ned lown to	М	L			0.00: FILL 1.30: Crushed sandstone gravel observed up to 2.5m.			
H_NZ_AU ROSE BAY GPJ <-DawingFile>> 17/01201911:02 10.000 Dagel Lab and in Sui Tool - DGD Lib: PSM 3.03.2 2015-10 AD/T				3.00 m SPT - 2, 0, 0, 0, N = 0. 4.50 m SPT - 7, 11, 15, N = 26.		35.4 36.4	- - - - - - - - - - - - - - - - - - -			SILTY SAND: orange-brown, fine gr sand, trace gravel sub-angular up to Becomes dark brown at 3.5 m.	ained 5 3mm.	M W	VL MD			3.50: Water observed at 3.5 m, cuttings partly washed off.			
Method Penetration Water Samples and Tests Moisture Condition Consistency/Relative Der AD/T - Auger drilling TC bit No resistance Inflow U - Undisturbed Sample D - Dny VS - Very soft AD/T - Auger drilling V bit WB - Washbore SPT - Standard penetration test Partial Loss SPT - Standard penetration test W - Wet F F F F SPT - Standard penetration test Partial Loss Complete Loss ES ENvironmental Sample W - Wet F + Stiff AS - Auger Screwing V - Large Disturbed Sample W - Wet H - Hard - Losse See Evaluatory Notes for details of abbreviations and basis of descriptions Basis of descriptions D - Dense D - Dense D - Dense See Evaluatory Notes for details of abbreviations Exercision System C - Commandt												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							



Borehole	ID
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BH08

Page 2 of 2

E	Engineering Log - Non Cored Borehole Project No.: Client: Pepper Property Advisory Pty Ltd Commenced														PS	SM3	759)
	Clie Pro Ho Ho	ent: bject le Li le P	t Na ocat	me: ion: on:	Pepper Kamba Rose B 340212	[·] Pro la G Bay 2.0 n	perty irls S n E 62	Advis chool 25144	ory Pi 7.0 m	ty Ltd N MG	A94 Zone 56	Commer Complet Logged Checked	nced: ed: By: I By:		08 08 ME GN	/01/ /01/ 3/SS	'201 '201 S	19 19
	Dri Ho	ll M le D	odel liam	anc eter	I Mounting:	CR 130	P 15) mm	5 Trac	k Mou	inted	Inclination: -90° Bearing:	RL Surfa Datum:	ace:	39 Aŀ	.40 i HD	m	С	perator: BG Drilling
			I	Drill	ing Informat	ion			Soil Description									Observations
	Wetthod Tests Bemarks Marke Ma							Depth (m)	Graphic Log	Classification Symbol	Material Description SOIL NAME: Colour, struct plasticity, additional	Material Description NAME: Colour, structure, plasticity, additional					d nete)) 000	r Structure and Additional Observations
ł										2	SILTY SAND: orange-brown, fine g sand, trace gravel sub-angular up t	rained o 3mm.	w	MD				5.10: Inferred residual at 5.1 m.
AU ROSE BAY.GPJ < <drawingfile>> 17/01/2019 11:02 10.0.000 DageLabandin Situ Tool - DGD Lit: PSM 3.00.2.2015-10:23 Pf; PSM 2.01 2015-04-07</drawingfile>							30.4 31.4 32.4 33.4				Hole Terminated at 5.20 m							
Method Penetration Water Samples and AD/T - Auger drilling TC bit No resistance Inflow U - Undisturbed Samples and AD/V - Auger drilling V bit No resistance through to Partial Loss D - Disturbed Samples and VB - Washbore SPT - Standard penetration test Partial Loss SPT - Standard penetration test SPT - Standard Penetration and Penetration SPT - Standard Penetration and basis of descriptions. Complete Loss SPT - Standard Penetration and pen												d Tests ample pple etration Test I Sample ed Sample symbols riptions fied Soil System	N	loistu D M W	re Ca - C - N - N	ondi Dry Noist Vet	tion	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 - Comented C - Compact



BH09

Ε	Engineering Log - Non Cored Borehole Project												PSM3759	
	Client Projec Hole I Hole I	: ct Na ₋ocat ⊃ositi	me: ion: on:	Pepper Kambala Rose Ba 340232.	Pro a G ay 0 m	perty irls So n E 62	Advis chool 251434	ory Pt 4.0 m	ty Ltd N MG	Comme Comple Logged A94 Zone 56 Checke	enced: eted: I By: ed By:		08/01/201 08/01/201 MB/SS GM	9 9
	Drill N Hole I	lodel Diam	anc eter:	I Mounting:	CR 130	P 155) mm	5 Trac	k Mou	inted	Inclination: -90° RL Sur Bearing: Datum:	face:	39 A⊦	.50 m ID O	perator: BG Drilling
		1	Drill	ing Informatio	on					Soil Description				Observations
Method	Wethod Contraction Contractio						Depth (m)	Graphic Log	Classification Symbol	Material Description SOIL NAME: Colour, structure, plasticity, additional	Moisture Condition	Aconsistency / Relative Densit Aconsistency / Aconsistency / Acons		Structure and Additional Observations
							-			SILTY SAND: dark brown, fine grained sand, roots and rootlets observed down to 0.2 m.	М	L		0.00: FILL
				1.50 m		38.5	- 1 -			SILTY SAND: orange-brown, fine grained sand, trace gravel sub-angular up to 3mm.	M	L		
2 2015-10-23 Prj: PSM 2.01 2015-04-07 AD/T				SPT - 4, 4, 3, N = 7.		37.5	- 2			Becomes pale brown at 2.0 m.				
largel Lab and In Situ Tool - DGD LIB: PSM 3.00.				3.00 m SPT - 2, 4, 3, N = 7.		 36.5	3-			SAND: light grey, fine grained sand	D	L		
1/2019 11:02 10.0.000 D				3.90 m		.5	-	× × ×	SM	SILTY SAND: orange-brown, fine grained sand	м	с		3.50: Inferred residual.
NONCORE_BH_NZ_AU_ROSE BAY GPJ < <drawngrile>> 17/1</drawngrile>		Metho Auge	d r drill r drill	SPT refusal	Pe	netrat No reat	ion sistance		W > Inflo ⊲ Par	Hole Terminated at 4.00 m ater Samples and Tests W U - Undisturbed Sample tial Loss D - Disturbed Sample SPT - Standard Bangheiter To	n st	Moistu Moistu	re Condition - Dry - Moist - Wet	4.00: TC bit refusal on inferred bedrock.
PSM 3.00.2 LIB.GLB Log IS_AL	SPT - Standard penetration test PT - Push tube AS - Auger Screwing See Explanatory Notes for details of abbreviations and basis of descriptions See Explanatory Notes for details of abbreviations and basis of descriptions See Explanatory Notes for details of abbreviations and basis of descriptions See Explanatory Notes for details of abbreviations and basis of descriptions See Explanatory Notes for details of abbreviations and basis of descriptions See Explanatory Notes for details of abbreviations and basis of descriptions See Explanatory Notes for details of abbreviations and basis of descriptions See Explanatory Notes for details of abbreviations and basis of descriptions See Explanatory Notes for details of abbreviations and basis of descriptions See Explanatory Notes for details of abbreviations and basis of descriptions See Explanatory Notes for details of abbreviations and basis of descriptions See Explanatory Notes for details of abbreviations and basis of descriptions See Explanatory Notes for details of abbreviations and basis of descriptions See Explanatory Notes for details of abbreviations and basis of descriptions See Explanatory Notes for details of abbreviations and basis of descriptions See Explanatory Notes for details of abbreviations and basis of descriptions See Explanatory Notes for details of abbreviations and basis of descriptions See Explanatory Notes for details of abbreviations and basis of descriptions See Explanatory Notes for details of abbreviations and basis of descriptions and basis of descriptions and solutions and solutions and basis of descriptions and babasis of descriptions and basis of descriptions and babasis of de													



BH10

E	Engineering Log - Non Cored Borehole												Project No.: PSM3759)
	Cli Pro Ho Ho	ent ojec Ile L Ile F	: ct Na ₋oca ⊃osi	ame Ition	Peppe : Kamba : Rose E : 340226	r Pro ala G Bay 5.0 n	perty iirls S	Advis chool 25148	ory Pt 1.0 m	y Ltd N MG	A94 Zone 56	Commen Complet Logged Checked	Commenced:09/01/2019Completed:09/01/2019Logged By:SSChecked By:GM					
	Dri Ho	il N le [1ode Dian	el an nete	d Mounting: r:	CR	P 15	5 Trac	k Mou	inted	Inclination: -90° Bearing:	RL Surface: 39.80 m Datum: AHD						perator: BG Drilling
				Dril	lling Informat	ion					tion						Observations	
Mothod		Penetration	Support	Water	Samples Tests Remarks	Recovery	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description SOIL NAME: Colour, struct plasticity, additional	ure,	Moisture 'au Condition		Consistency / Relative Density 100 1) and 200 1) and		d mete 3 1)	r Structure and Additional Observations
ΤΩν	AD/T AD/T						σ	-			SAND: orange-red, medium graine roots and rootlets observed down f	d sand, o 0.2 m. m.	M M to W	L				0.00: FILL
		44	/				39.8	1-			Hole Terminated at 1.00 m							1.00: TC bit refusal.
\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$					2												
PSM 3.00.2 LIB.GLB Log IS_AU_NONCORE_BH_	AD AD WE SP PT AS	/T - /V - 3 - W T - S - P - A	Metho Aug Aug Vash Stand Push	od er dr er dr bore ard p tube Scre	I Illing TC bit Illing V bit penetration test ewing r details of abbreviatio	Pe	No re throu ref	tion sistanc ugh to fusal	e !	W > Infle ⊲ Par ◄ Cor	ater Samples an ow U - Undisturbed S tial Loss D - Disturbed Sar SPT - Standard Pen ES - Environmenta TW - Thin Walled LB - Large Disturb Classification and soil desc based on Uni	1 Tests iample nple etration Tesi I Sample ed Sample symbols riptions fied Soil System	t	l Ioistu D M W	re C - [-]	ondi Dry Moist Wet	t	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

Attachment B Geotechnical & Analytical Laboratory Testing Results



POINT LOAD STRENGTH INDEX TEST RESULTS

Job No.	PSM3759														Sheet	1	of	1
Project	Kambala	Girls Scho	ool															
Test Method Test Machine Calibration Date	AS 4133.4. Purposes, I GSA 6500 e 3/12/2012	1 - 1993 M Determinatio	lethods of on of Point	Testing Load S	Rocks fo	or Engin Index	eering	Sampling Technique Storage History Moisture Condition Loading Rate	NLMC North I Natura < 30 se	Ryde ofi I econds	fice indo	or core	Sampling Date 8/01/20 Testing Date 8/01/20 Tested By MB/SS			019 019		
Rock T	Гуре	Location	Depth	D (mm)	L (mm)	P (kNI)	ametral I I _{s(50)} (MPa)	Ests Failure Mode	W (mm)	D	Axial, E	Block, a	and Irre I _s (MPa)	gular Lun I _{s(50)} (MPa)	np Tests Failure Mode		AS 1726 Strength	
Sandstone Sandstone Sandstone Sandstone Sandstone Sandstone		Bh04 Bh04 Bh06 Bh06 Bh06 Bh06	2.67 3.68 4.51 4.83 5.84 6.94 7.53	50 50 50 50 50 50 50 50	31 58 26 35 38 30 38	2.7 3.1 2.5 1.7 2.8 1.5 8.6	1.1 1.2 1 0.7 1.1 0.6 3.4	Parallel to bedding Parallel to bedding Parallel to bedding Parallel to bedding Parallel to bedding Parallel to bedding Parallel to bedding	50 50 50 50 50 50 50 50	33 35 31 45 38 38 39		2.3 2.2 2.7 2.4 4 2.2 8.6	1 1 1.3 0.8 1.6 0.9 3.5	Through Through Through Through Through Through	H H M H W VH			
By:	MB			Check	ked:	SS									Date:		14/01/	2019

\\Vas-psm-fs\3000\PSM3759\Eng\gINT - Rosebay\Old Library\[Point Load Results.xlsx]Result Sheet (1 of 3)