

Engineering Log - Hand Auger

client: **THE LAKES LIMITED (2012)**

principal:

project: **THE LAKES STAGE 3 CONSTRUCTION**

location: **CENTRE OF LOT 2**

Borehole ID: **HA3A-002**

sheet: 1 of 1

project no.: **GENZTAUC13086AP**

date started: **22 Jan 2015**

date completed: **22 Jan 2015**

logged by: **SWH**

checked by: **RBT**

position: E: 368141; N: 799987 (GPOC2000) surface elevation: Not Specified angle from horizontal: 90° DCP kit: Gold
 drill model: Hand Auger hole diameter: 50 mm

drilling information				material substance											
method & support	penetration	samples & field tests	water	SL (m)	depth (m)	graphic log	classification symbol	material description	moisture condition	consistency / relative density	value shear strength (kPa)	DCP (kPa/100 mm)	structure and additional observations		
AU AS HA W HA	N NI	B D E SS UW HP N N* Kc VS R BS	Not Encountered	0.0	0.0	[Cross-hatched pattern]	OL	ORGANIC SILT: non plastic; dark grey-black, some fine grained gravel, some fine to coarse grained sand, dry.	D				TOPSOIL / FILL		
				0.5	0.5	[Cross-hatched pattern]	ML	Sandy SILT: fine to coarse grained, non plastic to low plasticity, pale yellow-pale grey, dry to moist, very stiff.	VS1					VS 202 / 101 kPa FILL	
				1.0	1.0	[Cross-hatched pattern]	SM	Silty SAND: fine to coarse grained, pale yellow-pale grey, moist, medium dense.	MD					VS 100 / 47 kPa	
				1.5	1.5	[Cross-hatched pattern]	ML	SILT: low plasticity, pale brown, trace of fine sand, trace of clay, moist to wet, very stiff.	VS1					VS 171 / 57 kPa	
				2.0	2.0	[Cross-hatched pattern]	SM	Silty SAND: fine to coarse grained, pale brown, wet, dense.	D						VS 106 / 47 kPa
					2.0			Hand Auger HA3A-002 terminated at 2.0 m Target depth					VS > 216 kPa		

method AU auger drilling AS auger screwing HA hand auger W washaxe HA hand auger	support M mud C casing NI penetration 	samples & field tests B bulk disturbed sample D disturbed sample E environmental sample SS soil stain sample UW undisturbed sample (75mm diameter) HP hand penetrometer (kPa) N standard penetration test (SPT) N* SPT - sample recovered Kc SPT with solid cone VS vane shear, peak/retained (kPa) R refusal BS hammer bouncing	classification symbol & soil description based on Unified Classification System moisture D dry M moist W wet S saturated Wp plastic limit WL liquid limit	consistency / relative density VS very soft S soft F firm SF stiff VS1 very stiff H hard Fh friction VL very loose L loose MD medium dense D dense VD very dense
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2015-01-22 10:00 AM C:\Users\james\Documents\GENZTAUC13086AP\GENZTAUC13086AP\HA3A-002\HA3A-002-01-22-15.dwg

Engineering Log - Hand Auger

client: **THE LAKES LIMITED (2012)**

principal:

project: **THE LAKES STAGE 3 CONSTRUCTION**

location: **CENTRE OF LOT 5**

Borehole ID: **HA3A-005**

sheet: 1 of 1

project no: **GENZTAUC13086AP**

date started: **22 Jan 2015**

date completed: **22 Jan 2015**

logged by: **PM**

checked by: **RBT**

position: E: 768166, N: 799944 (BOPC2000) surface elevation: Not Specified angle from horizontal: 90° DCP Id.: Grid
 drill model: Hand Auger hole diameter: 50 mm

drilling information			material substance										
method & support	penetration	water	samples & field tests	RL (m)	depth (m)	graphic log	classification symbol	material description <small>SOIL TYPE: elasticity or particle characteristic, colour, secondary and minor components</small>	moisture condition	consistency / relative density	vene shear (kPa)	DCP (blows / 100 mm)	structure and additional observations
AD	AD							ORGANIC SILT: non plastic, dark brown, some fine to coarse sand, dry.	D				TOPSOIL / FILL
								SILT: non plastic, dark brown mottled orange-brown, trace of fine sand, dry, stiff.		St			FILL
					0.5			Silty SAND: fine to medium grained, pale brown, trace of fine grains, angular pumice gravel, dry to moist, medium dense.		MD			MATUA SUB-GROUP
					1.0			0.9 m: becoming fine to coarse grained.					
								SAND: fine to coarse grained, pale brown-pink, trace of silt, trace of coarse grained pumice gravel, moist, medium dense.	M to W	St			
								Sandy SILT: fine to medium grained, non plastic, pale pink-pale brown, moist to wet, stiff.		D			
								SAND: medium to coarse grained, pale pink-pale brown, trace of silt, moist to wet, dense.					
					1.5			1.5 m: with some silt, becoming fine to coarse grained, pale brown-pale pink, streaked pink-orange		W			
					2.0			Hand Auger HA3A-005 terminated at 2.0 m Target depth					

010 1 10 15 20 25 30 35 40 45 50 55 60 65 70 75 80 85 90 95 100 105 110 115 120 125 130 135 140 145 150 155 160 165 170 175 180 185 190 195 200 205 210 215 220 225 230 235 240 245 250 255 260 265 270 275 280 285 290 295 300 305 310 315 320 325 330 335 340 345 350 355 360 365 370 375 380 385 390 395 400 405 410 415 420 425 430 435 440 445 450 455 460 465 470 475 480 485 490 495 500

method AD auger drilling* AS auger screwing* HA hand auger W washbore I/A hand auger	support M mud D casing N air O oil P penetration no resistance required to insert water W Out to water level on data sheet water inflow water outflow	samples & field tests S bulk disturbed sample D disturbed sample E environmental sample SE split spoon sample U/W undisturbed sample 75mm diameter HP hand penetrometer (kPa) N standard penetration test (SPT) SPT - sample removed SPT with solid cone VE vane shear: peak/torqueless (kPa) R refusal H3 hammer sounding	classification symbol & soil description based on Unified Classification System moisture D dry M moist W wet S saturated Wp plastic limit Wl liquid limit	consistency / relative density VS very stiff S soft F firm St stiff VSt very stiff H hard Hs friable VL very loose L loose MD medium dense D dense VD very dense
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Engineering Log - Hand Auger

client: **THE LAKES LIMITED (2012)**
 principal:
 project: **THE LAKES STAGE 3 CONSTRUCTION**
 location: **CENTRE OF LOT 6**

Borehole ID: **HA3A-006**
 sheet: 1 of 1
 project no.: **GENZTAUC13086AP**
 date started: **22 Jan 2015**
 date completed: **22 Jan 2015**
 logged by: **PM**
 checked by: **RBT**

position: E: 368174; N: 799928 (HOPC2000) surface elevation: Not Specified angle from horizontal: 90° DCP ID: Gold
 drill method: Hand Auger hole diameter: 50 mm

drilling information				material substance									
method & support	penetration	water	samples & field tests	RL (m)	depth (m)	graphic log	classification symbol	material description	moisture condition	consistency / relative density	water shear strength (kPa)	DCP (blows/100 mm)	structure and additional observations
AD HA	-	-	-	-	0.0		OL	ORGANIC SILT: non plastic; dark brown, dry to moist.	D	VSL to H	-	-	TOPSOIL / FILL
					ML		SILT: non plastic, pale brown-pink, trace of fine grained sand, moist to wet, very stiff to hard.	M	VS LIP MATUA SUB-GROUP				
					SM		1.0 m becoming low plasticity, brown-pink with orange specks, trace of fine grained sand	M to W	MD to D	-	-	VS 215/27 kPa	
					SW		Silty SAND: fine to coarse grained, pale pink-pale brown, trace of fine grained gravel, moist to wet, medium dense to dense.						
				2.0									Hand Auger HA3A-006 terminated at 2.0 m Target depth

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method AD auger drilling AS auger screwing HA hand auger W washbore HA hand auger	support M mud C casing N nf penetration water 10 Oct-12 water level in calm shown water inflow water outflow	samples & field tests B bulk disturbed sample D disturbed sample E environmental sample SS soft spoon sample U# undisturbed sample 100mm diameter H# hand penetrometer (kPa) K standard penetrometer test (SPT) K* SPT - sample recovered Nc SPT with solid cone VS vane shear; peak/undrained (kPa) R refusal HB hammer sounding	classification symbol & soil description based on Unified Classification System moisture U dry W moist W wet S saturated Wp plastic limit Wl liquid limit	consistency / relative density VS very soft S soft F firm SL stiff VS: very stiff H hard Fh firm to hard VL very loose L loose MD medium dense D dense VD very dense
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* bit shown by suffix
 e.g. AD/T
 H blank bit
 T IC bit
 V vibr

Engineering Log - Hand Auger

client: **THE LAKES LIMITED (2012)**

principal:

project: **THE LAKES STAGE 3 CONSTRUCTION**

location: **CENTRE OF LOT 7**

Borehole ID: **HA3A-007**

sheet: 1 of 1

project no.: **GENZTAUC13086AP**

date started: **22 Jan 2015**

date completed: **22 Jan 2015**

logged by: **SWH**

checked by: **RBT**

position: E: 368185; N: 799812 (GPGC2000) surface elevation: Not Specified angle from horizontal: 90° DCP id.:
 drill model: Hand Auger hole diameter: 50 mm

drilling information				material substance										
method & support	penetration	water	samples & field tests	R _L (m)	depth (m)	graphic log	classification symbol	material description	moisture condition	consistency / relative density	van shear (kPa)	DCP (blows/100 mm)	structure and additional observations	
AD	N	not encountered			0.0 - 2.0		OL	SILT: non plastic, dark brown-black, dry.	D	VS1	-	-	TOPSOIL / FILL	
							ML	Sandy SILT: fine to medium grained, non plastic, pale yellow-pale grey, dry, very stiff. 0.4 m: becoming pale orange	M				VS 132/ 40 kPa	
							ML	SILT: low plasticity, pale brown-pale orange, some fine to medium grained sand, moist, very stiff.		VS 202/ 27 kPa				
							ML	Sandy SILT: fine to medium grained, low plasticity, pale brown-pale orange, moist, very stiff.	VS 102/ 27 kPa					
					2.0			Hand Auger HA3A-007 terminated at 2.0 m Target depth				VS 205/ 31 kPa	VS 195/ 27 kPa	VS 171/ 37 kPa

GPGC 2000 UTM EASTING 368185 NORTHING 799812 DCP TO CORNER FOR BOREHOLE GPGC 2000 UTM EASTING 368185 NORTHING 799812

method AD auger drilling* AS auger screwing* HA hand auger W washbore HA hand auger	support M mud N nil C casing penetration water 10-12 water level (if data shown) water inflow water outflow	samples & field tests B bulk disturbed sample D disturbed sample E environmental sample SS split spoon sample UN# undisturbed sample #mm diameter HP hand penetrometer (kPa) N standard penetration test (SPT) N' SPT - sample retrieved NS SPT with solid cone VS vane shear cone/retained (kPa) R refusal HB hammer bouncing	classification symbol & soil description based on Unified Classification System moisture: D dry M moist W wet S saturated Wp plastic limit Wl liquid limit	consistency / relative density VS very soft S soft F firm St stiff VS+ very stiff H hard Fh firm VL very loose L loose MD medium dense D dense VD very dense
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* fill shown by suffix
 e.g. AD7
 B blank bit
 TC bit
 V hit

Engineering Log - Hand Auger

client: **THE LAKES LIMITED (2012)**

principal:

project: **THE LAKES STAGE 3 CONSTRUCTION**

location: **CENTRE OF LOT 9**

Borehole ID: **HA3A-009**
 sheet: 1 of 1
 project no.: **GENZTAUC13086AP**
 date started: **21 Nov 2014**
 date completed: **21 Nov 2014**
 logged by: **SLC**
 checked by: **RBT**

position: E: 168204; N: 799878 (BOPC2003) surface elevation: Not Specified angle from horizontal: 90° DCP Id.: Gold
 drill model: Hand Auger hole diameter: 50 mm

drilling information				material substance								
method & support	penetration	samples & field tests	RL (m)	depth (m)	penetration log	classification symbol	material description	moisture condition	consistency / relative density	vane shear (kPa)	DCP (blow / 100 mm)	structure and additional observations
				0.5			ORGANIC SILT: non plastic, black with pale grey specks, dry.	D				TOPSOIL FILL
				1.0			Silty SAND: fine grained, uniform, pale grey, dry, medium dense.	MD				VS 117/ 73 kPa
				1.5			SILT: low plasticity, pale brown, some fine grained sand, moist to wet, very stiff.	M to W	VSt			VS 120/ 28 kPa
				2.0			Silty SAND: fine to coarse grained, well graded, pale grey brown, wet, medium dense.	W	MD			TE RANGA (GNIMBRITE)
				2.0			1.5 m: minor silt pockets <50mm.					MATUA SUB-GROUP
				2.0			Sandy SILT: non plastic, pale brown grey, sand is fine to medium grained, wet.					VS 130/ 23 kPa
				2.0			Hand Auger HA3A-009 terminated at 2.0 m Target depth					

C:\P\2014\GENZTAUC13086AP\LOG_CENTRE OF LOT 9\HA3A-009.DWG (AUGUST 2014) SURFACE ELEVATION: 0.000 (ASL) DATE: 21/11/2014

method AD auger drilling* AS auger screwing* HA hand auger W washline HA hand auger	support W misc C casing N nil penetration water If Oct-12 water level on date shown water inflow water outflow	samples & field tests H bulk disturbed sample D disturbed sample E environmental sample SE split spoon sample U# undisturbed sample #mm diameter H# hand penetrometer (kPa) N standard penetration test (SPT) N* SPT - sample recovered No SPT with solid core VS vane shear; peak/enclosed (kPa) R refusal HD hammer sounding	classification symbol & soil description based on Unified Classification System moisture D dry M moist W wet S saturated Wp plastic limit Wl liquid limit	consistency / relative density VS very soft S soft F firm St stiff VSt Very stiff H hard Hh trace Vh very loose L loose MD medium dense D dense VD very dense
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* be shown by suffix
 #G A/G
 R mark hit
 T TC hit
 V V hit

Engineering Log - Hand Auger

client: **THE LAKES LIMITED (2012)**
 principal:
 project: **THE LAKES STAGE 3 CONSTRUCTION**
 location: **CENTRE OF LOT 10**

Borehole ID: **HA3A-010**
 sheet: 1 of 1
 project no.: **GENZTAUC13086AP**
 date started: **21 Nov 2014**
 date completed: **21 Nov 2014**
 logged by: **PM**
 checked by: **RBT**

position: E: 368217; N: 799661 (BOPC2000) surface elevation: Not Specified angle from horizontal: 90° DCP id.: Gold
 drill model: Hand Auger hole diameter: 50 mm

drilling information				material substance									
method & support	penetration	water	samples & field tests	RL (m)	depth (m)	soil log classification symbol	material description	moisture condition	consistency / relative density	value shear stress (kPa)	DCP (blows/100 mm)	stratigraphy and additional observations	
HA No Encountered		No No No No	No No No No	0.0 0.5 1.0 1.5 2.0	0.0 0.5 1.0 1.5 2.0		ORGANIC SILT: non plastic, dark brown to black with orange brown mottling, moist.	M				TOPSOIL FILL	
							Silty SAND: fine grained, uniform, pale grey, pumiceous, moist.					TE RANGA IGIMBRITE	
							SILT: low plasticity, pale brown mottled orange brown, minor clay, trace fine grained sand, wet, very stiff. 1.6 m: becoming pale orange brown.	W	VSt	164	20	VS 164/ 20 kPa	MATUA SUB-GROUP
							1.8 m: becoming pale brown mottled white.			153	32	VS 153/ 32 kPa	
Hand Auger HA3A-010 terminated at 2.0 m Target depth													

COFFEE ENGINEERING CONSULTANTS LIMITED (INCORPORATED IN NEW ZEALAND) - 1/22

method AD auger drilling* AS auger screwing* HA hand auger W washcore HA hand auger	support M mud C casing N nil penetration water 10-15 water level in hole shown water inflow water outflow	samples & field tests B bulk disturbed sample D disturbed sample E environmental sample SS split spoon sample LNW undisturbed sample 40mm diameter HP hand penetrometer (kPa) N standard penetration test (SPT) N* SPT - sample recovered No SPT with solid cone VR vane shear; peak/encloded (kPa) R refusal LB hammer bearing	classification symbol & soil description transition limited Classification System: moisture D dry M moist W wet S saturated Wp plastic limit Wl liquid limit	consistency / relative density VG very soft S soft F firm St stiff VSt very stiff H hard Fb brittle VL very loose L loose ML medium dense D dense VL very dense
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* bit shown by suffix:
 AD/T
 B blank bit
 T TC bit
 V bit

Engineering Log - Hand Auger

client: **THE LAKES LIMITED (2012)**
 principal:
 project: **THE LAKES STAGE 3 CONSTRUCTION**
 location: **CENTRE OF LOT 11**

Borehole ID: **HA3A-011**
 sheet: 1 of 1
 project no.: **GENZTAUC13086AP**
 data started: **21 Nov 2014**
 date completed: **21 Nov 2014**
 logged by: **SLC**
 checked by: **RBT**

position: E: 388227; N: 799845 (GCP2000) surface elevation: Not Specified angle from horizontal: 90° DCP fit: Gold
 drill model: Hand Auger hole diameter: 50 mm

drilling information				material substance								
method & support	penetration	water	samples & field tests	RL (m)	depth (m)	material description	classification symbol	moisture condition	consistency / relative density	vane shear (kPa)	DCP (blows/100 mm)	structure and additional observations
					0.5	ORGANIC SILT: non plastic, black with pale grey specks, dry.		D				TOPSOIL FILL
					1.0	SAND: fine grained, uniform, pale grey, some silt, dry, medium dense to dense.		MD to D				TE RANGA IGNIMBRITE
					1.5							VS 124/ 14 kPa
					2.0	Hand Auger HA3A-011 terminated at 2.0 m Target depth						

2014 11 21 10:00 AM HA3A-011 (GCP2000) 50mm dia. Hand Auger. Logged by SLC. Checked by RBT.

method AD auger drilling* AS auger screwing* HA hand auger W washbore HA hand auger	support M mud C casing N not penetration 	samples & field tests S bulk disturbed sample D disturbed sample E environmental sample SS split spoon sample U#F undisturbed sample #mm diameter H#P hard penetrometer (kPa) K standard penetration test (SPT) N# SPT - sample recovered Nc SPT with solid cone VS vane shear; peak/rounded (kPa) R refusal HB hammer sounding	classification symbol & soil description based on Unified Classification System moisture D dry M moist W wet S saturated Wp plastic limit WL liquid limit	consistency / relative density VS very soft S soft F firm St stiff VS: very stiff H hard Fc friable VL very loose L loose MD medium dense D dense VD very dense
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* fill shown by suffix
 #g ADT
 B blank bit
 T IC bit
 V V bit

Engineering Log - Hand Auger

client: **THE LAKES LIMITED (2012)**
 principal:
 project: **THE LAKES STAGE 3 CONSTRUCTION**
 location: **CENTRE OF LOT 12**

Borehole ID: **HA3A-012**
 sheet: 1 of 1
 project no.: **GENZTAUC13086AP**
 date started: **06 Mar 2015**
 date completed: **06 Mar 2015**
 fogged by: **RB**
 checked by: **RBT**

position: T: 366243; N: 799830 (BOPC2000) surface elevation: Not Specified angle from horizontal: 00° DCP id.: Gold
 drill model: Hand Auger hole diameter:

drilling information				material substance									
method & support	penetration	water	samples & field tests	RL (m)	depth (m)	graphic log	classification symbol	material description	moisture content	consistency / relative density	void ratio	DCP (blows/100 mm)	structure and additional observations
		Not Encountered			0.5			ORGANIC SILT: non plastic, dark brown to black with orange brown mottling, dry to moist.	D to M				TOPSOIL FILL
								Silty SAND: fine grained, uniform, pale grey, dry to moist, loose to dense.	D				TE RANGA IGNIMBRITE
					1.5								
					2.0			Hand Auger HA3A-012 terminated at 2.0 m Target depth					

method AD auger drilling* AS auger screwing* HA hand auger W wash bore HA hand auger	support M: initial C: casing N: nil penetration no resistance to tip water 10 Oct. 12 water level on date shown water inflow water outflow	samples & field tests B bulk disturbed sample D disturbed sample E environmental sample BS split spoon sample U# undisturbed sample 40mm diameter H# hand penetrometer (HPs) N standard penetration test (SPT) N* SPT - sample recovered S SPT with solid cone VS vane shear preconsolidated (kPa) R refusal RS hammer logging	classification symbol & soil description based on Unified Classification System moisture D dry M moist W wet S saturated Wp plastic limit Wl liquid limit	consistency / relative density VS very soft S soft F firm St stiff VSd very stiff H hard Ch cohesive Vc very cohesive L loose Md medium dense D dense Vd very dense
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DCP 0.6, 0.8, 1.0, 1.2, 1.4, 1.6, 1.8, 2.0, 2.2, 2.4, 2.6, 2.8, 3.0, 3.2, 3.4, 3.6, 3.8, 4.0, 4.2, 4.4, 4.6, 4.8, 5.0, 5.2, 5.4, 5.6, 5.8, 6.0, 6.2, 6.4, 6.6, 6.8, 7.0, 7.2, 7.4, 7.6, 7.8, 8.0, 8.2, 8.4, 8.6, 8.8, 9.0, 9.2, 9.4, 9.6, 9.8, 10.0

Engineering Log - Hand Auger

client: **THE LAKES LIMITED (2012)**
 principal:
 project: **THE LAKES STAGE 3 CONSTRUCTION**
 location: **CENTRE OF LOT 14**

Borehole ID: **HA3A-014**
 sheet: 1 of 1
 project no.: **GENZTAUC13086AP**
 date started: **21 Nov 2014**
 date completed: **21 Nov 2014**
 logged by: **PM**
 checked by: **RBT**

position: E: 368279; N: 799811 (MOPC2000) surface elevation: Not Specified angle from horizontal: 00° DCP Id.: Gold
 drill method: Hand Auger hole diameter: 50 mm

drilling information					material substance					
method & support	penetration	water	samples & field tests	depth (m)	graphic log	classification symbol	material description	moisture condition	consistency / relative density	structure and additional observations
HA No Encounters		No Encounters	None	0.0		D D to M	ORGANIC SILT: non plastic, black with grey specks, dry.	VS		TOPSOIL FILL
				0.5			Sandy SILT: non plastic, brown mottled orange brown and dark brown, sand is fine grained, dry to moist, very stiff.			VOLCANIC ASHES
				1.0		MD	Silty SAND: fine grained, uniform, pale grey, pumiceous, dry to moist, medium dense.		TE RANGA IGNIMBRITE	
				1.5			Hand Auger HA3A-014 terminated at 2.0 m Target depth			

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method AD auger drilling* AS auger screwing* HA hand auger W washbore HA hand auger	support M mud C casing N nil	samples & field tests B bulk disturbance sample D disturbed sample C environmental sample SS split spoon sample JWF undisturbed sample / 75mm diameter HF hand penetrometer (kPa) N standard penetration test (SPT) N* SPT - sample recovered No SPT with solid cone VS vane shear, peak/ultimate (kPa) R refusal RB banner blasting	classification symbol & soil description based on Unified Classification System moisture D dry M moist W wet S saturated Wp plastic limit WL liquid limit	consistency / relative density VS very soft S soft F firm ST stiff VSC very stiff H hard Fc friable VL very loose L loose MD medium dense D dense VD very dense
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Engineering Log - Hand Auger

client: **THE LAKES LIMITED (2012)**

principal:

project: **THE LAKES STAGE 3 CONSTRUCTION**

location: **CENTRE OF LOT 17**

Borehole ID: **HA3A-017**
 sheet: 1 of 1
 project no: **GENZTAUC13086AP**
 date started: **03 Dec 2014**
 date completed: **03 Dec 2014**
 logged by: **SLC**
 checked by: **RBT**

position: E: 368346; N: 799604 (BOPC2000) surface elevation: Not Specified angle from horizontal: 90° DCP id.:
 drill model: Hand Auger hole diameter: 50 mm

drilling information				material substance									
method & support	penetration	samples & field tests	RL (m)	depth (m)	graphic log	classification symbol	material description	moisture condition	consistency / relative density	vein shear stress (kPa)	DCP (blows / 100 mm)	structure and additional observations	
HA	N	No. 2 - contained		0.0	[Cross-hatched pattern]	D	ORGANIC SILT: non plastic, black mottled orange brown, some fine grained sand, dry, hard.	D	II			TOPSOIL FILL	
							VS UTP						
				0.5		M	SAND: fine grained, uniform, pale grey, dry.	M	VSst		FILL		
						Sandy SILT: non plastic to low plasticity, orange brown mottled brown, sand is fine to medium grained, inclusions of grey silty sand, dry to moist, very stiff.	VS 183 kPa						
				1.0		0.8 m: becoming grey brown with minor orange brown silt inclusions <30mm, becoming moist.	VS 123/ 15 kPa						
						1.0 m: becoming difficult to drill below 1.0 metres.	VS 103 kPa						
1.5		1.5 m: trace red brown sand inclusions <20mm.	VS 193 kPa										
2.0			Clayey SILT: low to medium plasticity, brown with red brown and orange brown specks, dry to moist, very stiff.	D to M		VS 183 kPa							
				2.0			Hand Auger HA3A-017 terminated at 2.0 m target depth						

D:\S\3\5\00_Library\Testable rev0P Log_COF BOREHOLE_NCH BORFD - COF TALC\388346\017\GENZTAUC13086AP\031214\2014_11_22

method AD auger drilling* AS auger screwing* HA hand auger W washbore HA hand auger	support M mud N nil C casing penetration 	samples & field tests D bulk disturbed sample D disturbed sample E environmental sample SS split spoon sample U# undisturbed sample #mm diameter H# hand penetrometer (kPa) N standard penetration test (SPT) N* SPT - sample recovered Nc SPT with solid cone VS vane shear, peak/retained (kPa) R refusal HB hammer bouncing	classification symbol & soil description based on Unified Classification System moisture D dry M moist W wet S saturated Wp plastic limit Wl liquid limit	consistency / relative density VS very soft R soft F firm St stiff VSst very stiff H hard Fc friable VL very loose L loose MD medium dense D dense VD very dense
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* fill shown by suffix
 e.g. AD/T
 B blank bit
 T TC bit
 V V bit

Engineering Log - Hand Auger

client: **THE LAKES LIMITED (2012)**
 principal:
 project: **THE LAKES STAGE 3 CONSTRUCTION**
 location: **CENTRE OF LOT 19**

Borehole ID: **HA3A-019**
 sheet: 1 of 1
 project no. **GENZTAUC13086AP**
 date started: **14 Nov 2014**
 date completed: **14 Nov 2014**
 logged by: **SLC**
 checked by: **RBT**

position: E: 369381; N: 799821 (BOPC2000) surface elevation: Not Specified angle from horizontal: 0° DCP Id.:
 drill model: Hand Auger hole diameter: 50 mm

drilling information				material substance								
method & support	penetration	samples & field tests	PL (m)	depth (m)	graphic log	classification symbol	material description	moisture condition	consistency / relative density	value shear stress @ soil (kPa)	DCP (blows / 100 mm)	structure and additional observations
HA	-	-	-	0.0		-	ORGANIC SILT: non plastic, dark brown, dry, hard.	D	II	0	0	TOPSOIL FILL
				0.5			Sandy SILT: non plastic, brown mottled dark brown, orange brown and pale grey, sand is fine to medium grained, dry, hard.		H	0	0	FILL VS 200 kPa
				1.0			SILT: non plastic to low plasticity, brown mottled pale brown, (dark brown mottles are non organic) minor clay, occasional Hamilton Ash inclusions <30mm, dry to moist, hard.	D to M		0	0	VS 200 kPa
				1.5						0	0	VS 200 kPa
			2.0				Hand Auger HA3A-019 terminated at 2.0 m target depth.					VS 200 kPa

C:\E:\AUG LOG LIBRARY\LIST\BUREV22_08_LCH BOREHOLE - RBN COVERED - DCP TAUC13086AP.DWG 609PHO.EE.03 - sDrawing1.mxd 11/24/2015 11:22

method AD auger drilling AS auger screwing HA hand auger W washbore HA hand auger	support M mud C casing N nil penetration no resistance no resistance no resistance water 10 Cps 12 water lines on state shown water inflow water outflow	samples & field tests B bulk disturbed sample D disturbed sample E environmental sample SS split spoon sample U# undisturbed sample 50mm diameter HF hard penetrometer (kPa) N standard penetration test (SPT) N* SPT - sample recovered Nc SPT with split cone VS vane shear, peak/undrained (kPa) R refusal HB hammer bouncing	classification symbol & soil description based on Unified Classification System moisture D dry M moist W wet S saturated Wp plastic limit Wl liquid limit	consistency / relative density VS very soft S soft F firm ST stiff VSt very stiff H hard Fr friction VL very loose L loose MD medium dense D dense VD very dense
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* bit shown by suffix
 e.g. AD/T
 H blank bit
 T 10 bit
 V V bit

Engineering Log - Hand Auger

client: **THE LAKES LIMITED (2012)**
 principal:
 project: **THE LAKES STAGE 3 CONSTRUCTION**
 location: **CENTRE OF LOT 21**

Borehole ID: **HA3A-021**
 sheet: 1 of 1
 project no.: **GENZTAUC13086AP**
 date started: **14 Nov 2014**
 date completed: **14 Nov 2014**
 logged by: **RB**
 checked by: **RBT**

position: E: 368414; N: 709530 (BOPC2000) surface elevation: Not Specified angle from horizontal: 00° DCP Id.:
 drill model: Hand Auger hole diameter: 50 mm

drilling information				material substance						
method & support	penetration	samples & field tests	RL (m)	depth (m)	material description	penetration condition	penetration rate (min/300mm)	van osterhout penetrometer (kPa)	DCP (blows/100 mm)	structure and additional observations
				0.5	ORGANIC SAND: non plastic, Dark Brown, moist. SILT: low plasticity, orange-brown mottled grey, minor fine to coarse sand and minor clay, moist, very soft to hard.	M	VS to H			TOPSOIL FILL
			1.0	FILL VS 200 kPa						
			1.5	VS 155/ 43 kPa						
			2.0	VS 139/ 29 kPa						
			2.5	VS 171/ 32 kPa						
			3.0	VS 139/ 20 kPa						
			3.5	VS 200 kPa						
			4.0	VS 200 kPa						
Hand Auger HA3A-021 terminated at 2.0 m Target depth.										

method
 AD auger drilling*
 AS auger screwing*
 HA hand auger
 W washbore
 HA hand auger

support
 M mud
 C casing
 nil

penetration

water
 10-12 water level data shown
 water inflow
 water outflow

* nil shown by suffix
 e.g. AD7
 B blank bit
 T TC bit
 V V bit

samples & field tests
 B bulk disturbed sample
 U undisturbed sample
 E environmental sample
 SS split spoon sample
 LWM undisturbed sample 100mm diameter
 R² hand penetrometer (kPa)
 K standard penetration test (SPT)
 N* SPT - sample recovered
 Nc SPT with solids cone
 VS vane shear, peak/included (kPa)
 R refusal
 HD hammer sounding

classification symbol & soil description
 based on Unified Classification System

moisture
 D dry
 M moist
 W wet
 S saturated
 Wn plastic limit
 WI liquid limit

consistency / relative density

VS very soft
 S soft
 F firm
 SF stiff
 SI stiff
 VSr very stiff
 H hard
 Fh firm
 VL very loose
 L loose
 VD medium dense
 D dense
 VD very dense

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Engineering Log - Hand Auger

client: **THE LAKES LIMITED (2012)**
 principal:
 project: **THE LAKES STAGE 3 CONSTRUCTION**
 location: **CENTRE OF LOT 23**

Borehole ID: **HA3A-023**
 sheet: 1 of 1
 project no: **GENZTAUC13086AP**
 date started: **14 Nov 2014**
 date completed: **14 Nov 2014**
 logged by: **SLC**
 checked by: **RBT**

position: E: 388446; N: 799866 (BDPC2000) surface elevation: Not Specified angle from horizontal: 90° BCP ID: -
 drill model: Hand Auger hole diameter: 50 mm

drilling information				material substance									
method & support	penetration	samples & field tests	RL (m)	depth (m)	graphic log	classification symbol	material description SDIL TYPE: plasticity or particle characteristic, colour, secondary and minor components	moisture content	consistency / relative density	vanne shear test (kPa)	DCP (blow/100 mm)	structure and additional observations	
AD AS HA W HA	No. Encountered		0.0	0.0			ORGANIC SILT: non plastic, dark brown, dry, hard.	D	H			TOPSOIL FILL	
							BANDY SILT: non plastic, brown mottled pale brown and pale grey, dry to moist, hard.					H	VS 200 kPa FILL
													VS 200 kPa
													VS 200 kPa
													VS 200 kPa
Hand Auger HA3A-023 terminated at 2.0 m Target depth													

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method AD auger drilling AS auger screwing HA hand auger W washhole HA hand auger	support M mud C casing N fill penetration water 10-Occ-15 water level on site shows water flow water seepage	samples & field tests B bulk disturbed sample D disturbed sample E environmental sample SS split spoon sample UTM undisturbed sample #mm diameter HF hand penetrometer (kPa) N standard penetration test (SPT) N* SPT - sample recovered Nc SPT with solid cone VS vane shear, peak/retained (kPa) R refusal HB hammer sounding	classification symbol & soil description based on Unified Classification System moisture D dry M moist W wet S saturated Wp plastic limit Wl liquid limit	consistency / relative density VS very soft S soft F firm SF stiff VSJ very stiff H hard FH friable VL very loose L loose MD medium dense D dense VD very dense
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* bit shown by suffix
 A.G. blank bit
 T T.C. bit
 V fill

Engineering Log - Hand Auger

client: **THE LAKES LIMITED (2012)**
 principal:
 project: **THE LAKES STAGE 3 CONSTRUCTION**
 location: **CENTRE OF LOT 25**

borehole ID: **HA3A-025**
 sheet: 1 of 1
 project no.: **GENZTAUC13086AP**
 date started: **14 Nov 2014**
 date completed: **14 Nov 2014**
 logged by: **RB**
 checked by: **RBT**

position: E: 368450; N: 788888 (BOPC2000) surface elevation: Not Specified angle from horizontal: 90° DCP ID:
 drill model: Hand Auger hole diameter: 50 mm

drilling information				material substance								
method & support	penetration	water	samples & field tests	RL (m)	depth (m)	graphic log classification symbol	material description SOIL TYPE: plasticity or particle characteristic, colour, secondary and minor components	moisture condition	consistency / relative density	vane shear (kPa)	DCP (blows/150 mm)	structure and additional observations
AD AS HA W FA	N	Not Encountered		0.5	0.5		ORGANIC SAND: non plastic, Dark Brown, moist.	M	H			TOPSOIL FILL
							SILT: non plastic, orange-brown mottled orange, brown, grey, minor fine to coarse sand, moist, hard.					FILL
												VS 200 kPa
												VS 200 kPa
												VS 200 kPa
												VS 200 kPa
				1.0	1.0		Clayey SILT: low plasticity, orange-brown mottled orange, brown, grey, moist, hard.				VS 200 kPa	
				1.5	1.5		VS 200 kPa					
				2.0	2.0		VS 200 kPa					
				2.0	2.0		VS 200 kPa					
Hand Auger HA3A-025 terminated at 2.0 m Target depth												

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method AD auger drilling* AS auger screwing* HA hand auger W washbore FA hand auger	support M mud C casing N nil penetration 	samples & field tests S bulk disturbed sample D disturbed sample E environmental sample SS split spoon sample U#F undisturbed sample 75mm diameter I/P hand penetrometer (kPa) N standard penetration test (SPT) N' SPT - sample recovered No SPT with solid cone VS vane shear, peak/retention (kPa) R refusal HH hammer sounding	classification symbol A soil description based on Unified Classification System moisture D dry M moist W wet S saturated Wp plastic limit Wl liquid limit	consistency / relative density VS very soft S soft F firm St stiff VSr very stiff H hard Fc friable VL very loose L loose MD medium dense D dense VSr very dense
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* bit shown by silt
 e.g. ADT
 B blank bit
 I IC bit
 V bit

Engineering Log - Hand Auger

client: **THE LAKES LIMITED (2012)**
 principal:
 project: **THE LAKES STAGE 3 CONSTRUCTION**
 location: **CENTRE OF LOT 26**

Borehole ID: **HA3A-026**
 sheet: 1 of 1
 project no: **GENZTAUC13086AP**
 date started: **03 Dec 2014**
 date completed: **03 Dec 2014**
 logged by: **SLC**
 checked by: **RBT**

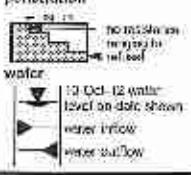
position: E: 386423; N: 799029 (BOPC2000) surface elevation: Not Specified angle from horizontal: 90° DCP id: -
 drill model: Hand Auger hole diameter: 50 mm

drilling information				material substance								
method & support	penetration	samples & field tests	RL (m)	depth (m)	graphic log	classification	material description	moisture	consistency / relative density	vane shear	DCP	structure and additional observations
							SOIL TYPE: plasticity or particle characteristics, colour, secondary and minor components			(kPa)	(blows/100 mm)	
				0.0			ORGANIC SILT: non plastic, black mottled orange brown, some fine to medium grained sand, dry.	D				TOPSOIL FILL
				0.5			Sandy SILT: non plastic, orange brown mottled brown with pale grey specks, sand is fine to medium grained, dry, hard.	H				FILL VS 200 kPa
				1.0								VS 200 kPa
				1.5								VS 200 kPa
				2.0								VS 200 kPa
				2.0			Hand Auger HA3A-026 terminated at 2.0 m Target depth					VS 200 kPa

COFFEEY CONSULTANTS LTD. 100/101/102/103/104/105/106/107/108/109/110/111/112/113/114/115/116/117/118/119/120/121/122/123/124/125/126/127/128/129/130/131/132/133/134/135/136/137/138/139/140/141/142/143/144/145/146/147/148/149/150/151/152/153/154/155/156/157/158/159/160/161/162/163/164/165/166/167/168/169/170/171/172/173/174/175/176/177/178/179/180/181/182/183/184/185/186/187/188/189/190/191/192/193/194/195/196/197/198/199/200/201/202/203/204/205/206/207/208/209/210/211/212/213/214/215/216/217/218/219/220/221/222/223/224/225/226/227/228/229/230/231/232/233/234/235/236/237/238/239/240/241/242/243/244/245/246/247/248/249/250/251/252/253/254/255/256/257/258/259/260/261/262/263/264/265/266/267/268/269/270/271/272/273/274/275/276/277/278/279/280/281/282/283/284/285/286/287/288/289/290/291/292/293/294/295/296/297/298/299/300/301/302/303/304/305/306/307/308/309/310/311/312/313/314/315/316/317/318/319/320/321/322/323/324/325/326/327/328/329/330/331/332/333/334/335/336/337/338/339/340/341/342/343/344/345/346/347/348/349/350/351/352/353/354/355/356/357/358/359/360/361/362/363/364/365/366/367/368/369/370/371/372/373/374/375/376/377/378/379/380/381/382/383/384/385/386/387/388/389/390/391/392/393/394/395/396/397/398/399/400/401/402/403/404/405/406/407/408/409/410/411/412/413/414/415/416/417/418/419/420/421/422/423/424/425/426/427/428/429/430/431/432/433/434/435/436/437/438/439/440/441/442/443/444/445/446/447/448/449/450/451/452/453/454/455/456/457/458/459/460/461/462/463/464/465/466/467/468/469/470/471/472/473/474/475/476/477/478/479/480/481/482/483/484/485/486/487/488/489/490/491/492/493/494/495/496/497/498/499/500/501/502/503/504/505/506/507/508/509/510/511/512/513/514/515/516/517/518/519/520/521/522/523/524/525/526/527/528/529/530/531/532/533/534/535/536/537/538/539/540/541/542/543/544/545/546/547/548/549/550/551/552/553/554/555/556/557/558/559/560/561/562/563/564/565/566/567/568/569/570/571/572/573/574/575/576/577/578/579/580/581/582/583/584/585/586/587/588/589/590/591/592/593/594/595/596/597/598/599/600/601/602/603/604/605/606/607/608/609/610/611/612/613/614/615/616/617/618/619/620/621/622/623/624/625/626/627/628/629/630/631/632/633/634/635/636/637/638/639/640/641/642/643/644/645/646/647/648/649/650/651/652/653/654/655/656/657/658/659/660/661/662/663/664/665/666/667/668/669/670/671/672/673/674/675/676/677/678/679/680/681/682/683/684/685/686/687/688/689/690/691/692/693/694/695/696/697/698/699/700/701/702/703/704/705/706/707/708/709/710/711/712/713/714/715/716/717/718/719/720/721/722/723/724/725/726/727/728/729/730/731/732/733/734/735/736/737/738/739/740/741/742/743/744/745/746/747/748/749/750/751/752/753/754/755/756/757/758/759/760/761/762/763/764/765/766/767/768/769/770/771/772/773/774/775/776/777/778/779/780/781/782/783/784/785/786/787/788/789/790/791/792/793/794/795/796/797/798/799/800/801/802/803/804/805/806/807/808/809/810/811/812/813/814/815/816/817/818/819/820/821/822/823/824/825/826/827/828/829/830/831/832/833/834/835/836/837/838/839/840/841/842/843/844/845/846/847/848/849/850/851/852/853/854/855/856/857/858/859/860/861/862/863/864/865/866/867/868/869/870/871/872/873/874/875/876/877/878/879/880/881/882/883/884/885/886/887/888/889/890/891/892/893/894/895/896/897/898/899/900/901/902/903/904/905/906/907/908/909/910/911/912/913/914/915/916/917/918/919/920/921/922/923/924/925/926/927/928/929/930/931/932/933/934/935/936/937/938/939/940/941/942/943/944/945/946/947/948/949/950/951/952/953/954/955/956/957/958/959/960/961/962/963/964/965/966/967/968/969/970/971/972/973/974/975/976/977/978/979/980/981/982/983/984/985/986/987/988/989/990/991/992/993/994/995/996/997/998/999/1000

method AD auger drilling* AS auger screwing* HA hand auger W washbore HA hand auger	support M mast C casing N nil C casing	samples & field tests D bulk disturbed sample D disturbed sample E environmental sample SS split spoon sample US# undisturbed sample #mm diameter HP hand penetrometer (kPa) N standard penetration test (SPT) N# SPT - sample recovered Nc SPT with solid cone VS vane shear, pushover/rotated (kPa) R refusal FB hammer boring	classification symbol & soil description based on Unified Classification System moisture D dry M moist W wet S saturated Wp plastic limit Wl liquid limit	consistency / relative density VS very soft S soft F firm St stiff VS# very stiff H hard F# firm VL very loose L loose MU medium dense D dense VD very dense
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* bit shown by suffix
 m.g. M/G
 D Shank bit
 TC bit
 V bit



Engineering Log - Hand Auger

Borehole ID: **HA3A-027**
 sheet: 1 of 1
 project no: **GENZTAUC13086AP**
 date started: **03 Dec 2014**
 date completed: **03 Dec 2014**
 logged by: **SLC**
 checked by: **RBT**

client: **THE LAKES LIMITED (2012)**
 principal:
 project: **THE LAKES STAGE 3 CONSTRUCTION**
 location: **CENTRE OF LOT 27**

position: E: 368418; N: 799042 (DOPCR000) surface elevation: Not Specified angle from horizontal: 90° DCP id.:
 drill model: Hand Auger hole diameter: 50 mm

drilling information				material substance							
method & support	penetration	water	samples & field tests	depth (m)	classification symbol	material description	moisture content	consistency / relative density	void ratio	DCP (blows/100mm)	structure and additional observations
No Encountered No Encountered No Encountered				0.5		ORGANIC SILT: non plastic, black mottled orange brown, some fine to medium grained sand, dry.	D	VSt to H			TOPSOIL FILL
						Bandy SILT: non plastic, orange brown, dark brown and pale brown, sand is fine to coarse grained, dry to moist, very stiff to hard.					D to M
									VS 150/ 18 kPa		
				1.0		Clayey SILT: low to medium plasticity, dark brown, moist, hard.	M	H			HAMILTON ASH
				1.5		becoming brown.					VS 200 kPa
				2.0		Hand Auger HA3A-027 terminated at 2.0 m Target Depth					VS 200 kPa

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method AD auger drilling AS auger screwing HA hand auger W wash bore HA hand auger	support M mud C casing N nil penetration water 10-12 water level on date shown water inflow water outflow	samples & field tests B bulk disturbed sample C disturbed sample E environmental sample SS split spoon sample U/W undisturbed sample #mm diameter H hand penetrometer (H-a) K standard penetrometer test (SPT) N SPT - sample recovered Nc SPT with soil cone VS vane shear; peak/retained (kPa) R refusal HD hammer sounding	classification symbol & soil description based on Unified Classification System moisture D dry M moist W wet S saturated Wp plastic limit WL liquid limit	consistency / relative density VS very stiff S stiff F firm Ss soft VSt very stiff H hard Fh friable VL very loose L loose MD medium dense D dense VD very dense
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* Not shown by suffix
 e.g. ADT
 B Blank bit
 T TC bit
 V Vial

Engineering Log - Hand Auger

client: **THE LAKES LIMITED (2012)**

principal:

project: **THE LAKES STAGE 3 CONSTRUCTION**

location: **CENTRE OF LOT 28**

Borehole ID: **HA3A-028**
 sheet: 1 of 1
 project no.: **GENZTAUC13086AP**
 date started: **06 Mar 2015**
 date completed: **06 Mar 2015**
 logged by: **RB**
 checked by: **RBT**

position: E: 368411; N: 799955 (BOPC2000) surface elevation: Not Specified angle from horizontal: 90° DCP id.: Grid
 drill model: Hand Auger hole diameter:

drilling information				material substance							
method & support	penetration	water	sample & field tests	depth (m)	material description	classification symbol	moisture condition	consistency / relative density	void ratio	DCP (blows/100 mm)	structure and additional observations
				0.0	ORGANIC SILT: non plastic, dark brown, dry, medium dense to dense.	D	MD to D				TOPSOIL FILL
				0.5	Silty SAND: fine to coarse grained, well graded, yellow-brown, moist, medium dense to dense.	M					ROTOEHU ASH VS 200 kPa
				1.0	SAND: fine to medium grained, poorly graded, grey, moist, medium dense to dense.						VS 200 kPa
				1.5	Clayey SILT: low to medium plasticity, dark brown mottled brown, moist, hard.	H					HAMILTON ASH VS 200 kPa
				2.0	Hand Auger HA3A-028 terminated at 2.0 m Target depth						VS 200 kPa

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008W 008X 008Y 008Z 009A 009B 009C 009D 009E 009F 009G 009H 009I 009J 009K 009L 009M 009N 009O 009P 009Q 009R 009S 009T 009U 009V 009W 009X 009Y 009Z 010A 010B 010C 010D 010E 010F 010G 010H 010I 010J 010K 010L 010M 010N 010O 010P 010Q 010R 010S 010T 010U 010V 010W 010X 010Y 010Z 011A 011B 011C 011D 011E 011F 011G 011H 011I 011J 011K 011L 011M 011N 011O 011P 011Q 011R 011S 011T 011U 011V 011W 011X 011Y 011Z 012A 012B 012C 012D 012E 012F 012G 012H 012I 012J 012K 012L 012M 012N 012O 012P 012Q 012R 012S 012T 012U 012V 012W 012X 012Y 012Z 013A 013B 013C 013D 013E 013F 013G 013H 013I 013J 013K 013L 013M 013N 013O 013P 013Q 013R 013S 013T 013U 013V 013W 013X 013Y 013Z 014A 014B 014C 014D 014E 014F 014G 014H 014I 014J 014K 014L 014M 014N 014O 014P 014Q 014R 014S 014T 014U 014V 014W 014X 014Y 014Z 015A 015B 015C 015D 015E 015F 015G 015H 015I 015J 015K 015L 015M 015N 015O 015P 015Q 015R 015S 015T 015U 015V 015W 015X 015Y 015Z 016A 016B 016C 016D 016E 016F 016G 016H 016I 016J 016K 016L 016M 016N 016O 016P 016Q 016R 016S 016T 016U 016V 016W 016X 016Y 016Z 017A 017B 017C 017D 017E 017F 017G 017H 017I 017J 017K 017L 017M 017N 017O 017P 017Q 017R 017S 017T 017U 017V 017W 017X 017Y 017Z 018A 018B 018C 018D 018E 018F 018G 018H 018I 018J 018K 018L 018M 018N 018O 018P 018Q 018R 018S 018T 018U 018V 018W 018X 018Y 018Z 019A 019B 019C 019D 019E 019F 019G 019H 019I 019J 019K 019L 019M 019N 019O 019P 019Q 019R 019S 019T 019U 019V 019W 019X 019Y 019Z 020A 020B 020C 020D 020E 020F 020G 020H 020I 020J 020K 020L 020M 020N 020O 020P 020Q 020R 020S 020T 020U 020V 020W 020X 020Y 020Z 021A 021B 021C 021D 021E 021F 021G 021H 021I 021J 021K 021L 021M 021N 021O 021P 021Q 021R 021S 021T 021U 021V 021W 021X 021Y 021Z 022A 022B 022C 022D 022E 022F 022G 022H 022I 022J 022K 022L 022M 022N 022O 022P 022Q 022R 022S 022T 022U 022V 022W 022X 022Y 022Z 023A 023B 023C 023D 023E 023F 023G 023H 023I 023J 023K 023L 023M 023N 023O 023P 023Q 023R 023S 023T 023U 023V 023W 023X 023Y 023Z 024A 024B 024C 024D 024E 024F 024G 024H 024I 024J 024K 024L 024M 024N 024O 024P 024Q 024R 024S 024T 024U 024V 024W 024X 024Y 024Z 025A 025B 025C 025D 025E 025F 025G 025H 025I 025J 025K 025L 025M 025N 025O 025P 025Q 025R 025S 025T 025U 025V 025W 025X 025Y 025Z 026A 026B 026C 026D 026E 026F 026G 026H 026I 026J 026K 026L 026M 026N 026O 026P 026Q 026R 026S 026T 026U 026V 026W 026X 026Y 026Z 027A 027B 027C 027D 027E 027F 027G 027H 027I 027J 027K 027L 027M 027N 027O 027P 027Q 027R 027S 027T 027U 027V 027W 027X 027Y 027Z 028A 028B 028C 028D 028E 028F 028G 028H 028I 028J 028K 028L 028M 028N 028O 028P 028Q 028R 028S 028T 028U 028V 028W 028X 028Y 028Z 029A 029B 029C 029D 029E 029F 029G 029H 029I 029J 029K 029L 029M 029N 029O 029P 029Q 029R 029S 029T 029U 029V 029W 029X 029Y 029Z 030A 030B 030C 030D 030E 030F 030G 030H 030I 030J 030K 030L 030M 030N 030O 030P 030Q 030R 030S 030T 030U 030V 030W 030X 030Y 030Z 031A 031B 031C 031D 031E 031F 031G 031H 031I 031J 031K 031L 031M 031N 031O 031P 031Q 031R 031S 031T 031U 031V 031W 031X 031Y 031Z 032A 032B 032C 032D 032E 032F 032G 032H 032I 032J 032K 032L 032M 032N 032O 032P 032Q 032R 032S 032T 032U 032V 032W 032X 032Y 032Z 033A 033B 033C 033D 033E 033F 033G 033H 033I 033J 033K 033L 033M 033N 033O 033P 033Q 033R 033S 033T 033U 033V 033W 033X 033Y 033Z 034A 034B 034C 034D 034E 034F 034G 034H 034I 034J 034K 034L 034M 034N 034O 034P 034Q 034R 034S 034T 034U 034V 034W 034X 034Y 034Z 035A 035B 035C 035D 035E 035F 035G 035H 035I 035J 035K 035L 035M 035N 035O 035P 035Q 035R 035S 035T 035U 035V 035W 035X 035Y 035Z 036A 036B 036C 036D 036E 036F 036G 036H 036I 036J 036K 036L 036M 036N 036O 036P 036Q 036R 036S 036T 036U 036V 036W 036X 036Y 036Z 037A 037B 037C 037D 037E 037F 037G 037H 037I 037J 037K 037L 037M 037N 037O 037P 037Q 037R 037S 037T 037U 037V 037W 037X 037Y 037Z 038A 038B 038C 038D 038E 038F 038G 038H 038I 038J 038K 038L 038M 038N 038O 038P 038Q 038R 038S 038T 038U 038V 038W 038X 038Y 038Z 039A 039B 039C 039D 039E 039F 039G 039H 039I 039J 039K 039L 039M 039N 039O 039P 039Q 039R 039S 039T 039U 039V 039W 039X 039Y 039Z 040A 040B 040C 040D 040E 040F 040G 040H 040I 040J 040K 040L 040M 040N 040O 040P 040Q 040R 040S 040T 040U 040V 040W 040X 040Y 040Z 041A 041B 041C 041D 041E 041F 041G 041H 041I 041J 041K 041L 041M 041N 041O 041P 041Q 041R 041S 041T 041U 041V 041W 041X 041Y 041Z 042A 042B 042C 042D 042E 042F 042G 042H 042I 042J 042K 042L 042M 042N 042O 042P 042Q 042R 042S 042T 042U 042V 042W 042X 042Y 042Z 043A 043B 043C 043D 043E 043F 043G 043H 043I 043J 043K 043L 043M 043N 043O 043P 043Q 043R 043S 043T 043U 043V 043W 043X 043Y 043Z 044A 044B 044C 044D 044E 044F 044G 044H 044I 044J 044K 044L 044M 044N 044O 044P 044Q 044R 044S 044T 044U 044V 044W 044X 044Y 044Z 045A 045B 045C 045D 045E 045F 045G 045H 045I 045J 045K 045L 045M 045N 045O 045P 045Q 045R 045S 045T 045U 045V 045W 045X 045Y 045Z 046A 046B 046C 046D 046E 046F 046G 046H 046I 046J 046K 046L 046M 046N 046O 046P 046Q 046R 046S 046T 046U 046V 046W 046X 046Y 046Z 047A 047B 047C 047D 047E 047F 047G 047H 047I 047J 047K 047L 047M 047N 047O 047P 047Q 047R 047S 047T 047U 047V 047W 047X 047Y 047Z 048A 048B 048C 048D 048E 048F 048G 048H 048I 048J 048K 048L 048M 048N 048O 048P 048Q 048R 048S 048T 048U 048V 048W 048X 048Y 048Z 049A 049B 049C 049D 049E 049F 049G 049H 049I 049J 049K 049L 049M 049N 049O 049P 049Q 049R 049S 049T 049U 049V 049W 049X 049Y 049Z 050A 050B 050C 050D 050E 050F 050G 050H 050I 050J 050K 050L 050M 050N 050O 050P 050Q 050R 050S 050T 050U 050V 050W 050X 050Y 050Z

method AD auger drilling* AS auger screwing* HA hand auger W washbore HA hand auger	support M mud C casing N nil penetration no resistance - rapping to refusal water 10-12 water level on base shown water in/w water callow	samples & field tests S bulk disturbed sample D disturbed sample E environmental sample SS split spoon sample U# undisturbed sample 75mm diameter HP hand penetrometer (kPa) N standard penetration test (SPT) N* SPT - sample recovered Nc SPT with acid cone VS vane shear, peak/consolid (kPa) R refusal HB hammer bouncing	classification symbol & soil description based on Unified Classification System moisture D dry M moist W wet S saturated Wp plastic limit Wl liquid limit	consistency / relative density VS very soft S soft F firm Sc stiff VSI very stiff H hard Fb friable VL very loose L loose Md medium dense D dense VD very dense
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bit shown by suffix
 e.g. AD/T
 B dark bit
 JC bit
 V nit

Engineering Log - Hand Auger

client: **THE LAKES LIMITED (2012)**

principal:

project: **THE LAKES STAGE 3 CONSTRUCTION**

location: **CENTRE OF LOT 29**

Borehole ID: **HA3A-029**

sheet: 1 of 1

project no.: **GENZTAUC13086AP**

date started: **17 Dec 2014**

date completed: **17 Dec 2014**

logged by:

checked by: **RBT**

position: E: 365385; N: 788344 (GPG2000) surface elevation: Not Specified angle from horizontal: 90° DCP lid:
 drill model: Hand Auger hole diameter: 50 mm

drilling information				material substance										
method & support	penetration	water	samples & field tests	depth (m)	graphic log	class / color symbol	material description	moisture condition	consistency / relative density	vane shear (kPa)	DCP (blows / 100 mm)	structure and additional observations		
AD	M	No encountered		0.0			Sandy SILT; non plastic, orange brown mottled brown, dark brown and pale grey, sand is fine to medium grained, dry to moist, hard.	U to M	H		100000	FILL		
				0.5			INTERBEDDED SILTS AND SANDS: Silts are low plasticity and pale brown. Sands are fine to medium grained and grey brown. Bedding is 100mm to 200mm. dry to moist, very stiff.					VSt	VS 200 kPa	ROTOEHU ASH
				1.0			Clayey SILT; medium plasticity, dark brown, dry to moist, hard.					H	VS 155/ 15 kPa	HAMILTON ASH
				1.5								VS 200 kPa		
				2.0			Hand Auger HA3A-029 terminated at 2.0 m Target depth						VS 200 kPa	

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method AD auger drilling* AS auger screwing* HA hand auger W washroom HA hand auger*	support M mud N nil C casing penetration water	samples & field tests B bulk disturbed sample D disturbed sample E environmental sample SR split spoon sample UH undisturbed sample UP hand penetrometer (kPa) N standard penetration test (SPT) N* SPT - sample recovered NC SPT with solid cone VS vane shear, peak/undrained (kPa) R refusal HS hammer sounding	classification symbol & soil description Based on Unified Classification System moisture D dry M moist W wet R saturated Wp plastic limit Wl liquid limit	consistency / relative density VS very soft S soft F firm St stiff VSt very stiff H hard Hh friable VV very loose L loose MD medium dense D dense VD very dense
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* bit shown by suffix
 e.g. ADT
 S - track bit
 T - C bit
 V - V bit

Engineering Log - Hand Auger

client: **THE LAKES LIMITED (2012)**
 principal:
 project: **THE LAKES STAGE 3 CONSTRUCTION**
 location: **CENTRE OF LOT 30**

Borehole ID: **HA3A-030**
 sheet: 1 of 1
 project no.: **GENZTAUC13086AP**
 date started: **22 Jan 2015**
 date completed: **22 Jan 2015**
 logged by: **PM**
 checked by: **RBT**

position: E: 365300; N: 709930 (BOP(2000)) surface elevation: Not Specified angle from horizontal: 90° DCI* Id.:
 drill model: Hand Auger hole diameter: 50 mm

drilling information				material substance									
method & support	penetration	water	samples & field tests	RL (m)	depth (m)	graphic log	classification symbol	material description	moisture condition	consistency / relative density	value shear stress (kPa)	DCP (blows/100 mm)	structure and additional observations
AD	N	-	-	-	0.0		D	Clayey SILT: low plasticity, orange-brown, dry to moist.	D	-	-	-	FILL
					0.4 m: with trace of fine grained sand			VS 137/ 24 kPa					
				0.5									VS 176/ 27 kPa
				1.0									VS 180/ 24 kPa
				1.5			M	ML Clayey SILT: low plasticity, orange-brown, moist, hard.	M	H			VS 215 kPa
				2.0				1.5 m: becoming brown					VS 215 kPa
				2.0				Hand Auger HA3A-030 terminated at 2.0 m Target depth					VS 215 kPa

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method AD auger drilling* AS auger screwing* HA hand auger W washbore HA hand auger	support M mud C casing N nil NI penetration 	samples & field tests S bulk disturbed sample D disturbed sample S environmental sample SS split spoon sample U ₁₀₀ undisturbed sample 100mm diameter HP hand penetrometer (kPa) N standard penetration test (SPT) N ₆₀ EPT - sample recovered N ₁₀₀ EPT with split cone VS vane shear, penetrometer (kPa) R refusal HB hammer blow/du	classification symbol & soil description based on Unified Classification System moisture D dry M moist W wet S saturated W _p plastic limit W _L liquid limit	consistency / relative density VS very soft S soft F firm St stiff VSt very stiff H hard Fb friable VL very loose L loose MD medium dense D dense VC very dense
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* as shown by suffix:
 A(V) Al(V)
 G blank fill
 T TC fill
 V V bit

Engineering Log - Hand Auger

client: **THE LAKES LIMITED (2012)**

principal:

project: **THE LAKES STAGE 3 CONSTRUCTION**

location: **CENTRE OF LOT 31**

Borehole ID: **HA3A-031**

sheet: 1 of 1

project no.: **GENZTAUC13086AP**

date started: **21 Nov 2014**

date completed: **21 Nov 2014**

logged by: **PM**

checked by: **RBT**

position: E: 368361; N: 799856 (BOPC2000) surface elevation: Not Specified angle from horizontal: 90° DCP id.:
 drill method: Hand Auger hole diameter: 50 mm

drilling information				material substance								
method & support	penetration	samples & field tests	RL (m)	depth (m)	graphic log	classification symbol	material description	moisture content	consistency / relative density	void shear stress (kPa)	DCP (blows/100 mm)	structure and additional observations
method & support: AD auger drilling* AS auger sampling* HA hand auger W washbore HA hand auger	penetration: no resistance ranging or refusal 10-20cm = 2 water level on date shown water inflow water outflow	samples & field tests: D bulk disturbed sample D' disturbed sample E environmental sample ES split spoon sample U _{und} undisturbed sample #mm diameter HP hard penetrometer (kPa) N standard penetration test (SPT) N* SPT - sample recovered Nc SPT with solid cone VS vane shear, peak/remoulded (kPa) R refusal HB hammer bounding	RL (m): 0.0 0.5 1.0 1.5 2.0	depth (m): 0.0 0.3 0.6 1.0 1.3 1.5 2.0	graphic log: [Patterned boxes representing soil layers]	classification symbol: D, H, M, H, VS	ORGANIC SILT: non plastic, dark brown, dry, hard. 0.3 m: becoming pale brown.	moisture content: D, H, M, H	consistency / relative density: H, H, H, H, H	void shear stress (kPa): VS 200 kPa, VS UTP, VS 200 kPa, VS 200 kPa, VS 200 kPa	DCP (blows/100 mm): [Vertical scale with markers]	TOPSOIL FILL
							Clayey SILT: low to medium plasticity, pale brown mottled dark brown, trace fine grained sand, dry, hard. 0.6 m: with some fine grained sand.					FILL
							SAND: fine to medium grained, poorly graded, pale grey brown, minor sub-angular gravels, dry. 0.9 m: clay increasing.					VS UTP
							Silty CLAY: medium to high plasticity, dark brown mottled pale brown, moist, hard. SILT: non plastic, dark brown mottled pale brown, moist, hard. 1.3 m: becoming brown.					ROTQEHU ASH
							Clayey SILT: non plastic to low plasticity, brown and pale brown, moist, hard.					HAMILTON ASH
Hand Auger HA3A-031 terminated at 2.0 m target depth.												

method AD auger drilling* AS auger sampling* HA hand auger W washbore HA hand auger	support M mud C casing N nil	samples & field tests D bulk disturbed sample D' disturbed sample E environmental sample ES split spoon sample U _{und} undisturbed sample #mm diameter HP hard penetrometer (kPa) N standard penetration test (SPT) N* SPT - sample recovered Nc SPT with solid cone VS vane shear, peak/remoulded (kPa) R refusal HB hammer bounding	classification symbol & soil description based on Unified Classification System moisture D dry M moist W wet S saturated Wp plastic limit Wl liquid limit	consistency / relative density VS very soft S soft F firm St stiff VS* very stiff H hard Fc friable VL very loose L loose MD medium dense D dense VD very dense
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Engineering Log - Hand Auger

client: **THE LAKES LIMITED (2012)**
 principal:
 project: **THE LAKES STAGE 3 CONSTRUCTION**
 location: **CENTRE OF LOT 32**

Borehole ID: **HA3A-032**
 sheet: 1 of 1
 project no.: **GENZTAUC13086AP**
 date started: **21 Nov 2014**
 date completed: **21 Nov 2014**
 logged by: **SLC**
 checked by: **RBT**

position: E: 368383; N: 799974 (BOPC2000) surface elevation: Not Specified angle from horizontal: 90° DCP ID: Gok
 drill model: Hand Auger hole diameter: 50 mm

drilling information			material substance										
method & support	penetration	water	samples & field tests	PL (%)	liquid limit (m)	grain to log	classification symbol	material description	moisture condition	consistency / relative density	vane shear strength (kPa)	DCP (blows/100 mm)	structure and additional observations
HA Not Encountered 2.0		10°Cs-12 water level on date shown water in/flow water outflow	VS 200 kPa VS 200 kPa VS 200 kPa VS 200 kPa VS 200 kPa	D D to M M D to M	H H M MD to D	0.5 1.0 1.5 2.0		ORGANIC SILT: non plastic, black mottled orange brown, dry, hard.	D	H	VS 200 kPa	TOPSOIL FILL VS 200 kPa	
								SILT: low plasticity, brown, dry to moist, hard. 0.5 m: some fine to medium grained sand.	D to M	H	VS 200 kPa	YOUNGER ASHES VS 200 kPa	
								Sandy SILT: low plasticity, orange brown, sand is fine to medium grained, moist, hard.	M		VS 200 kPa		
								SILT: low plasticity, brown, trace clay, moist hard.			VS 200 kPa		
								INTERBEDDED SILTY SAND AND SAND: Sands are fine to medium grained and grey. Silty sands are fine to medium grained and pale brown, dry to moist, medium dense to dense.	MD to D		VS 200 kPa	ROTOEHU ASH VS 200 kPa	
								SAND: fine to medium grained, poorly graded, grey, dry to moist, medium dense to dense.	D to M				
Hand Auger HA3A-032 terminated at 2.0 m Target depth													

method AD auger drilling* AS auger casing* HA hand auger W washbore HA hand auger * as shown by suffix e.g. AD/T B blank bit J IC bit V Vair	support M mud C casing N nil I casing penetration no resistance no/very little resist water 10°Cs-12 water level on date shown water in/flow water outflow	samples & field tests B bulk disturbed sample D disturbed sample E undisturbed sample SR split spoon sample (H) undisturbed sample #10mm diameter JIP liquid penetrometer (kPa) N standard penetration test (SPT) N* SPT - sample recovered No SPT with solid cone VS vane shear, peak/average (kPa) K refusal HH number toasting	classification symbol & soil description based on Unified Classification System moisture D dry M moist W wet S saturated Wp plastic limit Wl liquid limit	consistency / relative density VS very soft S soft F firm SI stiff VSL very stiff H hard Fb friable VL very loose L loose MD medium dense D dense VD very dense
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DCP ID: GOK LIBRARY ESTABLISHED BY COFFEEY CONSULTANTS LTD. (MUD) AUGER LOG FOR BOPC2000. E: 368383; N: 799974. DATE: 21/11/2014. BY: SLC

Engineering Log - Hand Auger

client: **THE LAKES LIMITED (2012)**
 principal:
 project: **THE LAKES STAGE 3 CONSTRUCTION**
 location: **CENTRE OF LOT 33**

Borehole ID: **HA3A-033**
 sheet: 1 of 1
 project no: **GENZTAUC13086AP**
 date started: **04 Nov 2014**
 date completed: **04 Nov 2014**
 logged by: **RB**
 checked by: **RBT**

position: E: 368359; N: 700988 (BOPC2000) surface elevation: Not Specified angle from horizontal: 90° DCP is: Gold
 drill model: Hand Auger hole diameter: 50 mm

drilling information				material substance									
matrix & support	penetration	water	samples & field tests	RL (m)	depth (m)	granule text	classification symbol	material description	moisture condition	consistency / relative density	vane shear (kPa)	DCP (blows/100 mm)	structure and additional observations
								SOIL TYPE: plasticity or particle characteristics, colour, secondary and minor components					
					0.0			ORGANIC SILT: non plastic, dark brown, moist.	M				TOPSOIL FILL
					0.5			SILT: non plastic, pale brown, moist, hard.	H		VS 200 kPa		YOUNGER ASHES
					1.0			SAND: fine to coarse grained, pale orange, moist, loose to medium dense.	I to MD				ROTGEHU ASH
					1.5			100mm lens of fill, pale grey. becoming pale grey, fine to medium grained					HAMILTON ASH
					2.0			Clayey SILT: non plastic to low plasticity, dark brown, moist, hard.	H		VS 200 kPa		
					2.0			Hand Auger HA3A-033 terminated at 2.0 m Target depth.			VS 200 kPa		

C:\p\0.8_26_LIK\REP\TEST\0.8_30\AP\Log_DCP_303\HOLE_03A\CORP_1 + DCP_TAU13086AP_CENTRE_OF_LOT_33.DWG 13/11/2014 17:22

method AD nuger drilling* AR nuger augerwip* HA hand auger* W washbore HA hand auger	support M mud N nil C casing penetration 	samples & field tests B 10M disturbed sample D disturbed sample E environmental sample SS split spoon sample I/## undisturbed sample 100mm diameter I/P load penetrometer (kPa) N standard penetration test (SPT) N' SPT - sample recovered Nc SPT with solid cone VS vane shear, peak/residual (kPa) R refusal HH hammer sounding	classification symbol & soil description based on Unified Classification System moisture D dry M moist W wet S saturated Wp plastic limit WL liquid limit	consistency / relative density VS very soft S soft F firm St stiff VS1 very stiff H hard Eb brittle VL very loose L loose MD medium dense D dense VD very dense
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* ht shown by suffix
 n.g AD/T
 B blank bit
 T TC bit
 V V bit

Engineering Log - Hand Auger

client: **THE LAKES LIMITED (2012)**

principal:

project: **THE LAKES STAGE 3 CONSTRUCTION**

location: **CENTRE OF LOT 34**

borehole ID: **HA3A-034**

sheet: 1 of 1

project no: **GENZTAUC13086AP**

date started: **04 Nov 2014**

date completed: **04 Nov 2014**

logged by: **RB**

checked by: **RBT**

position: E: 388358; N: 800008 (BOPC2001) surface elevation: Not Specified angle from horizontal: 90° DCP U: Gold
 Drill model: Hand Auger hole diameter: 50 mm

drilling information				material substance									
method & support	penetration	water	sample & hole tests	RL (m)	depth (m)	graphic log symbol	classif. color symbol	material description	moisture condition	consistency / relative density	veins / shear or voids (kPa)	DCP (kN/m ² / 100 mm)	structure and additional observations
AD auger drilling* AS auger screwing* HA hand auger W washcore FA hand auger	M fluid C casing N air no resistance ranging to refusal	10-Oct-12 water level as date shown water inflow water outflow		0.0 0.5 1.0 1.5 2.0	0.0 - 0.2	[Cross-hatched]		ORGANIC SILT: non plastic, dark brown, moist.	M				TOPSOIL FILL
					0.2 - 0.5	[Vertical lines]		SILT: low plasticity, pale brown, moist, hard.	H			VS 200 kPa YOUNGER ASHES	
					0.5 - 1.0	[Dotted]		SAND: fine to coarse grained, pale orange, moist, loose to dense.	D				
					1.0 - 1.5	[Horizontal lines]		BANDY SILT: non plastic, pale grey, sand is fine grained, moist to wet, very stiff.	M to W	VSt		ROTOHEHU ASH	
					1.5 - 1.8	[Dotted]		SAND: fine to medium grained, pale grey, moist to wet, medium dense to dense.	MD to D				
				1.8 - 2.0	[Diagonal lines]		Clayey SILT: non plastic to low plasticity, dark brown, moist, hard.	M	H			VS 200 kPa HAMILTON ASH	
				2.0			Hand Auger HA3A-034 terminated at 2.0 m Target depth					VS 200 kPa	

C:\P\3_3_06_D044-1157\5_1\WYAP_L04_COE_BORHOLE_NON-COURED - DCP - HAUC13086AP_DCP_BORE-034ES.DRI - C:\Program Files\Autodesk\AutoCAD 2011\Help\...

method AD auger drilling* AS auger screwing* HA hand auger W washcore FA hand auger	support M fluid C casing N air penetration no resistance ranging to refusal water 10-Oct-12 water level as date shown water inflow water outflow	samples & field tests D bulk disturbed sample D disturbed sample E environmental sample SS split spoon sample J# undisturbed sample (100mm diameter) HP hand penetrometer (kPa) N standard penetration test (SPT) N ^s SPT - sample recovered No SPT with void core VS vane shear, peak/concuded (kPa) R refusal FR failure/bounding	classification symbol & soil description based on Unified Classification System moisture D dry M moist W wet S saturated Wp plastic limit Wl liquid limit	consistency / relative density VS very soft S soft F firm St stiff VS _l very stiff H hard Ht fracture VL very loose L loose MD medium dense D dense VD very dense
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* as shown by suffix
 ADT blank bit
 S TC bit
 T V bit

Engineering Log - Hand Auger

client: THE LAKES LIMITED (2012)

principal:

project: THE LAKES STAGE 3 CONSTRUCTION

location: CENTRE OF LOT 35

Borehole ID: HA3A-035

sheet: 1 of 1

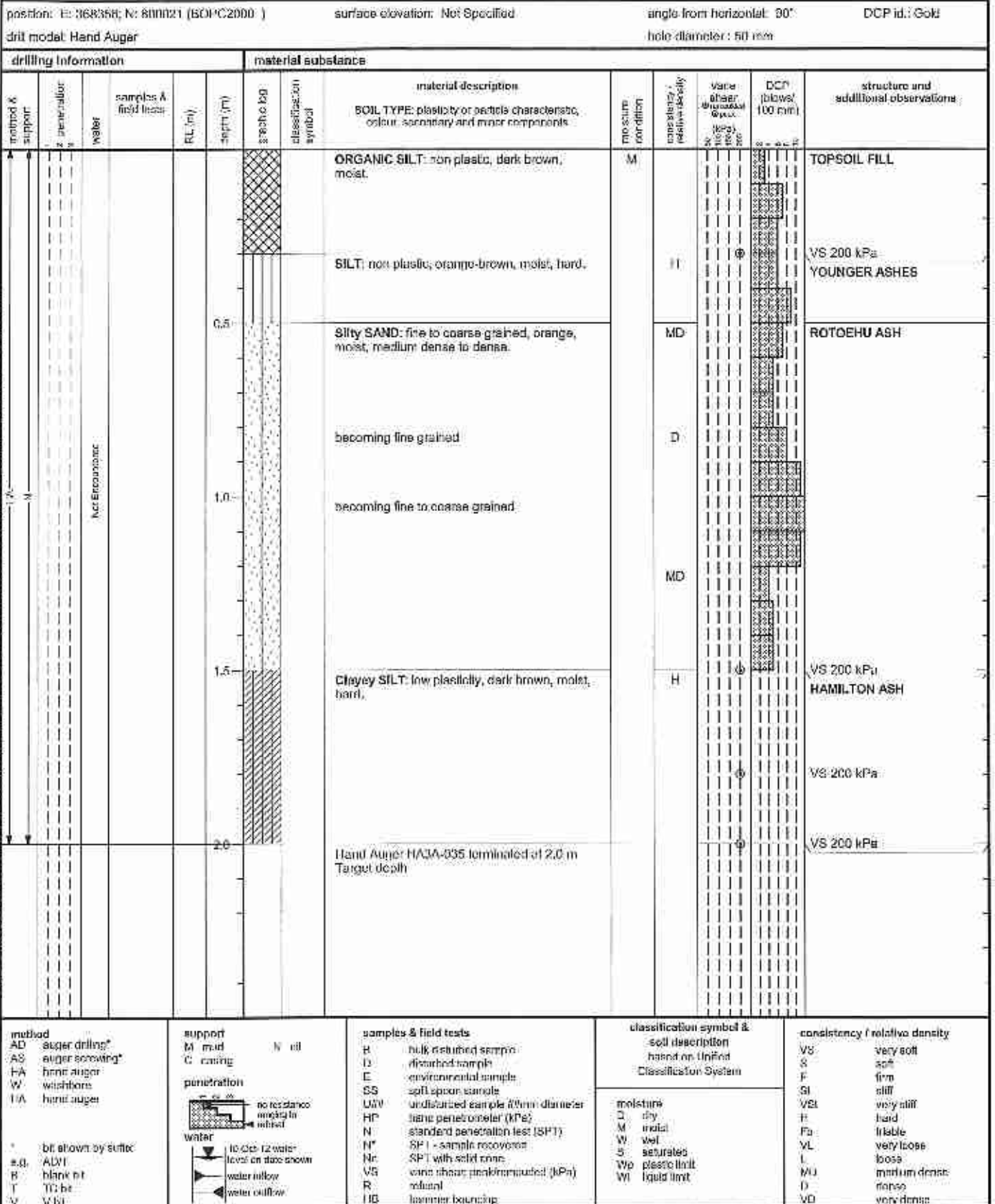
project no.: GENZTAUC13086AP

date started: 04 Nov 2014

date completed: 04 Nov 2014

logged by: RB

checked by: RBT



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Engineering Log - Hand Auger

client: **THE LAKES LIMITED (2012)**

principal:

project: **THE LAKES STAGE 3 CONSTRUCTION**

location: **CENTRE OF LOT 36**

Borehole ID: **HA3A-036**

sheet: 1 of 1

project no: **GENZTAUC13086AP**

date started: **06 Mar 2015**

date completed: **06 Mar 2015**

logged by: **RB**

checked by: **RBT**

position: E: 365360; N: 800030 (BOPC2000) surface elevation: Not Specified angle from horizontal: 90° DCP id.: Gokt
 drill model: Hand Auger hole diameter:

drilling information				material substance									
minors & support	penetration	water	samples & field tests	RL (m)	depth (m)	fresh clog	classification symbol	material description	moisture condition	consistency / relative density	vane shear / penetration (kPa)	DCP (blows/100 mm)	structure and additional observations
					0.0			ORGANIC SILT: non plastic, dark brown, moist.	M				TOPSOIL FILL
					0.5			Sandy SILT: non plastic, orange, sand is fine to medium grained, moist, hard.		H			YOUNGER ASHES VS 200 kPa
					1.0			SAND: fine to coarse grained, pale orange, moist, medium dense.		MD			ROTOHEHU ASH
					1.5								
					2.0			Silty CLAY: low plasticity, dark brown, moist, hard.		H			VS 200 kPa HAMILTON ASH
					2.0			Hand Auger HA3A-036 terminated at 2.0 m Target depth					VS 200 kPa

CDF: J 5 08 _BRAWY-TESTABLE KWAP Log_COF BOREHOLE FINON (DRIF) - DCP - AUC: 3884165: 1:UCKE:ICLLB:JRU <=Drain&P&S= 3104001E - 1.02

method AD auger drilling* AS auger screwing* HA hand auger W washcore HA hand auger	support M null C casing N nil penetration 	samples & field tests S bulk disturbed sample D disturbed sample E environmental sample SS split spoon sample UAW undisturbed sample #mm diameter HP hand penetrometer (kPa) N standard penetration test (SPT) N* SPT - sample recovered No SPT with solid core VS vane shear; peak/averaged (kPa) R rebound Ht hammer sounding	classification symbol & soil description based on Unified Classification System moisture D dry M moist W wet S saturated Wp plastic limit Wl liquid limit	consistency / relative density VG very soft S soft F firm St stiff VSg very stiff H hard Fb fracture VL very loose L loose Md medium dense D dense Vd very dense
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* Not shown by suffix
 e.g. AD/T
 B blank bit
 T TC bit
 V bit

Engineering Log - Hand Auger

client: **THE LAKES LIMITED (2012)**
 principal:
 project: **THE LAKES STAGE 3 CONSTRUCTION**
 location: **CENTRE OF LOT 37**

Borehole ID: **HA3A-037**
 sheet: 1 of 1
 project no.: **GENZTAUC13086AP**
 date started: **06 Mar 2015**
 data completed: **06 Mar 2015**
 logged by: **RB**
 checked by: **RBT**

position: E: 368307; N: 799976 (GPOC2000) surface elevation: Not Specified angle from horizontal: 90° DCP id.: Gold
 drill model: Hand Auger hole diameter:

drilling information				material substance						
method & support	penetration	samples & field tests	depth (m)	grain size classification symbol	material description	moisture content	consistency / relative density	DCP (blows/100 mm)	structure and additional observations	
A/S auger drilling AS auger screening HA hand auger W wash bore HA hand auger	No penetration No water	No samples & field tests	0.0 - 0.5	[Cross-hatched symbol]	ORGANIC SILT: non plastic, dark brown, moist, loose to medium dense.	M			FILL	
			0.5 - 1.5	[Dotted symbol]	SAND: fine to coarse grained, pale orange-grey, interbedded with silt lenses approx. every 200mm (approx. 50mm thick), trace black flecks, moist, loose to medium dense.		L to MD		VOLCANIC ASHES	
			1.5 - 2.0	[Horizontal lines symbol]	SILT: non plastic, dark brown, moist, hard.		H		VS 200 kPa	
					becoming orange-brown				VS 200 kPa	
					Hand Auger HA3A-037 terminated at 2.0 m Target depth				VS 200 kPa	

C:\S\0_0_26_LIBRARY\TEST_0_3_m\CAP Log COE BORSHOLE\NOV\CORDED + DRP - ZUCI\GENZTAUC13086AP\GENZTAUC13086AP - 03A\03701 - 152

method A/S auger drilling AS auger screening HA hand auger W wash bore HA hand auger	support M mud C casing N nil	samples & field tests B bulk disturbed sample I disturbed sample E environmental sample SS soft spoon sample U/W undisturbed sample #mm diameter HP hand penetrometer (kPa) N standard penetration test (SPT) S* SPT - sample measured Nc SPT with hold cone VS vane shear; peak/rounded (kPa) R refusal TB hammer sounding	classification symbol & soil description based on Unified Classification System	consistency / relative density VS very soft S soft F firm St stiff VS+ very stiff H hard Fb friable VL very loose L loose MD medium dense D dense V+ very dense
* bit shown by outline c.g. ADT B blank bit T TC bit V V bit	penetration 	moisture D dry M moist W wet S saturated Wp plastic limit WL liquid limit		

Engineering Log - Hand Auger

client: **THE LAKES LIMITED (2012)**
 principal:
 project: **THE LAKES STAGE 3 CONSTRUCTION**
 location: **CENTRE OF LOT 38**

borehole ID: **HA3A-038**
 sheet: 1 of 1
 project no.: **GENZTAUC13086AP**
 date started: **04 Nov 2014**
 date completed: **04 Nov 2014**
 logged by: **RB**
 checked by: **RBT**

position: E: 368393; N: 799095 (BOPC2000) surface elevation: Not Specified angle from horizontal: 90° DCP® id.:
 drill model: Hand Auger hole diameter: 50 mm

drilling information			material substance								
method & support	penetration	water	depth (m)	graphic log	classification symbol	material description	moisture condition	consistency / relative density	veve shear (kPa)	DCP (Blows/100 mm)	structure and additional observations
HA			0.0			ORGANIC SILT: non plastic, dark brown, moist.	M				TOPSOIL FILL
			0.5			SILT: non plastic, pale brown-orange, moist, stiff to hard.	H				VS 200 kPa YOUNGER ASHES
HA			1.0					VS 139 / 20 kPa			
			1.5			Sandy SILT: non plastic, pale brown, sand is fine to medium grained, moist to wet, stiff.	M to W	St		VS 94 / 13 kPa	VS 31 / 32 kPa ROTOHEHU ASH
HA			2.0			SAND: fine to medium grained, pale gray, trace sil, moist.	M				VS 80 / 12 kPa
			2.1			Hand Auger HA3A-038 terminated at 2.0 m Target depth					

method AD auger drilling* AS adobe screwing* HA hand auger W wellbore HA hand auger - Sil shown by suffix S.G. ADT H blank bit T 1C bit V Vhr	support M mud C casing penetration water 10-Del-12 water level on date shown water inflow water outflow	samples & field tests D bulk disturbed sample D disturbed sample E environmental sample SS split spoon sample U# undisturbed sample 50mm diameter HP hand penetrometer (kPa) N standard penetration test (SPT) N+ SPT - sample recovered N+ SPT with solid cone VS vane shear, post-remoulded (kPa) R refusal HB hammer sounding	classification symbol & soil description based on Unified Classification System moisture D dry M moist W wet S saturated Wp plastic limit Wl liquid limit	consistency / relative density VS very soft S soft F firm St stiff VSr very stiff L hard FL friable VL very loose L loose MD medium dense D dense VD very dense
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CDF 3 CG LIBRARY TEST SITE 1920

Engineering Log - Hand Auger

client: **THE LAKES LIMITED (2012)**
 principal:
 project: **THE LAKES STAGE 3 CONSTRUCTION**
 location: **CENTRE OF LOT 39**

Borehole ID: **HA3A-039**
 sheet: 1 of 1
 project no.: **GENZTAUC13086AP**
 data started: **04 Nov 2014**
 data completed: **04 Nov 2014**
 logged by: **RB**
 checked by: **RBT**

position: E: 398300; N: 800015 (DOPC2000) surface elevation: Not Specified angle from horizontal: 90° DCP id.: Gold
 drill model: Hand Auger hole diameter: 50 mm

drilling information				material substance											
method & support	penetration	water	samples & field tests	RL (m)	depth (m)	graphic log	classification symbol	material description	moisture content (%)	consistency / relative density	void ratio (e)	DCP (blows / 100 mm)	structure and additional observations		
AD	HA	W	N	0.5	0.5		M	ORGANIC SILT: non plastic, dark brown, moist.	M	VS	1.0	10	TOPSOIL FILL		
								SILT: non plastic, orange-brown, trace fine to medium sand, moist, very stiff to hard.					H	VS 200 kPa	YOUNGER ASHES
								Sandy SILT: non plastic, orange, sand is fine to coarse grained, moist, very stiff.					VS	VS 138 / 26 kPa	
								SAND: fine to coarse grained, pale orange, trace silt, moist, loose to dense, becoming fine grained, pale brown					VS	VS 168 / 20 kPa	
				1.5	1.5		MD to D						ROTOEHU ASH		
				2.0	2.0		L to MD	Hand Auger HA3A-039 terminated at 2.0 m Target depth							

2014_06_03_LIBRARY_TEST_03_03_KVWP_Log_COP-BOSS-10-15-16-17-18-19-20-21-22-23-24-25-26-27-28-29-30-31-32-33-34-35-36-37-38-39-40-41-42-43-44-45-46-47-48-49-50-51-52

method AD auger drilling* AS auger screwing* HA hand auger W washbore HA hand ream	support M mud C casing N nil penetration water 13-Oct-12 water level on date shown water inflow water outflow	samples & field tests B bulk disturbance sample D disturbed sample C environmental sample SS soft spoon sample U## undisturbed sample ##mm diameter HF hand penetrometer (kPa) N standard penetration test (SPT) Nf SPT - sample recovered Nc SPT with solid cone VS vane shear; peak/retained (kPa) R refusal HB hammer sounding	classification symbol & soil description based on Unified Classification System moisture D dry M moist W wet S saturated Wp plastic limit WL liquid limit	consistency / relative density VS very soft S soft F firm St stiff VSt very stiff H hard Fb friable VL very loose L loose MD medium dense D dense VD very dense
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* bit shown by suffix
 e.g. AD/T
 S blank bit
 T TC bit
 V bit

Engineering Log - Hand Auger

client: **THE LAKES LIMITED (2012)**
 principal:
 project: **THE LAKES STAGE 3 CONSTRUCTION**
 location: **CENTRE OF LOT 40**

Borehole ID: **HA3A-040**
 sheet: 1 of 1
 project no: **GENZTAUC13086AP**
 date started: **04 Nov 2014**
 date completed: **04 Nov 2014**
 logged by: **RB**
 checked by: **RBT**

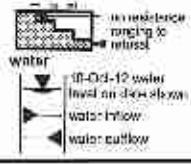
position: E: 308382; N: 800035 (NZPD2000) surface elevation: Not Specified angle from horizontal: 90° DCP id.: Gokt
 drill model: Hand Auger hole diameter: 50 mm

drilling information				material substance							
method & support	penetration	samples & field tests	depth (m)	material description	classification symbol	moisture condition	consistency / relative density	vane shear (kPa)	DCP (blows/100 mm)	structure and additional observations	
AD AS HA W HA	N C	No. structured	0.0 - 0.2	ORGANIC SILT: non plastic, dark brown, moist.	M					TOPSOIL FILL	
			0.2 - 0.5	SILT: non plastic, brown-orange, moist, very stiff.	VSL						YOUNGER ASHES VS 181/ 20 kPa
			0.5 - 1.0	Silty SAND: fine to coarse grained, pale orange, moist to wet, loose to medium dense.	I to MD						RŌTOHEHU ASH
			1.0 - 1.5	becoming fine grained with trace clay, low plasticity	M to W						
			1.5 - 2.0	BAND: fine to medium grained, pale grey, moist to wet, loose to medium dense.							
			2.0	Silty CLAY: low plasticity, dark brown, moist, hard.	M	H				VS 200 kPa HAMILTON ASH	
				Hand Auger HA3A-040 terminated at 2.0 m Target depth							

CDP-C 06 LIBRARY-TEST.DWG AUT. LVL. CDF BOREHOLE NO. CORSE + DCP TAUCHSCHAUT BOR BORD 10.15.14 (G) -> DrawingPlus - C:\MSO 5 (1) 2014

method AD: auger drilling* AS: auger screwing* HA: hand auger W: washbore HA: hand auger	support M: mud C: casing N: all C: casing	samples & field tests B: bulk (disturbed) sample D: disturbed sample E: environmental sample SS: split spoon sample LWA: undisturbed sample #100mm diameter HP: hand penetrometer (kPa) N: standard penetration test (SPT) N': SPT - sample test weight S: SPT with solid cone VS: vane shear, peak moment (kPa) R: refusal HB: hammer sounding	classification symbol & soil description based on Unified Classification System moisture D: dry M: moist W: wet S: saturated Wp: plastic limit Wl: liquid limit	consistency / relative density VS: very soft S: soft F: firm St: stiff VSI: very stiff H: hard Fk: fissile VL: very loose I: loose MD: medium dense D: dense VD: very dense
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* silt shown by suffix
 n.g. ADVT
 D: blank tilt
 T: TC bit
 V: (v)



Engineering Log - Hand Auger

client: **THE LAKES LIMITED (2012)**

principal:

project: **THE LAKES STAGE 3 CONSTRUCTION**

location: **CENTRE OF LOT 41**

Borehole ID: **HA3A-041**

sheet: 1 of 1

project no: **GENZTAUC13086AP**

date started: **04 Nov 2014**

date completed: **04 Nov 2014**

logged by: **RB**

checked by: **RBT**

position: E 368382; N 800049 (BOPC2000) surface elevation: Not Specified angle from horizontal: 90° DCP Is.: Gold
 drill model: Hand Auger hole diameter: 50 mm

drilling information				material substance									
method & support	penetration	samples & field tests	water	HL (m)	depth (m)	graphic log	classification symbol	material description	moisture condition	consistency / relative density	vane shear (kPa)	DCP (Blows/100 mm)	structure and additional observations
					0.0			ORGANIC SILT: non plastic, dark brown, moist.	M				TOPSOIL FILL
					0.5			SILT: non plastic, orange-brown, minor fine to medium sand, moist, stiff to hard.	H				YOUNGER ASHES VS 200 kPa
					1.0				VS1				VS 161/34 kPa
					1.5				St				VS 89/ 12 kPa
					2.0			SAND: fine to coarse grained, pale orange, minor silt, moist, loose to medium dense.	MD				ROTOEHU ASH
					2.0			silt content absent, becoming pale brown, sand is fine grained	I				
					2.0			Hand Auger HA3A-041 terminated at 2.0 m Target depth					

GDF 1.3 OF LIMBURY 1:50000 REV 05 2011 (C30) (C1) (C2) (C3) (C4) (C5) (C6) (C7) (C8) (C9) (C10) (C11) (C12) (C13) (C14) (C15) (C16) (C17) (C18) (C19) (C20) (C21) (C22) (C23) (C24) (C25) (C26) (C27) (C28) (C29) (C30) (C31) (C32) (C33) (C34) (C35) (C36) (C37) (C38) (C39) (C40) (C41) (C42) (C43) (C44) (C45) (C46) (C47) (C48) (C49) (C50) (C51) (C52) (C53) (C54) (C55) (C56) (C57) (C58) (C59) (C60) (C61) (C62) (C63) (C64) (C65) (C66) (C67) (C68) (C69) (C70) (C71) (C72) (C73) (C74) (C75) (C76) (C77) (C78) (C79) (C80) (C81) (C82) (C83) (C84) (C85) (C86) (C87) (C88) (C89) (C90) (C91) (C92) (C93) (C94) (C95) (C96) (C97) (C98) (C99) (C100) (C101) (C102) (C103) (C104) (C105) (C106) (C107) (C108) (C109) (C110) (C111) (C112) (C113) (C114) (C115) (C116) (C117) (C118) (C119) (C120) (C121) (C122) (C123) (C124) (C125) (C126) (C127) (C128) (C129) (C130) (C131) (C132) (C133) (C134) (C135) (C136) (C137) (C138) (C139) (C140) (C141) (C142) (C143) (C144) (C145) (C146) (C147) (C148) (C149) (C150) (C151) (C152) 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method AD auger drilling* AS auger screwing* HA hand auger W washbore HA hand auger	support M mud C casing N nil	samples & field tests B bulk disturbed sample D disturbed sample E environmental sample SS split seven sample (I) 1# undisturbed sample 47mm diameter (IP) liquid penetrometer (kPa) N standard penetration test (SPT) N' SPT - sample recovered Nc SPT with cone VS vane shear, peak/rotation (kPa) R refusal HB hammer bouncing	classification symbol & soil description based on Unified Classification System moisture O dry M moist W wet S saturated Wp plastic limit Wl liquid limit	consistency / relative density VS very soft S soft F firm St stiff VS: very stiff H hard Hb hard V: very loose L loose MD medium dense D dense VD very dense
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* bit shown by suffix
 e.g. ADT
 B bank hr
 I silt
 V fill

Engineering Log - Hand Auger

client: **THE LAKES LIMITED (2012)**

principal:

project: **THE LAKES STAGE 3 CONSTRUCTION**

location: **CENTRE OF LOT 42**

Borehole ID: **HA3A-042**

sheet: **1 of 1**

project no.: **GENZTAUC13086AP**

date started: **04 Nov 2014**

date completed: **04 Nov 2014**

logged by: **RB**

checked by: **RBT**

position: E: 368375; N: 800064 (GPOC2000) surface elevation: Not Specified angle from horizontal: 90° DCP is:
 drill model: Hand Auger hole diameter: 50 mm

drilling information				material substance							
method & support	penetration	samples & field tests	depth (m)	log graphic	classification symbol	material description	moisture condition	consistency / relative density	vane shear (kPa)	DCP (blows/100 mm)	structure and additional observations
AD	AS	HA	0.0	[Cross-hatched pattern]		ORGANIC SILT: non plastic, dark brown, moist.	M				TOPSOIL FILL
			0.5	[Dotted pattern]		SILT: non plastic, orange-brown, minor fine to medium sand, moist, very stiff to hard.	H				YOUNGER ASHES VS 200 kPa
			1.0	[Dotted pattern]		Sandy SILT: non plastic, orange, sand to fine to coarse grained, moist to wet.	M to W				VS 130/ 20 kPa
			1.2	[Dotted pattern]		Silty SAND: fine to coarse grained, orange, moist to wet.					VS 133/ 20 kPa
			1.5	[Dotted pattern]		SILT: non plastic, orange-brown, minor fine to medium sand, moist to wet, very stiff.	VSI				VS 110/ 10 kPa
			2.0	[Dotted pattern]		SAND: fine to coarse grained, pale orange-brown, moist to wet.					ROTOHEU ASH
			2.0			Hand Auger HA3A-042 terminated at 2.0 m Target depth					

C:\P\09-26 LIBRARY\TEST\BLE\WAP\104 DCF\BORHOLE\NOX\DOSED\DCP\LAUCHAUC13086AP\BORHOLE\HA3A-042\151231

method AD: auger drilling* AS: auger screwing* HA: hand auger* W: washbore HA: hand auger*	support M: mud C: casing N: nil penetration 	samples & field tests B: bulk disturbed sample D: disturbed sample E: environmental sample SS: split spoon sample UTM: undisturbed sample #mm diameter HP: hand penetrometer (kPa) N: standard penetration test (SPT) N*: SPT - sample recovered Nc: SPT with solid cone VS: vane shear, desk/retained (kPa) R: refusal HB: hammer blow/ing	classification symbol & soil description based on Unified Classification System moisture D: dry M: moist W: wet S: saturated Wp: plastic limit Wl: liquid limit	consistency / relative density VS: very soft S: soft F: firm St: stiff VSt: very stiff H: hard Hh: friable Vh: very loose L: loose MD: medium dense D: dense VD: very dense
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* Silt shown by suffix
 n.d. none
 D: blank silt
 T: TC bit
 V (S)

Engineering Log - Hand Auger

client: **THE LAKES LIMITED (2012)**
 principal:
 project: **THE LAKES STAGE 3 CONSTRUCTION**
 location: **CENTRE OF LOT 43**

Borehole ID: **HA3A-043**
 sheet: 1 of 1
 project no. **GENZTAUC13086AP**
 date started: **04 Nov 2014**
 date completed: **04 Nov 2014**
 logged by: **RB**
 checked by: **RBT**

position: E: 368372; N: 800060 (BDPC2000) surface elevation: Not Specified angle from horizontal: 90° DCP id.:
 drill model: Hand Auger hole diameter: 50 mm

drilling information				material substance								
method & support	penetration	water	samples & field tests	depth (m)	graphic log	classification symbol	material description SOIL TYPE: plasticity or particle characteristic, colour, secondary and minor components	pressure condition	consistency / relative density	vane shear strength (kPa)	CCP (kPa)	structure and additional observations
AD AS HA W HA	N	H2 Encountered		0.0		M	ORGANIC SILT: non plastic, dark brown, moist.	M	H			TOPSOIL FILL
							SILT: non plastic, orange, minor fine to medium sand, moist to wet, very stiff to hard.					VS 200 kPa
				0.5					VS1			
				1.0								VS 146 / 55 kPa
				1.5								VS 155 / 34 kPa
				2.0								VS 128 / 32 kPa
				2.5			sand is becoming fine grained	M to W				VS 130 / 20 kPa
				3.0								VS 125 / 20 kPa
				3.5								VS 126 / 23 kPa
				2.0	Hand Auger HA3A-043 terminated at 2.0 m Target depth							

COFFEEY CONSULTANTS LTD. 300 BURNING WOOD ROAD, WILLOWBUSH QLD 4060. TEL: 07 550 2000. FAX: 07 550 2001.

method AD auger drilling AS auger screwing HA hand auger W washbore HA hand auger	support M mud G casing N nil penetration water 10°C to 12°C water level (no data shown) water inflow water outflow	samples & field tests B bulk disturbed sample D described sample F environmental sample SS split spoon sample UNF undisturbed sample // 50mm diameter HP hand penetrometer (kPa) N standard penetration test (SPT) N* SPT - sample recovered Nc SPT with acid cone VS vane shear peak/residual (kPa) K refusal HR hammer bearing	classification symbol & soil description based on Unified Classification System moisture D dry M moist W wet S saturated Nc plastic limit W liquid limit	consistency / relative density VS very soft S soft F firm St stiff VSs very stiff H hard Ft friable L loose ML medium dense D dense VL very dense
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* fill shown by suffix
 e.g. AD/T
 B blank bit
 TC bit
 V hr

Engineering Log - Hand Auger

client: **THE LAKES LIMITED (2012)**
 principal:
 project: **THE LAKES STAGE 3 CONSTRUCTION**
 location: **CENTRE OF LOT 44**

Borehole ID: **HA3A-044**
 sheet: 1 of 1
 project no.: **GENZTAUC13086AP**
 date started: **04 Nov 2014**
 date completed: **04 Nov 2014**
 logged by: **RB**
 checked by: **RBT**

position: E: 368373; N: 800098 (BOPC2000) surface elevation: Not Specified angle from horizontal: 90° DCP No.:
 drill model: Hand Auger hole diameter: 50 mm

drilling information				material substance									
mined & support	penetration	water	samples & field tests	RL (m)	depth (m)	graphic log	classif. color symbol	material description SOIL TYPE: classify or particle characteristics, colour, secondary and minor components	moisture condition	consistency / relative density	vane shear strength (kPa)	DCP (blows/100 mm)	structure and additional observations
								ORGANIC SILT: non plastic, dark brown, moist.	M				TOPSOIL FILL
					0.5			BILT: non plastic, orange, minor fine to medium sand, moist, very stiff to hard.	H				VS 200 kPa YOUNGER ASHES
										VSI			VS 162/43 kPa
					1.0								VS 136/18 kPa
					1.5								VS 107/14 kPa
					2.0			Hand Auger HA3A-044 terminated at 2.0 m Target depth					VS 125/20 kPa
													VS 131/23 kPa
													VS 138/20 kPa

D:\P\3_5_B5_JBR\4\TES-G-3-REV\VP Log CO3 3086661 MON CORE - BOP TAUC1308661 DCR BOPC-DL ES.OP1 <<Create>> (11/04/2014)

method AD auger drilling* AS auger auguring* HA hand auger W wash bore HA hand auger	support M mud C casing N nil penetration 	samples & field tests B bulk disturbed sample U undisturbed sample E environmental sample SS split spoon sample U/W undisturbed sample #mm diameter NP hand penetrometer (kPa) N standard penetrometer test (SPT) N* SPT - sample recovered Nc SPT with cone VR vane shear, peak/retained (kPa) R rebound HB hammer sounding	classification symbol & soil description based on Unified Classification System moisture D dry M moist W wet S saturated Wp plastic limit Wl liquid limit	consistency / relative density VS very soft S soft F firm St stiff VSt very stiff H hard Fc flake VL very loose L loose MD medium dense D dense VD very dense
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* be shown by suffix
 eg. AD/T
 B. bit & bit
 T TC bit
 V bit

Engineering Log - Hand Auger

client: **THE LAKES LIMITED (2012)**
 principal:
 project: **THE LAKES STAGE 3 CONSTRUCTION**
 location: **CENTRE OF LOT 45**

Borehole ID: **HA3A-045**
 sheet: 1 of 1
 project no: **GENZTAUC13086AP**
 date started: **04 Nov 2014**
 date completed: **04 Nov 2014**
 logged by: **RB**
 checked by: **RBT**

position: E: 368372; N: 800116 (BOPC2000) surface elevation: Not Specified angle from horizontal: 90° DCP ID:
 drill model: Hand Auger hole diameter : 50 mm

drilling information				material substance									
method	support	penetration	samples & field tests	RL (m)	depth (m)	graphic log	classification symbol	material description	moisture content	consistency / relative density	vane shear (kPa)	DCP (blows/100 mm)	structure and additional observations
AS	M	-			0.0			ORGANIC SILT; non plastic, dark brown, moist	M				TOPSOIL FILL
								SILT; non plastic, orange, with minor fine to medium sand, moist, stiff to hard.					H
					0.5								VS 200 kPa
					1.0					St to VSl			VS 200 kPa
					1.5								VS 130/ 2 kPa
					2.0								VS 97/ 20 kPa
					2.0			Hand Auger HA3A-045 terminated at 2.0 m Target depth					VS 125/ 29 kPa
					2.0								VS 125/ 23 kPa
					2.0								VS 125/ 23 kPa

method AD auger drilling AS auger screwing HA hand auger W washbore HA hand auger	support M mud C casing penetration 10-Cis-12 water level or debris level water inflow water outflow	samples & field tests D bulk disturbed sample C undisturbed sample E environmental sample SS split spoon sample U# undisturbed sample #mm diameter H-P hard penetrometer (kPa) N standard penetration test (SPT) N* SPT - sample recovered Nc SPT with solid cone VS vane shear; peak/retained (kPa) R refusal HB hammer bouncing	classification symbol & soil description based on Unified Classification System moisture D dry M moist W wet S saturated Wp plastic limit Wl liquid limit	consistency / relative density VS very soft S soft F firm St stiff VSt very stiff H hard Fh firm VL very loose L loose MD medium dense D dense VD very dense
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C:\Users\jessie.jones\AppData\Local\Temp\1\AutoCAD\DWG\GENZTAUC13086AP\GENZTAUC13086AP.dwg (1/23)

Engineering Log - Hand Auger

Borehole ID: **HA3A-046**
 sheet: 1 of 1
 project no: **GENZTAUC13086AP**
 date started: **04 Nov 2014**
 date completed: **04 Nov 2014**
 logged by: **RB**
 checked by: **RBT**

client: **THE LAKES LIMITED (2012)**
 principal:
 project: **THE LAKES STAGE 3 CONSTRUCTION**
 location: **CENTRE OF LOT 46**

position: E: 368376; N: 800129 (BOPC2000) surface elevation: Not Specified angle from horizontal: 90° DCP id.:
 drill model: Hand Auger hole diameter: 50 mm

drilling information					material substance									
method & support	penetration	samples & field tests	RL (m)	depth (m)	material description	moisture condition	consistency / relative density	vane shear (kPa)	DCP (blows/100 mm)	structure and additional observations				
Method & Support: HA Hand Auger Penetration: Not Entered Samples & Field Tests: None RL (m): 0.0 0.5 1.0 1.5 2.0 Depth (m): 0.0 0.5 1.0 1.5 2.0	Penetration: Not Entered	Samples & Field Tests: None	RL (m): 0.0 0.5 1.0 1.5 2.0	Depth (m): 0.0 0.5 1.0 1.5 2.0	ORGANIC SILT: non plastic, dark brown, moist.	M				TOPSOIL FILL				
					SILT: non plastic, orange-brown, minor fine to medium sand, moist to wet, very stiff to hard.		H					VS 200 kPa	YOUNGER ASHES	
							VS1						VS 200 kPa	
													VS 143 / 34 kPa	
													VS 128 / 29 kPa	
					Sandy SILT: non plastic, orange, sand is fine to coarse (grained), moist to wet.	M to W				VS 131 / 20 kPa				
				2.0	Hand Auger HA3A-046 terminated at 2.0 m Target depth									

2014-11-04 13:45:00 - 13:55:00 - 14:00:00 - 14:05:00 - 14:10:00 - 14:15:00 - 14:20:00 - 14:25:00 - 14:30:00 - 14:35:00 - 14:40:00 - 14:45:00 - 14:50:00 - 14:55:00 - 15:00:00 - 15:05:00 - 15:10:00 - 15:15:00 - 15:20:00 - 15:25:00 - 15:30:00 - 15:35:00 - 15:40:00 - 15:45:00 - 15:50:00 - 15:55:00 - 16:00:00 - 16:05:00 - 16:10:00 - 16:15:00 - 16:20:00 - 16:25:00 - 16:30:00 - 16:35:00 - 16:40:00 - 16:45:00 - 16:50:00 - 16:55:00 - 17:00:00 - 17:05:00 - 17:10:00 - 17:15:00 - 17:20:00 - 17:25:00 - 17:30:00 - 17:35:00 - 17:40:00 - 17:45:00 - 17:50:00 - 17:55:00 - 18:00:00 - 18:05:00 - 18:10:00 - 18:15:00 - 18:20:00 - 18:25:00 - 18:30:00 - 18:35:00 - 18:40:00 - 18:45:00 - 18:50:00 - 18:55:00 - 19:00:00 - 19:05:00 - 19:10:00 - 19:15:00 - 19:20:00 - 19:25:00 - 19:30:00 - 19:35:00 - 19:40:00 - 19:45:00 - 19:50:00 - 19:55:00 - 20:00:00 - 20:05:00 - 20:10:00 - 20:15:00 - 20:20:00 - 20:25:00 - 20:30:00 - 20:35:00 - 20:40:00 - 20:45:00 - 20:50:00 - 20:55:00 - 21:00:00 - 21:05:00 - 21:10:00 - 21:15:00 - 21:20:00 - 21:25:00 - 21:30:00 - 21:35:00 - 21:40:00 - 21:45:00 - 21:50:00 - 21:55:00 - 22:00:00 - 22:05:00 - 22:10:00 - 22:15:00 - 22:20:00 - 22:25:00 - 22:30:00 - 22:35:00 - 22:40:00 - 22:45:00 - 22:50:00 - 22:55:00 - 23:00:00 - 23:05:00 - 23:10:00 - 23:15:00 - 23:20:00 - 23:25:00 - 23:30:00 - 23:35:00 - 23:40:00 - 23:45:00 - 23:50:00 - 23:55:00 - 24:00:00

method AD auger drilling* AS auger screwing* HA hand auger W washcore HA hand auger	support M mud C casing N nil penetration  * no resistance ranging to (m) (m) water 10-15 water level in borehole water inflow water cutoff	samples & field tests B bulk disturbed sample D disturbed sample E environmental sample SS split spoon sample UNL undisturbed sample (mm diameter) HP hand penetrometer (kPa) N standard penetration test (SPT) N* SPT - sample recovered Nc SPT with solid cone VS vane shear, peak/retained (kPa) R refusal HD hammer marking	classification symbol & soil description based on Unified Classification System moisture D dry M moist W wet S saturation Wp plastic limit Wl liquid limit	consistency / relative density VS very soft S soft F firm St stiff VS1 very stiff H hard Fc friable Vt very loose L loose MC medium dense D dense VD very dense
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* as shown by suffix
 #g AD/T
 B bank (b)
 T TC soil
 V V sil

Engineering Log - Hand Auger

client: **THE LAKES LIMITED (2012)**
 principal:
 project: **THE LAKES STAGE 3 CONSTRUCTION**
 location: **CENTRE OF LOT 48**

Borehole ID. **HA3A-048**
 sheet: 1 of 1
 project no. **GENZTAUC13086AP**
 date started: **04 Nov 2014**
 date completed: **04 Nov 2014**
 logged by: **SLC**
 checked by: **RBT**

position: E: 388368; N: 603154 (BOPC2001) surface elevation: Not Specified angle from horizontal: 90° DCP id.:
 drill model: Hand Auger hole diameter: 50 mm

drilling information				material substance							
method & support	penetration	sample & field tests	RL (m)	depth (m)	classification symbol	material description	moisture condition	consistency / relative density	van der Meer shear strength (kPa)	DCP (blows / 150 mm)	structure and additional observations
HA	H	No	-	0.0		ORGANIC SILT: non plastic, (dark brown mottled orange brown, dry.	D				TOPSOIL FILL
				0.5		SILT: non plastic, brown, some fine grained sand, dry to moist, stiff to hard.	II				VS 200 kPa VS 200 kPa
				1.0		1.2 m: becoming dry to moist.	D to M	St to VS:			VS 07/ 16 kPa VS 13/ 25 kPa
				1.5		1.5 m: becoming moist, low plasticity.	M				VS 11/ 14 kPa VS 8/ 12 kPa
				2.0		Hand Auger HA3A-048 terminated at 2.0 m Target depth.					

CDF 3.0 DE LIBRARY - 2017 015 REV001 Lib COI BOREHOLE - NON CORRECT - DCP TAUC 33564P C01 303R101 E1001 <<Drawing>> 31/04/2015 11:25

method AD auger drilling* AS auger screwing* HA hand auger W washbore HA hand auger	support M solid C casing H nil penatration water 	samples & field tests D bulk disturbed sample D disturbed sample E environmental sample SS split spoon sample I.## undisturbed sample 100mm diameter I.P. hand penetrometer (kPa) K standard penetration test (SPT) N* SPT - sample recovered NC SPT with solid cone VS vane shear, peak/undrained (kPa) H refusal HR hammer sounding	classification symbol & soil description based on Unified Classification System moisture: D dry M moist W wet S saturated Wp plastic limit Wl liquid limit	consistency / relative density VS very soft S soft F firm St stiff VS: very stiff H hard Fc friable VL very loose L loose MD medium dense D dense VD very dense
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* fill shown by suffix
 e.g. ADT
 blank fill
 TC bit
 V bit

Engineering Log - Hand Auger

client: **THE LAKES LIMITED (2012)**
 principal:
 project: **THE LAKES STAGE 3 CONSTRUCTION**
 location: **CENTRE OF LOT 49**

Borehole ID: **HA3A-049**
 sheet: 1 of 1
 project no: **GENZTAUC13086AP**
 date started: **04 Nov 2014**
 date completed: **04 Nov 2014**
 logged by: **SLC**
 checked by: **RBT**

position: E: 308341; N: 800157 (GPOC2000) surface elevation: Not Specified angle from horizontal: 90° DCP ID:
 drill model: Hand Auger hole diameter: 50 mm

drilling information				material substance										
method & support	penetration	samples & field tests	depth (m)	graphic log	classification symbol	material description	moisture condition	consistency / relative density	vane shear (kPa)	LCF (blows/100 mm)	structure and additional observations			
AD HA	Not Encountered		0.0		ORGANIC SILT: non plastic, black, dry.	D	D				TOPSOIL FILL			
			0.5								SILT: non plastic, brown, some fine grained sand, dry to moist, stiff to hard.	II		YOUNGER ASHES VS 200 kPa
			0.6 m: becoming dry to moist,								D to M		VS 172/ 31 kPa	
			1.0 m: becoming pale brown, sand becoming fine grained.										VS 133/ 20 kPa	
			1.8 m: becoming moist, low plasticity.								M		VS 104/ 16 kPa VS 91/ 12 kPa VS 187/ 27 kPa	
			2.0			Hand Auger HA3A-049 terminated at 2.0 m Target depth								

205 2 E 03 - DRIVEWAY/ST/SL/RECV Log - DCP BORED TO - NON COLL - DCP 1000 - 08884/0528 1234567890 - 01/02/2014 - 02

method AD auger drilling* AS auger screwing* HA hand auger W washbore HA hand auger	support M mud G casing penetration Water 10-12 water level data shown water inflow water outflow	samples & field tests S bulk disturbed sample U disturbed sample F environmental sample SR split spoon sample GSW undisturbed sample 75mm diameter FP hand penetrometer (kPa) N standard penetration test (SPT) N* SPT - sample recovered No SPT with solid cone VS vane shear: peak/undrained (kPa) R refusal FB Hammer/bouncing	classification symbol & soil description based on Unified Classification System moisture D dry M moist W wet S saturated Wp plastic limit Wl liquid limit	consistency / relative density VS very soft S soft F firm St stiff VSt very stiff H hard Fh medium hard VL very hard L loose MD medium dense D dense VD very dense
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* bit shown by suffix
 AD ADT
 D blank bit
 T TC bit
 V vt

Engineering Log - Hand Auger

client: **THE LAKES LIMITED (2012)**
 principal:
 project: **THE LAKES STAGE 3 CONSTRUCTION**
 location: **BOREHOLE LOCATED IN LOT 50**

Borehole ID: **HA3A-050**
 sheet: **1 of 1**
 project no: **GENZTAUC13086AP**
 date started: **08 Oct 2014**
 date completed: **08 Oct 2014**
 logged by: **RJB**
 checked by: **RBT**

position: E: 386298; N: 800200 (BOPC2000) surface elevation: Not Specified angle from horizontal: 90° DCP id:
 drill model: Hand Auger hole diameter: 50 mm

drilling information			material substance									
method & support	penetration	samples & field tests	RI (m)	depth (m)	graphic log	classification symbol	material description SOIL TYPE: plasticity or particle characteristics, colour, secondary and mix components	moisture symbol (%)	consistency / relative density	VS (kPa)	DCP (Blows/300 mm)	structure and additional observations
HA M	-		0.0	0.0	[Cross-hatched pattern]		ORGANIC SILT: non plastic, dark brown, moist.	M				TOPSOIL FILL
							Sandy SILT: non plastic, pale brown, sand is fine grained, moist, very stiff to hard.	H			VS 200 kPa YOUNGER ASHES	
										VS 200 kPa		
										VS 200 kPa		
								VSL		VS 123/ 34 kPa		
										VS 117/ 27 kPa		
										VS 123/ 21 kPa		
	H		VS 200 kPa									
			2.0	2.0			Hand Auger HA3A-050 terminated at 2.0 m Target depth				VS 200 kPa	

method AD auger drilling* AS auger screwing* HA hand auger W washover HA hand auger	support M mud C casing penetration 	samples & field tests D bulk disturbed sample D disturbed sample E environmental sample SS split spoon sample USS undisturbed sample within diameter HP hand penetrometer (kPa) N standard penetration test (SPT) N' SPT - sample recovered N _r SPT with solid cone VS vane shear, undrained (kPa) R refusal RB hammer bouncing	classification symbol & soil description based on Unified Classification System moisture D dry M moist W wet S saturated W _p plastic limit W _L liquid limit	consistency / relative density VS very soft S soft F firm St stiff VSL very stiff H hard Fb brittle VL loose L loose MD medium dense D dense VD very dense
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* shown by suffix
 e.g. AD/C
 blank bit
 TC bit
 VDE

SUN_3_08_SURVEYING_TABLE_REV04P.LSP COF BOREHOLE (E:NON CORE) - DCP GENZ TAUC 20086AP 00351405 - 4-DRAWING - 01/08/2013 10:01

Engineering Log - Hand Auger

client: **THE LAKES LIMITED (2012)**
 principal:
 project: **THE LAKES STAGE 3 CONSTRUCTION**
 location: **BOREHOLE LOCATED IN LOT 51**

Borehole ID: **HA3A-051**
 sheet: 1 of 1
 project no: **GENZTAUC13086AP**
 date started: **08 Oct 2014**
 date completed: **08 Oct 2014**
 logged by: **RJB**
 checked by: **RBT**

position: E: 366302; N: 800220 (NZPD2000) surface elevation: Not Specified angle from horizontal: 90° DCP kit:
 drill model: Hand Auger hole diameter: 50 mm

drilling information				material substance								
method of support	penetration	water	samples & field tests	RL (m)	depth (m)	SPT or ISO classification symbol	material description	moisture condition	consistency / relative density	vane shear strength (kPa)	DCP (blows/100 mm)	structure and additional observations
					0.0		ORGANIC SILT: non plastic, dark brown, moist.	M				TOPSOIL FILL
					0.5		SILT: non plastic, orange-brown, moist, very stiff to hard.	H				VS 200 kPa
					1.0							VS 200 kPa
					1.5							VS 200 kPa
					1.5							VS 117/24 kPa
					2.0		Sandy SILT: non plastic, orange, trace black flecks, sand is fine to coarse grained, moist, stiff.	St				VS 200 kPa
					2.0		Hand Auger HA3A-051 terminated at 2.0 m Target depth					VS 50/17 kPa

DCP 3.10 LIBRARY: EST, JLB, RYAN, JG, DCF BORE-HOLE, HCN DCRG + DC2 3E WTD, C12086AP, C0814, 024, <<Crawford>> 08/10/2014 16:35

method AC super drilling* AS super screwing* HA hand auger W washhole HA hand auger	support M mud C casing N nil	samples & field tests H bulk disturbed sample D disturbed sample E environmental sample SS split spoon sample UW undisturbed sample #/mm diameter HP hand penetrometer (kPa) N standard penetration test (SPT) N* SPT - sample recovered Nc SPT with cone VS vane shear; push/retracted (kPa) R refusal HB hammer bouncing	classification symbol & soil description based on Unified Classification System	consistency / relative density VS very soft S soft F firm St stiff VSSt very stiff H hard Hh friable Vh very loose L loose MD medium dense D dense VD very dense
bl shown by outlit AD/T blank bit T TC bit V V bit	penetration no resistance recorded to refusal water 10 Oct 12 water level on date shown water inflow water outflow	moisture D dry M moist W wet S saturated Wp plastic limit Wl liquid limit		

Engineering Log - Hand Auger

client: **THE LAKES LIMITED (2012)**
 principal:
 project: **THE LAKES STAGE 3 CONSTRUCTION**
 location: **BOREHOLE LOCATED IN LOT 52**

Borehole ID: **HA3A-052**
 sheet: 1 of 1
 project no.: **GENZTAUC13086AP**
 date started: **16 Oct 2014**
 date completed: **16 Oct 2014**
 logged by: **RJB**
 checked by: **RBT**

position: E: 365335; N: 800209 (BOPIC2000) surface elevation: Not Specified angle from horizontal: 90° DCP ID:
 drill model: Hand Auger hole diameter: 50 mm

drilling information				material substance										
method & support	penetration	water	samples & field tests	RL (m)	depth (m)	graphic log	classification symbol	material description SOIL TYPE: plasticity or particle characteristics, colour, secondary and mineral components	moisture condition	consistency / relative density	water shear strength (kPa)	DCP (blows/100 mm)	structure and additional observations	
HA	N	no water		0.5	0.5			ORGANIC SILT: non plastic, dark brown, moist, hard.	M	H			TOPSOIL FILL	
								Sandy SILT: non plastic, orange-brown mottled brown, sand is fine to medium grained, moist, hard.					FILL	
HA	N	no water		1.0	1.0			Sandy SILT: non plastic, orange-brown, sand is fine to medium grained, moist, very stiff to hard.					VS 200 kPa	VS 200 kPa
													VS 200 kPa	YOUNGER ASHES
													VS 200 kPa	
													VS 185/40 kPa	
													VS 147/34 kPa	
HA	N	no water		1.5	1.5							VS 110/21 kPa		
													VS 80/17 kPa	
HA	N	no water		2.0	2.0							VS 65/21 kPa		
Hand Auger HA3A-052 terminated at 2.0 m Target depth.														

method AD auger drilling* AR auger screwing* HA hand auger W washbore HA hand auger	support M fluid C casing penetration 	samples & field tests D bulk disturbed sample D disturbed sample E environmental sample SS soil spoon sample U## undisturbed sample #mm diameter HP heavy penetrometer (MPa) N standard penetration test (SPT) N* SPT - sample recovered Nc SPT with solid cone VS vane shear, peak/undrained (kPa) R refusal Hc hammer sounding	classification symbol & soil description based on Unified Classification System moisture D dry M moist W wet S saturated Wp plastic limit Wl liquid limit	consistency / relative density VS very soft S soft F firm St stiff VSt very stiff H hard Fb friable VL very loose L loose MD medium dense D dense VD very dense
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Engineering Log - Hand Auger

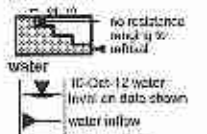
client: **THE LAKES LIMITED (2012)**
 principal:
 project: **THE LAKES STAGE 3 CONSTRUCTION**
 location: **BOREHOLE LOCATED IN LOT 53**

Borehole ID: **HA3A-053**
 sheet: **1 of 1**
 project no: **GENZTAUC13086AP**
 date started: **16 Oct 2014**
 date completed: **16 Oct 2014**
 logged by: **RJB**
 checked by: **RBT**

position: E: 368357; N: 600205 (BOPIC2000) surface elevation: Not Specified angle from horizontal: 90° DCP UJ:
 drill model: Hand Auger hole diameter: 50 mm

drilling information					material substance								
method & support	penetration %	water	samples & field tests	RL (m)	depth (m)	depth (m)	classification symbol	material description	moisture condition	consistency / relative density	vane shear (kPa)	DCP (blows/100 mm)	structure and additional observations
						0.0		ORGANIC SILT: non plastic, dark brown, moist	M				TOPSOIL FILL
						0.5		Sandy SILT: non plastic, orange-brown mottled brown, sand is fine to medium grained, moist, hard.	H				FILL VS 200 kPa
						0.5		Sandy SILT: non plastic, orange-brown, sand is fine to medium grained, moist, very stiff to hard.	H				VS 200 kPa YOUNGER ASHES
						1.0							VS 200 kPa
						1.5				VS1			VS 200 kPa
						1.5							VS 160/37 kPa
						1.5							VS 160/31 kPa
						1.5							VS 147/31 kPa
						2.0							VS 117/24 kPa
								Hand Auger HA3A-053 terminated at 2.0 m Target depth					

OFFICE: C:\PROGRAMS\TEST\BILITERA\1_06_CST\BILITE\BILITE.MXD\DOLOU\1_06_GENZTAUC13086AP\BOPIC2000_0000101313

method	support	samples & field tests	classification symbol & soil description based on Unified Classification System	consistency / relative density
AD auger drilling* AS auger screwing* HA hand auger W washbore FA hand auger	M mic C casing penetration  * no resistance noted * 10/05/12 water level on date shown * water inflow * water outflow	R bulk disturbed sample D disturbed sample E environmental sample SS split spoon sample UN/ undisturbed sample (50mm diameter) HP hand penetrometer (kPa) N standard penetration test (SPT) N* SPT - samples recovered Nc SPT with solid cone VS vane shear penetrometer (kPa) R refusal HD hammer sounding	moisture: D dry M moist W wet S saturated Wp plastic limit Wl liquid limit	VS very soft S soft F firm St stiff VS1 very stiff H hard Fv friable VL very loose L loose ML medium dense D dense VD very dense

Engineering Log - Hand Auger

client: **THE LAKES LIMITED (2012)**
 principal:
 project: **THE LAKES STAGE 3 CONSTRUCTION**
 location: **BOREHOLE LOCATED IN LOT 54**

Borehole ID: **HA3A-054**
 sheet: 1 of 1
 project no.: **GENZTAUC13086AP**
 date started: **16 Oct 2014**
 date completed: **16 Oct 2014**
 logged by: **RJB**
 checked by: **RBT**

position: E: 368370; N: 809202 (BOPC2000) surface elevation: Not Specified angle from horizontal: 93° DCP Id.:
 drill model: Hand Auger hole diameter: 50 mm

drilling information				material substance										
method & support	penetration	samples & field tests	RL (m)	depth (m)	graphic log	classification symbol	material description SOIL TYPE: plasticity or particle characteristics, colour, secondary and in situ components	mobility condition	consistency / relative density	vane shear strength (kPa)	DCP (blows/100 mm)	structure and additional observations		
AS hand auger	N no resistance, ranging to refusal		0.5	0.5		M	ORGANIC SILT: non plastic, dark brown, moist.	M				TOPSOIL FILL		
							Sandy SILT: non plastic, orange-brown, mottled brown, sand is fine to medium grained, moist, hard.					H		FILL VS 200 kPa
							Sandy SILT: non plastic, orange-brown, sand is fine to medium grained, moist, very stiff to hard.					H		VS 200 kPa VS 200 kPa VS 200 kPa YOUNGER ASHES VS 200 kPa
			2.0	2.0			Hand Auger HA3A-054 terminated at 2.0 m Target depth					VS 175/34 kPa VS 178/36 kPa VS 108/26 kPa VS 107/22 kPa		

method AU auger drilling* AS auger screwing* HA hand auger W washbore HA hand auger	support M mud C casing N nil penetration no resistance, ranging to refusal water TO-Ga-12 water level on date shown water table water outflow	samples & field tests B bulk disturbed sample D disturbed sample E environmental sample SS split spoon sample I (dia) undisturbed sample #mm diameter HP hard penetrometer (kPa) N standard penetration test (SPT) N* SPT - sample recovered Nc SPT with solid cone VS vane shear, peak/undrained (kPa) R refusal HH hammer sounding	classification symbol & soil description based on Unified Classification System moisture: D dry M moist W wet S saturated Wp plastic limit Wl liquid limit	consistency / relative density VS very soft S soft F firm St stiff VSst very stiff H hard Fh friable VL very loose L loose MD medium dense D dense VD very dense
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* not shown by suffix
 e.g. AOV
 B black bit
 T TC bit
 V vane

Engineering Log - Hand Auger

client: **THE LAKES LIMITED (2012)**
 principal:
 project: **THE LAKES STAGE 3 CONSTRUCTION**
 location: **BOREHOLE LOCATED IN LOT 55**

Boreshole ID: **HA3A-055**
 sheet: 1 of 1
 project no: **GENZTAUC13086AP**
 date started: **16 Oct 2014**
 date completed: **16 Oct 2014**
 logged by: **RJB**
 checked by: **RBT**

position: E: 968387; N: 800188 (GPG2000) surface elevation: Not Specified angle from horizontal: 90° DCP id:
 drill model: Hand Auger hole diameter: 50 mm

drilling information				material substance									
method & support	penetration	water	samples & field tests	RL (m)	depth (m)	soil log	class / soil symbol	material description	moisture condition	consistency / relative density	VS (kPa)	DCP (blows/100 mm)	structure and additional observations
HA	N	no water		0.5		[diagonal hatching]	M	ORGANIC SILT: non plastic, dark brown, moist.	M				TOPSOIL FILL
								Sandy SILT: non plastic, orange-brown mottled brown, sand is fine to medium grained, moist, hard.					II
HA	N	no water		1.0		[diagonal hatching]	II	Sandy SILT: non plastic, orange-brown, sand is fine to medium grained, moist, very stiff to hard.	II				VS 200 kPa
HA	N	no water		1.5		[diagonal hatching]	VSt		VSt				YOUNGER ASHES
HA	N	no water		2.0		[diagonal hatching]	VSt		VSt				VS 132/31 kPa
HA	N	no water		2.0		[diagonal hatching]	VSt		VSt				VS 132/27 kPa
Hand Auger HA3A-055 terminated at 2.0 m Target depth:													

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method AD auger drilling* AS auger screwing* HA hand auger W washbore WA hand auger	support M mud C casing N nil penetration water no water water inflow water outflow	samples & field tests B bulk disturbed sample D disturbed sample E environmental sample SS split spoon sample U#Ø undisturbed sample #mm diameter IIP load penetrometer (kPa) N standard penetration test (SPT) N* SPT - sample recovered NC SPT with solid cone VS vane shear, peak/rounded (kPa) R refusal RH hammer sounding	classification symbol & soil description based on Unified Classification System moisture U dry M moist W wet S saturated Wp plastic limit Wl liquid limit	consistency / relative density VS very soft S soft F firm St stiff VSt very stiff H hard Rk rock VL very loose L loose MD medium dense C dense VD very dense
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* Denoted by suffix
 e.g. ALWT
 N blank fill
 T TC bit
 V fill

Engineering Log - Hand Auger

client: **THE LAKES LIMITED (2012)**
 principal:
 project: **THE LAKES STAGE 3 CONSTRUCTION**
 location: **BOREHOLE LOCATED IN LOT 56**

Borehole ID: **HA3A-056**
 sheet: 1 of 1
 project no.: **GENZTAUC13086AP**
 date started: **16 Oct 2014**
 date completed: **16 Oct 2014**
 logged by: **RJB**
 checked by: **RBT**

position: E: 368408; N: 800184 (BOPC2000) surface elevation: Not Specified angle from horizontal: 90° DCP ID:
 drill model: Hand Auger hole diameter: 50 mm

drilling information				material substance								
method & support	penetration	samples & field tests	RL (m)	depth (m)	graphic log	classification symbol	material description	moisture condition	consistency / relative density	van shear strength (kPa)	DCP (blows/100 mm)	structure and additional observations
HA	N	S	-	0.0		M	ORGANIC SILT: non plastic, dark brown, moist.	M	-	-	-	TOPSOIL FILL
				0.5			Sandy SILT: non plastic, orange-brown mottled brown, sand is fine to coarse grained, moist, hard.					H
				1.0			Sandy SILT: non plastic, orange-brown, sand is fine to coarse grained, moist, stiff to hard. sand is becoming fine to medium grained	H	VS1	-	-	VS 200 kPa VS 132/27 kPa
HA	N	S	-	1.5		St		-	-	-	-	VS 144/31 kPa VS 132/34 kPa
				2.0			Hand Auger HA3A-056 terminated at 2.0 m Target depth					

method	support	samples & field tests	classification symbol & soil description based on Unified Classification System	consistency / relative density
AO auger drilling* AS auger screwing* HA hand auger W Washbore HA hand auger	M mud C casing N nil penetration 	B back disturbed sample U disturbed sample E environmental sample SS split spoon sample USP/ undisturbed sample 40mm diameter HP hand penetrometer (kPa) N standard penetration test (SPT) N* SPT - sample recovered Nc SPT with solid cone VS vane shear peak/undrained (kPa) R refusal HD hammer bouncing	moisture D dry W moist W wet B saturated Wp plastic limit WL liquid limit	VS very soft S soft F firm St stiff VS1 very stiff H hard Ph friable VL very loose L loose MD medium dense D dense VD very dense

* bit shown by suffix
 e.g. ADT
 B black bit
 TC TC bit
 V bit

C:\Users\jbr\OneDrive\Documents\log\DCP\DCP-CUT\DCP-CUT\LOGS\DCP-LOGS\DCP-LOGS-2014-10-16-13086AP.dwg

Engineering Log - Hand Auger

client: **THE LAKES LIMITED (2012)**
 principal:
 project: **THE LAKES STAGE 3 CONSTRUCTION**
 location: **BOREHOLE LOCATED IN LOT 57**

Borehole ID: **HA3A-057**
 sheet: 1 of 1
 project no.: **GENZTAUC13086AP**
 date started: **16 Oct 2014**
 date completed: **16 Oct 2014**
 logged by: **RJB**
 checked by: **RBT**

position: E: 388423; N: 800190 (BOPC2000) surface elevation: Not Specified angle from horizontal: 90° DCP id.:
 drill model: Hand Auger hole diameter: 50 mm

drilling information				material substance							
method & support	penetration	samples & field tests	FL (m)	depth (m)	classification symbol	material description SOIL TYPE: possibly by particle characteristic, colour, secondary and minor components	moisture condition	consistency / relative density	vane shear strength (kPa)	DCP (blows/100 mm)	structure and additional observations
AS hand auger	N			0.0	M	ORGANIC SILT: non plastic, dark brown, moist.	M				TOPSOIL FILL
				0.5		Sandy SILT: non plastic, orange-brown mottled brown, sand is fine to coarse grained, moist, hard.					H
				1.0		Sandy SILT: non plastic, orange-brown, sand is fine to coarse grained, moist, very stiff to hard.	H		VS 200 kPa	YOUNGER ASHES VS 200 kPa	
				1.5		sand is becoming fine to medium grained	VSI		VS 196/47 kPa		
				2.0		sand is becoming fine to coarse grained	H			VS 147/44 kPa	VS 101/27 kPa
				2.0		Hand Auger HA3A-057 terminated at 2.0 m Target depth					VS 101/24 kPa
				2.0							VS 200 kPa

CDF 0 3 06 LIBRARY/TEST.C.B. 04 AP L00 COE/BUTHERGLE BOU/CORRETT /DDH C/NP/AUC/13086AP- JBN/MJPP/ <CD>=RGR/16- 31X50231C- 031

method AS auger drilling* AS auger screwing* HA hand auger W washbore HA hand auger	support M min C casing N nil penetration 	samples & field tests B bulk disturbed sample D disturbed sample E environmental sample SS split spoon sample J# undisturbed sample #mm diameter IP hand penetrometer (kPa) N standard penetration test (SPT) N' SPT - sample recovered Ns SPT with solid cone VS vane shear, peak/retained (kPa) R retest HB hammer sounding	classification symbol & soil description based on Unified Classification System moisture D dry M moist W wet S saturated Wp plastic limit WI liquid limit	consistency / relative density VS very soft S soft F firm St stiff VSI very stiff H hard Fb friable VL very loose L loose MD medium dense D dense VD very dense
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Engineering Log - Hand Auger

client: **THE LAKES LIMITED (2012)**

principal:

project: **THE LAKES STAGE 3 CONSTRUCTION**

location: **BOREHOLE LOCATED IN LOT 58**

Borehole ID: **HA3A-058**

Sheet: 1 of 1

Project no: **GENZTAUC13086AP**

date started: **16 Oct 2014**

date completed: **16 Oct 2014**

logged by: **RJB**

checked by: **RBT**

position: E: 356442; N: 800185 (BOMC2000) surface elevation: Not Specified angle from horizontal: Nil° DCP ID: _____
 drill model: Hand Auger hole diameter: 50 mm

drilling information				material substance							
method & support	penetration	samples & field tests	depth (m)	graphic log	classification symbol	material description	moisture condition	consistency / relative density	VS (kPa)	DCP (blows/100 mm)	structure and additional observations
HA N	-	-	0.0		-	ORGANIC SILT: non plastic, dark brown, moist.	M				TOPSOIL FILL
			0.5			Sandy SILT: non plastic, orange-brown mottled brown, sand is fine to medium grained, moist, hard.	II			FILL VS 200 kPa	
			1.0			Sandy SILT: non plastic, orange-brown, sand is fine to medium grained, moist, very stiff to hard.	H			YOUNGER ASHES	
			1.5				VS(1)			VS 200 kPa	
			2.0			Hand Auger HA3A-058 terminated at 2.0 m Target depth.					VS 126 / 34 kPa
			2.0								VS 141 / 24 kPa

CDF D. 3. 06 LIBRARY\TEST\BLE\K003P_44_20F BORE-OLE: HIGH COVERD + 20F-3E\CTA-C\GENZTAUC13086AP\GENZTAUC13086AP\HA3A-058-01.dwg

method AD super drilling AS super augering HA hand auger W washbore HA hand auger	support M mud C casing N nil penetration water 	samples & field tests B bulk disturbed sample D disturbed sample E environmental sample SS split spoon sample U# undisturbed sample #mm diameter UP hand penetrometer (kPa) N standard penetration test (SPT) N' SPT - sample recovered Nc SPT with solid core VS vane shear, peak/remoulded (kPa) K retical HB hammer blow log	classification symbol & soil description based on Unified Classification System moisture D dry M moist W wet S saturated Wp plastic limit WL liquid limit	consistency / relative density VS very soft S soft F firm St stiff VS(1) very stiff H hard Fc friable VL very loose L loose MD medium dense D dense VD very dense
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* DI shown by suffix
 e.g. AC1
 d blank bf
 T TC fill
 V V fill

Engineering Log - Hand Auger

client: **THE LAKES LIMITED (2012)**
 principal:
 project: **THE LAKES STAGE 3 CONSTRUCTION**
 location: **CENTRE OF LOT 59**

Borehole ID: **HA3A-059**
 sheet: 1 of 1
 project no: **GENZTAUC13086AP**
 date started: **04 Nov 2014**
 date completed: **04 Nov 2014**
 logged by: **DBC**
 checked by: **RBT**

position: E: 368423; N: 600148 (MOPC2000) surface elevation: Not Specified angle from horizontal: 90° DCP id.:
 drill model: Hand Auger hole diameter: 50 mm

drilling information				material substance								
trial run & support	penetration	samples & field tests	water	RL (m)	depth (m)	classification symbol	material description SOIL TYPE: plasticity or particle characteristics, colour, secondary and minor components	moisture condition	consistency / relative density	vane shear (kPa)	DCP (blows/ 100 mm)	structure and additional observations
					0		ORGANIC SILT: non plastic, dark brown black, moist.	M				TOPSOIL FILL
					0.5		SILT: non plastic, brown orange, moist, stiff to very stiff.	M	VS			VS 154/ 19 xPa YOUNGER ASHES
					1.0				St			VS 199/ 40 kPa
					1.5		- becoming non plastic to slightly plastic with some clay from 1.2m.					VS 200/ 40 kPa
					2.0		- with minor clay from 1.3m.					VS 50/ 22 kPa
					2.1		- with minor sand and minor clay from 1.8m.					VS 83/ 17 kPa
					2.1							VS 60/ 14 kPa
					2.1		Hand Auger HA3A-059 terminated at 2.1 m Target depth					VS 117/ 21 kPa

D:\P\3_06_LIBRARY\287-018\287.dwg : DCF RBFB-CLF_NCK_COATED + DCP TA1DISCBAN DDP BOREHO 50.00 : s-CustomerFiles\c-0620-5-17-14

method AD auger drilling* AS auger screwing* HA hand auger W washman HA hand auger	support M mud C casing N nil penetration water no. Oct-12 water level on date shown water inflow water outflow	samples & field tests B bulk disturbed sample D disturbed sample E environmental sample SS split spoon sample UUW undisturbed sample (30mm diameter) HP hand penetrometer (kPa) N standard penetration test (SPT) N* SPT - sample recovered Nc SPT with split cone VS vane shear, peak/undrained (kPa) K refusal HB hammer bouncing	classification symbol & soil description based on Unified Classification System moisture D dry M moist W wet S saturated Wp plastic limit WL liquid limit	consistency / relative density VS very soft S soft F firm St stiff VS1 very stiff H hard Fc fracture VL very loose L loose MD medium dense D dense VD very dense
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* bit shown by suffix
 s.d. AD/T
 B bark bit
 I IC bit
 V nil

Engineering Log - Hand Auger

client: **THE LAKES LIMITED (2012)**
 principal:
 project: **THE LAKES STAGE 3 CONSTRUCTION**
 location: **CENTRE OF LOT 60**

Borehole ID: **HA3A-060**
 shoot: 1 of 1
 project no: **GENZTAUC13086AP**
 date started: **04 Nov 2014**
 date completed: **04 Nov 2014**
 logged by: **DBC**
 checked by: **RBT**

position: E: 308420; N: 800131 (BOPC2000) surface elevation: Not Specified angle from horizontal: 90° DCP No.:
 drill model: Hand Auger hole diameter: 50 mm

drilling information				material substance										
method & support	penetration	water	samples & field tests	RL (m)	depth (m)	graphic log	classification symbol	material description SOIL TYPE, plasticity or particle characteristics, colour, secondary and minor components	moisture condition	consistency / relative density	van Nostrand blow (blows/100 mm)	DCP (blows/100 mm)	structure and additional observations	
HA	N	Not Encountered		0.0	0.0		M	ORGANIC SILT: non plastic, dark brown black, moist.	M	H	VS	-	TOPSOIL FILL	
								SILT: non plastic, brown orange, moist, very stiff to hard.					VS >216 kPa YOUNGER ASHES	
								- becoming non plastic to slightly plastic with minor clay from 0.9m.					VS 151/ 40 kPa	
								- becoming orange brown speckled black speckled white from 1.5m.					VS 129/ 34 kPa	
								- becoming non plastic, brown orange speckled black speckled white from 1.9m. Clay absent.					VS 104/ 24 kPa	
Hand Auger HA3A-060 terminated at 2.1 m Target depth	VS 129/ 17 kPa													
				2.0									VS 136/ 21 kPa	
														VS 210/ 24 kPa

method AU auger drilling AR auger screwing HA hand auger W washhole HA hand auger	support M mud C casing penetration 	samples & field tests D bulk disturbed sample D disturbed sample E environmental sample SE split spoon sample U#F undisturbed sample 75mm diameter H#F hand penetrometer (kPa) N standard penetration test (SPT) N* SPT - sample recovered No SPT with solid cone VS vane shear, undrained (kPa) R refusal HS hammer sounding	classification symbol & soil description based on Unified Classification System moisture: D dry M moist W wet S saturated Wp plastic limit Wl liquid limit	consistency / relative density VS very soft S soft F firm St stiff VS1 very stiff H hard Fb friable VL very loose L loose MD medium dense D dense VD very dense
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* dit shown by suffix:
 n.d. All
 B blank bit
 T TC bit
 V VSI

Engineering Log - Hand Auger

client: **THE LAKES LIMITED (2012)**
 principal:
 project: **THE LAKES STAGE 3 CONSTRUCTION**
 location: **CENTRE OF LOT 61**

Barohole ID: **HA3A-061**
 sheet: 1 of 1
 project no: **GENZTAUC13086AP**
 date started: **04 Nov 2014**
 date completed: **04 Nov 2014**
 logged by: **DBC**
 checked by: **RBT**

position: E: 362410; N: 600117 (GPG2000) surface elevation: Not Specified angle from horizontal: 90° DCP id.:
 drill model: Hand Auger hole diameter: 50 mm

drilling information				material substance										
method & support	penetration	water	samples & field tests	depth (m)	mass in kg	classification symbol	material description	moisture content or	consistency / relative density	voids at least 0.075mm (kPa)	DCP (blows/100 mm)	structure and additional observations		
AD	H	No. 5 (residual)		0.0			ORGANIC SILT: non plastic, dark brown black, moist.	M				TOPSOIL FILL		
				0.5			SILT: non plastic, brown orange, moist to wet, firm to hard.	M	H				VS >216 kPa YOUNGER ASHES	
				1.0										VS 194/ 40 kPa
				1.5			- becoming brown orange speckled black with trace clay from 1.4m.							VS 161/ 34 kPa
				2.0			- becoming dark orange speckled black with some clay and some sand from 1.8m.	M to W	F					VS 45/ 16 kPa
				2.1			Hand Auger HA3A-061 terminated at 2.1 m Target depth					VS 3// 16 kPa		

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method AD super drilling* AS super screwing* HA hand auger W wash bore RA hand auger	support M mud C casing N nil penetration no resistance (angle to refusal) water level on date shown water inflow water inflow	samples & field tests B bulk (undisturbed) sample D disturbed sample E environmental sample SS split spoon sample U#F undisturbed sample #mm diameter H#F hand penetrometer (kPa) N standard penetration test (SPT) N# SPT - sample recovered Nc SPT with solid cone VS vane shear: peak/undrained (kPa) R refusal HB hammer bounding	classification symbol & soil description based on Unified Classification System moisture D dry M moist W wet S saturated Wp plastic limit WL liquid limit	consistency / relative density VS very soft S soft F firm St stiff VSt very stiff H hard Fb friable VL very loose L loose MD medium dense D dense VD very dense
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Engineering Log - Hand Auger

client: **THE LAKES LIMITED (2012)**
 principal:
 project: **THE LAKES STAGE 3 CONSTRUCTION**
 location: **CENTRE OF LOT 62**

Borehole ID: **HA3A-062**
 sheet: 1 of 1
 project no.: **GENZTAUC13086AP**
 date started: **04 Nov 2014**
 date completed: **04 Nov 2014**
 logged by: **DBC**
 checked by: **RBT**

position: E: 368419; N: 808097 (BOPC2000) surface elevation: Not Specified angle from horizontal: 90° DCP id.: Gold
 drill model: Hand Auger hole diameter: 50 mm

drilling information				material substance				
method & support	penetator	samples & field tests	RL (LT)	depth (m)	material description	moisture condition	consistency / relative density	structure and additional observations
HA Hand Auger	AD auger drilling*	N no resistance to 20kPa	0.0	0.0	ORGANIC SILT: non plastic, dark brown black, moist	M		TOPSOIL FILL
			0.5	0.5	SILT: non plastic, brown orange, moist, stiff to hard. - becoming dark orange speckled black speckled white with minor clay and trace sand from 0.6m,	M	St to VS?	YOUNGER ASHES VS UTP VS 154 / 2 / kPa
			1.0	1.0	- brown orange speckled black speckled white from 1.2m. Clay and sand absent. - becoming non plastic to slightly plastic with minor clay and minor sand from 1.4m,	M	St	VS 98 / 16 kPa VS 185 / 2 / kPa
			1.5	1.5	SANDY SILT / SILTY SAND: fine to medium grained, non plastic, brown orange, moist to wet, stiff, - becoming orange brown from 1.8m,	M	M to W	VS 98 / 17 kPa
			2.0	2.0	Hand Auger HA3A-062 terminated at 2.1 m target depth			ROTOSUASH VS 54 / 24 kPa VS 95 / 29 kPa

method AD auger drilling* AS auger screwing* HA hand auger W Washbore HA hand auger	support M mud C casing N nil penetration * 10-Qu-12 water level on date shown water flow direction	samples & field tests D bulk disturbed sample O disturbed sample E environmental sample SS split spoon sample 19# undisturbed sample 19mm diameter JIP hand penetrometer (kPa) N standard penetration test (SPT) N' SPT - sample recovered Nc SPT with mild cone VS vane shear; peak/undrained (kPa) R refusal HB hammer sounding	classification symbol & soil description based on Unified Classification System moisture D dry M moist W wet S saturated Wp plastic limit Wl liquid limit	consistency / relative density VS very soft S soft F firm St stiff VSt very stiff H hard Hs hard to scale VL very loose L loose MD medium dense D dense VD very dense
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Engineering Log - Hand Auger

client: **THE LAKES LIMITED (2012)**
 principal:
 project: **THE LAKES STAGE 3 CONSTRUCTION**
 location: **CENTRE OF LOT 63**

Borehole ID: **HA3A-063**
 sheet: 1 of 1
 project no.: **GENZTAUC13086AP**
 date started: **17 Dec 2014**
 date completed: **17 Dec 2014**
 logged by:
 checked by: **RBT**

position: E: 368421, N: 800082 (BOPC2000) surface elevation: Not Specified angle from horizontal: 90° DCP id.: Gold
 drill model: Hand Auger hole diameter: 50 mm

drilling information				material substance										
method & support	penetration	samples & field tests	RL (m)	depth (m)	graphic log	classification symbol	material description	moisture condition	consistency / relative density	DCP (blows/100 mm)	structure and additional observations			
AD AS HA W HA	No Encountered			0.0			Sandy SILT: non plastic, brown mottled orange brown, sand is fine to medium grained, dry, hard.	D	H		FILL			
				0.5			becoming orange brown, sand becoming fine to coarse grained.				VS 200 kPa			
				0.5			SILT: low plasticity, brown, dry to moist, very stiff.	D to M	VSst			VS 200 kPa	YOUNGER ASHES	
				1.0			Sandy SILT: low plasticity, brown, sand is fine grained, dry to moist, very stiff.					VS 138/25 kPa		
				1.0			SAND: fine to medium grained, poorly graded, yellow brown, dry to moist, medium dense to dense.		MO to I					ROTOEHU ASH
				1.5			SILT: low plasticity, brown, dry to moist, stiff becoming hard.		SIL becoming H				VS 81/0 kPa	
				2.0			Sandy SILT: low plasticity, pale grey, sand is fine to medium grained, dry to moist, stiff to hard. SILT: low plasticity, pale brown with pale grey specks, dry to moist, stiff to hard.						VS 200 kPa	
				2.0			Hand Auger HA3A-063 terminated at 2.0 m target depth							

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method AD auger drilling* AS auger screwing* HA hand auger W washcore HA hand auger	support M mud C casing N nil	samples & field tests D bulk disturbed sample D disturbed sample E environmental sample S5 split spoon sample U# undisturbed sample #mm diameter HP penetrometer (kPa) H standard penetration test (SPT) N SPT - sample recovered Nc SPT with solid cone VS vane shear; peak/retained (kPa) R refusal HB hammer bounce	classification symbol & soil description based on Unified Classification System moisture (dry M moist W wet S saturated Wc plastic limit Wl liquid limit	consistency / relative density VS very soft S soft F firm St stiff VSst very stiff R hard Ps brittle VL very loose L loose MD medium dense D dense VD very dense
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Engineering Log - Hand Auger

client: **THE LAKES LIMITED (2012)**

principal:

project: **THE LAKES STAGE 3 CONSTRUCTION**

location: **CENTRE OF LOT 64**

Borehole ID: **HA3A-064**

sheet: 1 of 1

project no. **GENZTAUC13086AP**

date started: **04 Nov 2014**

date completed: **04 Nov 2014**

logged by: **DBC**

checked by: **RBT**

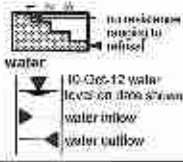
position: E: 368423; N: 800056 (GPOC2000) surface elevation: Not Specified angle from horizontal: 90° DCP fit.: Good
 drill model: Hand Auger hole diameter: 50 mm

drilling information				material substance									
method & support	penetration	samples & field tests	RL (m)	depth (m)	graphic log classification symbol	material description SOIL TYPE: plasticity or particle characteristics, colour, secondary and minor components	moisture content	consistency / relative density	vane shear strength (kPa)	DCP (blows/300 mm)	structure and additional observations		
HA NI Not Encountered		Not Encountered	0.0 0.5 1.0 1.5 2.0	0.0 - 0.1		ORGANIC SILT; non plastic, dark brown black, moist.	M				TOPSOIL FILL		
				0.1 - 0.5		SILT; non plastic, brown orange speckled black speckled white, moist, very stiff to hard. - with minor clay from (1,7) m.	M	H				YOUNGER ASHES VS UTP	
				0.5 - 1.0						VS11			VS 147/31 kPa
				1.0 - 1.5						VS11			VS 117/21 kPa
				1.5 - 1.8						VS11			VS 111/37 kPa
				1.8 - 2.1						VS11			VS 57/31 kPa
				2.1		SAND: fine to coarse grained, pale brown orange speckled black, moist, medium dense to dense.	M	ML to D			ROTOHEU ASH VS UTP		
				2.0		Clayey SILT: low plasticity, cream pale brown, with minor sand, moist, stiff.	M	SI			VS 57/31 kPa		
				2.0		Silty SAND: fine to medium grained, cream pale brown, moist.	M						
				2.0		SILT: non plastic, cream pale brown, with some sand, moist, hard.	M	H			VS UTP		
				2.1		Hand Auger HA3A-064 terminated at 2.1 m Target depth							

C:\P\0_36_LIBRARY\10111511\10111511.dwg - Loc: DCP SCREWDRIVE HOLE CORRECTION + DCP TAUC13086AP SCR BOREHOLE HA3A-064.dwg - Drawing File: C:\P\0_36_LIBRARY\10111511\10111511.dwg

method AU auger drilling AR auger screwing HA hand auger W washbore FA fume auger	support M mud C casing N nil ni	samples & field tests K bulk disturbed sample D disturbed sample E environmental sample SS split spoon sample UU undisturbed sample 48mm diameter HP fluid penetrometer (kPa) N standard penetrometer test (SPT) N* SPT - sample recovered Nc SPT with solid cone VS vane shear peak/retained (kPa) R refusal HD hammer sounding	classification symbol & soil description based on United Classification System moisture D dry M moist W wet S saturated Wp plastic limit Wl liquid limit	consistency / relative density VS very soft S soft F firm SI stiff VS1 very stiff H hard Fb brittle VL very loose L loose MD medium dense D dense VD very dense
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* DE shown by suffix
 ANI
 Q blank bit
 T TC bit
 V fill



Engineering Log - Hand Auger

client: **THE LAKES LIMITED (2012)**

principal:

project: **THE LAKES STAGE 3 CONSTRUCTION**

location: **CENTRE OF LOT 66**

Borehole ID: **HA3A-066**

sheet: 1 of 1

project no.: **GENZTAUC13086AP**

date started: **04 Nov 2014**

date completed: **04 Nov 2014**

logged by: **DBC**

checked by: **RBT**

position: E: 368428; N: 809133 (GPOC2000) surface elevation: Not Specified angle from horizontal: 90° DCP id.:
 drill model: Hand Auger hole diameter: 50 mm

drilling information				material substance								
method & support	penetration	samples & field tests	RL (m)	depth (m)	graphic log	classification symbol	material description	moisture condition	consistency / relative density	vanic shear strength (kPa)	DCP (blows/100 mm)	structure and additional observations
AD Hand Auger	N	None	0.0	0.0		None	ORGANIC SILT: non plastic, dark brown black, moist.	M				TOPSOIL FILL
							SILT: non plastic, brown orange, moist, hard.	M	H			FILL
							- with minor grey gravel inclusions (fine gravel sized) from 0.3m,					VS >216 kPa
							SILT: non plastic, brown orange, moist, stiff to very stiff.	M	St to VSt			YOUNGER ASHES
												VS 160/31 kPa
			0.5				- becoming dark orange with minor sand from 1.2m.					VS 171/34 kPa
			1.0				- becoming brown orange from 1.4m. Sand absent.					VS 75/21 kPa
			1.4				- with minor sand from 1.6m.					VS 182/26 kPa
			2.0				Sandy SILT: non plastic, brown orange, moist to Wc, very stiff.	M to W	VSt			VS 113/21 kPa
			2.1				Hand Auger HA3A-066 terminated at 2.1 m Target depth					VS 154/27 kPa

CDP 1.3.06 LEGEND-TEST/ILLUSTRATION OF SOIL BOREHOLE FOR ROSEHO ELEV. <source>ISS 01/04/2013 17:23

method AD auger drilling* AS auger screwing* HA hand auger W washbore HA hand auger	support M mud C casing penetration water (1) Oct-12 water level on data shown water inflow water outflow	samples & field tests B bulk disturbed sample D disturbed sample E environmental sample SE soft sensor sample UNP undisturbed sample #mm diameter HP hand penetrometer (kPa) N standard penetration test (SPT) N* SP1 - sample recovered Nc SP1 with solid cone VS vanic shear penetrometer (kPa) R refusal ND hammer sounding	classification symbol & soil description based on Unified Classification System: moisture D dry M moist W wet S saturated Wp plastic limit Wl liquid limit	consistency / relative density: VS very soft S soft F firm St stiff VSt very stiff H hard Fh friction VL very loose L loose Md medium dense D dense VD very dense
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* DL shown by suffix
 e.g. AD/T
 H blank bit
 T 1/2" bit
 V V bit

Engineering Log - Hand Auger

client: **THE LAKES LIMITED (2012)**
 principal:
 project: **THE LAKES STAGE 3 CONSTRUCTION**
 location: **CENTRE OF LOT 67**

Boothole ID: **HA3A-067**
 sheet: 1 of 1
 project no: **GENZTAUC13086AP**
 date started: **04 Nov 2014**
 date completed: **04 Nov 2014**
 logged by: **DBC**
 checked by: **RBT**

position: E: 358435; N: 800016 (BOPC2000) surface elevation: Not Specified angle from horizontal: 90° DCP id.: G001
 drill model: Hand Auger hole diameter : 50 mm

drilling information				material substance									
photo & support	penetration	water	samples & field tests	RL (m)	depth (m)	graphic log	classification symbol	material description	moisture condition	consistency / relative density	cone stress (kPa)	DCP (blows / 100 mm)	structure and additional observations
								ORGANIC SILT: non plastic, dark brown black, moist.	M				TOPSOIL FILL
					0.5			SILT: non plastic, brown orange, moist, stiff to very stiff.	M	St to VSt			VS 193/ 34 kPa YOUNGER ASHES
					1.0								VS 130/ 24 kPa
					1.5			Sandy SILT: non plastic, brown orange, moist.	M				VS 90/ 24 kPa
					1.5			SAND: fine to coarse grained, brown orange speckled black, with some silt, moist, medium dense.	M	MD			VS 147/ 18 kPa
					2.0			SILT: non plastic, pale brown orange, moist.	M				VS UTP
					2.0			SAND: fine to coarse grained, pale brown orange, moist, medium dense.	M	MD			VS UTP
					2.0			SILT: non plastic, pale brown orange, moist, hard.	M	II			VS UTP
					2.1			Hand Auger HA3A-067 terminated at 2.1 m Target depth					VS UTP

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method AD auger drilling AS auger casing HA hand auger W washbore HA hand auger	support M mud G casing N nil penetration water 	samples & field tests B bulk disturbed sample D disturbed sample E environmental sample SS split spoon sample U# undisturbed sample #/mm diameter HP hand penetrometer (kPa) N standard penetration test (SPT) N SPT - sample recovered Nc SPT with solid cone VS vane shear, peak/rounded (kPa) R retrieval HB hammer bouncing	classification symbol & soil description based on Unified Classification System moisture U dry M moist W wet S saturated Wp plastic limit Wl liquid limit	consistency / relative density VS very soft S soft F firm St stiff VSt very stiff II hard Fb friable VL very loose L loose MD medium dense D dense VL very dense
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Engineering Log - Hand Auger

client: **THE LAKES LIMITED (2012)**

principal:

project: **THE LAKES STAGE 3 CONSTRUCTION**

location: **CENTRE OF LOT 68**

Borehole ID: **HA3A-068**

sheet: 1 of 1

project no.: **GENZTAUC13086AP**

date started: **04 Nov 2014**

date completed: **04 Nov 2014**

logged by: **DBC**

checked by: **RBT**

position: E: 368441; N: 800061 (ROPC2000) surface elevation: Not Specified angle from horizontal: 90° DCP test: Gold
 drill mode: Hand Auger hole diameter: 50 mm

drilling information			material substance													
method & support	penetration	samples & field tests	RL (m)	depth (m)	graphic log	classification symbol	material description	moisture condition	consistency / relative density	VS shear stress (kPa)	DCP (blows/100 mm)	structure and additional observations				
Hand Auger	Not Encountered			0.0			ORGANIC SILT: non plastic, dark brown black, moist.	M				TOPSOIL FILL				
				0.5			SILT: non plastic, brown orange, moist, hard. - with minor sand from 0.4m.	M	H				YOUNGER ASHES VS >216 kPa			
				1.0			SAND: fine to medium grained, pale brown orange speckled black, with some silt, moist to wet, loose to medium dense. - silt absent from 0.9m. - with a <150mm lens of creamy pale brown Clayey SILT at 1.05m.	M	L to MD				VS UTP ROTOHEHU ASH VS >216 kPa			
				1.5			SILT: non plastic, cream brown, moist.	M						VS 79/ 24 kPa		
				1.5			SAND: fine to medium grained, pale gray speckled black, moist, medium dense. SILT: non plastic, brown, moist, hard.	M	MD						VS 57/ 27 kPa	
				1.5			SILT: non plastic, brown, moist, hard.	M	H							HAMILTON ASH VS UTP
				2.0												VS >216 kPa
Hand Auger HA3A-068 terminated at 2.1 m Target depth																

C:\Users\j... Desktop\1311516113086AP\DCP\TAUC13086AP\DCP\3086AP_068_HA3A_068.dwg

method AU auger drilling AS auger screening HA hand auger W washbore HA hand auger	support M mud C casing penetration water 10 Oct 12 water level on date shown water inflow water outflow	samples & field tests D bulk disturbed sample D disturbed sample E environmental sample SS soil sampler sample U# undisturbed sample (75mm diameter) HP point penetrometer (kPa) N standard penetration test (SPT) N* SPT - sample recovered Nc SPT with solid cone VS vane shear peak/retained (kPa) R refusal HB hammer bouncing	classification symbol & soil description based on Unified Classification System moisture D dry M moist W wet S saturated Wp plastic limit Wl liquid limit	consistency / relative density VS very soft S soft F firm S stiff VS1 very stiff H hard Hc triple VL very loose L loose MD medium dense D dense VD very dense
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* bc shown by suffix
 e.g. AX1
 Q blank fill
 T TC bit
 V bit

Engineering Log - Hand Auger

client: **THE LAKES LIMITED (2012)**

principal:

project: **THE LAKES STAGE 3 CONSTRUCTION**

location: **CENTRE OF LOT 70**

Borehole ID: **HA3A-070**

sheet: 1 of 1

project no.: **GENZTAUC13086AP**

date started: **04 Nov 2014**

date completed: **04 Nov 2014**

logged by: **DBC**

checked by: **RBT**

position: E 368451; N 799973 (BOPC2000) surface elevation: Not Specified angle from horizontal: 90° DCP id.: Gold
 drill model: Hand Auger hole diameter: 50 mm

drilling information				material substance									
method & support	penetration	soil	samples & field tests	RL (m)	depth (m)	graphic log	class / color symbol	material description	moisture condition	consistency / relative density	vane shear strength (kPa)	DCP (blows/100 mm)	structure and additional observations
								ORGANIC SILT: non plastic, dark brown cluck, moist.	M				TOPSOIL FILL
					0.5			SILT: non plastic, brown orange, with minor clay, moist to wet, stiff to hard. - clay absent from 0.5m.	M	H			VS >216 kPa YOUNGER ASHES
								- with minor clay from 0.5m.	M to W	St			VS 164/21 kPa VS 67/11 kPa
					1.0			SAND: fine to medium grained, pale brown orange speckled black, moist, medium dense to dense.	M	D			VS 59/27 kPa ROTOEHU ASH
								Clayey SILT: low plasticity, cream pale brown, moist.	M				VS UTP
								SAND: fine to medium grained, pale grey speckled black, moist, medium dense.	M	MD			VS UTP
								Sandy SILT: non plastic, cream pale brown, moist, stiff.	M	St			VS UTP
					2.0			Hand Auger HA3A-070 terminated at 2.1 m Target depth.					VS 84/34 kPa

method AD auger drilling* AS auger screwing* HA hand auger W wellbore HA hand auger	support M mud C casing N nil penetration 	samples & field tests B bulk disturbed sample D disturbed sample E environmental sample SS split spoon sample UWU undisturbed sample #mm diameter HP hand penetrometer (kPa) N standard penetration test (SPT) N* SPT - sample recovered Nc SPT with solid cone VS vane shear peak/undrained (kPa) R refusal HR hammer sounding	classification symbol & soil description based on Unified Classification System moisture D dry M moist W wet S saturated Wp plastic limit Wl liquid limit	consistency / relative density VS very soft S soft F firm St stiff VSt very stiff H hard Fh friable VL very loose L loose MD medium dense D dense VD very dense
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01112014 13086AP GENZTAUC13086AP HA3A-070 04/11/2014 12:28
 01112014 13086AP GENZTAUC13086AP HA3A-070 04/11/2014 12:28

Engineering Log - Hand Auger

client: **THE LAKES LIMITED (2012)**

principal:

project: **THE LAKES STAGE 3 CONSTRUCTION**

location: **CENTRE OF LOT 72**

Borehole ID: **HA3A-072**

sheet: 1 of 1

project no.: **GENZTAUC13086AP**

date started: **06 Mar 2015**

date completed: **06 Mar 2015**

logged by: **RB**

checked by: **RBT**

position: E: 368466; N: 789945 (ROPC2000) surface elevation: Not Specified angle from horizontal: 90° DCP id:
 drill model: Hand Auger hole diameter:

drilling information				material substance								
method & support	penetration	samples & field tests	PL (m)	depth (m)	diagram log	classification symbol	material description SOIL TYPE: plasticity or particle characteristics, colour, secondary and minor components	inclination structure	consistency / relative density	van shear stress (kPa)	DCP (blows/100 mm)	structure and additional observations
				0.0			ORGANIC SILT: non plastic, dark brown, dry, hard.	U	H			TOPSOIL FILL
				0.5			Sandy SILT: non plastic, orange, with black flecks, moist, hard.	M				YOUNGER ASHES VS 200 kPa
				1.0			Silty SAND: fine to coarse grained, well graded, orange-grey, moist.					VS 200 kPa
				1.5			SILT: non plastic, grey, moist, hard.		H			ROTOEHU ASH VS 200 kPa
				2.0			SAND: fine grained, uniform, pale grey, moist.					VS 200 kPa
				2.0			Clayey SILT: low plasticity, dark brown, moist, hard.		H			HAMILTON ASH VS 200 kPa
				2.0			Hand Auger HA3A-072 terminated at 2.0 m Target depth.					

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method AD auger drilling AS auger socketing HA hand auger W washbore HA hand auger	support W mud G casing N nt penetration 	samples & field tests R bulk disturbed sample D disturbed sample C environmental sample SE split spoon sample UWT undisturbed sample: 48mm diameter HP hand penetrometer (kPa) N standard penetration test (SPT) N* SPT - sample recovered Nc SPT with cone VS vane shear, peak/retained (kPa) R refusal FS hammer sounding	classification symbol & soil description based on Unified Classification System moisture D dry M moist W wet S saturated Wp plastic limit Wl liquid limit	consistency / relative density VS very soft S soft F firm St stiff VSt very stiff H hard Fb friable VL very loose L loose MD medium dense D dense VD very dense
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* all shown by suffix:
 AD ADVT
 R blank oil
 T 10 bit
 V bit

Borehole ID: **HA3A-075**
 sheet: 1 of 1
 project no.: **GENZTAUC13086AP**
 date started: **03 Nov 2014**
 date completed: **03 Nov 2014**
 logged by: **SLC**
 checked by: **RBT**

Engineering Log - Hand Auger

client: **THE LAKES LIMITED (2012)**
 principal:
 project: **THE LAKES STAGE 3 CONSTRUCTION**
 location: **CENTRE OF LOT 75**

position: E: 366494 N: 799899 (BOPC2000) surface elevation: Not Specified angle from horizontal: 90° DCP ill.
 drill model: Hand Auger hole diameter: 50 mm

drilling information			material substance											
method & support	penetration	water	sample & field tests	RL (m)	depth (m)	% solids log	classification symbol	material description	moisture condition	consistency / relative density	VS (kPa)	structure and additional observations		
method: AD support: M penetration: C water: HA tests: N			N: standard penetration test (SPT) SPT - sample recovered SPT will split cone VS: vane shear; peak/remoulded (kPa) R: refusal HS: hammer bouncing	0	0			ORGANIC SILT: non plastic, dark brown mottled orange brown, minor silt inclusions <20mm, moist.	M			TOPSOIL FILL		
				0.5			SILT: non plastic to low plasticity, brown, dry to moist, stiff to very stiff.	D to M	St to VS:	01	01		MATUA SUB-GROUP VS 162/ 10 kPa	
				0.5			0.5 m: becoming low plasticity,							VS 90/ 14 kPa
				1.0			0.8 m: minor pale brown mottles, minor black specks.	M						VS 146/ 15 kPa
				1.5			1.1 m: becoming pale cream brown with minor black specks. 1.5 m: becoming orange.							VS 07/ 0 kPa VS 111/ 16 kPa
2.0								Hand Auger HA3A-075 terminated at 2.0 m Target depth				VS 59/ 25 kPa		

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method: AD: auger drilling AS: auger screwing HA: hand auger W: washers HA: hand auger	support: M: marl C: casing	sample & field tests: D: bulk disturbed sample D: disturbed sample E: environmental sample SS: split spoon sample U#1: undisturbed sample #mm diameter HP: hard penetrometer (kPa) N: standard penetration test (SPT) NP: SPT - sample recovered Nu: SPT will split cone VS: vane shear; peak/remoulded (kPa) R: refusal HS: hammer bouncing	classification symbol & soil description based on Unified Classification System moisture: D: dry M: moist W: wet S: saturated Wp: plastic limit Wl: liquid limit	consistency / relative density: VS: very soft S: soft F: firm St: stiff VS1: very stiff H: hard Fb: friable VL: very loose L: loose MD: medium dense D: dense VD: very dense
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Engineering Log - Hand Auger

client: **THE LAKES LIMITED (2012)**
 principal:
 project: **THE LAKES STAGE 3 CONSTRUCTION**
 location: **CENTRE OF LOT 76**

Borehole ID: **HA3A-076**
 sheet: 1 of 1
 project no: **GENZTAUC13086AP**
 date started: **03 Nov 2014**
 date completed: **03 Nov 2014**
 logged by: **SLC**
 checked by: **RBT**

position: E: 308502; N: 744858 (DOPC2000) surface elevation: Not Specified angle from horizontal: 90° DCP ID:
 drill model: Hand Auger hole diameter: 50 mm

drilling information				material substance											
method & support	penetration	samples & field tests	RL (m)	depth (m)	soils log classification symbol	material description	moisture content	consistency / relative density	vanes shear stress (kPa)	DCP (blows/100 mm)	structure and additional observations				
AD AR HA W HA		M C B D E SS LW H N N* Nc VS R H	0.0 0.5 1.0 1.5 2.0	0.0	ORGANIC SILT: non plastic, dark brown mottled orange brown, minor silt inclusions <20mm, dry to moist.	D to M					TOPSOIL FILL				
				0.1	SILT: low plasticity, pale brown with black specks, moist, stiff.	M	Sl							MATUA SUB-GROUP VS 70/ 10 kPa	
				0.6	0.6 m: becoming brown,									VS 79/ 0 kPa	
				0.9	0.9 m: becoming pale brown with black specks, trace to minor clay,									VS 90/ 12 kPa	
				0.9										VS 79/ 10 kPa	
				1.5										VS 91/ 14 kPa	
				1.5										VS 68/ 12 kPa	
				1.9	1.5 m: becoming brown with orange brown mottles. 1.9 m: becoming brown.										
				2.0	Hand Auger HA3A-076 terminated at 2.0 m Target depth										

<p>method</p> <p>AD auger drilling*</p> <p>AR auger screening*</p> <p>HA hand auger</p> <p>W wash hole</p> <p>HA hand auger</p>	<p>support</p> <p>M mud</p> <p>C casing</p> <p>penetration</p> <p>water</p> <p>W Oct-12 water flow as data shows</p> <p>W water inflow</p> <p>W water outflow</p>	<p>samples & field tests</p> <p>B bulk disturbed sample</p> <p>D distributed sample</p> <p>E environmental sample</p> <p>SS split spoon sample</p> <p>LW undisturbed sample 100mm diameter</p> <p>H hand penetrometer (kPa)</p> <p>N standard penetration test (SPT)</p> <p>N* SPT - sample recovered</p> <p>Nc SPT with solid cone</p> <p>VS vane shear peak/undrained (kPa)</p> <p>R ratiol</p> <p>H hammer sounding</p>	<p>classification symbol & soil description based on Unified Classification System</p> <p>moisture</p> <p>D dry</p> <p>M moist</p> <p>W wet</p> <p>S saturated</p> <p>Wp plastic limit</p> <p>Wl liquid limit</p>	<p>consistency / relative density</p> <p>VS very soft</p> <p>S soft</p> <p>F firm</p> <p>St stiff</p> <p>VSt very stiff</p> <p>H hard</p> <p>Fh fragile</p> <p>VL very loose</p> <p>L loose</p> <p>MD medium dense</p> <p>D dense</p> <p>VD very dense</p>
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CDF 0.3.36 LIBRARY-PRINTED BY: A* Log: DDF UCHE/ICLL/HOK/DOVED + DCF TAU/CSREBAF/ICR/BORHO/RS/021 <<Uname>>+C:\user\51738

Engineering Log - Hand Auger

client: **THE LAKES LIMITED (2012)**
 principal:
 project: **THE LAKES STAGE 3 CONSTRUCTION**
 location: **CENTRE OF LOT 77**

Borehole ID: **HA3A-077**
 sheet: 1 of 1
 project no.: **GENZTAUC13086AP**
 date started: **22 Jan 2015**
 date completed: **22 Jan 2015**
 logged by: **SWH**
 checked by: **RBT**

position: E: 388528; N: 799845 (GDA2000) surface elevation: Not Specified angle from horizontal: 90° DCP No.:
 drill model: hole diameter: 50 mm

drilling information				material substance									
method & support	penetration	samples & field tests	RL (m)	depth (m)	depth in log	classification symbol	material description	moisture condition	consistency / relative density	DCP (blows/100 mm)	structure and additional observations		
method & support: HA water: not encountered	penetration: no resistance reaching to natural 10 DCP = 12 water level on data shown water inflow water outflow	samples & field tests: H bulk disturbed sample D disturbed sample E environmental sample SS split spoon sample U/W undisturbed sample (within diameter) HP hand penetrometer (kPa) N standard penetration test (SPT) N* SPT - sample recovered Nr SPT with solid cone VS vane shear (undrained) (kPa) R refusal HB hammer bouncing					100mm of topsoil removed after testing during the civil construction						
				0.5		Sandy SILT: fine to medium grained, non plastic, pale grey, dry, hard.	D	H				FILL VS >210 kPa	
				1.0		SILT: non plastic to low plasticity, pale orange, some fine to medium grained sand, some clay, dry to moist, stiff to very stiff. 0.5 m: becoming pale brown		St to VS					VS 171/ 40 kPa VS 85/ 27 kPa
				2.0		Clayey SILT: low plasticity, brown, some fine grained sand, moist, stiff to very stiff.							MATUA SUB-GROUP VS 113/ 31 kPa VS 104/ 31 kPa VS 110/ 37 kPa
				2.0			Hand Auger HA3A-077 terminated at 2.0 m Target depth						

method	support	samples & field tests	classification symbol & soil description based on Unified Classification System	consistency / relative density
AO auger drilling*	M mud	H bulk disturbed sample	moisture: D dry M moist W wet S saturated Wp plastic limit Wl liquid limit	VS very soft
AS auger screwing*	N rd	D disturbed sample		S soft
HA hand auger	C casing	E environmental sample		F firm
W washbore		SS split spoon sample		St stiff
HA hand auger		U/W undisturbed sample (within diameter)		VS _{st} very stiff
		HP hand penetrometer (kPa)		H hard
		N standard penetration test (SPT)		F ₈₀ friable
		N* SPT - sample recovered		VL very loose
		Nr SPT with solid cone		L loose
		VS vane shear (undrained) (kPa)		MD medium dense
		R refusal		D dense
		HB hammer bouncing		VD very dense

DCP: C 3 00 LIBRARY TEST EUB 7602 Doc: UCP-DCP-RICHIE-NOV-CO-05 + UCP-1AUCT00007-DCP-BOPEL-0-EE-GPJ <<DrawingFile>> C:\DCP\15-17-24

Engineering Log - Hand Auger

client: **THE LAKES LIMITED (2012)**

principal:

project: **THE LAKES STAGE 3 CONSTRUCTION**

location: **CENTRE OF LOT 78**

Borehole ID: **HA3A-078**

sheet: 1 of 1

project no: **GENZTAUC13086AP**

date started: **22 Jan 2015**

date completed: **22 Jan 2015**

logged by: **PM**

checked by: **RBT**

position: E: 358538; N: 799875 (GPOC2000) surface elevation: Not Specified angle from horizontal: 90° DCP id: _____
 drill model: _____ hole diameter: 80 mm

drilling information				material substance							
method & support	penetration	samples & field tests	depth (m)	log description symbol	material description	moisture content	consistency / relative density	VS shear stress (kPa)	DCP (blows / 100 mm)	structure and additional observations	
AD AS HA W UA	10-0ct-12 w/ite 10-0ct-12 w/ite water inflow water outflow	B D E SS URD HP N N* Nc VS R HD	0.0	ML	150mm of topsoil removed after testing during the civil construction	M	H	g1 g2		FILL	
					Clayey SILT: low plasticity, pale orange; some fine grained sand, dry to moist, stiff to hard. 0.3 m: becoming low to medium plasticity						D
			0.6		0.6 m: becoming medium plasticity			g1 g2		VS 110/ 20 kPa	
			1.0					g1 g2		VS 87/ 20 kPa	
			1.5	ML	Sandy SILT: fine grained, non plastic, pale orange-brown, dry, stiff. 1.5 m: becoming pale orange-brown, streaked, solid pink			g1 g2		MATUA SUB-GROUP VS 91/ 24 kPa	
			2.0		Hand Auger HA3A-078 terminated at 2.0 m Target depth			g1 g2		VS 94/ 27 kPa	

DDP 1.2 DE LUJARA 150 310 REV 04 04 2015 BORE-01E-NON-DETERED + DCP TALC:13086AP DCR: F07CHELES.CP. <<0newg>> 01/04/2015 17:28

method AD auger drilling AS auger screwing HA hand auger W washbore UA hand auger	support M mud C casing penetration 	samples & field tests B bulk disturbed sample D disturbed sample E environmental sample SS split spoon sample URD undisturbed sample: 80mm diameter HP hand penetrometer (kPa) N standard penetration test (SPT) N* SPT - sample recovered Nc SPT with solid cone VS vane shear, peak included (kPa) R refusal HD hammer ringing	classification symbol & soil description based on Unified Classification System moisture D dry M moist W wet S saturated Wp plastic limit Wl liquid limit	consistency / relative density VS very soft S soft F firm St stiff VSr very stiff H hard Ph firm VL very loose L loose Md medium dense D dense Vd very dense
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Engineering Log - Hand Auger

client: **THE LAKES LIMITED (2012)**

principal:

project: **THE LAKES STAGE 3 CONSTRUCTION**

location: **CENTRE OF LOT 79**

Borehole ID: **HA3A-079**

sheet: 1 of 1

project no: **GENZTAUC13086AP**

date started: **03 Nov 2014**

date completed: **03 Nov 2014**

logged by: **SLC**

checked by: **RBT**

position: E: 368544; N: 799613 (BDP02000) surface elevation: Not Specified angle from horizontal: 90° RCP ID:
 drill model: Hand Auger hole diameter: 50 mm

drilling information				material substance									
method & support	penetration	water	samples & field tests	RL (m)	depth (m)	2 metre log classification symbol	material description	moisture condition	consistency / relative density	cone shear / vane shear (kPa)	tip resistance (kPa)	DCP (blows/100 mm)	structure and additional observations
AD AS HA W HA	N	No Fracturing		0.5	0.5	H D St to VS	250mm of topsoil removed after testing during the civil construction	D	H				TOPSOIL FILL VS UTP: gravels
							ORGANIC SILT: non plastic, dark brown with orange brown and pale brown specks, minor fine to medium greywacke gravels, dry, hard.						VS 103/ 27 kPa
							SILT: non plastic, brown mottled pale brown and pale grey, dry, stiff to very stiff.						VS 183/ 33 kPa
							1.0 m: becoming brown.						VS 86/ 20 kPa
AD AS HA W HA	N	No Fracturing		1.5	1.5	M	Sandy SILT: low plasticity, orange brown mottled pale brown and brown with black specks, sand is fine to medium grained, minor fine to medium rhyolitic gravels, moist, stiff to very stiff. 1.6 m: 100mm zone of manganese deposits from 1.6 to 1.7 metres.	M					VS 58/ 12 kPa
													VS 106/ 18 kPa
AD AS HA W HA	N	No Fracturing		2.0	2.0		Hand Auger HA3A-079 terminated at 2.0 m Target depth						VS 117/ 26 kPa

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method AD auger drilling* AS auger screwing* HA hand auger W washbore HA hand auger	support M mud C casing N nil penetration 	samples & field tests B bulk disturbed sample D disturbed sample E environmental sample SS split spoon sample UDW undisturbed sample 75mm diameter HP hand penetrometer (kPa) N standard penetration test (SPT) N* SPT - sample recovery Nc SPT with unit cone VS vane shear, peak/undrained (kPa) R refusal HD hammer sounding	classification symbol & soil description based on Unified Classification System moisture D dry M moist W wet S saturated Wp plastic limit Wl liquid limit	consistency / relative density VS very soft R soft F firm St stiff VSf very stiff H hard Fb friable VL very loose L loose MD medium dense D dense VD very dense
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* bit shown by huffs
 A/G blank hr
 T TC bit
 V V fill

Engineering Log - Hand Auger

client: **THE LAKES LIMITED (2012)**

principal:

project: **THE LAKES STAGE 3 CONSTRUCTION**

location: **CENTRE OF LOT 80**

Borehole ID: **HA3A-080**

sheet: 1 of 1

project no.: **GENZTAUC13086AP**

date started: **03 Nov 2014**

date completed: **03 Nov 2014**

logged by: **SLC**

checked by: **RBT**

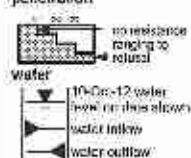
position: E: 368555; N: 799798 (BOP02000) surface elevation: Not Specified angle from horizontal: 90° DCP ID:
 drill model: Hand Auger hole diameter: 50 mm

drilling information				material substance										
method & support	penetration	wafer	samples & field tests	RL (m)	depth (m)	graphic log	class. color symbol	material description SOIL TYPE: plasticity or particle characteristics, colour, secondary and minor components	moisture description	consistency / relative density	veins shear strength (kPa)	DCP (blows / 100 mm)	structure and additional observations	
AD AS HA W HA	N	Nil	Nil	2.0	0.0			150mm of topsoil removed after testing during the civil construction						
					0.5		ORGANIC SILT: non plastic, dark brown with orange brown and pale brown specks, minor fine to medium greywacke gravels, dry, hard.	D	H				TOPSOIL FILL VS UTP: gravels	
					0.7		SILT: non plastic, orange brown, dry to moist, stiff to hard.		SI to II				MATUA SUB-GROUP VS 200 xPa	
					1.0		0.7 m: becoming brown, dry to moist.		D to M				VS 160/ 20 kPa	
				1.2			1.2 m: minor pale brown mollus, moist		M				VS 172/ 25 kPa	
				1.5									VS 83/ 14 kPa	
				2.0				Hand Auger HA3A-080 terminated at 2.0 m Target depth						VS 86/ 12 kPa

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method AD auger drilling* AS auger screwing* HA hand auger W wash bore HA hand auger	support M mud C casing Nil	samples & field tests B bulk disturbed sample D disturbed sample E environmental sample SS split spoon sample LSW undisturbed sample ##mm diameter H ² hand penetrometer (kPa) N standard penetration test (SPT) N* SPT - sample recovered KC SPT wet soil core VR vane shear, peak/undrained (kPa) R refusal CS hammer counting	classification symbol & soil description based on Unified Classification System moisture D dry M moist W wet S saturated Wp plastic limit Wl liquid limit	nonplasticity / relative density VS very soft S soft F firm St stiff VSt very stiff H hard Fb friable VL very loose L loose MD medium dense D dense VD very dense
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* fill shown by suffix
 e.g. AD7
 B blank bit
 T TC bit
 V vt



Engineering Log - Hand Auger

client: **THE LAKES LIMITED (2012)**

principal:

project: **THE LAKES STAGE 3 CONSTRUCTION**

location: **CENTRE OF LOT 81**

Borehole ID: **HA3A-081**

sheet: 1 of 1

project no: **GENZTAUC13086AP**

date started: **03 Nov 2014**

date completed: **03 Nov 2014**

logged by: **SLC**

checked by: **RBT**

position: E: 362562; N: 799782 (BOPC2000) surface elevation: Not Specified angle from horizontal: 90° DCP id.:
 drill model: Hand Auger hole diameter: 50 mm

drilling information				material substance								
method & support	penetration	water	samples & field tests	depth (m)	graphical	class / color symbol	material description	moisture condition	consistency / relative density	value shear strength (kPa)	DCP (blows/100 mm)	structure and additional observations
AD HA	N	Not Encountered		0.0 - 0.1	[Cross-hatched]		100mm of topsoil removed after testing during the civil construction	I2				TOPSOIL FILL
				0.1 - 0.5			Sandy SILT: non plastic, brown mottled orange brown and pale brown, sand is fine grained, dry, stiff to hard.	H			VS 200 kPa	MATUA SUB-GROUP
				0.5 - 1.0			SILT: low to medium plasticity, brown, some clay, moist, stiff to very stiff.	St			VS 69/0 kPa	
				1.0 - 1.5			Sandy SILT: non plastic, orange brown mottled pale grey with black specks, minor medium grained sand, trace medium grained (hyaline) gravels (sub rounded), dry to moist, very stiff.	M			VS 74/10 kPa	
				1.5 - 2.0			1.8 m: becoming pale grey with black specks.	VSt			VS 120/14 kPa	
				2.0			Hand Auger HA3A-081 terminated at 2.0 m Target depth	D			VS 122/27 kPa	
								M			VS 160/29 kPa	

CDF 3 5 08 LIBRARY - EST 318 0000P 043 00P 609E-01E 10H 020E0 - 30° TAL CTBMSAP 03R 505H01F5.07. 4-Drawing File: C:\M2013 1724

method AD auger drilling* AS auger screwing* HA hand auger W washbore HA hand auger	support M mud C casing N nil penetration 	samples & field tests B bulk disturbed sample D1 disturbed sample E environmental sample SS split spoon sample UH1 undisturbed sample within diameter HP hand penetrometer (kPa) N standard penetration test (SPT) N* SPT - sample recovered No SP with solid cone VS vane shear, peak/ultimate (kPa) W wheel HB hammer bouncing	classification symbol & soil description based on United Classifier System moisture U dry M moist W wet S saturated Wp plastic limit Wl liquid limit	consistency / relative density VS very soft S soft F firm St stiff VSt very stiff U hard Fc friable VL very loose L loose ML medium dense D dense VU very dense
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Engineering Log - Hand Auger

client: **THE LAKES LIMITED (2012)**

principal:

project: **THE LAKES STAGE 3 CONSTRUCTION**

location: **CENTRE OF LOT 82**

Borehole ID: **HA3A-082**
 sheet: 1 of 1
 project no: **GENZTAUC13086AP**
 date started: **03 Nov 2014**
 date completed: **03 Nov 2014**
 logged by: **SLC**
 checked by: **RBT**

position: E: 368559; N: 799765 (GPOC2000) surface elevation: Not Specified angle from horizontal: 90° DCP id.:
 drill model: Hand Auger hole diameter: 50 mm

drilling information			material substance									
method & support	penetration	samples & field tests	RL (m)	depth (m)	stratigraphic log	classification symbol	material description	moisture condition	consistency / relative density	vanic shear strength (kPa)	DCP (blows/100 mm)	structure and additional observations
Hand Auger	-	-	-	0.0 - 0.1	[Cross-hatched pattern]		ORGANIC SILT: non plastic, dark brown with orange brown and pale brown specks, minor fine to medium graywacke gravels, dry, hard, 100mm of topsoil removed after testing during the civil construction	D	H			TOPSOIL FILL
				0.1 - 0.5	[Diagonal lines pattern]		SILT: non plastic to low plasticity, orange brown mottled brown, minor medium grained sand, dry to moist, stiff	D to M	St			MATUA SUB-GROUP
				0.5 - 1.2	[Diagonal lines pattern]		0.6 m: low to medium plasticity, becoming brown with black specks, minor clay.	M		VS 72/ 10 kPa		
				1.2 - 1.5	[Diagonal lines pattern]		1.2 m: becoming pale cream brown with black specks.			VS 65/ 10 kPa		
Hand Auger	-	-	-	1.5 - 2.0	[Diagonal lines pattern]		Clayey SILT: medium plasticity, pale cream brown with black specks, moist, firm.					VS 53/ 10 kPa
				2.0 - 2.0	[Diagonal lines pattern]		Hand Auger HA3A-082 terminated at 2.0 m Target depth.					VS 48/ 10 kPa

C:\P\03_06_LIBR\PIV\TEST\DLB\m\A*.log DCP BORER-HOLE MNS COISEL 1 DCP 1A\CT000009 CLR BORER-HOLE ES(GF) --CrackingPhase C:\P\03_06_17\96

method AU auger drilling* AS auger screwing* HA hand auger* W washbore HA hand auger	support M mud C casing N nil penetration 	samples & field tests D bulk disturb sample D disturbed sample E environmental sample SS spill spoon sample U#1 undisturbed sample 40mm diameter H-P hand penetrometer (N/P) N standard penetration test (SPT) N* SPT - sample recovered hc BPT with split cone VE vane shear, peak/retained (kPa) R refusal FS hammer sounding	classification symbol & soil description based on Unified Classification System moisture D dry W moist W wet S saturated Wp plastic limit Wl liquid limit	consistency / relative density VS very soft S soft F firm St stiff VSt very stiff H hard Fc friable VL very loose L loose MD medium dense D dense VD very dense
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* bit shown by suffix
 A.Y.T
 D blank bit
 T TC bit
 V bit

Engineering Log - Hand Auger

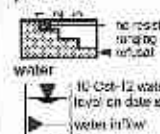
Borehole ID: **HA3A-083**
 sheet: 1 of 1
 project no: **GENZTAUC13086AP**
 date started: **03 Nov 2014**
 date completed: **03 Nov 2014**
 logged by: **SLC**
 checked by: **RBT**

client: **THE LAKES LIMITED (2012)**
 principal:
 project: **THE LAKES STAGE 3 CONSTRUCTION**
 location: **CENTRE OF LOT B3**

position: E: 368576; N: 799753 (BOPC2000) surface elevation: Not Specified angle from horizontal: 90° DCP lid:
 drill model: Hand Auger hole diameter: 50 mm

drilling information				material substance							
method & support	penetration	samples & field tests	RL (m)	depth (m)	classification symbol	material description	moisture condition	consistency / relative density	cone resistance (kPa)	DCP (blows/100 mm)	structure and additional observations
						ORGANIC SILT: non plastic, dark brown with orange brown and pale brown specks, colour fine to medium greywacke gravels, dry, hard.	D	H			TOPSOIL FILL
											VS UTP; gravels
				0.5		SILT: low plasticity, brown with pale brown and orange brown specks, trace fine grained sand, moist, stiff.	M	St			MATUA SUB-GROUP
						0.8 m: becoming pale brown with trace black specks.					VS 64/ 14 kPa
				1.0		1.2 m: some clay below 1.2 metres. Becoming pale cream brown with trace black specks.					VS 63/ 0 kPa
				1.5		Clayey SILT: medium plasticity, pale cream brown with black specks, moist, firm.					VS 50/ 0 kPa
				2.0		Silty CLAY: high plasticity, pale cream brown with black specks, moist, firm.					VS 35/ 14 kPa
						Hand Auger HA3A-083 terminated at 2.0 m Target depth.					

010-314-0101 (NZA) TEL: 010-314-0101 FAX: 010-314-0101

method AD auger drilling* AS auger screwing* HA hand auger W washers HA hand auger	support M mud C casing N nil penetration  no resistance water in flow water out flow water in flow	samples & field tests B bulk disturbed sample D disturbed sample E environmental sample SS split spoon sample Uw# undisturbed sample # (mm) diameter H# hard penetrometer (kPa) N standard penetration test (SPT) N# SPT - sample recovered Nc SPT with cone VS vane shear, peak/rounded (kPa) R refusal HE hammer sounding	classification symbol & soil description based on Unified Classification System moisture D dry M moist W wet S saturated Wp plastic limit WL liquid limit	consistency / relative density VS very soft S soft F firm R# stiff VS# very stiff H hard F# friable VL very loose L loose MD medium dense D dense VD very dense
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* Blows by stirrer
 e.g. AD/T
 B: blank bit
 I: IC bit
 V: vib

Engineering Log - Hand Auger

client: **THE LAKES LIMITED (2012)**
 principal:
 project: **THE LAKES STAGE 3 CONSTRUCTION**
 location: **CENTRE OF LOT 84**

Borehole ID: **HA3A-084**
 sheet: 1 of 1
 project no.: **GENZTAUC13086AP**
 date started: **03 Nov 2014**
 date completed: **03 Nov 2014**
 logged by: **SLC**
 checked by: **RBT**

position: E: 368690; N: 799738 (DOPC2000) surface elevation: Not Specified angle from horizontal: 80° DCP ID:
 drill model: Hand Auger hole diameter: 50 mm

drilling information				material substance							
method & support	penetration	samples & field tests	RL (m)	depth (m)	graphic log classification symbol	material description SOIL TYPE: plasticity or particle characteristics, colour, secondary and minor components	moisture condition	consistency / relative density	vanes shear strength (kPa)	DCP (blows/100 mm)	structure and additional observations
AD					[Cross-hatched pattern]	ORGANIC SILT; non plastic, dark brown, pale grey sandy silt inclusions <10mm, trace fine to medium gravels, dry to moist, hard.	D to M	H			TOPSOIL FILL
				0.5	[Vertical lines]	SILT: low plasticity, brown, trace pale grey specks, moist, stiff to very stiff.	M	SI to VSI			MATUA SUB-GROUP
				0.6		0.6 m: some pale brown mottles, minor to some clay			61	61	VS 112/ 12 kPa
				1.0					60	60	VS 131/ 18 kPa
				1.4		1.4 m: becoming pale brown.			60	60	VS 68/ 14 kPa
				1.5					60	60	VS 50/ 8 kPa
				2.0		Hand Auger HA3A-084 terminated at 2.0 m Target depth			60	60	VS 66/ 18 kPa

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method AD auger drilling* AS auger screwing* HA hand auger W washbore HA hand auger	support M mic G mining penetration * as resistance required to push water * 10-20L water level on table & 1cm * water inflow * water outflow	samples & field tests B bulk disturbed sample D disturbed sample E environmental sample SS split spoon sample U/M undisturbed sample #mm diameter RP hand penetrometer (kPa) N standard penetration test (SPT) N* SPT - sample recovered: RPT with solid cone VS vane shear peak/retained (kPa) R refusal HD hammer sounding	classification symbol & soil description based on United Classification System moisture D dry M moist W wet S saturated Wp plastic limit Wl liquid limit	consistency / relative density VS very soft S soft F firm ST stiff VST very stiff H hard FH friable VL very loose L loose MD medium dense D dense VD very dense
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* D/L/slower by suffix
 e.g. AD/T
 B blank bit
 T TC bit
 V bit

Engineering Log - Hand Auger

client: **THE LAKES LIMITED (2012)**
 principal:
 project: **THE LAKES STAGE 3 CONSTRUCTION**
 location: **CENTRE OF LOT 85**

Borehole ID: **HA3A-085**
 sheet: 1 of 1
 project no: **GENZTAUC13086AP**
 date started: **03 Nov 2014**
 date completed: **03 Nov 2014**
 logged by: **SLC**
 checked by: **RBT**

position: E: 368609; N: 799724 (MPC2000) surface elevation: Not Specified angle from horizontal: 90° DCP id.:
 drill model: Hand Auger hole diameter: 50 mm

drilling information				material substance						
penetration	samples & tests	depth (m)	classification symbol	material description	moisture condition	consistency / relative density	vane shear (kPa)	DCP (blows/100 mm)	structure and additional observations	
		0.0 - 0.5		ORGANIC SILT: non plastic, blank mottled pale grey and orange brown, minor fine sand, dry, hard.	D	H			TOPSOIL FILL	
		0.5 - 1.5		SILT: non plastic, yellow brown mottled pale grey with black specks, moist, stiff to very stiff.	M	St to VSst			VS 156/ 25 kPa MATUA SUB-GROUP	
		1.5 - 1.8		Sandy SILT: non plastic to low elasticity, pale cream brown with black specks, sand is fine to medium grained, moist, stiff.		St			VS 98/ 18 kPa VS 161/ 24 kPa	
		1.8 - 2.0		Clayey SILT: medium plasticity, brown, moist, stiff.		St			VS 74/ 0 kPa VS 96/ 0 kPa	
		2.0		Hand Auger HA3A-085 terminated at 2.0 m Target depth					VS 65/ 10 kPa	

method AD auger drilling* AS auger auger/mg HA hand auger W washbore HA hand auger	support M mud C casing N nil penetration water 10 Lit 12 water level on rate down water flow water inflow	samples & field tests: B bulk disturbed sample D disturbed sample C environmental sample SS split spoon sample UWF undisturbed sample #mm diameter HP hand penetrometer (kPa) N standard penetration test (SPT) N* SPT - sample recovered Nc SPT with solid cone VS vane shear; peak/remoulded (kPa) R refusal HB rammer bouncing	classification symbol & soil description based on Unified Classification System moisture D dry M moist W wet S saturated Wp plastic limit Wl liquid limit	consistency / relative density VS very soft S soft F firm St stiff VSs very stiff H hard Fb brittle VL very loose L loose MD medium dense D dense VD very dense
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C:\p\338_180417\1707_013.mxd AP 134 CO5 BO3H-C-E\NON CORP - ECP TAUC 13086AP GCS_SORINCLUBS.SHP <<Down>> 20/11/2014 7:21

Engineering Log - Hand Auger

client: **THE LAKES LIMITED (2012)**
 principal:
 project: **THE LAKES STAGE 3 CONSTRUCTION**
 location: **CENTRE OF LOT 86**

Borehole ID: **HA3A-086**
 sheet: 1 of 1
 project no: **GENZTAUC13086AP**
 date started: **03 Nov 2014**
 date completed: **03 Nov 2014**
 logged by: **SLC**
 checked by: **RBT**

position: E: 368813; N: 795712 (POPC2000) surface elevation: Not Specified angle from horizontal: 90° DCP id.:
 drill model: Hand Auger hole diameter: 50 mm

drilling information				material substance								
method & support	penetration	samples & field tests	RL (m)	depth (m)	graphic log	classification symbol	material description	mixture condition	consistency / relative density	vane shear strength (kPa)	DCP (blows/100 mm)	structure and additional observations
AD No Encountered	N		0.0	0.0		D	ORGANIC SILT; non plastic, black mottled pale grey and orange brown, minor fine sand, dry.	D	VS UH			TOPSOIL FILL
							SILT; non plastic, orange brown mottled pale brown, dry, hard.					H
							Clayey SILT; low to medium plasticity, brown, dry to moist, stiff to hard.	D to M	VS TH		MATUA SUB-GROUP	
							1.2 m: becoming moist	M	VS 101/ 48 kPa	VS 200 kPa	VS 101/ 38 kPa	VS 117/ 20 kPa
Hand Auger HA3A-086 terminated at 2.0 m Target depth												

CDF C 3 06 LIBRARY-TEST (01/11/14) .jpg CDF CDF UCRL ICLL HOK DOCSID + DCP TAUC13086AP 30F BOREHO ES.D71 <cfwong> 14-11-14 09:20:15 1/22

method AD auger drilling* AS auger screwing* HA hand auger W washbore HA hand auger	support M mud C casing N nil penetration 	samples & field tests H bulk disturbed sample D disturbed sample E environmental sample SS split spoon sample UW undisturbed sample #mm diameter HP hand penetrometer (kPa) N standard penetration test (SPT) N* SPT - sample recovered AC 8" x 1" with solid cone VS vane shear, peak/retained (kPa) R retinal HB hammer sounding	classification symbol & soil description based on Unified Classification System mixture D dry M moist W wet S saturated Wp plastic limit Wl liquid limit	consistency / relative density VS very soft S soft F firm St stiff VSt very stiff H hard Ea elastic VL very loose L loose MD medium dense D dense VD very dense
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* bit shown by suffix
 A.D. ADT
 B blank bit
 T TG bit
 V V bit

Engineering Log - Hand Auger

client: **THE LAKES LIMITED (2012)**
 principal:
 project: **THE LAKES STAGE 3 CONSTRUCTION**
 location: **CENTRE OF LOT 87**

Borehole ID: **HA3A-087**
 sheet: 1 of 1
 project no: **GENZTAUC13086AP**
 date started: **14 Nov 2014**
 date completed: **14 Nov 2014**
 logged by: **SLC**
 checked by: **RBT**

position: E: 368577; N: 799663 (BDPC2000) surface elevation: Not Specified angle from horizontal: 90° DCP id.:
 drill model: Hand Auger hole diameter: 50 mm

drilling information					material substance									
method & support	penetration	water	samples & field tests	RL (m)	depth (m)	drilling log	class. code or symbol	material description	moisture condition	consistency / relative density	vene shear strength (kPa)	DCP (blows / 300 mm)	structure and additional observations	
								50mm of topsoil removed after testing during the civil construction	D	II			TOPSOIL FILL	
					0.5			Sandy SILT: non plastic, orange brown mottled pale grey, dry, hard.	D to M	H			YOUNGER ASHES VS UTP; hard silt	
								INTERBEDDED SAND AND SILTY SAND: sand is fine to medium grained and pale brown. Silty sand is fine grained and pale brown. 100mm bedding, dry to moist.					VS 200 kPa ROTOCHU ASH	
					1.0			Clayey SILT: medium plasticity, brown, dry to moist, hard.		H			HAMILTON ASH VS 200 kPa	
					1.5								VS 200 kPa	
					2.0			Hand Auger HA3A-087 terminated at 2.0 m Target depth					VS 200 kPa	

SOP 3.0.05, 1/2014, 1/2015, 1/2016, 1/2017, 1/2018, 1/2019, 1/2020, 1/2021, 1/2022, 1/2023, 1/2024

method AD auger drilling* AS auger screwdrill* HA hand auger W washbore HA hand auger	support M mud C casing N nil penetration 	samples & field tests B bulk disturbed sample LI disturbed sample E environmental sample SR split spoon sample UDW undisturbed sample (50mm diameter) HP hand penetrometer (kPa) N standard penetration test (SPT) N* SPT - sample recovered No SPT with soil cone VS vane shear, peak/monotonic (kPa) H refusal CB hammer sounding	classification symbol & soil description based on Unified Classification System moisture D dry M moist W wet S saturated Wa plastic limit WL liquid limit	consistency / relative density VS very soft S soft F firm St stiff VS1 very stiff H hard Fc friable VL very loose L loose MC medium dense D dense VD very dense
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* as shown by suffix
 e.g. AD/T
 B blank bit
 T TC bit
 V V bit

Engineering Log - Hand Auger

client: **THE LAKES LIMITED (2012)**
 principal:
 project: **THE LAKES STAGE 3 CONSTRUCTION**
 location: **CENTRE OF LOT 89**

Borehole ID: **HA3A-089**
 sheet: 1 of 1
 project no: **GENZTAUC13086AP**
 date started: **14 Nov 2014**
 date completed: **14 Nov 2014**
 logged by: **SLC**
 checked by: **RBT**

position: E: 368553; N: 799711 (BOPC2000) surface elevation: Not Specified angle from horizontal: 90° DCP (m):
 drill model: Hand Auger hole diameter: 50mm

drilling information				material substance													
method & support	penetration	samples & field tests	RL (m)	depth (m)	graphic log classification symbol	material description	moisture condition	consistency / relative density	Vane shear (kPa)	DCP (blows/100 mm)	structure and additional observations						
AD AS HA W WA	100-12 water 100-12 water yellow to brown water to blue		0.5	0.5		150mm of topsoil removed after testing during the civil construction ORGANIC SILT: non plastic, dark brown mollic orange brown and pale grey, dry, hard.	D	H			TOPSOIL FILL						
														VS 200/ kPa			
																VS 200/ 33 kPa	
																MATUA SUB-GROUP	
																VS 191/ 24 kPa	
			1.0	1.0		SILT: low plasticity, brown orange, becomes greasy when reworked, trace black specks and minor pale grey mollic, moist, very stiff to hard. (1.95 m) minor to some fine to medium grained sand.	M	VS to H			VS 142/ 18 kPa						
			1.5	1.5							VS 130/ 0 kPa						
			2.0	2.0							VS 200/ 19 kPa						
Hand Auger HA3A-089 laminated at 2.0 m Target depth																	

DATE: 14/11/2014 10:00 AM
 LOGGED BY: SLC
 CHECKED BY: RBT
 PROJECT: THE LAKES STAGE 3 CONSTRUCTION
 LOCATION: CENTRE OF LOT 89
 BOREHOLE ID: HA3A-089

method AD auger drilling* AS auger screwing* HA hand auger W washcore WA hand auger	support M mud C casing N nil penetration 	samples & field tests B bulk disturbed sample D disturbed sample E environmental sample SS split spoon sample (##) undisturbed sample ##mm diameter KP hand penetrometer (kPa) N standard penetration test (SPT) N1 SPT - sample recovered N2 SPT with solid cone VS vane shear, peak/remoulded (kPa) R refusal HB hammer sounding	classification symbol & soil description based on Unified Classification System moisture (D) dry M moist W wet S saturated Wp plastic limit Wl liquid limit	consistency / relative density VS very soft S soft F firm SF stiff VS1 very stiff H hard Fb friable VL very loose L loose MD medium dense D dense VD very dense
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* as shown by suffix:
 e.g. AD(X)
 H (hand auger)
 TC (top)
 V (vane)

Engineering Log - Hand Auger

Borehole ID: **HA3A-090**
 sheet: **1 of 1**
 project no.: **GENZTAUC13086AP**
 date started: **14 Nov 2014**
 date completed: **14 Nov 2014**
 logged by: **RB**
 checked by: **RBT**

client: **THE LAKES LIMITED (2012)**
 principal:
 project: **THE LAKES STAGE 3 CONSTRUCTION**
 location: **CENTRE OF LOT 90**

position: E: 368542; N: 799775 (GPGC2000) surface elevation: Not Specified angle from horizontal: 80° DCP ID:
 drill model: Hand Auger hole diameter : 50 mm

drilling information				material substance										
method & support	penetration	samples & field tests	RL (m)	depth (m)	graphic log	classification symbol	material description	relative condition	consistency / relative density	cone shear stress (kPa)	DCP (blows/100mm)	structure and additional observations		
AD AS HA W HA		No. 5 encountered		0.0			250mm of topsoil removed after testing during the civil construction							
				0.5			ORGANIC SILT: non plastic, dark brown, moist, very stiff.	M	VS1	100			TOPSOIL FILL VS 171/34 kPa	
							SILT: non plastic, orange-brown, moist, very stiff.							FILL VS 143/23 kPa
				1.0			SILT: non plastic, orange, interbedded with pockets of clayey silt (approx. 50mm thick, pink with black flecks); moist, very stiff.							VS 110/13 kPa MATUA SUB-GROUP
				1.5			Sandy SILT: non plastic, orange, sand is course grained, moist, very stiff.							VS 149/26 kPa
			2.0				Clayey SILT: low plasticity, orange-brown, moist to wet, stiff.	M to W	SI	100		VS 125/12 kPa		
				2.0			Hand Auger HA3A-090 terminated at 2.0 m Target depth					VS 50/0 kPa		

C:\P_C\06_LIMRARY\13086AP\03_CCF_BOREHOLE_HOZ_COSED_00P_Ta_C\13086AP_03R_DWG_HOZ_COSED_00P_Ta_C\03R_DWG_HOZ_COSED_00P_Ta_C.dwg

method AD auger drilling AS auger screwing HA hand auger W washcore HA hand auger	support M min C casing N all penetration 	samples & field tests H bulk disturbed sample D disturbed sample E environmental sample SS split spoon sample LW undisturbed sample #mm diameter SP hand penetrometer (kPa) N standard penetrometer test (SPT) N* SPT - sample recovered Nc SPT with solid cone VS vane shear peak/residual (kPa) R refusal TD hammer sounding	classification symbol & soil description based on Unified Classification System moisture D dry M moist W wet S saturated Wp plastic limit WL liquid limit	consistency / relative density VS very soft S soft F firm St stiff VS1 very stiff H hard Hn hard VL very loose L loose MD medium dense D dense VD very dense
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* D/E shown by suffix
 G.S. ADVI
 G. blank bit
 T. TC bit
 V. V bit

Engineering Log - Hand Auger

client: **THE LAKES LIMITED (2012)**
 principal:
 project: **THE LAKES STAGE 3 CONSTRUCTION**
 location: **CENTRE OF LOT 91**

Borehole ID: **HA3A-091**
 sheet: 1 of 1
 project no: **GENZTAUC13086AP**
 date started: **14 Nov 2014**
 date completed: **14 Nov 2014**
 logged by: **SLC**
 checked by: **RBT**

position: E: 368531; N: 709741 (BOPC2000) surface elevation: Not Specified angle from horizontal: 90° DCP ID:
 drill model: Hand Auger hole diameter: 50 mm

drilling information				material substance								
method of support	penetration	samples & field tests	RL (m)	depth (m)	graphic log	classification symbol	material description	moisture condition	consistency / relative density	veins shear strength (kPa)	DCP (blows/100 mm)	structure and additional observations
HA				0.0			150mm of topsoil removed after testing during the civil construction					
				0.5		D	ORGANIC SILT: non plastic, dark brown, dry, hard.		II			TOPSOIL FILL VS 200 kPa
				0.5		H	Sandy SILT: non plastic to low plasticity, brown mottled pale brown and orange brown, dry, hard.		H			FILL VS 200 kPa
				1.0		M	SILT: low plasticity, brown mottled pale brown, rare organic silt inclusions <5mm and fine grained sub-angular gravels, moist, hard.		M			
				1.0		VS1	Clayey SILT: low to medium plasticity, brown mottled orange brown and pale grey, moist, very stiff.		VS1			MATUA SUB-GROUP VS 122/ 25 kPa
				1.5			1.2 m: becoming pale brown with black specks.					VS 124/ 0 kPa
				1.5			SILT: low plasticity, brown orange with black specks, occasional pale cream brown clayey silt inclusions <40mm, moist, very stiff.					VS 160/ 12 kPa
				2.0			Hand Auger HA3A-091 terminated at 2.0 m target depth					VS 170/ 12 kPa

D:\3\0530_BROWNSTEAD\BROWNSTEAD\BOPC2000\GENZTAUC13086AP\GENZTAUC13086AP\HA3A-091\HA3A-091_20141114.dwg

method AD auger drilling* AS auger 'screwing' HA hand auger W washbore HA hand auger	support M mud C casing N nil penetration 	samples & field tests B bulk disturbed sample D disturbed sample E environmental sample BS split spoon sample LW undisturbed sample @ (m): diameter HP hand penetrometer (kPa) N standard penetration test (SPT) N* SPT - sample recovered NC SPT with soil cone VS vane shear, peak/residual (kPa) R refusal HB hammer sounding	classification symbol & soil description based on Unified Classification System moisture D dry M moist W wet S saturated Wp plastic limit Wl liquid limit	consistency / relative density VS very soft S soft F firm St stiff VS1 very stiff F hard Fa friable VL very loose L loose ML medium dense D dense VD very dense
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* not shown by shaft
 n.g. blank fill
 TC bit
 V bit

Engineering Log - Hand Auger

client: **THE LAKES LIMITED (2012)**
 principal:
 project: **THE LAKES STAGE 3 CONSTRUCTION**
 location: **CENTRE OF LOT 92**

Borehole ID: **HA3A-092**
 sheet: 1 of 1
 project no.: **GENZTAUC13086AP**
 date started: **14 Nov 2014**
 date completed: **14 Nov 2014**
 logged by: **RB**
 checked by: **RBT**

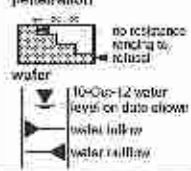
position: G: 380524; N: 799757 (BOPC2010) surface elevation: Not Specified angle from horizontal: 90° DCP id:
 drill model: Hand Auger hole diameter: 50 mm

drilling information				material substance							
method & support	penetration	samples & field tests	RL (m)	depth (m)	graphical classification symbol	material description SOIL TYPE: plasticity or particle characteristics, colour, secondary and minor components	moisture classification	consistency / relative density	vane shear (kPa)	DCP (blows / 100 mm)	structure and additional observations
HA						50mm of topsoil removed after testing during the civil construction	M				TOPSOIL FILL
						ORGANIC SILT: non plastic, dark brown, moist					FILL
						Clayey SILT: low plasticity, orange-brown mottled orange, moist, very stiff to hard.		VS1 to H			VS 200 kPa
				0.5		SILT: non plastic, orange, moist, very stiff to hard.					MATUA SUB-GROUP
											VS 171/ 37 kPa
											VS 164/ 34 kPa
				1.5							VS 125/ 27 kPa
											VS 200 kPa
						Sandy: non plastic, orange, sand is medium to coarse grained, interbedded with clayey silt pockets (approx. 50mm thick, pink-white with black fibres), moist, very stiff to hard.					VS 110/ 13 kPa
				2.0		Hand Auger HA3A-092 terminated at 2.0 m Target depth					VS 131/ 12 kPa

CS2_0_8_25_LITE169X-1ES1.GPJ Log DCP-BORHOLE NON-CORSE + DCP TAUD15086A2 DCP BORHOLE (BOPC) (BOPC) <<C:\scripts\l...>> 11/24/14 9:11:23

method AI: auger drilling* AS: auger-screwing* HA: hand auger W: wash hole HA: hand auger	support M: mud C: casing N: nil	samples & field tests B: bulk disturbed sample D: disturbed sample E: environmental sample SS: SPT spoon sample US: undisturbed sample #50mm diameter HP: hand penetrometer (kPa) N: standard penetration test (SPT) N': SPT - sample recovered NC: SPT with solid cone VS: vane shear, peak (emerged) (kPa) R: refusal HB: hammer bounce	classification symbol & soil description as per or Unified Classification System	nonplasticity / relative density VS: very soft S: soft F: firm St: stiff VSst: very stiff H: hard Fb: friable VL: very loose L: loose MD: medium dense D: dense VD: very dense
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* bit shown by suffix
 e.g. AD/blank bit
 T: TC bit
 V: V bit



Engineering Log - Hand Auger

client: **THE LAKES LIMITED (2012)**

principal:

project: **THE LAKES STAGE 3 CONSTRUCTION**

location: **CENTRE OF LOT 94**

Borehole ID: **HA3A-094**

sheet: 1 of 1

project no.: **GENZTAUC13086AP**

date started: **14 Nov 2014**

date completed: **14 Nov 2014**

logged by: **RB**

checked by: **RBT**

position: E: 368501; N: 799799 (BOPC2000) surface elevation: Not Specified angle from horizontal: 90° DCP ID:

drill model: Hand Auger hole diameter: 50 mm

drilling information				material substance								
method & support	penetration	samples & field tests	SL (m)	depth (m)	log standard	classification symbol	material description	maximum condition	consistency / relative density	vanic shear strength (kPa)	DCP (blows/100 mm)	structure and additional observations
AD HA	N	No Fractures		0.0			60mm of topsoil removed after testing during the civil construction ORGANIC SAND ; non plastic, dark brown, moist, very stiff to hard.	M	VS: to H			TOPSOIL FILL
				0.5			SILT : non plastic to low plasticity, brown, moist, very stiff to hard.					FILL
				1.0			Sandy SILT : non plastic, brown-grey mottled white and orange, sand is fine to coarse grained, moist, very stiff to hard.					MATUA SUB-GROUP
				1.5			Silty SAND : fine to coarse-grained, grey, moist.					
				2.0			Hand Auger HA3A-004 terminated at 2.0 m Terzaghi depth					

FILE: B:_PROJECTS\EST\3LD\rev2\LOG - GENZTAUC13086AP DCR 20141114.FE.CPJ - Drawing File: 01/11/2015 13:25

method AD auger/drilling* AS auger screwing* HA hand auger W washbore WA hand auger	support M mud C casing N nil penetration 10 Oct-12 water level on date shown water inflow water outflow	samples & field tests D bulk disturbed sample D1 disturbed sample E environmental sample SS split spoon sample U# undisturbed sample (30mm diameter) HP hand penetrometer (kPa) N standard penetration test (SPT) N* SPT - sample recovered Ni SPT with solid cone VS vane shear, prebromhead (kPa) R refusal HB hammer blowings	classification symbol & soil description based on Unified Classification System moisture D dry M moist W wet S saturated Wp plastic limit Wl liquid limit	consistency / relative density VS very soft S soft F firm St stiff VS1 very stiff H hard Fh friable VL very loose L loose MD medium dense D dense VD very dense
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* all shown by suffix
 e.g. ADYT
 K blank bit
 T TC bit
 V V bit

Engineering Log - Hand Auger

client: **THE LAKES LIMITED (2012)**
 principal:
 project: **THE LAKES STAGE 3 CONSTRUCTION**
 location: **CENTRE OF LOT 95**

Borehole ID: **HA3A-095**
 sheet: 1 of 1
 project no.: **GENZTAUC13086AP**
 date started: **14 Nov 2014**
 date completed: **14 Nov 2014**
 logged by: **SLC**
 checked by: **RBT**

position: E: 302490; N: 798621 (BOPC2000) surface elevation: Not Specified angle from horizontal: 90° DCP till:
 drill model: Hand Auger hole diameter: 50 mm

drilling information			material substance								
depth (m)	penetration	sample & field tests	depth (m)	graphic log	class/color symbol	material description	moisture condition	consistency / relative density	vane shear strength (kPa)	DCP (blows / 0.05 m)	structure and additional observations
0.0			0.0			150mm of topsoil removed after testing during the civil construction					
0.0			0.0			ORGANIC SILT: non plastic, dark brown and black mottled orange brown, minor to some fine to coarse grained sand, dry, hard.	D	II			TOPSOIL FILL VS 200 kPa
0.5			0.5			SILT: non plastic, brown mottled pale brown and dark brown, dry, hard.		II			FILL VS 200 kPa
0.5			0.5			Sandy SILT: non plastic to low plasticity, pale brown mottled pale grey, sand is fine grained, dry to moist, hard.	D to M	II			ROTGEHU ASH VS 200 kPa
1.0			1.0			Silty SAND: fine to medium grained, platy, brown, dry. Clayey SILT: low plasticity, dark brown, dry, hard.	D	H			HAMILTON ASH VS 200 kPa
1.5			1.5								VS 200 kPa
2.0			2.0								VS 200 kPa
Hand Auger HA3A-095 terminated at 2.0 m Target depth.											

method AG auger drilling* AS auger auger drill HA hand auger W washbore HA hand auger	support M mud G casing penetration water 1/4 to 1/2 water level on data shown water miltz water outflow	samples & field tests B bulk disturbed sample D disturbed sample E environmental sample SS split barrel sample IJH undisturbed sample: 100mm diameter IJP hand penetrometer (kPa) N standard penetration test (SPT) N' SPT - sample recovered Nc SPT with solid cone VS vane shear test (undrained) (kPa) R refusal HR hammer housing	classification symbol & soil description based on Unified Classification System moisture D dry M moist W wet S saturated Wp plastic limit Wl liquid limit	consistency / relative density VS very soft S soft F firm St stiff VS: very stiff H hard Fc fracture VL very loose L loose M: medium dense D dense VD very dense
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2014 11 14 10:00 AM C:\Users\SLC\Desktop\HA3A-095\HA3A-095.dwg
 2014 11 14 10:00 AM C:\Users\SLC\Desktop\HA3A-095\HA3A-095.dwg
 2014 11 14 10:00 AM C:\Users\SLC\Desktop\HA3A-095\HA3A-095.dwg

Engineering Log - Hand Auger

client: **THE LAKES LIMITED (2012)**

principal:

project: **THE LAKES STAGE 3 CONSTRUCTION**

location: **CENTRE OF LOT 96**

Borehole ID: **HA3A-096**

sheet: 1 of 1

project no.: **GENZTAUC13086AP**

date started: **14 Nov 2014**

date completed: **14 Nov 2014**

logged by: **SLC**

checked by: **RBT**

position: E: 368473; N: 799811 (RDPC2000) surface elevation: Not Specified angle from horizontal: 90° DCP id.: Cold
 drill model: Hand Auger bore diameter: 50 mm

drilling information				material substance								
method & support	penetration	samples & field tests	RL (m)	depth (m)	graphic log	classification symbol	material description	moisture condition	consistency / relative density	VS (kPa)	DCP (blows/100 mm)	structure and additional observations
				0.0			150mm of topsoil removed after testing during the drill construction					
				0.0			ORGANIC SILT: non plastic, dark brown and black mottled orange brown, minor to some fine to coarse grained sand, dry, hard.	D	H			TOPSOIL FILL VS 200 kPa
				0.5			SILT: non plastic, brown with pale grey specks, dry, hard.					YOUNGER ASHES VS 200 kPa
				0.8			Silty SAND: fine to medium grained, poorly graded, brown, dry, loose. 0.8 m: sand becoming very fine grained.		L			ROTOHEHU ASH
				1.0			SAND: fine to medium grained, poorly graded, grey, dry, loose. Clayey SILT: low to medium plasticity, dark brown, dry to moist, hard.	D to M	H			HAMILTON ASH VS 200 kPa
				1.4			1.4 m: becoming dry.		D			VS 200 kPa
				1.6			1.6 m: becoming brown.					VS 200 kPa
				2.0			Hand Auger HA3A-096 terminated at 2.0 m Target depth					

DCP 1.3 00 LIBRARY TEST SLB 8200AF - 48 DCP BORE-01E NCL 001501 200 TA 02101899P GCR 002-010-05567 - 0020101899P 01/04/2015 17:05

method AD super drilling* AS super augering* HA hand auger W washbore HA hand auger	support M mud C casing N nil penetration 	samples & field tests R bulk disturbed sample D disturbed sample E environmental sample SS split spoon sample U/S undisturbed sample #mm diameter HP hand penetrometer (kPa) N standard penetration test (SPT) N* SPI - sample recovered Nc SPI with solid core VS vane shear penetrometer (kPa) R refusal HB hammer sounding	classification symbol & soil description based on Unified Classification System moisture D dry M moist W wet S saturated Wp plastic limit Wl liquid limit	consistency / relative density VS very soft S soft F firm St stiff VSt very stiff H hard Fb brittle VL very loose L loose MD medium dense D dense VD very dense
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* bit shown by suffix
 ADT
 K blank bit
 T 1/2 bit
 V vibr

Engineering Log - Hand Auger

client: **THE LAKES LIMITED (2012)**
 principal:
 project: **THE LAKES STAGE 3 CONSTRUCTION**
 location: **CENTRE OF LOT 97**

Borehole ID: **HA3A-097**
 sheet: 1 of 1
 project no: **GENZTAUC13086AP**
 date started: **14 Nov 2014**
 date completed: **14 Nov 2014**
 logged by: **RB**
 checked by: **RBT**

position: E: 360459; N: 799804 (MOPC2000) surface elevation: Not Specified angle from horizontal: 90° DCP ill:
 drill model: Hand Auger hole diameter: 50 mm

drilling information				material substance								
method & support	penetration	samples & field tests	RL (m)	depth (m)	sample kg	classification symbol	material description	moisture condition	consistency / relative density	DP	DCP (blow/100 mm)	structure and additional observations
AD	HA						150mm of loose soil removed after testing during the civil construction.					
							ORGANIC SILT: non plastic, dark brown and black mottled orange brown, minor to some fine to coarse grained sand, moist, hard.	M				TOPSOIL FILL
							Sandy SILT: non plastic, brown mottled white and orange, sand is fine to coarse grained, moist, hard.					VS UTP
							Sandy SILT: non plastic, dark brown, moist, hard.					FILL
				0.5			Sandy SILT: non plastic, dark brown, moist, hard.					HAMILTON ASH
							SILT: non plastic to low plasticity, brown, trace clay, moist, very stiff.		VSst			VS 200 kPa
				1.0			Sandy SILT: non plastic, orange-brown, sand is fine to medium grained, moist, very stiff.					VS 138/ 32 kPa
												VS 136/ 23 kPa
				1.5								VS 152/ 27 kPa
				2.0								VS 118/ 18 kPa
				2.0			Hand Auger HA3A-097 terminated at 2.0 m Target depth					VS 118/ 15 kPa

2015 0 8 00 - LIBRARY TEST FILE REVISED - DCP - BOREHOLE - NON-CORRECTED - DCP - VALUE - APPROXIMATE - FOR INFORMATION ONLY - NOT TO BE USED FOR DESIGN PURPOSES

method AD auger drilling* AS auger screwing* HA hand auger W washbore HA hand auger	support M mud C casing N nil penetration no resistance resistance to refusal water 10-12 water level on date shown water in hole water in flow	samples & field tests B bulk disturbed sample D disturbed sample C environmental sample SS soft spoon sample UTS undisturbed sample #mm diameter HP hand penetrometer (kPa) N standard penetration test (SPT) Nt SPT - sample recovered Nc SPT with sand cone VS vane shear; peak/remoulded (kPa) R refusal HE hammer sounding	classification symbol & soil description based on Unified Classification System moisture U dry M moist W wet S saturated Wp plastic limit Wl liquid limit	consistency / relative density VS very soft S soft F firm St stiff VSst very stiff H hard Fb friable VL very loose L loose ML medium dense D dense VD very dense
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* fill shown by sulkix
 eg. AD/T
 B blank bit
 T TC bit
 V vt

Engineering Log - Hand Auger

client: **THE LAKES LIMITED (2012)**
 principal:
 project: **THE LAKES STAGE 3 CONSTRUCTION**
 location: **CENTRE OF LOT 98**

Borehole ID: **HA3A-098**
 sheet: 1 of 1
 project no.: **GENZTAUC13086AP**
 date started: **14 Nov 2014**
 date completed: **14 Nov 2014**
 logged by: **RB**
 checked by: **RBT**

position: E: 368445; N: 799796 (BOPC2000) surface elevation: Not Specified angle from horizontal: 90° DCP (m):
 drill model: Hand Auger hole diameter: 60 mm

drilling information				material substance										
method & support	penetration	water	samples & field tests	RL (TV)	depth (m)	graphic log	classif color symbol	material description SOIL TYPE: plasticity or particle characteristic, colour, secondary and minor components.	moisture condition	consistency / relative density	vs (kPa)	DCP (blows / 100 mm)	structure and additional observations	
AD AS HA W HA	H	No		2.0	0.5			250mm of topsoil removed after testing during the civil construction.						
								ORGANIC SILT: non plastic, dark brown, moist, very stiff to hard.	M	VSt to H			VS 200 kPa	TOPSOIL FILL
								Sandy SILT: non plastic, brown mottled grey, sand is fine to coarse grained, moist, very stiff to hard.						FILL
								SILT: non plastic, orange-brown mottled dark brown, minor fine to medium sand, trace clay, moist, very stiff to hard.					VS 176/ 62 kPa	
								SILT: non plastic, orange, moist, very stiff to hard.					VS 200 kPa	
								SILT: non plastic, orange, moist, very stiff to hard.					VS 171/ 29 kPa	
				2.0				Hand Auger HA3A-098 terminated at 2.0 m Target depth				VS 139/ 29 kPa	MATUA SUB-GROUP	
												VS 130/ 29 kPa		

REF: J & B 13086AP-231.GLI REV04 LAG COL BORCHOLE VON BORCH - DCP - SAUC13086AP-001 BORCHOLESDM - 00354748188 - 210342216 - 17-05

method AD auger drilling* AS auger sampling* HA hand auger W Washbore HA hand auger	support M mud O casing N nil penetration 10-0ct-12 water level as date shown water flow water surface	samples & field tests B bulk disturbed sample D disturbed sample E environmental sample SS split spoon sample I# undisturbed sample 75mm diameter IIP hand penetrometer (kPa) N standard penetration test (SPT) N' SPT - sample recovered No SPT with solid cone VS vane shear, peak/undrained (kPa) R refusal HB hammer bouncing	classification symbol & soil description based on Unified Classification System moisture: D dry M moist W wet S saturated Wp plastic limit Wt liquid limit	consistency / relative density VS very soft S soft F firm St stiff VSt very stiff H hard Fc fracture VL very loose L loose MD medium dense D dense VD very dense
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* as shown by suffix, e.g. AD/T
 B Blank bit
 I TC bit
 V bit

Engineering Log - Hand Auger

client: **THE LAKES LIMITED (2012)**

principal:

project: **THE LAKES STAGE 3 CONSTRUCTION**

location: **CENTRE OF LOT 89**

Borehole ID: **HA3A-099**
 sheet: 1 of 1
 project no: **GENZTAUC13086AP**
 date started: **14 Nov 2014**
 date completed: **14 Nov 2014**
 logged by: **SLC**
 checked by: **RBT**

position: E: 368430; N: 799787 (BQPC2000) surface elevation: Not specified angle from horizontal: 00° DCP u.:
 drill model: Hand Auger hole diameter: 50 mm

drilling information				material substance							
method & support	penetration	samples & field tests	RL (m)	depth (m)	relative log classification symbol	material description	moisture content	consistency / relative density	void ratio	DCP (blows/100 mm)	structure and additional observations
				0.5		200mm of topsoil removed after testing during the civil construction					
				1.0		ORGANIC SILT: non plastic, dark brown and black mottled orange brown, minor to some fine to coarse grained sand, dry, very stiff to hard.	D	VS to H			FILL VS 200 kPa
				1.5		Sandy SILT: non plastic, brown mottled pale grey and dark brown, sand is fine to medium grained, dry to moist, very stiff to hard.	D to M				VS 200 kPa
				2.0		Clayey SILT: medium plasticity, dark brown, moist, very stiff.	M	VSt			VS 198/36 kPa VS 115/20 kPa VS 108/27 kPa MATUA SUB-GROUP VS 104/28 kPa
				2.0		Hand Auger HA3A-099 terminated at 2.0 m Target depth					

method AD auger drilling* AS auger screwing* EA hand auger W washover HA hand auger	support M mud C casing N nil penetration 	samples & field tests B bulk disturbed sample D disturbed sample E environmental sample SS split spoon sample U# undisturbed temp 75mm diameter HP hand penetrometer (kPa) N standard penetrometer test (SPT) N# SPT - sample recovered Nc SPT with soil cone VS vane shear; peak/reworked (kPa) R refusal HB hammer sounding	classification symbol & soil description based on Unified Classification System moisture D dry M moist W wet S saturated Wp plastic limit Wl liquid limit	consistency / relative density VS very soft S soft F firm St stiff VSt very stiff H hard Fb friable VL very loose L loose MD medium dense D dense VD very dense
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C:\P\0_0_06_LIBRARY\TEST\DRILLING\HA_099\HA099-01E_NON-CORROD + DCP - TALLC\BORGAP\3DR\305\ENC\ES\OF...
 C:\DRAWING\B...
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 C:\DRAWING\B...

Engineering Log - Hand Auger

client: **THE LAKES LIMITED (2012)**

principal:

project: **THE LAKES STAGE 3 CONSTRUCTION**

location: **CENTRE OF LOT 100**

Borehole ID: **HA3A-100**

sheet: 1 of 1

project no.: **GENZTAUC13086AP**


date started: **14 Nov 2014**

date completed: **14 Nov 2014**

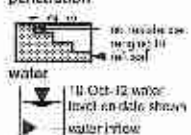
logged by: **RB**

checked by: **RBT**

position: E: 368414; N: 799775 (BOPC2000) surface elevation: Not Specified angle from horizontal: 90° DCP ID: _____
 drill model: Hand Auger hole diameter: 50 mm

drilling information				material substance										
method & support	penetration	water	samples & field tests	RL (m)	depth (m)	graphic log	classification symbol	material description SOIL TYPE: plasticity or particle character, colour, secondary and minor components	moisture condition	consistency / relative density	vane shear (kPa)	DCP (blows/100 mm)	structure and additional observations	
AD AS HA	Nil	No Excavated	Nil	2.0	0.0		M	150mm of topsoil removed after testing during the civil construction	M	VS	Nil	Nil	MATUA SUB-GROUP	
								SILT: non plastic to low plasticity, orange, with black flecks, minor fine to medium sand, trace clay, moist, very stiff.						VS 167/26 kPa
								Sandy SILT: moist, stiff to very stiff.						VS 78/12 kPa
								Silty SAND: fine to coarse grained, orange-brown, moist, stiff.						VS 70/12 kPa
								SILT: low plasticity, orange-brown, minor clay, moist, stiff.						VS 79/23 kPa
								Silty SAND: fine to coarse grained, orange-brown, moist, stiff.						VS 73/12 kPa
Hand Auger HA3A-100 terminated at 2.0 m Target depth	VS 83/16 kPa													

CCP 3.06 LIBRARY-TESTING - see GDF BOREHOLE, NICK DOUGLAS DCP (AUSTRIAN) BUR BORSHO 55.G.F. -> Drawing File -> 1-14-2014 11:25

method AD auger drilling AS auger screwing HA hand auger W washcore HA hand auger	support M mud C casing Nil penetration  water 10 Oct-12 water level on site shown water inflow water outflow	samples & field tests R bulk disturbed sample D disturbed sample E environmental sample SC split spoon sample UNF undisturbed sample #10mm diameter HP hand penetrometer (kPa) N standard penetration test (SPT) N* SPT - sample recovered Nc SPT with cone VS vane shear, post-rotated (kPa) R refusal HB hammer sounding	classification symbol & soil description based on Unified Classification System moisture D dry M moist W wet S saturated Wp plastic limit Wl liquid limit	consistency / relative density VS very soft S soft T firm St stiff VSt very stiff H hard Fb brittle V loose L loose MD medium dense D dense VD very dense
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* dt shown by suffix:
 .GS ADT
 .B blank bit
 .T TC bit
 .V bit

Engineering Log - Hand Auger

client: **THE LAKES LIMITED (2012)**

principal:

project: **THE LAKES STAGE 3 CONSTRUCTION**

location: **CENTRE OF LOT 101**

Borehole ID: **HA3A-101**
 sheet: 1 of 1
 project no: **GENZTAUC13086AP**
 date started: **14 Nov 2014**
 date completed: **14 Nov 2014**
 logged by: **SLC**
 checked by: **RBT**

position: E: 366300; N: 709767 (BOPC2000) surface elevation: Not Specified angle from horizontal: 90° DCP kN:
 drill model: Hand Auger hole diameter: 50 mm

drilling information				material substance							
depth (m)	penetration	water	samples & field tests	depth (m)	graphic log	class / color / symbol	material description	moisture / saturation	consistency / relative density	cone / blow / 100 mm	structure and additional observations
0.0				0.0			50mm of topsoil removed after testing during the civil construction	D	VSst to St		TOPSOIL FILL
0.0				0.0			ORGANIC SILT: non plastic, dark brown and black mottled orange brown, minor to some fine to coarse grained sand, dry, stiff to very stiff.				MATUA SUB-GROUP
0.0				0.0			SILT: non plastic, orange brown, dry, stiff to very stiff.				VSf 164/ 27 kPa
0.5				0.5			Sandy SILT: non plastic, orange brown, sand is fine grained, dry to moist, stiff to very stiff.	D to M			VS 72/ 18 kPa
1.0				1.0			SILT: low plasticity, orange brown, minor clay, moist, firm to very stiff.	M			VS 110/ 20 kPa
1.5				1.5					F to St		VS 74/ 14 kPa
2.0				2.0							VS 55/ 0 kPa
2.0				2.0							VS 49/ 0 kPa
2.0				2.0			Hand Auger HA3A-101 terminated at 2.0 m Target depth				

C:\Users\TEST\Documents\HA3A-101\HA3A-101\HA3A-101.dwg

method AD auger drilling AS auger screwing HA hand auger W washbore HA hand auger	support M mud C casing N nil penetration water	samples & field tests B bulk disturbed sample J disturbed sample E environmental sample SR split spoon sample U/W undisturbed sample 100mm diameter CP hand penetrometer (kPa) N standard penetration test (SPT) N* SPT - sample recovered No SPT with soil cone VS vane shear, peak/undrained (kPa) R rheal HB hammer sounding	classification symbol & soil description based on Unified Classification System moisture D dry M moist W wet S saturated Wp plastic limit Wl liquid limit	consistency / relative density VS very soft S soft F firm St stiff VSf very stiff H hard Hb hard VL very loose L loose MD medium dense D dense VD very dense
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* bit shown by suffix
 e.g. AD/T
 S blank bit
 T TC bit
 V bit

Engineering Log - Hand Auger

client: **THE LAKES LIMITED (2012)**
 principal:
 project: **THE LAKES STAGE 3 CONSTRUCTION**
 location: **CENTRE OF LOT 102**

Borehole ID: **HA3A-102**
 shoot: 1 of 1
 project no.: **GENZTAUC13086AP**
 date started: **14 Nov 2014**
 date completed: **14 Nov 2014**
 logged by: **RB**
 checked by: **RBT**

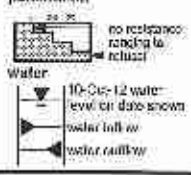
position: E: 368382; N: 799758 (BOPC2000) surface elevation: Not Specified angle from horizontal: 90° DCP ID:
 drill model: Hand Auger hole diameter: 50 mm

drilling information				material substance									
method & support	generator	water	samples & field tests	RL (m)	depth (m)	graphic log	classification system	material description	moisture condition	consistency / relative density	void plasticity (US) (kPa)	DCP (blows / 100 mm)	structure and additional observations
		Not Borehole			0.5			ORGANIC SILT: non plastic, dark brown, moist, very stiff to hard.	M	VSt to H			TOPSOIL FILL
								Sandy SILT: non plastic, orange-brown, mottled white, orange, grey, sand is fine to coarse grained, moist, very stiff to hard.					VS 200 xPa FILL
					1.5								VS 200 kPa
					1.5								VS 140 / 27 kPa
					1.5								VS 200 xPa
					1.5								VS 125 / 29 kPa
					2.0			SILT: non plastic, orange, minor fine to medium sand, moist, stiff.		St			VS 70 / 23 kPa
					2.0			Hand Auger HA3A-102 terminated at 2.0 m Target depth		St			VS 63 / 18 kPa

CDF 3 3 01 LIBRARY TEST 211 E 000 AP Log 001 5073 HO ID: NON CORREL - DCP - AUG 1356 AP 003 BOREHOLE FAULTY software: GenLog - 01/03/2015 1:22

method AC auger drilling* AS auger screwing* HA hand auger W washbore HA hand auger	support M mud C casing N nil ni	samples & field tests B bulk disturbed sample D disturbed sample E environmental sample ES split spoon sample U# undisturbed sample / thin diameter HP hand penetrometer (HP) N standard penetration test (SPT) N* SPT - sample recovered No SPT with soil cone VS vane shear, peak modulus (kPa) R refusal HH hammer bouncing	classification system & soil description based on Unified Classification System moisture U dry M moist W wet S saturated Wp plastic limit Wl liquid limit	consistency / relative density VS very soft S soft F firm St stiff VSt very stiff H hard Fb friable VL very loose L loose MD medium dense D dense VD very dense
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* bill shown by suffix
 e.g. AD/T
 B blank bit
 I TC bit
 V V bit



Engineering Log - Hand Auger

client: **THE LAKES LIMITED (2012)**

principal:

project: **THE LAKES STAGE 3 CONSTRUCTION**

location: **CENTRE OF LOT 108**

Borehole ID: **HA3B-108**

sheet: 1 of 1

project no. **GENZTAUC13086AP**



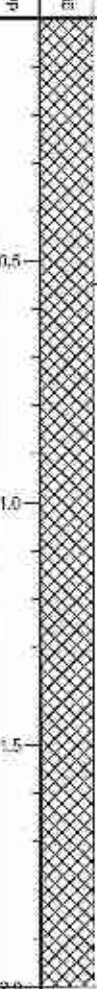



date started: **21 Nov 2014**

date completed: **21 Nov 2014**

logged by: **SLC**

checked by: **RBT**

position: E: 368416; N: 799876 (DOPC2000) surface elevation: Not Specified angle from horizontal: 90° DCP #: _____
 drill model: Hand Auger hole diameter: 50 mm

drilling information				material substance									
method & support	penetration	water	samples & field tests	depth (m)	graphic log	classification symbol	material description	moisture condition	resistance / relative density	veno effect (kPa)	OCF (kN/m ²)	structure and additional observations	
HA Net Encased Not Encased			No resistance, pushed to 2.0 m	0.5		H M to W W	ORGANIC SILT: non plastic, black and dark brown mottled orange brown and pale grey, dry.				TOPSOIL FILL		
				1.0			Sandy SILT: non plastic to low plasticity, brown with pale brown specks, minor silty sand pockets <50mm, dry to wet, hard.				VS 200 kPa	VS 200 kPa	YOUNGER ASHES
				1.2			1.2 m: becoming pale brown mottled pale grey and brown, moist.				VS 200 kPa	VS 200 kPa	
				1.5			1.8 m: sand increasing, sand becoming fine to medium grained.				VS 200 kPa	VS 200 kPa	
				2.0			1.9 m: sand decreasing, minor clay.				VS 200 kPa	VS 200 kPa	
Hand Auger HA3B-108 terminated at 2.0 m Target depth													

method AD auger drilling* AS auger screwing* HA hand auger W washbore HA hand auger	support M timber C casing N nil penetration no resistance, pushed to 2.0 m water HD-CIS-12 water level or data shown water inflow water outline	samples & field tests H bulk disturbed sample D retained sample E environmental sample SS split spoon sample UR/UR' undisturbed sample 50mm diameter HP hand penetrometer (kPa) N standard penetration test (SPT) N* SPT - sample recovered Nc SPT with soil cone VS wire shear penetrometer (kPa) R refusal HB hammer bouncing	classification symbol & soil description: based on Unified Classification System moisture: D dry M moist W wet S saturated PL plastic limit WL liquid limit	consistency / relative density VS very soft S soft F firm St stiff VS(1) very stiff H hard Fc firm VL very loose L loose MD medium dense D dense VD very dense
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C:\Users\jll\OneDrive\Documents\2014\20140115\20140115_108_HA3B-108.dwg

Engineering Log - Hand Auger

client: **THE LAKES LIMITED (2012)**
 principal:
 project: **THE LAKES STAGE 3 CONSTRUCTION**
 location: **CENTRE OF LOT 110**

Borehole ID: **HA3B-110**
 sheet: 1 of 1
 project no.: **GENZTAUC13086AP**
 date started: **21 Nov 2014**
 date completed: **21 Nov 2014**
 logged by: **PM**
 checked by: **RBT**

position: E: 368386; N: 799860 (BOPC2000) surface elevation: Not Specified angle from horizontal: 0° DCP id:
 drill model: Hand Auger hole diameter: 50 mm

drilling information				material substance										
method & support	penetration	water	samples & field tests	FL (m)	depth (m)	graphic log	classification symbol	material description SOIL TYPE: plasticity or particle characteristics, colour, secondary and minor components	moisture condition	consistency / relative density	vane shear (kPa)	DCP (blows/100 mm)	structure and additional observations	
AD AS HA W HA	N	No Encountered		0.5	0.5			ORGANIC SILT: non plastic, dark brown to black mottled orange brown, dry, very stiff to hard.	D	VS: to H			TOPSOIL FILL	
								Sandy SILT: non plastic, brown mottled pale grey, dry, very stiff to hard.					VS 162/ 40 kPa	FILL
								0.5 m: becoming light brown mottled orange brown and dark brown.					VS 200 kPa	
								0.0 m: becoming pale brown with low plasticity.					VS 162/ 50 kPa	
AD AS HA W HA	N	No Encountered		1.0	1.5			Silty SAND: fine grained, uniform, pale brown mottled dark brown and orange brown, minor clay, dry to moist, very stiff to hard.	D to M	VS: to H			VS UTP	
													VS 200 kPa	
				2.0	2.0	Hand Auger HA3B-110 terminated at 2.0 m Target depth								

C:\J_C_06_UBS\MYTEST\15112014\001 - 06 DCF BOREHOLE MCK COSED + DCP TAUC13086AP 2014 BOPC2000.FLS.CAD Drawing Title: C:\J_C_06_UBS\15112014

method AD auger drilling AS auger screwing HA hand auger W washbore HA hand auger	support M mud C casing N nil penetration 	samples & field tests D soft disturbed sample S disturbed sample E standard penetration test (SPT) SS soil spoon sample I# undisturbed sample #mm diameter HP hand penetrometer (kPa) N standard penetration test (SPT) N# SPT - sample movement Nc SPT with solid cone VS vane shear, peak/undrained (kPa) R rebound HB hammer bouncing	classification symbol & soil description based on United Classification System moisture D dry M moist W wet S saturated Wp plastic limit Wl liquid limit	consistency / relative density VS very soft S soft F firm St stiff VS: very stiff H hard Fl friable VL very loose L loose MD medium dense D dense V: very dense
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* Dr shown by suffix
 G: All
 D: blank bit
 T: TC bit
 V: full

Engineering Log - Hand Auger

client: **THE LAKES LIMITED (2012)**

principal:

project: **THE LAKES STAGE 3 CONSTRUCTION**

location: **CENTRE OF LOT 112**

Borehole ID: **HA3B-112**

sheet: 1 of 1

project no: **GENZTAUC13086AP**

date started: **02 Dec 2014**

date completed: **02 Dec 2014**

logged by: **SLC**

checked by: **RBT**

position: E: 388359; N: 790843 (BDPC2000) surface elevation: Not Specified angle from horizontal: 90° DCP kPa:												
drill model: Hand Auger hole diameter: 50 mm												
drilling information					material substance							
method & support	penetration	water	samples & field tests	RL (m)	depth (m)	graphic log	classification symbol	material description	moisture condition	consistency / relative density	structure and additional observations	
								ORGANIC SILT: non plastic, black and dark brown mottled orange brown and pale grey, some fine to medium grained sand, dry, hard.	D	H	VS 200 kPa	TOPSOIL FILL
					0.5						VS 200 kPa	
					1.0			Clayey SILT: low plasticity, brown mottled dark brown, (non-organic), dry to moist, very stiff becoming hard. 1.0 m becoming brown.	D to M	H becoming VS _{st}	VS 200 kPa	FILL
					1.2			1.2 m minor orange brown and dark brown (non organic) specks.	M		VS 200 kPa	
					1.35			1.35 m 100mm silty sand (fine to medium grained, grey brown).			VS 143/29 kPa	
					2.0			Hand Auger HA3B-112 terminated at 2.0 m Target depth			VS 152/ 15 kPa	

COI_01_016_112A.W - 1/31/2015 11:25 AM - 3/1/2015 11:25 AM - 3/1/2015 11:25 AM - 3/1/2015 11:25 AM

method AD - auger drilling AS - auger screwing HA - hand auger W - washbore HA - hand auger	support M - mud N - nil C - casing	samples & field tests U - bulk disturbed sample D - disturbed sample E - environmental sample SS - split spoon sample U# - undisturbed sample # (mm diameter) HP - hand penetrometer (HPs) N - standard penetration test (SPT) N* - SPT - sample removed Nc - SPT with solid cone VS - vane shear; penetrometer (kPa) R - refusal HB - hammer sounding	classification symbol & soil description based on Unified Classification System moisture U - dry M - moist W - wet S - saturated Wp - plastic limit Wl - liquid limit	consistency / relative density VS - very soft S - soft F - firm St - stiff VSst - very stiff H - hard Fb - friction VL - very loose L - loose MD - medium dense D - dense VD - very dense
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Engineering Log - Hand Auger

client: **THE LAKES LIMITED (2012)**

principal:

project: **THE LAKES STAGE 3 CONSTRUCTION**

location: **CENTRE OF LOT 113**

Borehole ID: **HA3B-113**

sheet: 1 of 1

project no: **GENZTAUC13086AP**

date started: **02 Dec 2014**

date completed: **02 Dec 2014**

logged by: **SLC**

checked by: **RBT**

position: E: 368343; N: 799837 (GPG2000) surface elevation: Not Specified angle from horizontal: 90° DCP ID:

Drill model: Hand Auger hole diameter: 50 mm

drilling information				material substance								
method & support	penetration	water	samples & field tests	depth (m)	graphic log	classification	material description	moisture	consistency / relative density	vane shear	DCP (kN/m² / 150 mm)	structure and additional observations
HA	H	no Encountered		0.0 - 0.5	[Cross-hatched pattern]		ORGANIC SILT: non plastic, black mottled pale grey, dry, hard.	M	H			TOPSOIL FILL
				0.5 - 1.0	[Cross-hatched pattern]		Sandy SILT: non plastic, brown mottled orange brown and pale brown, sand is fine to medium grained, dry. SAND: fine grained, uniform, pale grey, dry.					VS 200 kPa FILL
				1.0 - 1.5	[Cross-hatched pattern]		Silty SAND: fine grained, uniform, brown grey, dry. Sandy SILT: non plastic, orange brown mottled brown with black specks, sand is fine to medium grained, dry to moist, very stiff to hard.					VS 200 kPa VS 162/34 kPa
				1.5 - 2.0	[Cross-hatched pattern]		Clayey SILT: low plasticity, brown mottled orange brown, moist, very stiff to hard.					VS 200 kPa VS 200 kPa
				2.0			Hand Auger HA3B-113 terminated at 2.0 m Target depth					

CDF 3 - 3 - 03 LIBRARY TEST FILE REVUP Log CDF BORSEHO.E - NON DATED - DCP TAUC13086AP CDF BORSEHO.E - NON DATED - DCP TAUC13086AP

method AD: auger drilling* AS: auger screwing* HA: hand auger W: washbore HA: hand auger	support M: mud C: casing penetration  water	samples & field tests G: bulk disturbed sample D: disturbed sample E: environmental sample SS: split spoon sample U# : undisturbed sample #mm diameter HP: hand penetrometer (kPa) N: standard penetration test (SPT) N': SPT - sample recovered Nc: SPT with acid cone VS: vane shear, peak/included (kPa) R: refusal HB: hammer bouncing	classification symbol & soil description based on Unified Classification System moisture D: dry M: moist W: wet S: saturation Wp: plastic limit Wl: liquid limit	consistency / relative density VS: very soft S: soft F: firm St: stiff VSt: very stiff H: hard Fb: trace VL: very loose L: loose MD: medium dense D: dense VD: very dense
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Engineering Log - Hand Auger

client: **THE LAKES LIMITED (2012)**

principal:

project: **THE LAKES STAGE 3 CONSTRUCTION**

location: **CENTRE OF LOT 114**

Borehole ID: **HA3B-114**
 sheet: 1 of 1
 project no.: **GENZTAUC13086AP**
 date started: **02 Dec 2014**
 date completed: **02 Dec 2014**
 logged by: **SLC**
 checked by: **RBT**

position: E: 168818; N: 798837 (BOPC2000) surface elevation: Not Specified angle from horizontal: 90° DCP id.: Gold
 drill model: Hand Auger hole diameter: 50 mm

drilling information				material substance									
method & support	penetration	water	samples & field tests	RL (m)	depth (m)	graphic log	classification symbol	material description	moisture condition	consistency / relative density	van Nostrand blow count (blows/300 mm)	DCP (blows/100 mm)	structure and additional observations
AD AS HA W WA	M C	No Encumbrance	N NI	0.0 0.5 1.0 1.5 2.0	0.0	[Cross-hatched pattern]		ORGANIC SAND: dry, hard.	D	H			TOPSOIL FILL
					0.5	[Dotted pattern]		Silty SAND: fine grained, uniform, brown mottled pale grey and pale brown, dry, medium dense to dense.		MD to D			FILL
					1.0	[Diagonal lines pattern]		Silty SAND: fine to medium grained, poorly graded, brown grey with pink specks, dry to moist, medium dense to dense. 1.3 m: becoming pale grey.	D to M	MD to D			TE RANGA IGNIMBRITE VS 17.1/ 18 kPa
					1.5	[Horizontal lines pattern]		Sandy SILT: low plasticity, pale brown grey with pink and black specks, sand is fine grained, dry to wet, stiff to very stiff. 1.7 m: becoming moist.		VS1 to St			MATUA SUB-GROUP VS 125/ 9 kPa VS 66/ 9 kPa
				2.0				Hand Auger HA3B-114 terminated at 2.0 m Target depth					

CDF E. a. 06 LIBRARY:1541,940,7600,006 COT BOREHOLE: HA3B-114, 50mm DIA. TAUCHERMAN SCR BOREHOLE: 55,650J <<Schwimmbad>> UTM: 168818, 798837

method AD auger drilling* AS auger screwing* HA hand auger W washcore WA hand auger	support M mud C casing N nil NI penetration water inflow water outflow	samples & field tests B bulk disturbed sample D disturbed sample E environmental sample SS split spoon sample UAW undisturbed sample (75mm diameter) LP hand penetrometer (kPa) N standard penetration test (SPT) N' SPT - sample recovered NS SPT with solid cone VS vane shear, peak (undrained) (kPa) R refusal HB hammer bouncing	classification symbol & soil description based on Unified Classification System moisture D dry M moist W wet S saturated Wp plastic limit WL liquid limit	consistency / relative density VS very soft S soft F firm St stiff VS: very stiff H hard Fr friction VL very loose L loose MD medium dense D dense VC very dense
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* bt shown by suffix
 eg. AXVI
 H blank bit
 TC bit
 V bit

Engineering Log - Hand Auger

client: **THE LAKES LIMITED (2012)**

principal:

project: **THE LAKES STAGE 3 CONSTRUCTION**

location: **CENTRE OF LOT 115**

Borehole ID: **HA3B-115**

sheet: 1 of 1

project no: **GENZTAUC13086AP**

date started: **02 Dec 2014**

date completed: **02 Dec 2014**

logged by: **SLC**

checked by: **RBT**

position: E: 368240; N: 799837 (BOPC2000) surface elevation: Not Specified angle from horizontal: 90° DCP ID:
 drill model: Hand Auger hole diameter: 50 mm

drilling information				material substance								
method & support	penetration	sample A field tests	RL (m)	depth (m)	class / soil tag	class / soil symbol	material description	moisture condition	consistency / relative density	value shear strength (kPa)	DCP (blows/100 mm)	structure and additional observations
AD ADT	H	-	-	0.0	-	-	ORGANIC SILT: non plastic, black and dark brown mottled orange brown and pale grey, dry.	D	-	-	-	TOPSOIL FILL
							SILT: non plastic, pale orange brown and pale brown, friable, some fine to medium grained sand, dry.					D to M
AD ADT	H	-	-	0.5	-	-	Sandy CLAY: low plasticity, pale grey, some silty, dry to moist, hard.	M	-	-	VS 200 kPa	
							0.7 m: becoming moist.				-	-
AD ADT	H	-	-	1.0	-	-	Silty SAND: fine to medium grained, poorly graded, pale grey, moist.	-	-	-		
							1.1 m: 50mm clayey silt lenses at 1.1 metres.				-	-
AD ADT	H	-	-	1.5	-	-	Sandy SILT: non plastic in low plasticity, pale grey with black and pale pink specks, moist, silty to very stiff.	-	-	-		
							VS 78/9 kPa					
Hand Auger HA3B-115 terminated at 2.0 m Target depth												

C:\P\03 DE LIBRARY\TEST\FILE (M) OF 144 DCP BORE-01-E-MCN-DERRID 1 2014\A\CT000044\308 304\304LES.GPJ ->Diagrams\Files -> M0307015 1705

method AD auger drilling* AS auger screwing* HA hand auger W washbore HA hand auger	support M mud C casing N nil penetration 	samples & field tests B bulk disturbed sample D disturbed sample E environmental sample SR split spoon sample LWA undisturbed sample #mm diameter HP hand penetrometer (kPa) N standard penetration test (SPT) N* SPT - sample recovered No SPT with soil core VS vane shear, postconsolidated (kPa) R mineral HB hammer bearing	classification symbol & soil description based on Unified Classification System moisture D dry M moist W wet S saturated Wp plastic limit Wl liquid limit	consistency / relative density VS very soft S soft F firm SL stiff VSt very stiff H hard Ch brittle VL very loose L loose MD medium dense D dense VD very dense
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* bit shown by suffix:
 AD-T
 H
 T
 J.C. bit
 V

Engineering Log - Hand Auger

client: **THE LAKES LIMITED (2012)**




principal:

project: **THE LAKES STAGE 3 CONSTRUCTION**

location: **CENTRE OF LOT 116**

Borehole ID: **HA3B-116**
 sheet: 1 of 1
 project no: **GENZTAUC13086AP**
 date started: **02 Dec 2014**
 date completed: **02 Dec 2014**
 logged by: **SLC**
 checked by: **RBT**

position: T: 368290; N: 790866 (BOPC2000) surface elevation: Not Specified angle from horizontal: 90° DCP Id.: Cold
 drill model: Hand Auger hole diameter: 50 mm

drilling information		material substance										
method & support	penetration	water	samples & field tests	RL (m)	depth (m)	graphic log	classification symbol	material description	moisture condition	consistency / relative density	DCP (Blows/100 mm)	structure and additional observations
AD	AS				0.5			ORGANIC SILT: non plastic, black and dark brown mottled orange brown and pale grey, dry.	D			TOPSOIL FILL
					0.5			SILT: non plastic, pale orange brown and pale brown, friable, some fine to medium grained sand, dry to moist, hard. becoming orange brown with pale grey and black specks.	D to M	H		FILL VS UTP
					0.5			SAND: fine grained, uniform, pale grey, minor silt, dry to moist, dense. becoming pale grey, silt absent below 0.6 metres.	M	D		TE RANGA IGNIMBRITE
Hand Auger HA3B-116 terminated at 2.0 m. Target depth												

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method AD auger drilling* AS auger screwing* HA hand auger W washbore HA hand auger	support M mud C casing N nil	samples & field tests S bulk disturbed sample Q disturbed sample E environmental sample SE split spoon sample U/W undisturbed sample #mm diameter H ⁺ hand penetrometer (kPa) N standard penetrometer test (SPT) N ⁺ SPT - sample recovered N ⁻ SPT with safe cone VS vane shear; peak/rounded (kPa) R refusal HD hammer sounding	classification symbol & soil description based on Unified Classification System moisture D dry M moist W wet S saturated Wp plastic limit WI liquid limit	consistency / relative density VS very soft S soft F firm SF stiff VS1 very stiff H hard Hb hard V1 very loose L loose MD medium dense D dense VD very dense
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* all shown by suffix
 e.g. AD1
 B blank bit
 L TC bit
 V bit

Engineering Log - Hand Auger

client: **THE LAKES LIMITED (2012)**

principal:

project: **THE LAKES STAGE 3 CONSTRUCTION**

location: **BOREHOLE LOCATED IN LOT 118**

Borehole ID: **HA3B-118**

sheet: 1 of 1

project no: **GENZTAUC13086AP**

date started: **08 Oct 2014**

date completed: **08 Oct 2014**

logged by: **RJB**

checked by: **RBT**

position: E: 368289; N: 709503 (BOPC2000) surface elevation: Not Specified angle from horizontal: 80° DCP id.:
 drill model: Hand Auger hole diameter: 50 mm

drilling information				material substance					structure and additional observations			
method & support	penetration	samples & field tests	RL (m)	depth (m)	graphic log	classification symbol	material description	moisture condition	consistency / relative density	void ratio	DCP (blows / 100 mm)	
AD	penetration			0.0	[Cross-hatched pattern]		ORGANIC SILT: non plastic, Dark Brown, moist, hard.	M	H			TOPSOIL FILL
				0.5	[Diagonal line pattern]		Clayey SILT: non plastic, orange-brown mottled pale grey and orange, minor fine to coarse sand, moist, hard.		H			VS 200 kPa YOUNGER ASHES
				1.0	[Stippled pattern]		Sandy SILT: low plasticity, pale grey-brown streaked orange, mottled black, trace sub-angular black gravel, minor clay content, sand is fine to coarse grained, moist to wet, very stiff to hard.	W	VSI			VS UTP VS 123/ 10 kPa VS 129/ 34 kPa VS 144/ 22 kPa
				2.0			Hand Auger HA3B-118 terminated at 2.0 m Target depth					VS 144/ 22 kPa

CFP 0.06 UBSARYT8E7-6.4E 7m02* Loc: C00-3034314CLL-1001-00010101-1001-GENZTAUC13086AP-3608-4-DPI-6-DPI-4-E-FIN-31040810-031

calcium water not measured

<p>method</p> <p>AD auger drilling*</p> <p>AS auger screwing*</p> <p>HA hand auger</p> <p>W washcore</p> <p>FA hand auger</p>	<p>support</p> <p>M mud</p> <p>C casing</p> <p>penetration</p>	<p>samples & field tests</p> <p>E bulk disturbed sample</p> <p>D disturbed sample</p> <p>I environmental sample</p> <p>SS split spoon sample</p> <p>U&D undisturbed sample 38mm diameter</p> <p>IIP hard penetrometer (kPa)</p> <p>N standard penetration test (SPT)</p> <p>N* SPT - sample recovered</p> <p>Nc SPT with soil cone</p> <p>VS vane shear, peak/undrained (kPa)</p> <p>K shear</p> <p>H hammer-bouncing</p>	<p>classification symbol & soil description based on Unified Classification System</p> <p>moisture</p> <p>D dry</p> <p>M moist</p> <p>W wet</p> <p>S saturation</p> <p>Wn plastic limit</p> <p>WL liquid limit</p>	<p>consistency / relative density</p> <p>VS very stiff</p> <p>S soft</p> <p>F firm</p> <p>St stiff</p> <p>VSI very stiff</p> <p>H hard</p> <p>Fb friable</p> <p>VL very loose</p> <p>L loose</p> <p>MD medium dense</p> <p>D dense</p> <p>VD very dense</p>
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* bit shown by suffix

e.g. ADYT

B black bit

T TC bit

V v bit

Engineering Log - Hand Auger

client: **THE LAKES LIMITED (2012)**

principal:

project: **THE LAKES STAGE 3 CONSTRUCTION**

location: **BOREHOLE LOCATED IN LOT 119**

Borehole ID: **HA3B-119**
 sheet: 1 of 1
 project no.: **GENZTAUC13086AP**
 date started: **05 Aug 2014**
 date completed: **05 Aug 2014**
 logged by: **RJB**
 checked by: **RBT**

position: E: 368287; N: 799923 (BOPC2000) surface elevation: Not Specified angle from horizontal: 00° DCP Id.:
 drill model: Hand Auger hole diameter: 50 mm

drilling information			material substance									
method & support	penetration	samples & field tests	RL (m)	depth (m)	graphic log	classification symbol	material description SDIL TYPE: plasticity or particle characteristic, colour, secondary and minor components	relative cohesion	consistency / relative density	Vars shear modulus (kPa)	DCP (blows/100 mm)	structure and additional observations
HA	N			0.5		OL	ORGANIC SILT: non plastic to low plasticity, dark brown, moist.	M				TOPSOIL FILL
						SM	Silty SAND: fine to coarse grained, grey, moist.				FILL	
						ML	Sandy SILT: low plasticity, orange mottled brown, sand is fine to medium grained, moist, very stiff.	VSt			VOLCANIC ASHES	
				1.0		SM	Silty SAND: fine to coarse grained, pale brown-grey, with black flecks, fine fine angular magnesium gravel, moist, medium dense.	MD			VS 118/41 kPa	
				2.0			Hand Auger HA3B-119 terminated at 2.0 m Target depth					

C:\P\08 LIBRARY\FILES\08 LIB\03 BOREHOLE\MOV\COSE.DCP GENZTAUC13086AP 358 42014 0505 31062014 15:31
 HA
 N
 Structure not annotated

method AD: auger drilling AS: auger screwing HA: hand auger W: washbore HA: hand auger	support M: mud C: casing N: nil penetration 	samples & field tests K: bulk disturbed sample D: disturbed sample E: environmental sample SS: split spoon sample UWF: undisturbed sample 50mm diameter RP: hand penetrometer (kPa) N: standard penetration test (SPT) N*: SPT - sample recovered Nr: SPT with solid cone VS: vane shear, peak/undist (kPa) R: refusal HB: hammer sounding	classification symbol & soil description based on Unified Classification System: moisture D: dry M: moist W: wet S: saturated Wp: plastic limit Wl: liquid limit	consistency / relative density VS: very soft S: soft F: firm St: stiff VSt: very stiff H: hard Fh: friable VL: very loose L: loose MD: medium dense D: dense VD: very dense
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* fill shown by suffix:
 AIY: fill
 D: blank fill
 T: TC fill
 V: bit

Engineering Log - Hand Auger

client: **THE LAKES LIMITED (2012)**
 principal:
 project: **THE LAKES STAGE 3 CONSTRUCTION**
 location: **BOREHOLE LOCATED IN LOT 120**

Borehole ID: **HA3B-120**
 sheet: 1 of 1
 project no.: **GENZTAUC13086AP**
 date started: **08 Oct 2014**
 date completed: **08 Oct 2014**
 logged by: **RJB**
 checked by: **RBT**

position: E: 368284; N: 700044 (BOPC2000) surface elevation: Not Specified angle from horizontal: 00° DCP H.I.:
 drill model: Hand Auger hole diameter: 50 mm

drilling information				material substance									
method & support	generator	water	samples & field tests	RL (m)	depth (m)	graphic log	classification symbol	material description	moisture content or	consistency / relative density	voids (percent) (to 100 mm)	DCP (blows/100 mm)	structure and additional observations
								SOIL TYPE: plasticity or particle characteristics, colour, secondary and minor components					
					0.5			ORGANIC SILT: non plastic, dark brown, moist.	M				TOPSOIL FILL
								Sandy SILT: non plastic, pale orange mottled grey and brown, sand is fine to coarse grained, moist, hard.	H				VS UTP FILL
								Clayey SILT: low plasticity, pale orange-brown, trace fine sand, moist, hard.	II				YOUNGER ASHES
								SILT: non plastic, orange, black flecks, trace medium to coarse pumiceous sand, moist, very stiff.	VS1				VS 200 kPa
					1.0			Clayey SILT: low plasticity, brown, moist to wet, firm to stiff.	M to W F to SI				VS 200 kPa
					1.5								VS 100/21 kPa
													VS 47/14 kPa
													VS 59/14 kPa
													VS 57/16 kPa
					2.0			Hand Auger HA3B-120 terminated at 2.0 m Target depth					VS 50/14 kPa

CDF 0.9.08 USERBY TEST.GLD 39/02 Loc: CDF: URM:HC1: HQD: COSEF + DCP: GENZTAUC13086AP: 2008:USER: s=Data=H:File= 31/03/2016 8:01

method AD: auger drilling AS: auger screwing HA: hand auger W: wash core TA: hand auger	support M: med. C: casing N: nil penetration 	samples & field tests B: bulk disturbed sample D: disturbed sample E: environmental sample SS: split spoon sample UWB: undisturbed sample (borehole diameter) IIP: hand penetrometer (kPa) N: standard penetration test (SPT) N': SPT - sample removed NC: SPT with split cone VS: vane shear; peak/retained (kPa) R: refusal HB: hammer sounding	classification symbol & soil description based on Unified Classification System moisture D: dry M: moist W: wet S: saturated Wp: plastic limit Wl: liquid limit	consistency / relative density VS: very soft S: soft F: firm St: stiff VS1: very stiff H: hard TB: friable VL: very loose L: loose MD: medium dense D: dense VD: very dense
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Engineering Log - Hand Auger

client: **THE LAKES LIMITED (2012)**
 principal:
 project: **THE LAKES STAGE 3 CONSTRUCTION**
 location: **BOREHOLE LOCATED IN LOT 121**

Borehole ID: **HA3B-121**
 sheet: 1 of 1
 project no: **GENZTAUC13086AP**
 date started: **05 Aug 2014**
 date completed: **05 Aug 2014**
 logged by: **RJB**
 checked by: **RBT**

position: E: 368283; N: 799962 (BOPC2000) surface elevation: Not Specified angle from horizontal: 00° DCP is:
 drill model: Hand Auger hole diameter: 50 mm

drilling information				material substance									
method & support	penetration	water	samples & field tests	Rt. (m)	depth (m)	graphic log	classification symbol	material description SOIL TYPE: plasticity or particle characteristic, colour, secondary and minor components	moisture condition	consistency / relative density	vane shear @ 100 mm kPa	DCP (blows/ 100 mm)	structure and additional observations
AD N	-	-		0.5	0.5		OL	ORGANIC SILT: non plastic to low plasticity, dark brown, moist.	M				TOPSOIL FILL
							ML	Clayey SILT: low plasticity, orange mottled white, moist, hard.	H				FILL VS 200 kPa
							ML	Sandy SILT: non plastic, pale brown, sand is fine to medium grained, moist.	L to MD				VOLCANIC ASHES
							SP	SAND: fine grained, pale brown-orange, moist, loose to medium dense. - becoming fine to coarse grained					
AD N	-	-		1.0	1.0		MI	SILT: low to medium plasticity, dark brown, moist, very stiff to hard. - becoming mottled with orange	VS to H				VS 186/ 25 kPa
													VS UTP
				2.0	Hand Auger HA3B-121 terminated at 2.0 m Target depth								VS UTP

CDF 1.3 DE LIBRARY-TESTING 6/14/14 - 05 GENZTAUC13086AP - 05 GENZTAUC13086AP - 05 GENZTAUC13086AP - 05 GENZTAUC13086AP

method AD auger drilling* AS auger screwing* HA hand auger W washbore HA hand auger	support M mud C casing N nil penetration water 	samples & field tests B bulk disturbed sample D disturbed sample E environmental sample SS split spoon sample S# undisturbed sample within diameter HP hand penetrometer (kPa) N standard penetration test (SPT) N* SPT - sample recovered No SPT with cone VS vane shear penetrometer (kPa) R refusal HB hammer bouncing	classification symbol & soil description based on Unified Classification System moisture D dry M moist W wet S saturated Wp plastic limit Wl liquid limit	consistency / relative density VS very soft S soft F firm St stiff VS# very stiff H hard F# friable VL very loose L loose MD medium dense D dense VD very dense
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* all shown by suffix
 a.g. ADT
 H blank bit
 T 10' bit
 V nil

Engineering Log - Hand Auger

client: **THE LAKES LIMITED (2012)**
 principal:
 project: **THE LAKES STAGE 3 CONSTRUCTION**
 location: **BOREHOLE LOCATED IN LOT 122**

Borehole ID: **HA3B-122**
 sheet: 1 of 1
 project no.: **GENZTAUC13086AP**
 date started: **08 Oct 2014**
 date completed: **08 Oct 2014**
 logged by: **RJB**
 checked by: **RBT**

position: E: 366281; N: 799883 (BCRPC2000) surface elevation: Not Specified angle from horizontal: 90° DCP III:
 drill model: Hand Auger hole diameter: 50 mm

drilling information				material substance											
method & support	penetration	water	samples & tests	RL (m)	depth (m)	graphic log	classification symbol	material description	moisture condition	consistency / relative density	vane shear (kPa)	DCP (blows/100 mm)	structure and additional observations		
AD AD HA W HA	-	-	-	-	0.5		M	ORGANIC SILT: non plastic, dark brown, moist.	M	-	-	-	TOPSOIL FILL		
								Sandy SILT: non plastic, brown mottled orange, pale grey and black, sand is fine to coarse grained, moist, hard.					H	VS 200 kPa	FILL
								Clayey SILT: low plasticity, pale orange-brown, moist, stiff to very stiff.					St to VS	VS 104/ 14 kPa	YOUNGER ASHES
														VS 95/ 14 kPa	
														VS 70/ 11 kPa	
														VS 87/ 17 kPa	
		1.0			1.5			SILT: non plastic, pale orange-brown, trace fine sand, moist, stiff.	St						
					2.0			Sandy SILT: non plastic, orange-brown, trace black flecks, sand is fine grained, moist, stiff.	St						
								Clayey SILT: low plasticity, pale orange-brown, moist to wet, stiff.	M to W						
					2.0			Hand Auger HA3B-122 terminated at 2.0 m Target depth							

CDF E. 3. 06 LIBRARY-TEST-SILE (KVA) - LOS DCP BOREHOLE: MAX CORSD + DCP GENZTAUC13086AP 30014384 <Drawing file> 31/08/2015 10:22

method AD auger drilling AS auger screwing HA hand auger W washbore HA hand auger	support M mud C casing N nil O other	samples & field tests D bulk disturbed sample D disturbed sample E environmental sample SS split spoon sample U# unsplit hard sample #mm diameter HP hand penetrometer (kPa) N standard penetration test (SPT) N' SPT - sample recovered Nc SPT with cone VS vane shear; peak/reworked (kPa) R refusal HB hammer bouncing	classification symbol & soil description based on Unified Classification System moisture D dry M moist W wet S saturated Wp plastic limit Wl liquid limit	consistency / relative density VS very soft S soft F firm St stiff VS1 very stiff H hard Fb friable VL very loose L loose M medium dense D dense VD very dense
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bit shown by suffix:
 B-G ACFI
 K bank bit
 I TC bit
 V V bit

Engineering Log - Hand Auger

client: **THE LAKES LIMITED (2012)**

principal:

project: **THE LAKES STAGE 3 CONSTRUCTION**

location: **BOREHOLE LOCATED IN LOT 123**

Borehole ID: **HA3B-123**

sheet: 1 of 1

project no.: **GENZTAUC13086AP**

date started: **05 Aug 2014**

date completed: **05 Aug 2014**

logged by: **RJB**

checked by: **RBT**

position: E: 368778; N: 800003 (BOPC2000)

surface elevation: Not Specified

angle from horizontal: 80°

DCP ID:

drill model: Hand Auger

hole diameter: 50 mm

drilling information				material substance							
method & support	penetration	samples & field tests	RL (m)	depth (m)	classification symbol	material description SOIL TYPE: plasticity or particle characteristics, colour, secondary and mineral components	moisture condition	consistency / relative density	vane shear (kPa)	DCP (blows/100 mm)	structure and additional observations
				0.0	OL	ORGANIC SILT: non plastic to low plasticity, dark brown, moist.	M				TOPSOIL FILL
				0.5	SM	Silty SAND: fine to medium grained, brown-orange, moist, dense.		D			VOLCANIC ASHES VS 200 kPa
				1.0	ML	SILT: low plasticity, pale brown, with black flecks, moist to wet, stiff.	W	St			VS 72/ 11 kPa
				1.5	SM	Sandy SILT: non plastic to low plasticity, orange, sand is fine grained, moist, very stiff.	M				VS 85/ 18 kPa
				2.0		Hand Auger HA3B-123 terminated at 2.0 m Target depth		VSL			VS 124/ 21 kPa

method AD auger drilling* AS auger screwing* HA hand auger W washbore HA hand auger	support M mud C casing penetration 	samples & field tests B bulk disturbed sample D disturbed sample E environmental sample SS split spoon sample U# undisturbed sample 75mm diameter UP hand penetrometer (kPa) N standard penetration test (SPT) N* SPT - sample recovery Nc SPT with solid cone VS vane shear, peak/enclosed (kPa) K refusal HH hammer sounding	classification symbol & soil description based on Unified Classification System moisture D dry M moist W wet S saturated Wp plastic limit Wl liquid limit	consistency / relative density VS very soft S soft F firm St stiff VSL very stiff H hard Hb brittle L loose MD medium dense D dense VD very dense
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File: J:\08_LAKES\07_SSI\316_REV04_Let_COE_BOREHOLE_NCM_COE\07_0005XP_00814651_01\DrawingFiles\07_0005XP_00814651.dwg
 10/24/2015 10:51 AM

Engineering Log - Hand Auger

client: **THE LAKES LIMITED (2012)**
 principal:
 project: **THE LAKES STAGE 3 CONSTRUCTION**
 location: **BOREHOLE LOCATED IN LOT 125**

Borehole ID: **HA3B-125**
 sheet: 1 of 1
 project no.: **GENZTAUC13086AP**
 date started: **05 Aug 2014**
 date completed: **05 Aug 2014**
 logged by: **RJB**
 checked by: **RBT**

position: E: 388277, N: 800046 (BOPC2001) surface elevation: Not Specified angle from horizontal: 90° DCP int:
 drill model: Hand Auger hole diameter: 50 mm

drilling information				material substance									
method & support	penetration	water	samples & field tests	RL (m)	depth (m)	grain size	class/cation symbol	material description SOIL TYPE: plasticity or particle characteristic, colour, secondary and minor components	moisture condition	consistency / relative density	unit weight (kN/m ³)	DCP (blows/100 mm)	structure and additional observations
HA	M	no water		0.0	0.0	-		ORGANIC SILT: non plastic, dark brown, moist	M	II			TOPSOIL FILL
								Clayey SILT: low plasticity, orange, moist, hard					VOLCANIC ASHES
								Silty SAND: fine to coarse grained, orange-brown, moist, medium dense	MD		VS 200 kPa		
				2.0	2.0			Hand Auger HA3B-125 terminated at 2.0 m Target depth					

DCP 0.6.05 JBRAUN-TEST-0.1 w/AP Log 001 30-2-10-10-1308 CORE - DCP GENZ TAUC 13086AP JBRAUN-TEST-0.1 w/AP Log 001 30-2-10-10-1308

method AD auger drilling* AS auger screwing* HA hand auger W washbore HA hand auger	support M mud C casing penetration 	samples & field tests B bulk disturbed sample D disturbed sample E environmental sample SS split spoon sample IAHF undisturbed sample #mm diameter IP hand penetrometer (kPa) N standard penetration test (SPT) N* SPT - sample recovered No SPT with split cone VS vane shear, peak/undrained (kPa) R refusal HB hammer bounding	classification symbol & soil description based on Unified Classification System moisture D dry M moist W wet S saturated Wp plastic limit Wl liquid limit	consistency / relative density VS very soft S soft F firm St stiff VS+ very stiff H hard Fc firm VL very loose L loose MD medium dense D dense VD very dense
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* bit shown by suffix
 e.g. ADTC
 T TC bit
 V V bit

Engineering Log - Hand Auger

client: **THE LAKES LIMITED (2012)**
 principal:
 project: **THE LAKES STAGE 3 CONSTRUCTION**
 location: **BOREHOLE LOCATED IN LOT 127**

Borehole ID: **HA3B-127**
 sheet: 1 of 1
 project no.: **GENZTAUC13086AP**
 date started: **06 Mar 2015**
 date completed: **06 Mar 2015**
 logged by: **RJB**
 checked by:

position: E: 368244; N: 800087 (DOPC2000) surface elevation: Not Specified angle from horizontal: 80° DCP ID:
 drill method: Hand Auger hole diameter:

drilling information				material substance							
method & support	penetration	samples & field tests	depth (m)	material description	classification symbol	moisture condition	consistency / relative density	water shear strength (kPa)	DCP (blows/100mm)	structure and additional observations	
AD HA W HA	M C N ill	B D E SA JAW HP N N* NC VS R HB	0.0 - 0.5	ORGANIC SILT: non plastic, dark brown, moist.	M					TOPSOIL FILL	
			0.5 - 1.5	Sandy SILT: non plastic, orange-brown, sand is fine to coarse grained, moist, very stiff.		VSt to VSt					VOLCANIC ASHES
			1.5 - 1.6	SAND: fine to coarse grained, pale brown, with black flecks, moist.							
			1.6 - 2.0	SILT: non plastic, pale brown, wet, very stiff.	W	VSt					
			2.0 - 2.3	100mm lens - SAND; fine to medium grained, pale grey.							
			2.0 - 2.3	SAND: fine to medium grained, pale grey, moist.	M						
Hand Auger HA3B-127 terminated at 2.0 m Target depth											

REF: C:\LIBRARY\LIST\BUREAU\05_COFFBORE-01E_NON-CORROD + DC1 DE VTA_00000000_0001_00000000_0001_00000000_0001_00000000_0001_00000000_0001_00000000

method AD auger drilling* AS auger casing* HA hand auger W washbore HA hand auger	support M mud C casing N ill penetration 	samples & field tests B bulk disturbed sample D disturbed sample E environmental sample SA split spoon sample JAW undisturbed sample (from diameter) HP hand penetrometer (kPa) N standard penetration test (SPT) N* SPT - sample recovery NC SPT (full) solid cone VS vane shear peak/retained (kPa) R refusal HB hammer bouncing	classification symbol & soil description based on Unified Classification System moisture: D dry M moist W wet S saturated Wp plastic limit Wl liquid limit	consistency / relative density VS very soft S soft F firm St stiff VSt very stiff H hard Hb friable Vv very loose L loose MD medium dense D dense VD very dense
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* to be shown by suffix:
 e.g. ADT
 B black bit
 T 1/2" bit
 V bit

Engineering Log - Hand Auger

client: **THE LAKES LIMITED (2012)**
 principal:
 project: **THE LAKES STAGE 3 CONSTRUCTION**
 location: **BOREHOLE LOCATED IN LOT 128**

Borehole ID: **HA3B-128**
 sheet: 1 of 1
 project no: **GENZTAUC13086AP**
 date started: **08 Oct 2014**
 date completed: **08 Oct 2014**
 logged by: **RJB**
 checked by: **RBT**

position: E: 368282; N: 800108 (BOPC2000) surface elevation: Not Specified angle from horizontal: 90° DCP ID:
 drill model: Hand Auger hole diameter: 50 mm

drilling information				material substance							
well cut & support	penetration	samples & field tests	RL (m)	depth (m)	effective log classification symbol	material description	moisture condition	consistency / relative density	cone shear (kPa)	DCP (blows/100 mm)	structure and additional observations
well cut & support: H penetration: 1 samples & field tests: 1 RL (m): depth (m): effective log classification symbol: material description: moisture condition: consistency / relative density: cone shear (kPa): DCP (blows/100 mm): structure and additional observations:				0.5		ORGANIC SILT: non plastic, dark brown, dry to moist, hard.	M	H			TOPSOIL FILL
							D to M				VS 200 kPa
								VSst			YOUNGER ASHES
											VS 189/21 kPa
											VS 200 kPa
				1.0		SILT: non plastic, orange, trace fine to medium sand, moist, hard.	M	H			VS 200 kPa
											VS 200 kPa
								St			VS 67/ 11 kPa
											VS 200 kPa
				1.5		SILT: non plastic, orange, trace fine to medium sand, moist, hard.		St			VS 200 kPa
											VS 200 kPa
											VS 200 kPa
				2.0		Hand Auger HA3B-128 terminated at 2.0 m Target depth					VS 200 kPa

COFFEEY CONSULTANTS LTD. 258/259/260/261/262/263/264/265/266/267/268/269/270/271/272/273/274/275/276/277/278/279/280/281/282/283/284/285/286/287/288/289/290/291/292/293/294/295/296/297/298/299/300/301/302/303/304/305/306/307/308/309/310/311/312/313/314/315/316/317/318/319/320/321/322/323/324/325/326/327/328/329/330/331/332/333/334/335/336/337/338/339/340/341/342/343/344/345/346/347/348/349/350/351/352/353/354/355/356/357/358/359/360/361/362/363/364/365/366/367/368/369/370/371/372/373/374/375/376/377/378/379/380/381/382/383/384/385/386/387/388/389/390/391/392/393/394/395/396/397/398/399/400/401/402/403/404/405/406/407/408/409/410/411/412/413/414/415/416/417/418/419/420/421/422/423/424/425/426/427/428/429/430/431/432/433/434/435/436/437/438/439/440/441/442/443/444/445/446/447/448/449/450/451/452/453/454/455/456/457/458/459/460/461/462/463/464/465/466/467/468/469/470/471/472/473/474/475/476/477/478/479/480/481/482/483/484/485/486/487/488/489/490/491/492/493/494/495/496/497/498/499/500/501/502/503/504/505/506/507/508/509/510/511/512/513/514/515/516/517/518/519/520/521/522/523/524/525/526/527/528/529/530/531/532/533/534/535/536/537/538/539/540/541/542/543/544/545/546/547/548/549/550/551/552/553/554/555/556/557/558/559/560/561/562/563/564/565/566/567/568/569/570/571/572/573/574/575/576/577/578/579/580/581/582/583/584/585/586/587/588/589/590/591/592/593/594/595/596/597/598/599/600/601/602/603/604/605/606/607/608/609/610/611/612/613/614/615/616/617/618/619/620/621/622/623/624/625/626/627/628/629/630/631/632/633/634/635/636/637/638/639/640/641/642/643/644/645/646/647/648/649/650/651/652/653/654/655/656/657/658/659/660/661/662/663/664/665/666/667/668/669/670/671/672/673/674/675/676/677/678/679/680/681/682/683/684/685/686/687/688/689/690/691/692/693/694/695/696/697/698/699/700/701/702/703/704/705/706/707/708/709/710/711/712/713/714/715/716/717/718/719/720/721/722/723/724/725/726/727/728/729/730/731/732/733/734/735/736/737/738/739/740/741/742/743/744/745/746/747/748/749/750/751/752/753/754/755/756/757/758/759/760/761/762/763/764/765/766/767/768/769/770/771/772/773/774/775/776/777/778/779/780/781/782/783/784/785/786/787/788/789/790/791/792/793/794/795/796/797/798/799/800/801/802/803/804/805/806/807/808/809/810/811/812/813/814/815/816/817/818/819/820/821/822/823/824/825/826/827/828/829/830/831/832/833/834/835/836/837/838/839/840/841/842/843/844/845/846/847/848/849/850/851/852/853/854/855/856/857/858/859/860/861/862/863/864/865/866/867/868/869/870/871/872/873/874/875/876/877/878/879/880/881/882/883/884/885/886/887/888/889/890/891/892/893/894/895/896/897/898/899/900/901/902/903/904/905/906/907/908/909/910/911/912/913/914/915/916/917/918/919/920/921/922/923/924/925/926/927/928/929/930/931/932/933/934/935/936/937/938/939/940/941/942/943/944/945/946/947/948/949/950/951/952/953/954/955/956/957/958/959/960/961/962/963/964/965/966/967/968/969/970/971/972/973/974/975/976/977/978/979/980/981/982/983/984/985/986/987/988/989/990/991/992/993/994/995/996/997/998/999/1000

method AD: auger drilling AE: auger screwing HA: hand auger W: washers HA: hand auger	support M: mud C: casing penetration water 10 Oct-12 water level on date shown water inflow water outflow	samples & field tests B: bulk disturbed sample Q: disturbed sample C: environmental sample SE: split spoon sample U#/#: undisturbed sample #/#mm diameter H#/#: hand penetrometer (kPa) N: standard penetration test (SPT) N#: SPT - sample recovered Nc: SPT with solid cone VS: vane shear; peak/undrained (kPa) R: refusal HD: hammer sounding	classification symbol & soil description based on Unified Classification System moisture D: dry M: moist W: wet S: saturated Wp: plastic limit Wl: liquid limit	consistency / relative density VS: very soft S: soft F: firm St: stiff VS: very stiff H: hard Fc: friable VL: very loose L: loose MD: medium dense D: dense VD: very dense
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Engineering Log - Hand Auger

client: **THE LAKES LIMITED (2012)**
 principal:
 project: **THE LAKES STAGE 3 CONSTRUCTION**
 location: **BOREHOLE LOCATED IN LOT 130**

Borehole ID: **HA3B-130**
 sheet: 1 of 1
 project no: **GENZTAUC13086AP**
 date started: **08 Oct 2014**
 date completed: **08 Oct 2014**
 logged by: **RJB**
 checked by: **RBT**

position: E: 355204; N: 800150 (BOPC2000) surface elevation: Not Specified angle from horizontal: 90° DCP id.:
 drill model: Hand Auger hole diameter: 50 mm

drilling information				material substance								
method & RL (post)	penetration	samples & field tests	RL (m)	depth (m)	graphic log	classification symbol	material description	moisture condition	consistency / relative density	VS (kPa)	DCP (blows / 100 mm)	structure and additional observations
method: HA hand auger RL (post): 1.00 penetration: 1.00 samples & field tests: none RL (m): 1.00 depth (m): 0.50 graphic log: 				0.5			ORGANIC SILT: non plastic, dark brown, moist.	M				TOPSOIL FILL
							Sandy SILT: fine grained, non plastic, pale brown-orange, trace clay content, moist to wet, stiff to hard.	H				VS UTP YOUNGER ASHES
							no clay content, moist	VS1				VS UTP VS 138/ 17 kPa
								M to W				VS 144/ 17 kPa
									H			VS 175/ 24 kPa VS 200 kPa
				1.5			becoming orange with black flecks, sand becoming fine to coarse grained.	SI				VS 73/ 17 kPa VS 98/ 17 kPa
				2.0			Hand Auger HA3B-130 terminated at 2.0 m Target depth	M				VS 200 kPa

DCP 0.8.00 UB 200x115x15.0 J w/v L22 07 3056HCLF 1004306KFC + DEP GENZTAUC13086AP 10354SP1 <30m=100kPa>> 01/08/2015 16:32

method A) auger drilling AS auger socketing HA hand auger W washbore HA hand auger	support M mud C casing N nil penetration 	samples & field tests B bulk disturbed sample D disturbed sample E environmental sample SS split spoon sample U# undisturbed sample 50mm diameter HP hand penetrometer (HPS) N standard penetration test (SPT) N' SPT - sample recovered Ns SPT with soil cone VS vane shear, peak/residual (kPa) K manual HR hammer sounding	classification symbol & soil description based on Unified Classification System moisture D dry M moist W wet S saturated Wp plastic limit Wl liquid limit	consistency / relative density VS very soft S soft F firm ST stiff VS1 very stiff H hard Fc friable VL very loose L loose MD medium dense D dense VD very dense
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Engineering Log - Hand Auger

Borehole ID: **HA3B-131**
 sheet: 1 of 1
 project no: **GENZTAUC13086AP**
 date started: **08 Oct 2014**
 date completed: **08 Oct 2014**
 logged by: **RJB**
 checked by: **RBT**

client: **THE LAKES LIMITED (2012)**
 principal:
 project: **THE LAKES STAGE 3 CONSTRUCTION**
 location: **BOREHOLE LOCATED IN LOT 131**

position: E: 368298; N: 800172 (GPG2000) surface elevation: Not Specified angle from horizontal: 90° DCP ID:
 drill method: Hand Auger hole diameter: 50 mm

drilling information				material substance								
method & support	penetration	samples & field tests	PL (m)	depth (m)	tracing / log	classification symbol	material description SOIL TYPE: plasticity or particle characteristics, colour, secondary and minor components	moisture (relative)	consistency / relative density	vane shear / shear stress (kPa)	DCP (blows/100 mm)	structure and additional observations
AD HA W HA	N C			0.0			ORGANIC SILT : non plastic, dark brown, moist.	M				TOPSOIL FILL
				0.5			SILT : non plastic, brown-orange, trace fine sand, moist, hard.	HI			VS 200 kPa	YOUNGER ASHES
				1.0			Sandy SILT : non plastic, orange, trace black flecks; sand is fine to coarse grained, moist, firm to stiff.	SI			VS 200 kPa	ROTOHEHU ASH
				1.5			Silty SAND : fine to coarse grained, pale brown, trace black flecks, moist.	F			VS 88/11 kPa	
				2.0			Hand Auger HA3B-131 terminated at 2.0 m Target depth	SI			VS 44/17 kPa	VS 92/34 kPa

FIG. 3.2.16 - LAKES STAGE 3 CONSTRUCTION - GROUNDWATER MONITORING POINT LOGS - BOREHOLE HA3B

method AD - auger drilling* AS - auger screwing* HA - hand auger W - washcore HA - hand auger	support N - mud C - casing penetration 	samples & field tests B - bulk disturbed sample D - disturbed sample E - environmental sample SS - split spoon sample DW - undisturbed sample #100 diameter HP - hand penetrometer (hp) N - standard penetration test (SPT) N ^r - SPT - sample recovered NC - SPT with cone VS - vane shear, peak/retained (kPa) R - refusal HB - hammer bounce	classification symbol & soil description based on Unified Classification System moisture D - dry M - moist W - wet S - saturated Wp - plastic limit Wl - liquid limit	consistency / relative density VS - very soft S - soft F - firm SI - stiff VC - very stiff H - hard Fh - friable VL - very loose L - loose MD - medium dense C - dense VD - very dense
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* fill shown by suffix
 e.g. ADT
 B - blank bit
 I - IG bit
 V - bit

Engineering Log - Hand Auger

client: **THE LAKES LIMITED (2012)**
 principal:
 project: **THE LAKES STAGE 3 CONSTRUCTION**
 location: **CENTRE OF LOT 132**

Borehole ID: **HA3B-132**
 sheet: 1 of 1
 project no: **GENZTAUC13086AP**
 date started: **04 Nov 2014**
 date completed: **04 Nov 2014**
 logged by: **SLC**
 checked by: **RBT**

projection: E: 368341, N: 800133 (BOPC2000) surface elevation: (Not Specified) angle from horizontal: 90° DCP id.:
 drill model: Hand Auger hole diameter: 50 mm

drilling information				material substance									
method & support	penetration	samples & field tests	RL (m)	depth (m)	graphic log	classification symbol	material description	moisture condition	consistency / relative density	cone shear (kPa)	tip cap (kPa)	structure and additional observations	
AD	N	No Arcuate	-	0.0	[Cross-hatched]	D	ORGANIC SILT: non plastic, black with pale grey specks, dry.	D	VS to H	-	-	TOPSOIL FILL	
				0.5			SILT: non plastic, brown, some fine grained sand, dry to moist, very stiff to hard.					VS 200 kPa	YOUNGER ASHES VS 200 kPa
AD	N	No Arcuate	-	1.0	[Vertical lines]	M	1.0 m: becoming pale brown, moist.	M	-	-	-	VS 200 kPa	VS 140 / 31 kPa
				1.5			VS 122 / 24 kPa					VS 106 / 16 kPa	
				2.0			VS 137 / 31 kPa						
				2.0	Hand Auger HA3B-132 terminated at 2.0 m Target depth.								

COFFEE LIBRARY/TEXT/FILE/NO/A? LOC: COFFEE/REFERENCE/MS/CO/SU/DCP/TAUC13086AP/DCP/HA3B-132/Hand Auger/HA3B-132

method AD auger drilling* AS auger screwing* HA hand auger W washbore HA hand auger	support M mud C casing N nil penetration 	samples & field tests D bulk disturbed sample D disturbed sample E environmental sample SS split spoon sample U# undisturbed sample #mm diameter HP hand penetrometer (kPa) N standard penetration test (SPT) N# SPT - sample recovered Nc SPT with cone VS vane shear; peak/undrained (kPa) R refusal HB hammer bounce	classification symbol & soil description based on Unified Classification System moisture D dry M moist W wet S saturated Ws plastic limit Wl liquid limit	consistency / relative density VS very stiff S soft F firm SL stiff VSI very stiff H hard Fb friable V very loose L loose MD medium dense D dense VD very dense
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* bit shown by suffix
 e.g. A(D)
 H blank bit
 T TC bit
 V bit

Engineering Log - Hand Auger

client: **THE LAKES LIMITED (2012)**

principal:

project: **THE LAKES STAGE 3 CONSTRUCTION**

location: **CENTRE OF LOT 135**

Borehole ID: **HA3B-135**

sheet: 1 of 1

project no.: **GENZTAUC13086AP**

date started: **04 Nov 2014**

date completed: **04 Nov 2014**

logged by: **SLC**

checked by: **RBT**

position: E: 368342; N: 800079 (BOPC2000) surface elevation: Not Specified angle from horizontal: 90° DCP ML1 Gold
 drill model: Hand Auger hole diameter: 50 mm

drilling information				material substance									
method & auger	penetration	samples & field tests	RL (m)	depth (m)	graphic log	classification symbol	material description SOIL TYPE: plasticity or particle characteristics, colour, secondary and minor components	moisture condition	consistency / relative density	VS (kPa)	DDP (blows / 100 mm)	structure and additional observations	
AD AS HA	-	-	-	0.0		-	ORGANIC SILT: non plastic, dark brown mottled orange brown, minor silt inclusions <20mm, dry.	D	-	-	-	TOPSOIL FILL	
				0.5			SILT: non plastic, brown, minor fine grained sand, dry to moist, stiff to hard.	D to M				St to H	VS 200/40 kPa
				1.0			0.6 m: becoming orange brown with black specks, low plasticity.	M				VS 80/15 kPa	
				1.5			1.0 m: becoming brown.	MD				VS 170/16 kPa	
			2.0				Silty SAND: fine to medium grained, poorly graded, brown, moist, medium dense.					VS 104/11 kPa	ROTOGHU ASH
				2.0			Hand Auger HA3B-135 terminated at 2.0 m target depth						

C:\Users\SLC\Desktop\HA3B-135\HA3B-135.dwg

method AD auger drilling AS auger spraying HA hand auger W washcore HA hand auger	support M mud C casing N nil penetration no resistance resistance water level on dot shown water flow water milky	samples & field tests D hole disturbed sample D' disturbed sample E environmental sample SS split spoon sample U# undisturbed sample 75mm diameter HP hand penetrometer (kPa) N standard penetration test (SPT) N' SPT - sample recovered Nc SPT with solid cone VS vane shear, peak/maximum (kPa) R refusal HB hammer bouncing	classification symbol & soil description based on Unified Classification System moisture 1- dry M moist W wet S saturated Wp plastic limit Wl liquid limit	consistency / relative density VS very soft S soft F firm St stiff VSt very stiff H hard Hc friable Vc very loose L loose MD medium dense D dense VD very dense
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* ht shown by suffix
 e.g. AD1
 B (back bit)
 T TC bit
 V VBE

Engineering Log - Hand Auger

client: **THE LAKES LIMITED (2012)**
 principal:
 project: **THE LAKES STAGE 3 CONSTRUCTION**
 location: **CENTRE OF LOT 136**

Borehole ID: **HA3B-136**
 sheet: 1 of 1
 project no: **GENZTAUC13086AP**
 date started: **04 Nov 2014**
 date completed: **04 Nov 2014**
 logged by: **SLC**
 checked by: **RBT**

position: E: 368342; N: 800063 (BD+C2000) surface elevation: Not Specified angle from horizontal: 90° DCP id.: Cold
 drill model: Hand Auger hole diameter: 50 mm

drilling information				material substance					
method & support	penetration	samples & field tests	HL (m)	depth (m)	classification symbol	material description	moisture condition	consistency / relative density	structure and additional observations
AD AS/T HA W KA	[Diagram showing penetration test]	[Diagram showing samples & field tests]	[Diagram showing HL and depth]	0.0 - 0.5		ORGANIC SILT: non plastic, dark brown, mottled orange brown, minor silt inclusions <20mm, dry.	D		TOPSOIL FILL
				0.5 - 1.0		SILT: low plasticity, pale brown, some fine grained sand, moist, stiff to very stiff.	M	St to VSt	YOUNGER ASHES VS 168/ 37 kPa
				1.0 - 1.5		INTERBEDDED SILTY SAND AND SANDY SILT: silty sands are fine to medium grained and pale brown. Sandy silts are low plasticity and pale brown with fine to medium sand, moist to wet, stiff or loose.	L or St		VS 99/ 12 kPa VS 111/ 27 kPa
				1.5 - 2.0		1.5 m: becoming moist to wet.	M to W		ROTOHEHU ASH VS 04/ 0 kPa
			2.0			Clayey SILT: medium plasticity, dark brown, moist, hard.	M	H	VS 200 kPa HAMILTON ASH
Hand Auger HA3B-136 terminated at 2.0 m Target depth.									

Conf. J. S. DE LIMA, CIVIL ENGINEER, Lic. Conf. BOBBI O. E. NDI SOREDI, DC - TAUC - 80854P OOR SOCHOLEE OF. -> District File No - 01/240815 TT/23

method AD auger drilling* AS/T auger screwing* HA hand auger W washover KA hand auger	support W mud C casing N nil penetration [Diagram showing penetration test] water 10-0ct-12 water level on dcd shown water inflow water surface	samples & field tests B bulk disturbed sample U undisturbed sample E environmental sample SS split spoon sample U/W undisturbed sample 100mm diameter HP hand penetrometer (kPa) N standard penetrometer test (SPT) N* SPT - sample recovered No No VR vane shear, peak/average (kPa) R refusal I-B hammer sounding	classification symbol & soil description based on Unified Classification System moisture D dry M moist W wet S saturated Wp plastic limit Wl liquid limit	consistency / relative density VS very soft S soft F firm St stiff VSt very stiff H hard Hb friable VL very loose L loose MD medium dense D dense VD very dense
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* as shown by suffix
 AS/T
 b blank bit
 T TC bit
 V V bit

Engineering Log - Hand Auger

client: **THE LAKES LIMITED (2012)**

principal:

project: **THE LAKES STAGE 3 CONSTRUCTION**

location: **CENTRE OF LOT 137**

Borehole ID: **HA3B-137**

sheet: 1 of 1

project no.: **GENZTAUC13086AP**

date started: **04 Nov 2014**

date completed: **04 Nov 2014**

logged by: **SLC**

checked by: **RBT**

position: E: 368335; N: 800046 (BOPC2000) surface elevation: Not specified angle from horizontal: 90° DCP id.:
 drill method: Hand Auger hole diameter: 50 mm

drilling information				material substance							
method & support	penetration	samples & field tests	FL (m)	depth (m)	graphic log	classification symbol	material description	moisture condition	consistency / relative density	VS (kPa)	structure and additional observations
HA				0.0			ORGANIC SILT: non plastic, dark brown mottled orange brown, minor silt inclusions <20mm, dry.	D			TOPSOIL FILL
				0.1			SILT: non plastic to low plasticity, orange brown mottled pale brown and brown, trace organic silt inclusions <5mm, dry.				FILL
				0.5			Clayey SILT: low to medium plasticity, dark brown mottled brown, dry to moist, very stiff to hard.	M	VSt to H		VS 200 kPa HAMILTON ASH
				0.6			0.6 m: becoming dark orange brown. Low plasticity.	D			VS 200 kPa
				1.0							VS 200 kPa
				1.2			1.2 m: becoming brown, moist. Low to medium plasticity.	M			VS 146/ 24 kPa
				1.5							VS 200 kPa
				2.0			Hand Auger HA3B-137 terminated at 2.0 m Target depth				VS 111/ 24 kPa

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method AD super drilling AS auger screwing HA hand auger W washbore HA hand auger	support M mud C casing N nil penetration 	samples & field tests S bulk disturbed sample D disturbed sample E environmental sample SS spill source sample U# undisturbed sample 3/8" diameter HP hand penetrometer (kPa) N standard penetration test (SPT) N* SPT - sample recovered Nc GPT with solid cone VS vane shear test/maximum (kPa) R refusal HB hammer bouncing	classification symbol & soil description based on Unified Classification System moisture D dry M moist W wet S saturated Wp plastic limit Wl liquid limit	consistency / relative density VS very soft S soft F firm St stiff VSt very stiff H hard Fb flake V loose C loose MD medium dense D dense VD very dense
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* blanked by suffix:
 ADT
 HT
 T
 V

Engineering Log - Hand Auger

client: **THE LAKES LIMITED (2012)**

principal:

project: **THE LAKES STAGE 3 CONSTRUCTION**

location: **CENTRE OF LOT 138**

Borehole ID: **HA3B-138**
 sheet: 1 of 1
 project no: **GENZTAUC13086AP**
 date started: **04 Nov 2014**
 date completed: **04 Nov 2014**
 logged by: **SLC**
 checked by: **RBT**

position: E: 368320; N: 800032 (BOPG2000) surface elevation: Not Specified angle from horizontal: 90° DCP Id.: Gold
 drill model: Hand Auger hole diameter: 50 mm

drilling information				material substance									
method & support	penetration	samples & field tests	RL (m)	depth (m)	graphic log	classification symbol	material description	moisture condition	consistency / relative density	vane shear @ 100 mm	DCP (blows/100 mm)	structure and additional observations	
HA	-	-	-	0.0			ORGANIC SILT: non plastic, black mottled orange brown, dry.	D				TOPSOIL FILL	
				0.5			SILT: non plastic, pale brown with black specks, dry, very stiff to hard.		VSt to H				MATUA SUB-GROUP VS 200 kPa
				1.0			Sandy SILT: non plastic, pale brown with black specks, sand is fine grained, dry to moist, stiff to hard.	D to M					VS 200 kPa
				1.5			Silty SAND: fine to coarse grained, well graded, brown with dark brown specks, dry, loose to medium dense.	D	L to MD				
			2.0				Hand Auger HA3B-138 terminated at 2.0 m Target depth.					VS 98/31 kPa	

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method AD auger drilling AS auger screwing HA hand auger WA water auger HA hand auger	support M mud C casing N nil penetration 	samples & field tests B bulk disturbed sample D disturbed sample E environmental sample SS split spoon sample U&A undisturbed sample @ 50mm diameter IP lead penetrometer (kPa) N standard penetration test (SPT) N* SPT - sample recovered No SPT with cone VS vane shear, peak/remoulded (kPa) R refusal HS hammer sounding	classification symbol & soil description based on Unified Classification System moisture D dry M moist W wet S saturated Wp plastic limit WL liquid limit	consistency / relative density VS very soft S soft F firm St stiff VSt very stiff H hard Fb friable VL very loose L loose MD medium dense D dense VD very dense
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Engineering Log - Hand Auger

client: **THE LAKES LIMITED (2012)**

principal:

project: **THE LAKES STAGE 3 CONSTRUCTION**

location: **CENTRE OF LOT 139**

Borehole ID: **HA3B-139**

sheet: 1 of 1

project no.: **GENZTAUC13086AP**

date started: **06 Mar 2015**

date completed: **06 Mar 2015**

logged by: **RB**

checked by: **RBT**

position: E: 368329; N: 800014 (GPG2000) surface elevation: Not Specified angle from horizontal: 90° DCP id.: Gold
 drill model: Hand Auger hole diameter:

drilling information				material substance										
method & support	penetration	samples & field tests	RL (m)	depth (m)	graphic log	classification symbol	material description SOIL TYPE: plasticity or particle character(s), colour, secondary and minor components	moisture condition	in situ dry / relative density	cone shear / penetration (kPa)	UCP* (blows/100 mm)	structure and additional observations		
AD AS HA W HA	-	-	-	0.0			ORGANIC SILT: non plastic, dark brown mottled orange brown, dry.	D				TOPSOIL FILL		
				0.5			Silty SAND: fine grained, uniform, brown with black specks, moist, loose to dense.	M	D				MATUA SUB-GROUP	
				1.0					MO					
				1.5			Sandy SILT: non plastic, brown with black specks, moist.						VS 120/ 20 kPa	
				2.0			SILT: low plasticity, brown with black specks, moist.						VS 61/ 9 kPa	
			2.0				Clayey SILT: medium plasticity, brown with black specks, moist.					VS 125/ 20 kPa		
Hand Auger HA3B-139 terminated at 2.0 m Target depth														

CDP: C:\3\06\LIBRARY\TEST\ELB... \44\ GCF BODEH3\F_N05_001101.DCP (A:\C:\WORK\306\306 BORSHO_25.GPJ) <<Clicking File>> E:\WORK\3\128

method AD auger drilling AS auger screwing HA hand auger W washbore HA hand auger	support M mud C casing N nil penetration * to determine sticking to, infill	samples & field tests A bulk disturbed sample D disturbed sample E environmental sample SS split spoon sample USP undisturbed sample 40mm diameter HP hand penetrometer (kPa) N standard penetration test (SPT) N* SPT - sample recovered Nc SPT with cone VS vane shear, peak/undisturbed (kPa) R refusal HB hammer blowlog	classification symbol & soil description based on Unified Classification System moisture D dry M moist W wet S saturated Wp plastic limit Wl liquid limit	consistency / relative density VS very soft S soft F firm St stiff VSt very stiff H hard Fh fluids VL very loose L loose MD medium dense D dense VD very dense
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* to be shown by suffix
 MJD ACVT
 B Mark bit
 T TO bit
 V V bit

Engineering Log - Hand Auger

client: **THE LAKES LIMITED (2012)**
 principal:
 project: **THE LAKES STAGE 3 CONSTRUCTION**
 location: **CENTRE OF LOT 140**

Borehole ID: **HA3B-140**
 sheet: 1 of 1
 project no.: **GENZTAUC13086AP**
 date started: **04 Nov 2014**
 date completed: **04 Nov 2014**
 logged by: **SLC**
 checked by: **RBT**

position: E: 368331; N: 700004 (BOPC2000) surface elevation: Not Specified angle from horizontal: 90° DCP fit:
 drill model: Hand Auger hole diameter: 50 mm

drilling information				material substance								
method & support	penetration	samples & field tests	RL (m)	depth (m)	graphic log	classification symbol	material description SOIL TYPE: plasticity or particle characteristics, colour, secondary and minor components	moisture condition	consistency / relative density	vane shear strength (kPa)	DCP (blows/100 mm)	structure and additional observations
No. encountered	No. encountered			0.5		D	ORGANIC SILT: non plastic, dark brown mottled orange brown, dry.	D to M	H			TOPSOIL FILL
							Sandy SILT: non plastic, orange brown with black specks, sand is fine grained, dry to moist, stiff to hard.					VS 200 kPa
				1.0								VS 200 kPa
				1.5			1.5 m: low plasticity, becoming brown, moist.	M				VS 131/20 kPa
				2.0			Hand Auger HA3B-140 terminated at 2.0 m Target depth.					VS 79/11 kPa
												VS 87/12 kPa
												VS 93/14 kPa

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method AD auger drilling* AR auger screwing* HA hand auger W washhole HA hand auger	support M mud C casing N nil penetration 	samples & field tests B bulk disturbed sample D disturbed sample E environmental sample SS soft spoon sample (I)B# undisturbed sample #mm diameter HP hand penetrometer (kPa) N standard penetration test (SPT) NP SPT - sample recovered Nc SPT with solid cone VS vane shear, peak/remoulded (kPa) R refusal HB hammer bouncing	classification symbol & soil description based on Unified Classification System moisture D dry M moist W wet S saturated Wp plastic limit WL liquid limit	consistency / relative density VS very soft S soft F firm St stiff VSt very stiff L loose FL friable VL very loose L loose MD medium dense D dense VD very dense
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* Not shown by suffix
 O.G. AD/T
 3 black bit
 T TC bit
 V bit

Engineering Log - Hand Auger

client: **THE LAKES LIMITED (2012)**
 principal:
 project: **THE LAKES STAGE 3 CONSTRUCTION**
 location: **CENTRE OF LOT 142**

Borehole ID: **HA3B-142**
 sheet: 1 of 1
 project no: **GENZTAUC13086AP**
 date started: **04 Nov 2014**
 date completed: **04 Nov 2014**
 logged by: **SLC**
 checked by: **RBT**

position: E: 368333; N: 799962 (BOPC2000) surface elevation: Not Specified angle from horizontal: 90° DCP id.: Gold
 drill model: Hand Auger hole diameter: 50 mm

drilling information				material substance					structure and additional observations			
traced & supported	penetration	water	samples & field tests	RL (m)	depth (m)	graphic log	classification symbol	material description	moisture condition	consistency / relative density	DCP (blows/ 100 mm)	
								ORGANIC SILT: non plastic, dark brown with pale grey specks, dry.	D			TOPSOIL FILL
								Sandy SILT: non plastic, brown mottled pale brown and pale grey, molles are minor, sand is medium to coarse grained, dry, hard.	H			YOUNGER ASHES VS 200 kPa
					0.5			Silty SAND: fine to coarse grained, well graded, pale brown with pale grey specks, dry to moist, loose to dense. 0.6 m: sand becoming pale yellow brown.	D to M	L to D		RDOEHU ASH
					1.0			0.9 m: becoming pale brown, sand becoming very fine grained. 1.0 m: 100mm fine to coarse grained sand lense from 0.0 to 1.1 metres.				
					1.5			SAND: medium grained, uniform, grey, dry to moist, loose to dense.				
					2.0			Clayey SILT: medium plasticity, dark brown, moist, hard.	M	H		VS 200 kPa HAMILTON ASH VS 200 kPa
					2.0			Hand Auger HA3B-142 terminated at 2.0 m target depth				

DDP_0_3_00_LISRARY-142150122222_2014-11-04_10:11:00 - C:\P\142\CONSTRUCTION\DRILLING\HA3B-142\GENZTAUC13086AP.dwg 03/11/2014 11:28

method AD auger drilling* AS auger screwing* HA hand auger W washbore HW hand auger	support M mud C casing N nil penetration  no resistance ranging to refusal water 10-12 Oct 12 water level on site shown water inflow water withdrawal	samples & field tests H bulk disturbed sample D disturbed sample C environmental sample SS split spoon sample UH1 undisturbed sample 75mm diameter HI1 hand penetrometer (kN) N standard penetration test (SPT) N* SPT - sample movement Ni SPT with solid cone VS vane shear, peak/retained (kPa) R refusal HB hammer bounding	classification symbol & soil description based on Unified Classification System moisture D dry M moist W wet S saturated Wp plastic limit Wl liquid limit	consistency / relative density VS very soft S soft F firm St stiff VS+ very stiff H hard Fr friable VL very loose L loose MD medium dense D dense VL+ very dense
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* Bl shown by suffix
 e.g. AD/I
 B blank bit
 I IC bit
 V V bit

Engineering Log - Hand Auger

client: **THE LAKES LIMITED (2012)**

principal:

project: **THE LAKES STAGE 3 CONSTRUCTION**

location: **CENTRE OF LOT 144**

Borehole ID: **HA3B-144**
 sheet: 1 of 1
 project no: **GENZTAUC13086AP**
 date started: **04 Nov 2014**
 date completed: **04 Nov 2014**
 logged by: **SLC**
 checked by: **RBT**

position: E: 368337; N: 799533 (BOPC2000) surface elevation: Not Specified angle from horizontal: 90° DCP ID: _____
 drill model: Hand Auger hole diameter: 50 mm

drilling information				material substance									
method & support	penetration	water	samples & field tests	PL (%)	depth (m)	graphic log	class / color symbol	material description SOIL TYPE: plasticity or particle characteristic, colour, secondary and other components	moisture condition	consistency / relative density	value of test parameter (kPa)	DCP (blows/100 mm)	structure and additional observations
AD	AS	WA	W	10	0.5		D	ORGANIC SILT: non plastic, dark brown with pale grey specks, dry.	VS to H	VS	100	33	TOPSOIL FILL
								SILT: low plasticity, orange brown, dry to moist, stiff to hard.					VS
AD	AS	WA	W	10	1.0		M	0.0 m: sandy silt lens <100mm (low plasticity, brown).	VS	VS	100	31	VS 100/ 31 kPa
								occasional pale grey pockets with black specks.					VS
AD	AS	WA	W	10	1.5		M	occasional pale grey pockets with black specks.	VS	VS	100	25	VS 100/ 25 kPa
								VS					100
AD	AS	WA	W	10	2.0		M	Hand Auger HA3B-144 terminated at 2.0 m Target depth.	VS	VS	100	14	VS 100/ 14 kPa
								VS					100

method AD auger drilling AS auger screwing HA hand auger W washbore HA hand auger	support M mud C casing N nil penetration 	samples & field tests D bulk disturbed sample D disturbed sample E environmental sample SS spit spoon sample U undisturbed sample (30mm diameter) HP hand penetrometer (kPa) N standard penetration test (SPT) N ^s SPT - sample recovered N _s SPT with soil cure VS vane shear, peak/embodied (kPa) R refusal HB hammer bounce	classification symbol & soil description based on Unified Classification System moisture D dry M moist W wet S saturated W _p plastic limit W _L liquid limit	consistency / relative density VS very soft S soft F firm SL stiff VS _t very stiff H hard Fc friable VL very loose L loose MD medium dense D dense VD very dense
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 11/04/2014 11:52

Engineering Log - Hand Auger

client: **THE LAKES LIMITED (2012)**

principal:

project: **THE LAKES STAGE 3 CONSTRUCTION**

location: **CENTRE OF LOT 145**

Borehole ID: **HA3B-145**

sheet: 1 of 1

project no.: **GENZTAUC13086AP**

date started: **21 Nov 2014**

date completed: **21 Nov 2014**

logged by: **PM**

checked by: **RBT**

position: E: 368376; N: 799907 (BDPC2000) surface elevation: Not Specified angle from horizontal: 00° DCP ID:
 drill model: Hand Auger hole diameter: 40 mm

drilling information				material substance									
method & support	penetration	samples & field tests	PL (m)	depth (m)	graphic log	classification symbol	soil description	moisture content	consistency / relative density	vane shear (kPa)	DCP (blows/100 mm)	structure and additional observations	
AD AS HA W HA	10-20 water level (circle shows water inflow, triangle shows water outflow)	M	0.0	0.0			ORGANIC SILT: non plastic, dark brown, some fine to medium grained sand, moist.	M				TOPSOIL FILL	
				0.5		SILT: non plastic to low plasticity, orange brown, trace dark brown mottles, moist, very stiff.	VS				MATUA SUB-GROUP VS 105/34 kPa		
				0.8		0.8 m: trace manganese inclusions					VS 139/50 kPa		
				1.0		0.95 m: becoming pale orange brown, some fine grained sand.					VS 115/32 kPa		
				1.5		Bandy SILT: low plasticity, orange, sand is fine grained, minor clay, moist, stiff.	St				VS 88/25 kPa		
				1.7		1.4 m: becoming pale brown					VS 94/45 kPa		
			2.0				SILT: low to medium plasticity, pale brown, trace fine grained sand, some clay, moist, stiff.	SL				VS 86/16 kPa	Hand Auger HA3B-145 terminated at 2.0 m Target depth

DCP L 3 DE LIBRARY TEST IN RANVAAC... 1000

method AD auger drilling* AS auger screwing* HA hand auger W washbore HA hand auger	support M mud C casing N nil penetration water 10-20 water level (circle shows water inflow, triangle shows water outflow)	samples & field tests B bulk disturbed sample D disturbed sample E environmental sample SS split spoon sample UNQ undisturbed sample 40mm diameter HP hand penetrometer (kPa) N standard penetration test (SPT) N* SPT - sample recovered No SPT with solid cone VS vane shear, peak/retained (kPa) R refusal TB hammer testing	classification symbol & soil description based on United Classification System moisture D dry M moist W wet S saturated Wp plastic limit Wl liquid limit	consistency / relative density VS very soft S soft F firm St stiff VSst very stiff H hard Fr friction VL very loose L loose MD medium dense D dense VLt very dense
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* bit shown by suffix
 e.g. ADT
 B blank bit
 I IC bit
 V vib

Engineering Log - Hand Auger

client: **THE LAKES LIMITED (2012)**
 principal:
 project: **THE LAKES STAGE 3 CONSTRUCTION**
 location: **CENTRE OF LOT 147**

Borehole ID: **HA3B-147**
 sheet: 1 of 1
 project no.: **GENZTAUC13086AP**
 date started: **21 Nov 2014**
 date completed: **21 Nov 2014**
 logged by: **SLC**
 checked by: **RBT**

position: E: 368405; N: 730025 (BOPC2030) surface elevation: Not Specified angle from horizontal: 90° DCP id.:
 drill method: Hand Auger hole diameter: 50 mm

drilling information				material substance										
method & support	penetration	samples & field tests	RL (m)	depth (m)	soils log classification symbol	material description	moisture condition	consistency / relative density	VS (kPa)	DCP (blows/100 mm)	structure and additional observations			
HA	-	-	-	0.5	[Cross-hatched symbol]	ORGANIC SILT: non plastic, dark brown to black mottled orange brown, dry to moist, hard.	D to M	H	-	-	TOPSOIL FILL			
						BANDY SILT: non plastic, brown mottled pale brown, sand is fine to medium grained, dry to moist, hard.					FILL VS 200 kPa			
					-	-	-	1.0	-	BILT: non plastic, brown, some fine grained sand, dry to moist, very stiff to hard.	VSI to H	-	-	YOUNGER ASHES VS 200 kPa
										0.7 m: with minor dark brown mottles.				VS 200 kPa
-	-	-	1.5	-	-	1.1 m: becoming pale brown mottled dark brown.	-	-	-	VS 200 kPa				
						Hand Auger HA3B-147 terminated at 2.0 m Target depth				VS 166/44 kPa				
Hand Auger HA3B-147 terminated at 2.0 m Target depth														

DCP 3.9 DE LAKES STAGE 3 CONSTRUCTION - BOPC2030 - TAU13086AP - GENZTAUC13086AP - 20141121 - 1425

method AD: auger drilling AS: auger screwing HA: hand auger W: washers HA: hand auger	support M: mud C: casing N: nil H: all	samples & field tests B: bulk disturbed sample U: undisturbed sample E: environmental sample SS: soil spoon sample UMI: undisturbed sample 50mm diameter HP: hand penetrometer (kPa) N: standard penetration test (SPT) N*: SPT - sample monovial Nc: SPT with solid cone VS: vane shear (undrained) (kPa) R: refusal TB: Turner bounding	classification symbol & soil description based on Unified Classification System moisture D: dry M: moist W: wet S: saturated Wp: plastic limit Wl: liquid limit	consistency / relative density VS: very soft S: soft F: firm St: stiff VSt: very stiff H: hard Hh: friction VL: very loose L: loose MD: medium dense D: dense VD: very dense
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