

TABLE A
SOIL LABORATORY RESULTS COMPARED TO WASTE CLASSIFICATION GUIDELINES[illegible][illegible]

Concentration above the CT1
Concentration above the SCC1
Concentration above the SCC2

[illegible]

TABLE B
SOIL LABORATORY TCLP RESULTS
 All data in mg/L unless stated otherwise

			Lead	B(a)P
PQL - Envirolab Services			0.03	0.001
TCLP1 - General Solid Waste ¹			5	0.04
TCLP2 - Restricted Solid Waste ¹			20	0.16
TCLP3 - Hazardous Waste ¹			>20	>0.16
Sample Reference	Sample Depth	Sample Description		
BH3	0.4-0.5	Fill: sand	4.9	LPQL
BH4	0.0-0.1	Fill: silty sand	0.2	NA
Total Number of samples			2	1
Maximum Value			4.9	LPQL

Explanation:

1 - NSW EPA Waste Classification Guidelines (2014)

General Solid Waste
 Restricted Solid Waste
 Hazardous Waste

VALUE

VALUE

VALUE

Abbreviations:

PQL: Practical Quantitation Limit
 LPQL: Less than PQL
 B(a)P: Benzo(a)pyrene
 NC: Not Calculated
 NA: Not Analysed
 TCLP: Toxicity Characteristics Leaching Procedure

TABLE C
SUMMARY OF LABORATORY RESULTS - ACID SULFATE SOILS ANALYSIS (sPOCAS)

		Analysis	pH _{KCL}	TAA pH 6.5 18molH+/ tonne	pH _{ox}	TPA pH 6.5 18molH+/ tonne	TSA pH 6.5 18molH+/ tonne	S _{POS} %w/w	Liming Rate kg CaCO ₃ /tonne
Action Criteria ¹ :		Coarse Textured Soil	pH 5.0		pH 5.0			0.03% w/w	
Sample Reference	Sample Depth (m)	Sample Description							
BH1	3.0-3.15	Sand, dark grey/grey	9.1	LPQL	7.5	LPQL	LPQL	0.21	<0.75
BH2	5.7-6.15	Sand, light brown	9.2	LPQL	7.1	LPQL	LPQL	0.04	<0.75
BH3	7.2-7.65	Silty sand, dark grey	5.1	6	2.5	180	180	0.28	14
BH4	7.2-7.65	Sand, grey	6.9	LPQL	2.6	170	170	0.31	13
Total Number of Samples			4	4	4	4	4	4	2
Minimum Value			5.1	6	2.5	170	170	0.04	13
Maximum Value			9.2	6	7.5	180	180	0.31	14

Explanation:

¹ The Action criteria have been adopted from the Acid Sulfate Soil Manual (1998).

Values Exceeding Action Criteria

VALUE

Abbreviations:

pH_{KCL} : pH of filtered 1:20, 1M KCL extract, shaken overnight

TAA pH 6.5 : Total Actual Acidity in 1M KCL extract titrated to pH6.5

pH_{ox} : pH filtered 1:20 1M KCL after peroxide digestion

TPA : Total Potential Acidity, 1M KCL peroxide digest titrated to pH6.5

TSA: Total Sulfide Acidity

S_{POS}: Peroxide oxidisable Sulfur (SP - SKCL)

Appendix A: Borehole Logs



Borehole No.

1

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BOREHOLE LOG

Client: HELM PTY LTD
Project: PROPOSED RESIDENTIAL DEVELOPMENT
Location: 177 RUSSELL AVENUE, DOLLS POINT, NSW

Job No.: 29353S

Method: SPIRAL AUGER & CASING ADVANCER

R.L. Surface: ~1.6 m

Date: 4/5/16

Datum: AHD

Plant Type: JK308

Logged/Checked By: A.B./P.S.

Groundwater Record	SAMPLES			Field Tests	RL (m AHD)	Depth (m)	Graphic Log	Unified Classification	DESCRIPTION	Moisture Condition/Weathering	Strength/Rel Density	Hand Penetrometer Readings (kPa)	Remarks
	ES	U50	DB	DS									
ON COMPLETION OF AUGERING AFTER 15 HRS									FILL: Silty sand, fine grained, brown, trace of roots and root fibres.	M			GRASS COVER
						1		SP	SAND: fine to medium grained, light brown, trace of shell fragments.	M	VL		
						1							
						0				W			
						2			as above, but grey.				
						-1							
						3			SAND: fine to medium grained, dark grey, trace of silt and shell fragments.				SPT SUNK UNDER SELF WEIGHT
						-2							SLIGHT ORGANIC ODOUR
						4			SAND: fine to medium grained, grey.				
						-3							
						5							
						-4					L		
						6							
						-5							



Borehole No.

1

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BOREHOLE LOG

Client: HELM PTY LTD
Project: PROPOSED RESIDENTIAL DEVELOPMENT
Location: 177 RUSSELL AVENUE, DOLLS POINT, NSW

Job No.: 29353S

Method: SPIRAL AUGER & CASING ADVANCER

R.L. Surface: ~1.6 m

Date: 4/5/16

Datum: AHD

Plant Type: JK308

Logged/Checked By: A.B./P.S.

Groundwater Record	SAMPLES				Field Tests	RL (m AHD)	Depth (m)	Graphic Log	Unified Classification	DESCRIPTION	Moisture Condition/ Weathering	Strength/ Rel Density	Hand Penetrometer Readings (kPa)	Remarks
	ES	U50	DB	DS										
					N = 22 6,9,13	-6			SP	SAND: fine to medium grained, grey.	W	MD		CASING ADVANCER
						-7								
					N = 15 3,6,9	-9								
						-10								
					N = 30 6,13,17	-12								
						-11								
						-13								
						-12								

JK_LIB_CURRENT - V8.00.GLB Log_J & K AUGERHOLE - MASTER 29353S DOLLS POINT.GPJ <<DrawingFile>> 25/05/2016 11:11 Produced by gINT Professional, Developed by Datgel

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BOREHOLE LOG

Logged/Checked By: A.B./P.S.

AIK_LIB_CURRENT - V8.00.GLB Log J & K AUGERHOLE - MASTER 29353S DOLLS POINT.GPJ <<DrawingFile>> 25/05/2016 11:11 Produced by gINT Professional, Developed by Datgel



Borehole No.
1
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BOREHOLE LOG

Client: HELM PTY LTD
Project: PROPOSED RESIDENTIAL DEVELOPMENT
Location: 177 RUSSELL AVENUE, DOLLS POINT, NSW

Job No.: 29353S **Method:** SPIRAL AUGER & CASING ADVANCER **R.L. Surface:** ~1.6 m
Date: 4/5/16 **Datum:** AHD
Plant Type: JK308 **Logged/Checked By:** A.B./P.S.

Groundwater Record	SAMPLES			Field Tests	RL (m AHD)	Depth (m)	Graphic Log	Unified Classification	DESCRIPTION	Moisture Condition/ Weathering	Strength/ Rel Density	Hand Penetrometer Readings (kPa)	Remarks
	ES	U50	DB	DS									
						-20		SP	SAND: fine to medium grained, light grey, trace of shell fragments and clay.	W	D		
						22		-	SANDSTONE: fine to medium grained, light grey.	SW	L		HIGH RESISTANCE
						-21			REFER TO CORED BOREHOLE LOG				
						23							
						-22							
						24							
						-23							
						25							
						-24							
						26							
						-25							
						27							
						-26							

CORED BOREHOLE LOG

Client: HELM PTY LTD
Project: PROPOSED RESIDENTIAL DEVELOPMENT
Location: 177 RUSSELL AVENUE, DOLLS POINT, NSW

Job No.: 0 **Core Size:** NMLC **R.L. Surface:** ~1.6 m
Date: 4/5/16 **Inclination:** VERTICAL **Datum:** AHD
Plant Type: JK308 **Bearing:** N/A **Logged/Checked By:** A.B./P.S.

Water Loss/Level	Barrel Lift	RL (m AHD)	Depth (m)	Graphic Log	CORE DESCRIPTION Rock Type, grain characteristics, colour, structure, minor components.	Weathering	Strength	POINT LOAD STRENGTH INDEX I _s (50) EL-0.03 VL-0.1 L-0.3 M-1 H-3 VH-10 EH	DEFECT DETAILS		
									DEFECT SPACING (mm) 500 300 100 50 30 10	DESCRIPTION Type, inclination, thickness, planarity, roughness, coating. Specific General	
			-20 22		START CORING AT 22.23m						
100% RETURN			-21 23		SANDSTONE: fine to medium grained, light grey, bedded at 5°. as above, but bedded at 0°.	SW	L			(22.80m) Be, 0°, P, S (23.00m) J, 40°, P, R, XW INFILL (23.27m) CS, 0°, 2 mm.t (23.33m) CS, 0°, 20 mm.t	
			-22 24		CORE LOSS 0.07m SANDSTONE: fine to medium grained, light grey, bedded at 0-5°. SANDSTONE: fine to medium grained, light grey, orange brown and red brown, cross bedded at 20°.	SW	M H			(23.84m) CS, 0°, 20 mm.t	
			-23 25								
			-24 26 -25 27 -26		END OF BOREHOLE AT 25.26 m						MONITORING WELL INSTALLED TO 8.49m, SLOTTED TO 5.5m TO 8.49m, SAND FILTER TO 4.8m, BENTONITE PLUG TO 0.7m, BACKFILLED TO SURFACE, COMPLETED WITH GATIC COVER

JK LIB CURRENT - V7.3.GLB Log JK & K CORED BOREHOLE - MASTER 285353 DOLLS POINT.GPJ <<DrawingFile>> 25/05/2016 14:59 Produced by gINT Professional. Developed by Dalgal



Borehole No.
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BOREHOLE LOG

Client: HELM PTY LTD
Project: PROPOSED RESIDENTIAL DEVELOPMENT
Location: 177 RUSSELL AVENUE, DOLLS POINT, NSW

Job No.: 29353S **Method:** SPIRAL AUGER & CASING ADVANCER **R.L. Surface:** ~1.3 m
Date: 3/5/16 **Datum:** AHD
Plant Type: JK308 **Logged/Checked By:** A.B./P.S.

Groundwater Record	SAMPLES				Field Tests	RL (m AHD)	Depth (m)	Graphic Log	Unified Classification	DESCRIPTION	Moisture Condition/ Weathering	Strength/ Rel Density	Hand Penetrometer Readings (kPa)	Remarks
	ES	U50	DB	DS										
AFTER 14 HOURS							1		-	FILL: Silty sand, fine grained, grey brown, trace of root and root fibres.	M			GRASS COVER
					N = 3 2,1,2		1		SP	SAND: fine to medium grained, grey, trace of fine grained shell fragments.	M	VL		MARINE
							0				W			
					N = 2 2,1,1		2							
							-1							
					N = 2 0,1,1		3							
							-2							
					N = 4 2,1,3		-3					L		
							-4							
					N = 10 2,4,6		-5			SAND: fine grained, light brown.				ORGANIC ODOUR WASHBORING WITH CASING ADVANCER
										SAND: fine to medium grained, dark grey, trace of silt.				



Borehole No.
2
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BOREHOLE LOG

Client: HELM PTY LTD
Project: PROPOSED RESIDENTIAL DEVELOPMENT
Location: 177 RUSSELL AVENUE, DOLLS POINT, NSW

Job No.: 29353S **Method:** SPIRAL AUGER & CASING ADVANCER **R.L. Surface:** ~1.3 m
Date: 3/5/16 **Datum:** AHD
Plant Type: JK308 **Logged/Checked By:** A.B./P.S.

Groundwater Record	SAMPLES			Field Tests	RL (m AHD)	Depth (m)	Graphic Log	Unified Classification	DESCRIPTION	Moisture Condition/ Weathering	Strength/ Rel Density	Hand Penetrometer Readings (kPa)	Remarks
	ES	U50	DB	DS									
									SAND: fine to medium grained, dark grey, trace of silt. <i>(continued)</i>	W	L		ORGANIC ODOUR TO 7.65m
									SAND: fine to medium grained, grey.		(MD - D)		