

CCG-C-21-12093

COTTAM PARKWAY STATION, PRESTON

FACTUAL REPORT

MAY 2021

Prepared by:

THE REAL OF

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Prepared for:

LANCASHIRE COUNTY COUNCIL

County Hall Fishergate Preston PR1 8XB



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1.0 INTRODUCTION

CC GEOTECHNICAL LTD (CCG) was commissioned by *LANCASHIRE COUNTY CONCIL* (The Client) to provide geotechnical fieldwork and laboratory testing services in connection with a proposed construction project at Cottam Parkway Station, Preston, PR4 ORE.

The Client has indicated the proposed works include the construction of a carpark with an adjoining road and bridge crossing the Lancaster Canal.

The investigation was required to provide geotechnical properties of the underlying strata insofar as they relate to permanent and temporary design works and construction of the proposed bridge foundations, road and carpark.

2.0 SITE LOCATION & DESCRIPTION

The proposed Cottam Parkway Station is located approximately 5km west-northwest of Preston City centre and approximately 3km east of 'Salwick' railway station.

Presently, the site is privately owned farmland with multiple access gates. The planned carpark development runs parallel with the existing railway whereas the planned road and bridge runs perpendicular to the existing railway.

The sites topography is relatively flat with an average elevation across the site being 20.17mAOD.

3.0 PURPOSE & AIMS OF THE INVESTIGATION

The purpose of this investigation was to determine the geological sequence below ground level and the engineering properties of encountered strata.

The scope and extent of this investigation was determined by The Client.

The data reported herein provides geotechnical information on the ground conditions underlying the site and is presented as a factual compilation. No interpretations have been placed on the findings.

This report must be read in conjunction with the Notes on Limitations, presented in Appendix I.

4.0 FIELDWORK

4.1 Introduction

The fieldwork element of the investigation was carried out during the period 01st March – 26th March 2021, and comprised the following:

- Mobilisation of plant and personnel
- Surveying of borehole locations and elevations by GPS (Leica GS15)
- Sinking of 6nr boreholes by cable percussion methods (CP01-CP06)
- Advancement of each cable percussion borehole into the bedrock by chiselling
- Sinking of 18nr window sample holes up to 6.00mbgl



- Installation of 8nr groundwater and gas monitoring piezometer standpipes (CP01, 03, 04, 06) (WS05, 09, 14, 18)
- The mechanical excavation of 6nr trial pits up to 2.00mbgl (TP01 TP06)
- Conducting 3nr falling head permeability tests. (FH 8/9, FH 12/13, FH 18/17)
- The recovery of small disturbed and bulk disturbed soil samples for geotechnical laboratory testing
- The recovery of undisturbed soil samples in cohesive strata for geotechnical laboratory testing

The fieldwork was carried out in accordance with the UK Specification for Ground Investigation: 2nd Edition: 2015, and BS10175:2011 +A2 2017, BS5930:2015 +A1 2020, and BS EN 1997-2:2007 Eurocode 7, insofar as they related to the scope of the investigation.

The locations of the exploratory positions were instructed by The Client and set out by *CCG*.

The layout of the investigation is as annotated on The Clients Drawings , provided in Appendix A.

4.1 Cable Percussion Boreholes

All boreholes were positioned clear of recorded buried services and the locations were scanned using a Cable Avoidance Tool (CAT) prior to the hand excavation of a starter pit extending to a typical depth of 1.2mbgl.

6nr boreholes (CP01-CP06) were advanced through superficial/drift deposits using cable percussion methods using a Dando 150 drilling rig deploying 150mm diameter tools and casings. All drill arisings were logged in detail, and bulk disturbed, and small disturbed samples were recovered at regular incremental depths.

In-situ SPT's and U100 sampling was carried out at alternating 1m depth intervals up to 10mbgl. Below 10mbgl alternating SPT and U100 tests were undertaken at 1.50m depth intervals with U100 samples recovered in suitable cohesive soils.

All cable percussion boreholes were terminated upon proving bedrock.

Logs of the boreholes annotated with position co-ordinates, elevation, sampling records, SPT 'N' values and undrained cohesion values are provided in Appendix B.

The SPT hammer calibration certificate is provided in Appendix D.

4.2 Dynamic Sampling Boreholes

All boreholes were positioned clear of recorded buried services and the locations were scanned using a Cable Avoidance Tool (CAT) prior to the hand excavation of a starter pit extending to a typical depth of 1.2mbgl.

3nr window sample boreholes were sunk to 6mbgl (WS11, WS12, WS14). WS13, scheduled for 6mbgl, refused at 2.9mbgl on a suspected boulder.

A further 8nr window sample boreholes were sunk to 3mbgl (WS07-WS10 and WS15-WS18) with 6nr window sample boreholes sunk to 4mbgl (WS01 - 06)

All window sample boreholes were advanced through superficial/drift deposits using dynamic sampling methods using a Dando terrier dynamic sampling rig. In this method of investigation, relatively "undisturbed" soil profile samples are recovered in 1m long Perspex liners. The Perspex tubes are split and carefully logged and subsampled. Subsamples for analysis are removed at appropriate depths from the profile and transferred to chilled amber glass jars and vials for laboratory analysis.

In-situ SPT's were carried out at regular 1 m intervals to termination depth.

Logs of the boreholes, annotated with sampling details and SPT `N' values are given in Appendix B.

All boreholes, excluding WS13, were terminated at The Clients instructed depth.

4.3 Trial Pit Excavations

6nr trial pit excavations were positioned clear of recorded buried services and were scanned using a Cable Avoidance Tool (CAT). All excavations were undertaken with an 8-tonne rubber tracked excavator and extended to a maximum termination depth of 2mbgl as instructed by The Client.

The exposures were carefully logged and sampled, and the arisings then returned to the excavations in the reverse sequence of their excavation to preserve, insofar as was possible, the original lithology.

Logs of the pits annotated with details of sub-sampling and hand shear vane test data are given in Appendix B.

Photographs of the trial pit exposures and arisings are provided at Appendix E.

Dynamic Cone Penetration (DCP) results are provided in Appendix H

4.4 Falling Head Permeability Tests

3nr falling head permeability tests (FH 8/9, 13/12 & 17/18) were conducted in accordance with the method described in BS5930. The FH 8/9 indicates the WS boreholes it was positioned between. Similarly for the other tests. This test involved the sinking of a 1m borehole, logging the arisings and casing off the borehole to 1mbgl. An



87mm Perspex liner was used to case off the borehole. The hole was then filled with water and monitored over a period of up to 2.5 hours.

Results are presented in Appendix C.

5.0 LABORATORY TESTING

5.1 Soil Engineering Testing

Selected samples of soils recovered from the intrusive investigation were subjected to the following program of engineering testing, undertaken at the UKAS accredited laboratory of *CCG*:

- 103nr soil samples were subjected to the determination of Moisture Content in accordance with BS1377:
 Part 2: 1990
- 63nr soil samples were subjected to the determination of Liquid & Plastic Limits BS 1377-2:1990
- 19nr Particle Size Distributions BS 1377-2:1990
- 3nr U100 soil samples were subjected to the determination of Unconsolidated Undrained Triaxial Compression in accordance with BS 1377: Part 7: 1990
- 10nr U100 soil samples were subjected to the determination of Unconsolidated Undrained Triaxial Compression (multi-stage) in accordance with BS 1377: Part 7: 1990
- 11nr One-dimensional Consolidation Test in accordance with BS 1377-5:1990
- 16nr Sedimentation by Hydrometer in accordance with BS 1377-2:1990

The soil engineering test results are presented in Appendix F.

5.2 LCC Framework Suites Chemical Testing.

Selected subsamples of soil and rock were subjected to a suite of chemical testing derived from LCC Framework suites. All testing was undertaken at a subcontract UKAS / MCERTS accredited laboratory.

The following programme of testing was undertaken on selected soil samples:

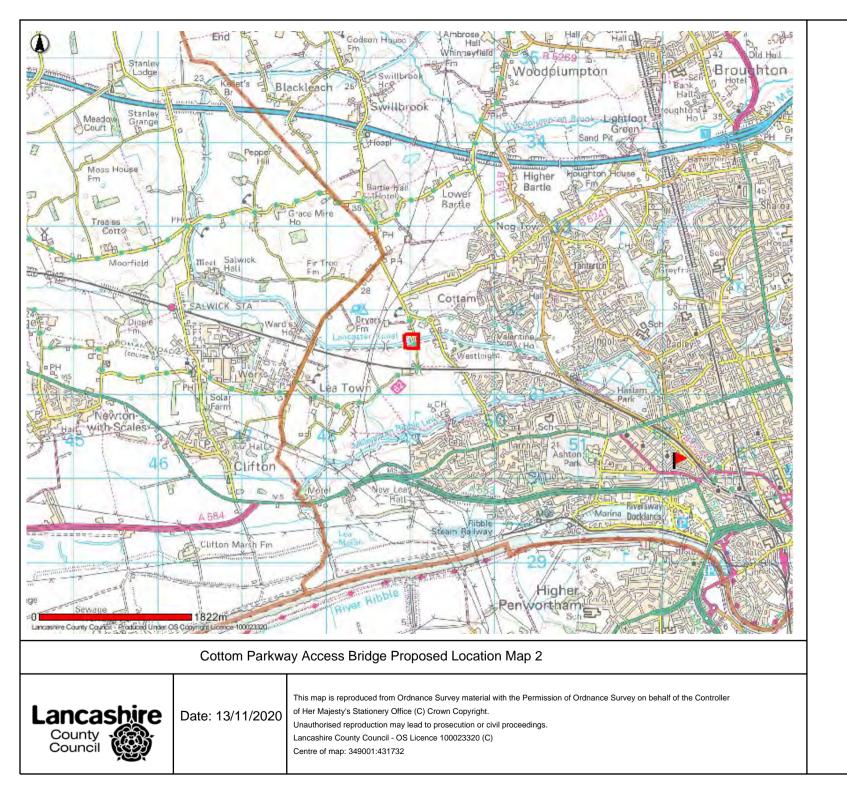
- 27nr Standard Soil Suites
- 27nr Asbestos Screen Tests
- 27nr Speciated TPH Tests
- 27nr Speciated PAH Tests
- 23nr Sulphate content of acid extract from soil tests
- 23nr Sulphate content of water extracted from soil tests.
- 2nr pH Test

The results of the chemical analyses are presented in Appendix G.

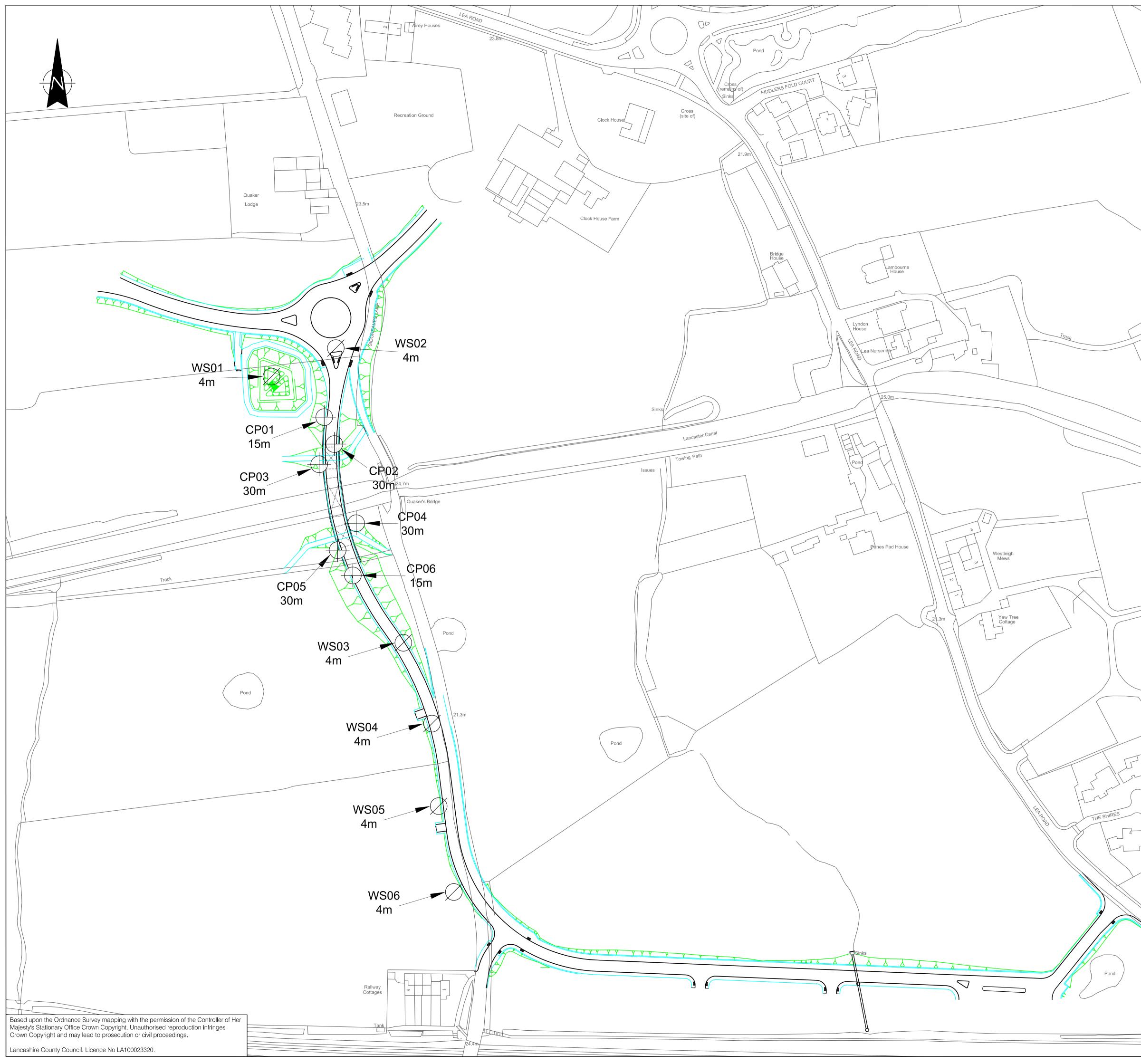


APPENDIX A

DRAWINGS





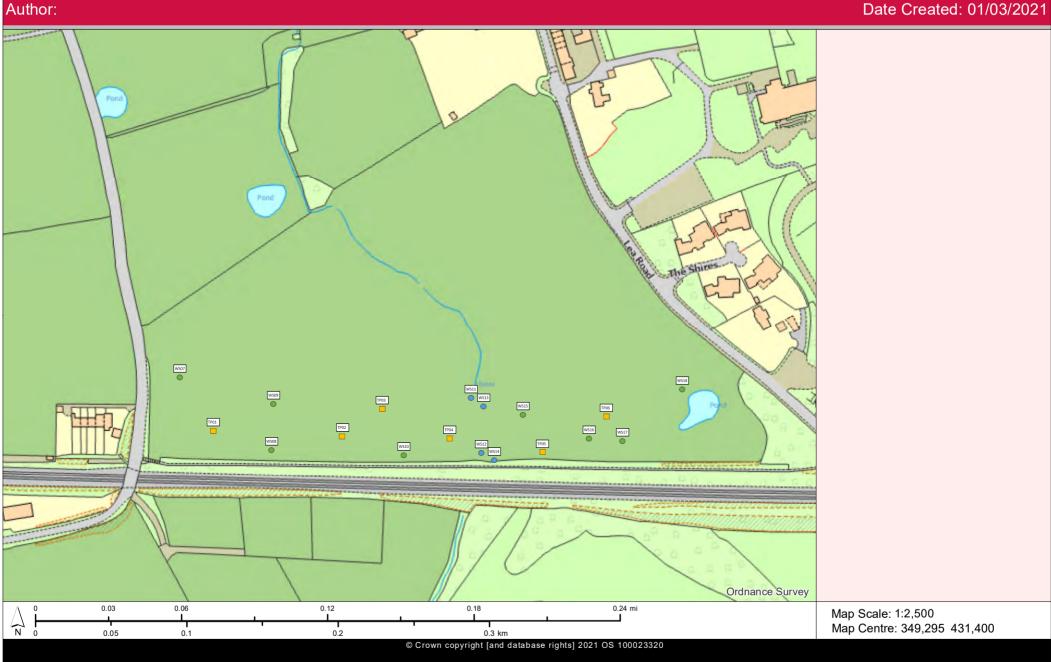


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Car Park Borehole Plan



Author:





APPENDIX B

BOREHOLE AND TRIAL PIT LOGS

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		hiselling					nstallatio		1			(m) Time (mins) Ros			10
rom (m) To (17.50 18.	(m) Du	ration Rei	marks iseling through		op (m				(mm) 1	3.20 13.20) 13.7	0 0	Slig	nt seepao	je
11.00 10.			ndstone bedroo				1			1					

			Contract I Cottam F		v Sta	ation				Client:		LCC		Boreh	ole ID:		
((7	Contract I		-		started	:	Logged By	/:	Checked By	y:	Status:		CP	02	
			CCG-C-	21-120	93	19	/03/20	021	S	Р	CE	3	FINAL	Sheet	2 of 2		
Cable	Percus	sion	Easting:		N	lorthir	ng:		Ground Le	vel:	Plant Used:		Rig Crew:	Scale:			
Bor	ehole L	og	3490	029.4		4	31656	6.7	22.34r	nAOD	Dando	150	AR/CMG		1:	50	
Weather:					Т	ermin	ation:	Refusal	on sandsto			SPT Harr	mer: CCG6 Energ	y Ratio: 64			
Denth	<u> </u>	& In Situ Tes			Leve	el D	epth (m)			Strata	Details				Gr Wate	oundwate	ter ackfil
Depth 10.00 -	Sample ID	1	est Result		(mAO		epth (m) hickness)	Legend		stiff brow		escription	y gravelly silty CLA	Y	Strik		
10.45									with free	quent sar	nd and silt lam	ninations	Gravel is fine to				
10.50	В								sandsto		lar to well ro	unded m	udstone and	-			
									×					-			
- 11.00	D							×	×					- 11			
							44.00		×								
11.40	В		1.50m, N=1	2	11.0		11.30 0.30)	XXXX		ı dense b	rown slightly	sandy cla	ayey SILT.				
11.50	ES	(2,3/2,4,3		2	10.7	4	11.60	$\times \times \times$		wn slight	ly sandy sligh	ntly grave	Ily silty CLAY. Grav	el is			
40.00					10.5	4	11.80	×	fine to n		ubangular to	well roun	ded mudstone and	/F			
- 12.00	ES							×			rown silty cla	yey fine t	o medium SAND.	/ - 12			
								×						ŀ			
12.50	В							×	21 91					-			
						(1.90)	× ×						Ē			
- 13.00	D	SPT(S) 13 (4,3/4,3,3	3.00m, N=1	14				× ×	5					- 13		_	
		1,3/4,3,3	,-+)					×	<u>.</u>					-			
								×	<u></u>					F			
					8.64	4 ⁻	13.70	- X					y gravelly silty CLA	Y			
- 14.00	В						0.70)	×			medium suba andstone.	ngular to	well rounded	- 14			
14.00 - 14.45	U						/	×	×					-			
14.50	D				7.94	1	14.40	×	Very sti	ff brown s	lightly sandy	slightly g	ravelly silty CLAY.				
								× ×	and mu	dstone.	•		ounded sandstone	-			
- 15.00	в							×	340mm	of U100 sample	recovered. Sampler imp	pacted cobble a	14.84mbgl.	- 15			
10.00								×	×								
15.40	D					(1.90)	×	×					-			
								×	×					-			
								× 	X					-			
- 16.00	В	105mm/5	6.00m, 50 (0 for 200m	25 for m)				×	X					- 16			
					6.04	4 ⁻	16.30	¥ • • • •					SANDSTONE				
16.50	В										wn very grav subrounded s		clayey SAND. Grav e.	vel -			
														-			
- 17.00	D													- 17			
								:::::	:								
			7.50m, 50 (for 155mm			(2.50)		:					F			
		00111/00		"/				:::::	:					-			
- 18.00	В													18			
								:::::	:					-			
18.50	D													ŀ			
		SPT(S) 1	8.80m, N=1	100	3.54	1 ·	18.80		:		End -4 D	hole ct 10 1	20m				
-			mm/100 fo								End of Bore	nole at 18.8	וווספ	- 19			
		2001111)												Ē			
														F			
														ŀ			
-														- 20			
		of Shift Obs					Diame		asing Diam		marks:				L		_
Date 21-03-2021	Time 08:00	Depth (m) 5.00	Casing (m) V 5.00	/ater (m)		th (m) 3.80	Dia (r 15		th (m) Dia 3.80 1	(mm) 1 h 50	our hand exc	avated s	ervice avoidance p	it.			
21-03-2021 22-03-2021	16:00 08:00	16.00 16.00	16.00 16.00	15.50		-											
22-03-2021	15:00	18.80	18.80	18.50	1												
		Chiselling						nstallatio				(m) Seale	Water Strikes				
	(m) Du	ration Rei	marks		Тор	o (m)	Base				3.20 13.2				ht seep	bage	
17.50 18	.80 0		iseling thround store in the store is the st		1												
					<u> </u>						CC GEOTEC	CHNICAL	LTD 0151 545 2750 w	ww.ccgeo	echnic	al.co.uk	

\bigcap				t Name: Parkwa	ay St	tatio	n			Client:		L	СС		Bo	orehole		
((7	Contrac	t Numbe	r: l		Started	:	Logged B		Chec	ked By:		atus:		(CP0	3
				2-21-12			7/03/20			P		СВ		FINAL		neet 1	of 2	
	Percus		Easting:	: 9019.8	ľ	North	ning: 431641		Ground Le	evel: mAOD		Used:)ando 15		g Crew: AR/CMG		cale:	1:50	
BOR Veather:	ehole Lo	bg	34	9019.6					on sandst			-	-	er: CCG6 Ene		o. 64%		
veatrier.	Samples &	& In Situ Tes	ting			Terini	ination.	Refusal	on sanusi		Details		Tamine		agy i taut	J. 04 /l		dwater
Depth	Sample ID	Te	est Result		Lev (mAC		Depth (m) (Thickness)	Legend				Strata Desc	•				Water Strike	Back Installa
0.15 0.20 0.20 0.40	ES B D B				22.3		(0.30) 0.30		fine to i	medium s	ubangu s. Grass	ilar mudst sed at sur	one and face (TO	ty CLAY. Gra sandstone. PSOIL) y sandy silty	F	-		
0.50 0.60 1.00 1.10 1.20	ES D B ES D	SPT(S) 1. (1,2/3,3,3,		12	21.3	33	(1.00)	× · · · · · · · · · · · · · · · · · · ·	-	s firm at 1.00 - 1.			lightly g	ravelly silty C		- 1		· · · · · · · · ·
1.50 1.80 2.00 2.00 - 2.45	B ES D U	(,,_,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	-,					× × × × × × ×	high un sand. C	drained s	hear st ine to c	rength an oarse sub	d occasi	to subrounde	on of	- 2		· · · + · · · + · · · + · · · +
2.50 2.60	B ES														- - - - - - - - - - - - - - - - - - -			
3.00 3.50 3.60	D B ES	SPT(S) 3. (2,2/3,3,3,		12				×	%F 1%F 1%F 1%							- 3		· · · · ·
4.00 4.00 - 4.45	D U							× × ×							- - - - - -	- 4		· · · · ·
4.50	В							×							- - - - - -	-		· · · -
5.00 5.50	D B	SPT(S) 5. (2,3/2,3,3,		12				× × ×							- - - -	- 5		· · · - ·
6.00 6.00 - 6.45	D U						(10.40)	×								- 6		· · · -
6.50	В							×	XETXE									·
7.00 7.50	D	SPT(S) 7. (2,4/4,4,4,		16				× × ×								- 7		· · - · - · - · · - · · · - · · · - · · · · - ·
8.00 8.00 - 8.45	DU							×							-	- 8		
8.50	В							X	× · · · · · · · · · · · · · · · · · · ·						- - - - - - - - - - 			
9.00	D	SPT(S) 9. (3,2/5,3,3,		15				× × × ×	X. IX. IX.							- 9		· · · -
9.50 10.00	B							X				ontinued ne:	rt sheat		-	- 10		· · · -
	rt & End o	of Shift Obse Depth (m) 0 11.00 11.00		Water (n	n) Dep			nm) Dep	asing Diam th (m) Dia 7.00 1	<u>(mm)</u> 1 ł 150	marks: nour har	nd excava	ted serv	ice avoidance Water Strike	es			<u> </u>
	(m) Du	1:00 Chi	narks seling thro dstone be		(op (m) 0.00 1.00		0 PL	ype Dia .AIN	(mm)	11.70 12.90	11.70 12.90	12.20 15.00	n) Time (mins) F 10 15 0 0151 545 275	Rose to (m) 11.70 12.90	Slight Slight	ly wet sa ly wet sa	ands

\frown			Contract Name Cottam Park		tatior	n			Client:		L	CC		E	Borehole	
(f		- 7	Contract Numb	-		Started:		_ogged By	:	Checked	d By:	Sta	tus:		(CP03
			CCG-C-21-1	2093	1	7/03/20)21	S	P		СВ		FINAL	. 5	Sheet 2	of 2
Cable	Percus	sion	Easting:		North	ing:		Ground Le	vel:	Plant Us	ed:	Rig	Crew:	5	Scale:	
Bor	ehole L	og	349019.8	3	4	431641	.8	22.63n	nAOD	Dar	ndo 150)	AR/CM	G		1:50
eather:					Termi	ination: I	Refusal	on sandsto			SPT	Hammer	CCG6 Er	ergy Rat	io: 64%	
Denth	T	& In Situ Tes		Lev	vel	Depth (m)	1		Strata							Groundwa Water B
Depth 10.00 -	Sample ID	1	est Result	(mA	OD)	(Thickness)	Legend		stiff brown		ta Descr	•	velly silty	CLAY of		Strike Ins
10.45								high und	drained sh	near stren	igth and	occasio	nal laminat	ion of		
10.50	В						<u> </u>		ravel is fil he and sa		rse suba	angular to	subround	ed	-	
							<u> </u>	×							-	
11.00	D						<u> </u>	×							- 11	
								×								• •
			1.50m, N=20				×— —	×.							-	
		(3,4/5,5,5		10.	.93	11.70	X—, —	×					<u></u>			
11.80	ES					(0.40)							 SILT. Gra mudstone 			
12.00 12.00	B D			10.	.53	12.10		Soft bro	wn sliahtl	v sandv s	liahtly a	iravellv si	Ity CLAY.	Gravel is	- 12	
						(a.)	×		nedium su				nudstone a		-	
12.50 12.50	B D					(0.80)	×— —	sandsto	11 0 .							•
				9.7	73	12.90	×— —	× 							[]	
		SPT(S) 1 (2,4/3,5,4	3.00m, N=15 .3)					3	dense br	own sand	ty claye	y SILT.			- 13	
		(_, , , 0,0,4	,-,				× × × × × × × ×	>								
13.50 13.60	B ES							>							-	
13.00							$(\times \times \times)$	~							-	
14.00	D					(2.10)	$(\times \times \times)$	~							- 14	
							$(\times \times \times)$	~							-	
			4.50m, N=13				$(\times \times \times \times)$	2							-	
		(2,4/3,3,3	,4)				$(\times \times \times \times)$	2								
	_			7.6	63	15.00		> Eirm to	otiff brown	- olightly (anduai		with frequ	ont	- 15	
15.10	В					(0.60)	× 			and sand		ILY CLAT	withhequ	ent	-	
15.50	D						×	×							-	
				7.0	03	15.60	× · · · · ·						SANDST		-	
		SPT(S) 1	6.00m, 50					: recovere : subroun	ed as very	y sandy si WEL.	ilty fine	to coarse	subangul	ar to	- 16	
		(10,14/50	for 295mm)					•							-	• •
16.50	в					(1.00)		•							-	• •
10.50						(1.90)		•							-	
17.00	D							•							-	
17.00		SPT(S) 1	7.20m, N=100					•							- 17	
			0 for 230mm)	-	12	17 50	· · · · · ·	:							-	
				5.1	13	17.50				End of E	Borehole a	at 17.50m			Εl	
															- 18	
															-	
															Ē	
															- 19	
															É	
															-	
															[
															- 20	
Date	Time		Casing (m) Water	(m) De	pth (n		nm) Dep	asing Diame th (m) Dia	(mm) 1 h	marks: our hand	excavat	ed servic	e avoidan	ce pit.		
7-03-2021 3-03-2021	16:00 08:30	11.00 11.00	11.00 11.00		17.50	150			50		SYSAAd					
										1		<u></u>	Water Stri			
om (m) To		Chiselling	marks	Т	op (m)		nstallation		(mm) 1	1.70 1	11.70	12.20	Time (mins) 10	11.70	Slight	ly wet sands
		1:00 Ch	iseling through		0.00	1.00	0 PL	AIN 1	19	2.90 1	12.90	15.00	15	12.90		ly wet sands
1	1	sar	ndstone bedrock		1.00	16.5	ou ISLO	TTED 1	9				1	1	cgeoteo	

\bigcap				։t Name։ ո Parkw		tatior	า			Client:		L	СС		В	orehol		
(t		7	Contrac	t Numbe	er:	Date	Started		Logged B		Che	cked By:	Sta				CP04	
		·		C-21-12			4/03/20	021		SP	Diam	CB t Used:	Dia	FINAL	3	heet 1	of 2	
	Percus ehole Lo		Easting 34	9042.5		ہ ر	431606	6.4	Ground Le 22.97	mAOD		Dando 15	- U	Crew: AR/CM		cale:	1:50	
Veather: Dry			1			Termi	ination:	Refusal	on sandst				Hammer	: CCG6 En	ergy Rati	io: 64%		
Depth	Samples a	& In Situ Tes T	sting est Result		Lev (mA0		Depth (m) Thickness)	Legend	1	Strat	a Details	s Strata Desci	ription					/ater Backfil Istallat
0.40 0.50	B ES				22.		0.20		to med rootlets Stiff bro	ium suba s, grasse own sligh ndrained	angular ed at su ntly san shear s	sandstone face (TOP dy slightly g	and mud SOIL) gravelly si avel is fir	AY. Gravel stone. Freq Ity CLAY of the to medius andstone.	uent			
1.50	В	SPT(S) 1 (2,2/1,2,2		8			(2.50)		7*1-1%-1%-1%							- 1 - - - - - - -		
2.00 2.00 - 2.45	D U							×	- X - I - I X - I - I X							-2	• • • •	• • • • •
2.50 2.50	B ES		00m N	.11	20.:	27	2.70	×						vey slightly g				
3.00	D	SPT(S) 3 (3,2/2,3,3		.11			(1.00)		<u></u>							- 3	• • • • • • • •	· .+ • .+ • .+ • .+
3.50 4.00 4.00 - 4.45	ES D U				19.:	27	3.70	×	🚽 high ur	ndrained	shears		avel is fin	avelly silty (le to mediu stone.		-4	**. **. **.	
4.50 4.50	B ES							×								-	• • • • • • • •)
5.00	D	SPT(S) 5 (2,4/4,5,5		19				×								-5	• • • • • •	·
5.50 5.50	B ES							×								-	• • • • • •	* • •
6.00 6.00 6.50	D U B						(4.60)	×								-6	• • • • • • • •	· :+ · :+ · :+ · :+
6.50 7.00	ES D	SPT(S) 7		24				×	1×1×1×1×							-7	• • • •	•
7.50 7.50	B ES	(4,4/5,6,6	,7)					×	lak. 1x.							-		。
8.00 8.00 - 8.45	D U				14.	67	8.30	×	×							8		·
8.50 8.50	B ES				14.		8.50	× × × ×	fine to Firm br	medium rown slig m undraii	subrou htly sar ned she	nded sands idy slightly ar strength	stone. gravelly s . Gravel i	y SILT. Grav silty CLAY o s fine to me	of		• • • • • • • •	
9.00	D	SPT(S) 9 (3,5/4,6,5		22				X	× subang	guiar to r	ounded	mudstone	and sand	ISTONE.		9	• • • • • • • •	• -
9.50 9.50 10.00	B ES D							×				Continued ne>	t sheet			- 10	* * * * *	•
Sta Date		of Shift Obs Depth (m)		Water (n			le Diame		asing Diam hth (m) Dia	()	emarks	:				I I	1	
04-03-2021 05-03-2021 05-03-2021	16:00 08:30 16:00	11.00 11.00 18.00	11.00 11.00 11.00 18.00	16.90		8.00	15			150	nour ha	and excava	iea servia	e avoidanc				
		hiselling			_			nstallatio		s				Water Strik	Rose to (m			_
rom (m) To			marks		(op (m) 0.00 1.00		(m) T 0 Pl	ype Dia _AIN	a (mm) 20 20	2.70 8.30 12.90	2.70 8.30 12.90	3.90 8.60 13.80	20 20 10 0151 545 27	2.70 8.10 12.90	Wate Wate	r strike r strike r strike	

\frown			Contract Nam Cottam Park		tatio	n			Client:		L	сс		В	orehol		
((7	Contract Num			Started:	.	Logged B	y:	Che	cked By:	St	atus:		(CP0	4
			CCG-C-21-1			4/03/20			P		СВ		FINAL	3	heet 2	of 2	
	Percus		Easting: 349042.		North	ning: 431606		Ground Le	evel: mAOD		it Used: Dando 15		g Crew: AR/CM0		cale:	1:50	
BOr /eather: Dry	ehole Lo	uy	349042.	J				on sandst					AR/CMC		0. 640		
reamer. Dry		& In Situ Te	sting		Terrin		Reiusai	UII Saliusi		a Details		папппе		егуу каш	0.04%	Groun	dwate
Depth	Sample ID	1	Fest Result	Le ^v (mA		Depth (m) (Thickness)	Legend				Strata Desc	ription				Water Strike	Back Installa
10.00 - 10.45	U						×						silty CLAY o is fine to me		-		·
	в						× ×				mudstone			Jaiann	-		· · · -
10.50	В						×	11 X									° –
11.00	D						×	×							- - - 11		• -
11.00							×	×									• -
		SPT(S) 1	1.50m, N=23			(4.40)	×— —	×									° –
		(3,5/5,6,6					<u>∧</u>	X							-		° –
12.00	В						~ 	×							- 12		° –
12.00							×								- 12		° -
12.50	D						×	<u> </u>									° –
							×	×							ŧ	_	
		SPT(S) 1	3.00m, N=23	10.	.07	12.90	<u> </u>						velly SAND.	Gravel	- 13		
		(5,4/4,6,6				(0.80)	××	is fine t	o mediur	m subro	ounded san	dstone.					• _
13.50	В					(0.00)	××								-		- • -
				9.3	27	13.70		Stiff bro	own sligh	ntly san	dy slightly o	ravelly	silty CLAY of	high			· · · -
14.00	D						×	🛛 undrain	ned shea	r streng	th. Gravel mudstone	is fine to	medium	0	- 14		• -
							×	× ×		ounded	muustone		ustone.				• -
14.50 -	U						×	X							-		• -
14.95							×	×									•
15.00	В					(2.60)	×	×							- 15		° -
							×— —	×									° -
15.50	D						×	×							-		° - -
							×	X									° -
			6.00m, 50				×	<u></u>							- 16		° -
		(3,5/50 fc	or 160mm)	6.0	67	16.30	¥	* *				14					-
16.50	В						××	ine to d	coarse si	wn very ubangu	lar to subro	ounded r	y SAND. Gra nudstone an	d			
							× × ``	sandsto	one.						-		-
17.00	D					(1.60)	× × -								- 17		
						(××	<u></u>							 		
17.50	В		7.50m, 40) for 170mm)				××	<.							[]		
		(11,12/40	, , , , , , , , , , , , , , , , , , , ,			17.00		<u> </u>							[]		
		SPT(S) 1	8.00m, 100 (25 n/100 for 190mm	5.0 4.9		17.90 18.00		Very we	eak sligh		thered brow d of Borehole				- 18		
				"											ŧ		
															- 19		
															[]		
															[]		
~			on otica-	<u> </u>	0.5-1		tor C		oto- In	ow - '					- 20		
Date	Time		Casing (m) Water	(m) De	epth (r		nm) Dep		(mm) 1	emarks hour ha		ted serv	ice avoidanc	e pit.			
4-03-2021 5-03-2021	16:00 08:30	11.00 11.00	11.00 11.00		18.00	150	ע 18 18	8.00 1	150								
5-03-2021	16:00	18.00	18.00 16.9	90													
										trike (m	Casing (m)	Sealed /r	Water Strik) Rema	arks	
om (m) To		Chiselling ration Re	marks		op (m) Base		ype Dia	(mm)	2.70 8.30	2.70 8.30	3.90 8.60	20 20 20	2.70 8.10	Water	r strike r strike	
					0.00 1.00	1.0 17.0			20 20	12.90	12.90	13.80	10	12.90	Water	r strike	
										CC (GEOTECHN	CAL LTE	0151 545 27	50 www.c	cgeote	chnical.c	o.uk

				ct Name: n Parkw		tatio	n			Client	t:	1	СС		E	Boreho	le ID:
(f		- 7		t Numbe			Started	:	Logged	By:	C	L hecked By:		atus:			CP05
U			CCG-	C-21-12	093	0	1/03/20			SP		СВ		FINAL	-	Sheet 1	l of 2
Cable	Percus	sion	Easting	:		North	ing:)	Ground			ant Used:	Ri	g Crew:	5	Scale:	
Bor	ehole Lo	og	34	9034.0			431589).7	22.5	50mAOE)	Dando 15	0	AR/CM	G		1:50
leather: Dry		la Citu Ta	oting			Term	ination:	Refusal	on sand	stone be	edrock ata Det		Hamme	er: CCG6 Er	nergy Rat	tio: 649	% Groundwa
Depth	Sample ID	& In Situ Te	sung Test Result		Lev		Depth (m) (Thickness)	Legend		503	ala Del	Strata Desc	ription				Water Ba Strike Inst
	50				(mA	00)	(THICKHESS)		Dark			andy slightly	gravelly		c CLAY.	-	Suike Inst
0.20 0.30	ES B						(0.50)					lium subangu t rootlets gras			PSOIL)	-	
0.30 0.60	D B				22.	.00	0.50	X	Soft	to firm bro	own sl	ghtly sandy s	lightly gr	avelly silty	CLAY.	-	
0.70	ES							×	and r	el IS fine mudstone	э.	rse subangula	ar to sud	rounded sa	nasione		
1.00 1.20	B ES	SPT(S) 1	20m N-	-7				×	×0	casional rootiets	at 0.50 - 1.	uumbgi				-1	
		(1,2/1,2,2		-7			(1.70)	× 	×							-	
1.50	В							× 	×							-	
1.80	D							× ×	×								
2.00 - 2.45	U				20.	30	2.20	×	1.			dy. Possibly failed.				-2	
0.50	_		E0 1	.17	_0.			×	Medi	um dense	e brow	n clayey silty	SAND.			F	
2.50 2.50	ES EW	SPT(S) 2 (2,4/4,5,4		17			(0.70)	×								-	
2 00					19.	.60	2.90	× ×	Stiff I	hecoming	ı firm o	lightly sandy	slightly	ravelly eilty		+	
3.00 3.00 - 3.45	B U							×	of hig	gh becom	ning me	edium undrair	ned shea	ir strength.	Gravel	- 3	
3.50	в							×	is tine	e io medi	ium SU	brounded mu	usione.			E	
3.50								× ×	×							F	
4.00	D	SPT(S) 4	00m N-	-11				×	N. N								
4.00		(2,3/2,3,3		• • • •				×	×							- 4	
4.50	В							×	X							-	
4.50								×	×							-	
5.00 - 5.45	U							×	X							- 5	
5.00 - 5.45							(4.70)	×	- X							- 5	
5.50	D						(4.70)	× 	×							-	
5.50	ES							× ×	×							-	
6.00	В	SPT(S) 6	6.00m N=	-16				×— ×	×							- 6	
2.00		(1,4/3,4,5						× ×	X								
6.50	D							×	X I I I							E	
								×	1							E	
7.00 - 7.45	U							×								-7	
								×	×							È	
7.50	В							× ×	×							-	
					14. 14.		7.60 7.80					ayey GRAVEI ar mudstone a			nedium	ţ	
		SPT(S) 8		-23				×	Firm	to stiff br	own sl	ightly sandy s	lightly gi	ravelly silty	CLAY.	- 8	
		(4,3/4,5,7	7,7)					×		el is fine stone.	ιυ mec	lium subangu	iai to su	biounded		-	
8.50	в							×	×							E	
								X	×							[]	
9.00	D							×	×							- 9	
								×— ×	×								
9.50	В							× ×	×							ŧ	
								X_	X I I I							F	
10.00	D								<u>-</u>			Continued nex	kt sheet			- 10	
Sta Date	art & End o Time	of Shift Obs Depth (m)	servations Casing (m)	Water (n	B n) De	oreho	le Diame n) Dia (r	eter Ca	asing Dia th (m) [[ameter Dia (mm)	Remai	ˈksː hand excava	tod arm		00 r ³⁴		L
1-03-2021 2-03-2021	16:00 08:30	4.50 4.50	4.50 4.50		., 58	18.20	15	0 18	3.20	150	i nour	nanu excava	ieu serv	ice avoldan	ce pit.		
3-03-2021	08:30	4.50 15.60	4.50 15.80	15.60													
														Water Stri			
		Chiselling	morter	1	+-	on ()		nstallation			Strike 2.20	(m) Casing (m) 2.20	Sealed (n 2.90				arks er Strike
		3:00 Ch	marks			op (m	Base	(m) T	ype [Dia (mm)	7.60	7.60	7.80	5 10	7.20	Wate	er Strike er Strike
	1	mu	udstone b	oulder						-							

\bigcap			Contract Nam Cottam Park		Statio	n			Client:		L	CC		E	Boreho	le ID:	
(f		- 7	Contract Num			Started	:	Logged By	/:	Chec	ked By:		atus:		(CP0	5
			CCG-C-21-1	2093	0	01/03/20	021	S	Р		СВ		FINAL	- 5	Sheet 2	2 of 2	
	Percus		Easting:		North	•	_	Ground Le			Used:		g Crew:		Scale:		
	ehole L	og	349034.	0		431589		22.50r			ando 15		AR/CM			1:50	
/eather: Dr		& In Situ Te:	stina		Ierm	ination:	Refusal	on sandste		ock Details	SPT	Hamme	er: CCG6 Er	nergy Rat	io: 64%		ndwate
Depth	Sample ID		fest Result		vel (OD)	Depth (m) (Thickness)	Legend	1	Olidia		Strata Desc	ription				Water Strike	Back
		SPT(S) 1 (3,3/4,5,6	0.00m, N=21	(112	(02)	, ,	×						ravelly silty	CLAY.	t		
		(3,3/4,5,0	5,0)				×	mudsto	ne.		n subangu				-		
10.50	В						×	×	nai smali pocke.	ts of tine to n	iedium SAND at 1	10.00-10.50mb	<i>gi</i>		-		
							×	×							-		
11.00	D					(4.70)	×	X							- 11		
44.50	U					(4.70)	×	X							-		
11.50 - 11.95							×	×							-		
10.00	в						×— -	×							-		
12.00	В						×	×							- 12		
12.40	D			10	01	12 50	×	× •							-		
	_				.01	12.50	×	K Medium	n dense b	orown v	ery silty cl	ayey SA	ND.		-		
12.80	В	SPT(S) 1	3.00m, N=18				× ×	₹ ×							- 13		
		(3,4/4,5,4				(1.50)		<. 							- 13		
13.50	D					(1.00)	 ×	×									
10.00							× ×	<. 							-		
				8	51	14.00	× ×	×							- 14		
							×				ly sandy s າ subangu		ravelly silty brounded	CLAY.	- '		
14.50	в						×	mudsto	ne.		-						
14.50 14.50 -	DU						×	T XI							-		
14.95						(1.80)	×	X							- - 15		
15.00							×	×							-		
15.50	в						×	×							-		
			5.80m, 50 (37 fc	vr 6	70	15.80	×	×									
			50 for 160mm)		10	15.00		Brown	MUDSTC	NE (po	ssibly a b	oulder)			- 16		
						(0.70)									-		
				6.	00	16.50	5.78 S	Vory do	nso brou		gravolly e		D. Gravel is	fino to	-		
							×						one and sa		-		
17.00	в						××××	*							- 17		
						(1.65)	×××	N X									
17.50	в		7.50m, 50 (25 fc	or		(1.00)	×××								-		
17.50	D	5mm/50 f	for 10mm)				$\hat{x} \times \hat{x}$	*									
							$\times \times $	3							- 18		
		SPT(S) 1	8.20m, 100 (25 100 for 20mm)		36 30	18:20		Weak n	noderatel		nered redo of Borehole		/n SANDST	ONE	1		
										End	51 20101010	at 10.2011					
															-		1
															- 19		1
															E		
															f		
															- 20		
Date	Time		Casing (m) Water	(m) De	epth (r		nm) Dep		(mm) 1 h	emarks: hour ha	nd excava	ited serv	ice avoidan	ce pit.			
1-03-2021 2-03-2021	16:00 08:30	4.50 4.50	4.50 4.50		18.20				50	.cui iid	onoava		aroiuali	- • pit.			
3-03-2021	08:30	15.60	15.80 15.6	0													
											<u></u>		Water Stri				
rom (m) To		Chiselling ration Re	marks	т	ōp (m		nstallatio (m) T		(mm)	2.20	2.20	2.90	n) Time (mins 30	2.20	Wate	er Strike	
		3:00 Ch	iseling through idstone boulder			, 10000	, '			7.60 12.50	7.60 12.50	7.80 14.00	5 10	7.20 12.50		er Strike er Strike	
										CC G	EOTECHN	ICAL LTE	0151 545 27	750 www.c	cgeote	chnical.	co.uk

				t Name: n Parkwa	av ¢	tatio	n			Client:			.CC		E	oreho	le ID:
(- 7		t Numbe			Started	:	Logged B	y:	Che	ecked By:		itus:		(CP06
				C-21-12			9/03/20			SP SP		СВ		FINAL		Sheet 1	
Cable	Percus	sion	Easting	:		North	ning:		Ground Le	evel:	Pla	nt Used:	Rig	Crew:		Scale:	012
	ehole L		34	9046.7			431570).2	22.25	mAOD		Dando 15	0	AR/CM	G		1:50
Weather:						Term	ination:	Refusal	on sandst	one bec	drock	SPT	- Hammei	r: CCG6 Er	nergy Rat	io: 64%	6
	· ·	& In Situ Te			Lev	vel	Depth (m)			Stra	ita Detai						Groundwate Water Bac
Depth	Sample ID		Test Result		(mA	OD)	(Thickness)	Legend		ev slight	llv sand	Strata Desc y slightly gr	•	v organic (Strike Instal
0.15	ES				22.	05	0.20		Gravel	is fine to (TOPS	o mediı	um subangu	lar mudst	tone. Grass	sed at		
0.50	В							× ···	Soft be	coming	stiff bro	wn slightly				-	
0.60 0.70	D ES							× ×		Gravel is one and		o medium si one.	ubangular	to subrou	nded		
- 1.00	В							×	× •. Become	es firm at 1.00	Ombgl					- 1	* •
			1.20m, N=	:14				×									
1.40 1.50	D ES	(2,2/3,3,3	5,5)				(2.60)	×	Lens of	water bearing	g brown silty	clayey SAND at 1.4) - 1.50mbgl.			-	
								×									
- 2.00	в							×	× Become	es stiff at 2.00	mbgl					- 2	
2.00 - 2.45	U							×	×							[]	
2.40	D B							×	×							-	
2.50	ES				19.	45	2.80	×	×							FI	
- 3.00	D	SPT(S) 3	3.00m, N=	27	13.	10	2.00	× × · ·	Mediun	n dense	brown	silty slightly	clayey S	AND.		-3	* * * * * - * * _
		(2,3/5,6,7					(0.90)	× ×	×.							[]	· · · -
3.40 3.50	ES B						. ,	× × ,	×.								· · -
3.60	D				18.	55	3.70	- x	Eirm to	stiff bro	wn slia	htly sandy s	slightly ar	avelly silty	CLAY of	-	 • •
3.70 -4.00 - 4.45	EW U							×	😾 high un	drained	l shear	strength wit	h frequer	it pockets o	of sand	-4	·· · •
								×				ravel is fine e sandston			uiar to	-	•••-
4.50	в							×	×								· · · - · · · -
								×								-	· · · -
- 5.00	D	SPT(S) 5	5.00m, N=	:15				×	×							-5	
0.00		(1,2/3,4,4						×	×								° -
5.50	в							×	×								
								×	×							-	· · -
- 6.00	D							×	×							-6	° -
6.00 - 6.45	Ū								×								• • -
6.50	в								×							-	° -
0.00								× ×	×							-	°
- 7.00	D	SPT(S) 7	7.00m, N=	:22			(9.10)	X	×							-7	••
		(3,3/4,6,6						×								- 1	·
7.50	В							×	i i x								* • • - • • . • -
								×	×								*.* *.*-
- 8.00	D							× ×	×	190 Jan	ined at	repath of 0.00	mbal			- 8	
8.00 - 8.45	Ū							×	CLAY h	as iow undrail	neu snear st	r <u>ength at 8.00 -</u> 8.45	nugi.			Ē	· · ·
8.50	в							×	i i i								· · · · -
								×	×							E	
9.00	D	SPT(S) 9	9.00m, N=	21				×	X							-9	• • •= • • • -
		(4,4/5,5,5						×	×							Ē	• * • •- • • • -
9.50	В							×	×							EI	•••••• ••••
5.00								×	X								•*••• • • •
- 10.00	D							×	×			Continue 1	vt ob 1			[10	• * • • • • • • • • •
Sta	art & End o	of Shift Ob	servations		В	oreho	le Diame	eter C	asing Diam	neter F	Remark	Continued ne S:					
Date 09-03-2021	16:00	9.50	Casing (m) 9.50	Water (n	n) De	pth (r 18.00	n) Dia (r 15	nm) Dep 0 18	th (m) Dia 3.00	(mm) 1 150	hour h	and excava	ted servio	ce avoidan	ce pit.		
11-03-2021 11-03-2021	08:00 16:00	9.50 18.00	9.50 18.00	8.70													
										Ļ				M/- 1 01			
	(Chiselling			_			nstallatio	 n	s		1) Casing (m)) Rose to (m		
	(m) Du	ration Re	emarks hiseling in	sandetor		op (m 0.00		(m) T	ype Dia	(mm) 19	1.40	1.40	1.60	10	1.40	lens	r strike in sand
10.00 10			drock.	ວລາເບຣເບເາຍ		1.00	17.0	-		19	2.80	2.80	3.70	10	2.50	-	r strike
												JEUTECHN		0101 545 21	30 WWW.C	cyeote	chnical.co.uk

CG-C-21-12093 09/03/2021 SP OB FINAL Sheet : Cable Percussion Easting: Northing: Ground Level: Plant Used: Rig Grew: Scale: Sca	CP06
Cable Percussion Borehole Log Easting: 349046.7 Northing: 349046.7 Ground Level: 22,25mAOD Plant Used: Dando 150 Rig Crew: APC/MG Scale: APC/MG Scale: APC/MG Weather: Samples & In Situ Testing Termination: Refusal on sandstone bedrock SPT Hammer: CCG6 Energy Ratio: 64 Dept Samples & In Situ Testing Test Result Immon Situal Description Strata D	of 2
Borehole Log 349046.7 431570.2 22.25mAOD Dandol 150 AR/CMG Weather: Termination: Refusal on sandstone bedrock SPT Hammer: CC66 Energy Ratio: 64' Doph amote to Test Result Level (August Control on the contro	. 01 2
Samples & In Situ Testing Strata Details Depth Sample In Test Result Level (mAOD) Prederes) Strata Description 10.00 - 10.45 U Firm to stiff brown sightly sandy sightly gravely singhtly gravely sightly gravely sightly gravely sight	1:50
Depth Sample ID Test Result Level (mAOD) Legend (mAOD) Stata Description 10.05 B Firm to stiff brown slightly sandy slightly gravelly slight (LAY of high undriande shear strength with frequent pockets of sand and slit laminations. Grave Is fine to medium subangular to well rounded mudstone sandstone and granite.	
10.00 U <thu< th=""> U U U</thu<>	Groundwate Water Bac
12.00 B SPT(S) 11.50m, N=22 (4.4/5.5.5.7) 9.45 12.80 Medium dense brown sandy clayey SILT. 12 12.50 D SPT(S) 13.00m, N=15 (1.2/3.4.4.4) 9.45 12.80 Medium dense brown sandy clayey SILT. 13 13.50 B	Strike Insta • • • - • • • - • • • - • • • - • • • - • • • - • • • - • • • - • • • - • • • - • • • - • • • - • • • • - • • • -
12.50 D SPT(S) 13.00m, N=15 (1.2/3,4,4,4) 9.45 12.80 Medium dense brown sandy clayey SILT. 13 13.50 B (1.2/3,4,4,4) (1.40)	
SPT(S) 13.00m, N=15 (1.2/3,4,4,4) 9.45 12.80 Amount of the second se	* * * - * * * - * * * - * * * -
13.50 B (1.2/3,4,4,4) (1.40) 13.50 B (1.40) (1.40) 14.00 D (1.40) (1.40) 14.50-14.95 U (1.40) (1.40) 14.50-14.95 U (1.60) (1.60) 15.50 B (1.60) (1.60) (1.60) 15.50 B (1.750 for 275mm) (1.60) (1.60) 16.50 B (1.750 for 275mm) (2.00) (2.00) 17.00 D SPT(S) 17.00m, 50 (2.00) (2.00) (2.00) 4.45 17.80 Weak reddish brown weathered SANDSTONE (1.750 for 200mm)	• • • • • • • • • • • • • • • • • •
14.00 D 8.05 14.20 Image: state sta	* <u>*</u> * * * * * * * * * * * * * * *
14.50 - 14.95 U	· · · - · · · - · · · - · · · -
15.50 D SPT(S) 16.00m, N=50 (4,7/50 for 275mm) 6.45 15.80 Very weak brown weathered SANDSTONE recovered as a very sandy silty GRAVEL. Gravel is fine to coarse subangular sandstone. 16 16.50 B SPT(S) 17.00m, 50 (12,13/50 for 200mm) (2.00) (2.00) 17.80 17.80 17.80	ه ۹۰۰۰ م ۱۹۹۰ م
16.50 B 17.00 D SPT(S) 17.00m, 50 (12,13/50 for 200mm) 4.45 17.80	*
17.00 D SPT(S) 17.00m, 50 (12,13/50 for 200mm)	• • • • • • • • • • • • • • • • • • •
	* * * * * - * * -
4.25 18.00 End of Borehole at 18.00m	
- 19	
Start & End of Shift Observations Borehole Diameter Casing Diameter Remarks:	
Date Time Depth (m) Casing (m) Water (m) Depth (m) Dia (mm) Dia (mm) <t< td=""><td></td></t<>	
Chiselling Installation Water Strikes	
rom (m) To (m) Duration Remarks Top (m) Base (m) Type Dia (mm) 1.40 1.60 10 1.40 1.60 In 1.40	er strike in sand er strike

\bigcap			Contract Name: Cottam Parkw		tatio	n			Client:		L	сс		В	orehol	e ID:	
(+		- 7	Contract Numb	-		Started	:	Logged By	 /:	Che	cked By:		tatus:		V	NS0	1
			CCG-C-21-12	093	2	25/03/20	021	S	Р		СВ		FINAL	SI	heet 1	of 1	
Dynam			Easting:		Norti	-		Ground Le			t Used:		ig Crew:		cale:		
	ehole L	og	348992.5			431694	.5	22.35r	nAOD	Dar	ndo Terriei	•	AR/CMC			1:25	
Weather: Dry		0 ha Oita Ta at	·		Term	nination:	As instru	ucted	Otra	to Dataila		Hamm	er: N/R, Energ	y Ratio:	N/R	0	
Depth	Sample ID	& In Situ Test	est Result	Le	vel	Depth (m) (Thickness)	Legend	1	Stra	ta Details	Strata Desci	ription				Water	dwater Backfill/
0.00 - 1.00 0.10	UT ES			(mA 22.		(Thickness)	Legene	Soft gre Gravel i mudsto surface	is fine to ne and (TOPS wn sligt	tly sandy o mediu sandsto OIL) htly san	y slightly gra m subangu ne. Freque dy slightly g	avelly si lar to wo nt rootle gravelly	ilty organic CL/ ell rounded ets, grassed at silty CLAY. Gra mudstone and	avel is		Strike	Installation
0.50	ES	HVP=110					×	sandsto		subarigu		Junded		-	· · · ·		
- 1.00 1.00 - 2.00	ES UT	SPT(S)N=1	3 (1,2/3,3,3,4)				×	kukukuka							- 1		
1.50	D	HVP=110					× × × × × × × × ×	akiakakaka						-			
-2.00 - 3.00	UT	SPT(S)N=1 HVP=110	6 (3,3/3,4,4,5)			(3.80)	× · · · · · · · · · · · · · · · · · · ·	uku ku ku ku						-	- 2		
2.50	D	HVP=110					X	17. 17. 17. 17. 1						-			
-3.00 - 4.00	UT	SPT(S)N=2 HVP=110	2 (3,3/5,5,6,6)				x	<u> </u>							- 3		
		HVP=110					×	kurkurkur									
_		SPT(S)N=2 HVP=110	1 (3,3/4,5,6,6)	18.	.35	4.00	X	<u></u>		En	d of Borehole	at 4.00m			- 4		
-														-	- 5		
		of Shift Obse				ole Diame		asing Diam		Remarks	:						1
Date			casing (m) Water (i	n) De	epth (r					Strike (m`)Casing (m)	Sealed (Water Strike: m) Time (mins) R				
From (m) To		Chiselling ration Ren	narks	Т	op (m		nstallatio (m) T		(mm)		,		0	()	BH D		
	1																

\bigcap	γ		Contract Name: Cottam Parkw Contract Numbe	ay S		n Started	:	Logged By	Client		L hecked By:	.CC	Status:	E	Boreho	le ID: NSO	2
			CCG-C-21-12			26/03/20		S			СВ		FINA	L g	Sheet 1		
	nic Sam		Easting:			ning:		Ground Le			ant Used:		Rig Crew:	5	Scale:		
	ehole L	og	349030.9			431711		22.88r	nAOD	D	ando Terrie	-	AR/CI			1:25	
Weather: Dry		& In Situ Test	ina		Ierm	ination:	As instru	icted	Stra	ata Det		Hamr	mer: N/R, En	ergy Ratio	: N/R	Grour	ndwater
Depth	Sample ID	1	est Result	Lev (mA	/el	Depth (m) (Thickness)	Legend				Strata Desc	ription				Water Strike	Backfill/ Installation
0.00 - 1.00	UT ES			22.		0.25		Gravel mudsto surface	is fine t ne and (TOPS	to mec I sands SOIL)	ndy slightly gr lium subangu stone. Freque andy slightly	ilar to v ent root	well rounded tlets, grasse	d at			
0.65	ES	HVP=110					×	fine to o sandsto	coarse	suban	gular to subro	ounded	d mudstone a	and			
	UT	HVP=110						1.1X1.1X1							- - - - - 1		
1.20	ES	SPT(S)N=1	5 (2,2/3,3,4,5)				×	XI IX							- - -		
- 1.50	D	HVP=110					× × × × × × × × ×	gi axi axi axi a							-		
	UT	SPT(S)N=2 HVP=110	3 (3,5/5,6,6,6)			(3.75)		x. 1x. 1x. 1x.							- 2		
-		HVP=110						1×1 1×1 1×1 1×1							-		
3.00 - 4.00	UT	SPT(S)N=2 HVP=110	7 (3,5/5,7,7,8)					<u>axı axı axı axı axı</u>							- 3		
- 3.50	D	HVP=110						1×1 - 1×1 - 1×1							-		
- - - - - -		SPT(S)N=2 HVP=110	2 (4,4/4,5,6,7)	18.	88	4.00	X	- 1% - 1%			End of Borehole	e at 4.00	m		- - - - - -		
· · · ·																	
	art & End	of Shift Obse	ervations			ole Diame		asing Diam	eter	Remar	ˈks:				- 5		
Date	Time	Depth (m) C	casing (m) Water (r	n) De	pth (r	n) Dia (r	nm) Dep	th (m) Dia	<u>(mm)</u>				Water St				
From (m) To		Chiselling ration Ren	narks	Тс	op (m		nstallatio (m) T		(mm)		(m) Casing (m)		0		BH C	RY	com

Coltam Parkway Station LCC WS Contrain Number: Logged By: Ohecked By: Status:	25 Dundwater
Opmamic Sampling Borehole Log CCG-C-21-12093 349071.0 26/03/2021 SP CB FINAL Sheet 1 of 1 Upmamic Sampling Borehole Log Easting: 349071.0 Northing: 41536.1 Ground Level: 21.55MADD Plant Used: Danke Territer Rig ARC/MG Size Territer Rig ARC/MG <td>oundwater</td>	oundwater
Dynamic Sampling Borehole Log Easting 349071.0 Northing: 431536.1 Ground Level: 21.55mAOD Plant Used: Dando Terrier Rig SPT Hammer: NR, Energy Ratio: NR Weather: Dry 0.00 - 1.00 UT SPT Hammer: NR, Energy Ratio: NR 1.2 0.00 - 1.00 UT Terrination: As instructed SPT Hammer: NR, Energy Ratio: NR 0.010 UT Strata Details Strata Details 0.30 ES 21.30 0.25 HVP=90 UT SPT (sym=10 (1,222.2.4) 0.85 HVP=110 UT SPT(sym=10 (1,222.2.4) 20.45 HVP=70 19.90 1.65 Stiff brown sliphtly sandy sliphtly gravelly slip UCAY. Gravel is fine to medium subangular to subrounded mudstone and sandstone. Stiff brown sliphtly sandy sliphtly gravelly slip CLAY. Gravel is fine to medium subangular to subrounded mudstone and sandstone. 0.00 UT SPT(s)N=10 (1,222.2.4) 19.90 1.65 19.90 18.61 Stiff brown sliphtly sandy sliphtly gravelly slip CLAY. Gravel is fine to medium subangular to subrounded mudstone and sandstone. -2 2.00 D SPT(s)N=20 (2.22.5.6.7) 19.90 1.65 -2.00 UT SPT(s)SN=20 (2.22.	oundwater
Borehole Log 349071.0 431536.1 21.55mAOD Dando Terrier Rig AR/CMG 1:2 Weather: Dry Termination: As instructed SPT Hammer: NR, Energy Ratio: NR SPT Hammer: NR, Energy Ratio: NR Depth Samples & In Situ Testing Strata Decay Sighty samption Weather: Origon (Inc.) Situ Decay Sighty samption Weather: Origon (Inc.) Situ Decay Sighty samption Weather: Origon (Inc.) Inc.) Inc. Sitt Decay (Inc.) Inc.) Inc. Inc.) Inc. Inc.) Inc. Inc.) Inc. Inc.) Inc.) Inc.) Inc.) Inc.) Inc.) Inc.) Inc.) Inc.)	oundwater
Samples & In Situ Testing Strata Details Strata Deciption Strata Dec	r Back
Depth Sempter ID Test Result Level (MAOD) Strata Description Wetweet (MAOD) 0.00 - 1.00 UT UT Soft grey slightly sandy slightly gravely silly organic CLAY. Gravel is fine to medium subangular to subrounded mudstone and sandstone. Frequent rootlets, grassed at standstone. Soft grey slightly sandy slightly gravely silly organic CLAY. Gravel is fine to medium subangular to subrounded mudstone and sandstone. Soft free with sandstone. Frequent rootlets, grassed at standstone. 0.30 ES HVP=50 0.25 Soft free with substrate (TOPSOL)	r Back
Depine Sample To Idex redsult (mAOD) Organization Samelia Sample To Samelia Samelia <td></td>	
0.10 ES 21.30 0.25 Grave is fine to medium subangular to well rounded mudstone and sontone. Frequent rootets, grassed at surface (TOPSOL). 0.30 ES HVP=80 0.85 0.85 0.85 HVP=110 0.85 HVP=110 0.85 0.85 0.85 -1.00-2.00 UT SPT(S)N=10 (1.22.2.2.4) 20.45 1.10 Medium dense brown clayey sity fine to medium SAND with frequent pockets of clay. -2.00 D SPT(S)N=10 (1.22.2.2.4) 1.10 Medium dense brown clayey sity fine to medium SAND with frequent pockets of clay. -2.00 D SPT(S)N=10 (1.22.2.2.4) 1.10 Medium dense brown slightly sandy slightly gravely sity CLAY. Gravel is into to medium subangular to subrounded mudstone and sandstone. -2.00 D SPT(S)N=20 (2.22.5.6.7) 1.9.90 1.65 -3.00 - 4.00 UT SPT(S)N=18 (3.34.4.4.6) (2.36) SPT(S)N=18 (3.34.4.4.6) 3.33	
0.30 ES 21.30 0.25 Suff zons lightly sandy slightly gravely slity CLAY. Gravel is sind to medium subangular to subrounded mudstone and sandstone. 0.90 ES HVP=110 20.45 1.10 1.00 - 2.00 UT SPT(S)N=10 (1.2/2.2.2.4) 20.45 1.10 2.00 UT SPT(S)N=10 (1.2/2.2.2.4) 1.10 Image: single to medium subangular to subrounded mudstone and sandstone. -2.00 UT SPT(S)N=10 (1.2/2.2.2.4) 1.10 Image: single to medium subangular to subrounded mudstone and sandstone. -2.00 UT SPT(S)N=10 (1.2/2.2.2.6,7) 19.90 1.65 -3.00 - 4.00 UT SPT(S)N=18 (3.3/4.4.4.6) Image: single to subrounded mudstone and sandstone. -2 -3.00 - 4.00 UT SPT(S)N=18 (3.3/4.4.6) Image: single to subrounded mudstone and sandstone. -3	
0.30 ES	
0.90 ES HVP=10 0.85) andstone. andstone. 1 1.00 - 2.00 UT SPT(S)N=10 (1,22,2,2,4) 20.45 1.10 Medium dense brown clayey sity fine to medium SAND with frequent pockets of clay. Medium dense brown clayey sity fine to medium SAND with frequent pockets of clay. 2.00 19.90 1.65 Stiff brown slightly sandy slightly gravelly sity CLAY. Gravel is fine to medium subangular to subrounded mudstone and mudstone and mudstone and mudstone and mudstone and mudstone and mudstone. 2 -2.00 Stiff brown slightly sandy slightly gravelly slity CLAY. Gravel is fine to medium subangular to subrounded mudstone and	
0.90 ES HVP=110 20.45 1.10 Medium dense brown clayey silty fine to medium SAND with requering pockets of clay. -1.00 - 2.00 UT SPT(S)N=10 (1.2/2.2.2.4) 20.45 1.10 Medium dense brown clayey silty fine to medium SAND with requering pockets of clay. -2.00 D SPT(S)N=20 (2.2/2.5.6.7) 19.90 1.65 Suff brown slightly sandy slightly gravelly silty CLAY. Gravel is fine to medium subangular to subrounded mudstone and sandstone. -2 -3.00 - 4.00 UT SPT(S)N=18 (3.3/4,4.4.6) (2.35) Suff brown slightly sandy slightly gravelly silty CLAY. Gravel is fine to medium subangular to subrounded mudstone and sandstone. -2	
0.90 ES HVP=110 20.45 1.10 Medium dense brown clayey silty fine to medium SAND with frequent pockets of clay. 0.90 SPT(S)N=10 (1.2/2.2.2.4) 20.45 1.10 Medium dense brown clayey silty fine to medium SAND with frequent pockets of clay. 0.90 HVP=70 19.90 1.65 Stiff brown slightly sandy slightly gravelly silty CLAY. Gravel is fine to medium subangular to subrounded mudstone and standstone. 2.00 2.00 - 3.00 UT SPT(S)N=20 (2.2/2.5.6.7) 19.90 1.65 3.00 - 4.00 UT SPT(S)N=18 (3.3/4.4.4.6) (2.35) Stiff brown slightly sandy slightly gravelly silty CLAY. Gravel is fine to medium subangular to subrounded mudstone and standstone. -3	
0.90 ES UT UT SPT(S)N=10 (1.2/2.2.2.4) 20.45 1.10 Medium dense brown clayey sity fine to medium SAND with frequent pockets of clay. 0.50 UT HVP=70 19.90 1.65 Stiff brown slightly sandy slightly gravely sity CLAY. Gravel is fine to medium subangular to subrounded mudstone and sandstone. Stiff brown slightly sandy slightly gravely sity CLAY. Gravel is fine to medium subangular to subrounded mudstone and sandstone. 2 -3.00 - 4.00 UT SPT(S)N=18 (3.3/4.4.6) HVP=90 (2.35) Stiff brown slightly sandy slightly gravely slig	
-1.00 - 2.00 UT SPT(\$)N=10 (1.2/2.2.2.4) 20.45 1.10 Medium dense brown clayey silty fine to medium SAND with 1 -2.00 -1.00	
2.00 2.00 - 3.00 -3.00 - 4.00 UT SPT(S)N=18 (3,3/4,4.4,6) UT SPT(S)N=18 (3,3/4,4.4,6) (2.35) -3.00 - 4.00 UT SPT(S)N=18 (3,3/4,4.4,6) (3.3/4,4	
2.00 2.00 - 3.00 D UT SPT(S)N=10 (1,2/2,2,2,4) NVP=70 19.90 1.65 Stiff brown slightly sandy slightly gravelly slity CLAY. Gravel is fine to medium subangular to subrounded mudstone and sandstone. Stiff brown slightly sandy slightly gravelly slity CLAY. Gravel is fine to medium subangular to subrounded mudstone and sandstone. -2 -3.00 - 4.00 UT SPT(S)N=18 (3.3/4,4,4.6) HVP=50 (2.35) (2.35) -3	
2.00 D SPT(S)N=20 (2,2/2,5,6,7) 1.65 Siff brown slightly sandy slightly gravelly silty CLAY. Gravel is fine to medium subangular to subrounded mudstone and sandstone. 2.01 - 3.00 UT SPT(S)N=20 (2,2/2,5,6,7) 1.65 Siff brown slightly sandy slightly gravelly silty CLAY. Gravel is fine to medium subangular to subrounded mudstone and sandstone. 2.01 - 3.00 UT SPT(S)N=18 (3,3/4,4,4,6) 2.235 Siff brown slightly sandy slightly gravelly silty CLAY. Gravel is fine to medium subangular to subrounded mudstone and sandstone. 2.235	
2.00 - 3.00 UT SPT(S)N=18 (3,3/4,4,6) L ST(S)N=18 (3,3/4,4,6) L S SUFF Constraints and store 3	
-2.00 2.00 - 3.00 D UT SPT(S)N=20 (2,2/2,5,6,7) HVP=90 Sub Drown sugnity sandy signity gravely siny CLAY. Grave is sindstone. -2 -3.00 - 4.00 UT SPT(S)N=18 (3,3/4,4,6) HVP=90 (2.35) -3	
-2.00 2.00 - 3.00 D UT SPT(S)N=20 (2,2/2,5,6,7) HVP=90 Sub Drown sugnity sandy signity gravely siny CLAY. Grave is sindstone. -2 -3.00 - 4.00 UT SPT(S)N=18 (3,3/4,4,6) HVP=90 (2.35) -3	
HVP=70 2.00 - 3.00 UT SPT(S)N=20 (2.2/2,5,6,7) HVP=90 HVP=110 HVP=110 UT SPT(S)N=18 (3.3/4,4,4,6) HVP=90 UT SPT(S)N=18 (3.3/4,4,4,6) HVP=90 HVP=	
-2.00 2.00 - 3.00 UT SPT(S)N=20 (2.2/2,5,6,7) HVP=90 +VP=110 -3.00 - 4.00 UT SPT(S)N=18 (3.3/4,4,4,6) HVP=90 -3.00 - 4.00 UT SPT(S)N=18 (3.3/4,4,6) HVP=90 -3.00 - 4.00 UT SPT(S)N=18 (3.3/4,4,6) HVP=90 -3.00 - 4.00 UT SPT(S)N=18 (3.3/4,4,6) HVP=90 -3.00 - 4.00 UT SPT(S)N	
2.00 - 3.00 UT HVP=90 HVP=110 -3.00 - 4.00 UT SPT(S)N=18 (3,3/4,4,4,6) HVP=90 -3	
-3.00 - 4.00 UT SPT(S)N=18 (3.3/4,4,4.6) HVP=90 (2.35) 	
-3.00 - 4.00 UT SPT(S)N=18 (3,3/4,4,4,6) HVP=90 - 3	
-3.00 - 4.00 UT SPT(S)N=18 (3,3/4,4,4,6) HVP=90 - 3	
-3.00 - 4.00 UT SPT(S)N=18 (3,3/4,4,4,6) HVP=90 - 3	
-3.00 - 4.00 UT SPT(S)N=18 (3,3/4,4,4,6) HVP=90	
-3.00 - 4.00 UT SPT(S)N=18 (3,3/4,4,4,6) HVP=90	
-3.00 - 4.00 UT SPT(S)N=18 (3,3/4,4,4,6) HVP=90	
3.50 D HVP=100	
- 3.50 D HVP=100	
3.50 D HVP=100	
- 3.50 D HVP=100	
- SPT(S)N=20 (2,2/4,4,5,7) 17.55 4.00 End of Borehole at 4.00m 4	
Start & End of Shift Observations Borehole Diameter Casing Diameter Remarks:	
Date Time Depth (m) Casing (m) Water (m) Depth (m) Dia (mm) Depth (m) Dia (mm)	
Chicolling Unstallation Strike (m) Casing (m) Sealed (m) Time (mins) Rose to (m) Remarks	
Chiselling Installation Strike (m) (Casing (m) (Sealed (m)) (time (mins)) Kose to (m) (Kemarks From (m) Top (m) Base (m) Type Dia (mm) 1.10 0 Slight seep	
	age
	age

			Contract Name: Cottam Parkw		statio	n			Client:		LCC	2			Boreho	le ID:	
((- 7	Contract Number	-		Started:		Logged By	 /:	Check		Sta	tus:		١	NSC	4
			CCG-C-21-12	093	2	6/03/20		S			СВ		FINA	L	Sheet 1	of 1	
Dynam			Easting:		North	•		Ground Le		Plant l		-	Crew:		Scale:		
	ehole Lo	og	349088.0			431488		21.91r	nAOD	Dand	o Terrier R	•	AR/CN			1:25	
Weather: Dry		& In Situ Tes	ting		Term	ination: /	As instru	icted	Strat	a Details	SPT H	ammer	: N/R, En	ergy Rati	o: N/R	Groui	ndwater
	Sample ID		est Result	Le (mA		Depth (m) (Thickness)	Legend		Strat		trata Descripti	ion				Water Strike	Backfill/ Installatio
0.00 - 1.00	UT							Gravel i	is fine to	medium	lightly grave subangular e. Frequent	to well	rounded		-		inotaliatio
0.20	ES	HVP=70		21	.71	0.20	× ····	∐∖ <u>surface</u> ≚ Firm be	(TOPS) coming Gravel is	OIL) stiff brow	n slightly sa edium subr	ndv sli	ahtiv arav	ellv siltv			
0.70	ES	HVP=65					×	<u></u>									
-1.00 - 2.00	UT						×	X							-1		
1.20	ES		6 (2,3/4,4,4)				×								- - - -		
- - - - - -		HVP=110					×	12°12°12°12°12°12°12°12°12°12°12°12°12°1							- - - - - -		
-2.00 - 3.00	UT	SPT(S)N=1	7 (2,3/4,4,4,5)			(3.80)	×	<u>121-121-121-121</u>							- 2		
2.50	D	HVP=110						1X1 1X1 1X1 1X1							-		
-3.00 - 4.00	UT	SPT(S)N=2	0 (4,3/4,4,5,7)				×	1×1 1×1 1×1							- 3		
-		HVP=110					×								- - - - - -		
· · · ·		SPT(S)N=2 HVP=110	0 (2,3/4,5,5,6)	17	.91	4.00	X	4-1%-17		End o	of Borehole at	4.00m			- - - - - -		
															- - - - - - - - - -		
-			an otion -						ata- In	a magadi					- 5		
Sta Date	rt & End c	of Shift Obse Depth (m)	ervations Casing (m) Water (r			le Diame n) Dia (n		asing Diam th (m) Dia	eter R (mm)	emarks:							
From (m) To (Chiselling ration Rer	narks	т	op (m)		nstallatio (m) T		(mm)		Casing (m) Se		0	s) Rose to (BH C	RY	

C		5	Contract Name Cottam Parkw Contract Numb	/ay S er:	Date	on e Started: 26/03/20		Logged By		LCC Checked By: CB	Status: FINAL		WS05
Dvnam	nic Sam	pling	CCG-C-21-12 Easting:			20/03/20		Ground Le		Plant Used:	Rig Crew:	Sheet ' Scale:	1 of 1
	ehole L		349092.1			431438	8.7	21.60r	mAOD	Dando Terrier R	ig AR/CMG		1:25
Weather: Dry					Term	nination: /	As instru	icted	0. 1		ammer: N/R, Energy Ra	atio: N/R	
Depth	Samples a	& In Situ Tes	ting est Result	Le		Depth (m)	Legend		Strata	a Details Strata Descripti	on		Groundwater Water Backfil
0.00 - 1.00	UT			<u>(mA</u> 21.	<u>OD)</u> .35	(Thickness)		Soft gre Gravel mudsto surface Stiff bro	is fine to ne and s (TOPSC own sligh	y sandy slightly grave medium subangular andstone. Frequent i DIL)	Ily silty organic CLAY. to well rounded ootlets, grassed at relly silty CLAY. Gravel	is	Strike Installati
0.60	ES	HVP=90				(0.75)	×	1%-1%-1%-1%-1					_
-1.00 - 2.00 1.10 1.20	UT ES B	SPT(S)N=1	1 (1,2/2,3,3,3)	20.	.60	1.00 (0.40)		with fre		ckets of clay. Gravel	y slightly gravelly SAN is fine to medium	D - 1	
-				20.	.20	1.40	× ×	Stiff bro	own sligh medium	tly sandy slightly grav subrounded mudston	velly silty CLAY. Gravel e and sandstone	is -	
		HVP=110					X	X. TX. TX. TX.					
- 2.00 2.00 - 3.00	D UT	SPT(S)N=2	20 (2,3/4,5,6,5)			(1.50)		17 1X1 1X1 1X1 1X1 1X				- 2	
		HVP=80		18	70	2.90	× ···					-	
-3.00 - 4.00	UT	SPT(S)N=1	8 (2,3/2,5,5,6)	18		3.10		X X Stiff bro	wn sligh	ey SAND. tly sandy slightly grav rounded mudstone ar	velly silty CLAY. Gravel nd sandstone	- 3 is -	
		HVP=110				(0.90)	×	1%+ 1%+ 1%+ 1%					
-		SPT(S)N=2	21 (2,2/3,5,6,7)	17.	.60	4.00	X	1% 12		End of Borehole at 4	.00m	4	
-				<u> </u>					I=-			- 5	
Sta Date		of Shift Obse Depth (m)	ervations Casing (m) Water (i			ole Diame m) Dia (n		asing Diam th (m) Dia		emarks:			
	(hiselling		_		Ir	nstallatio	 n	S		Water Strikes aled (m) Time (mins) Rose t	o (m) Rem	arks
From (m) To			narks		op (m 0.00 1.00	n) Base 1.0	(m) T 0 Pl		(mm)	1.00 CC GEOTECHNICA	0 NL LTD 0151 545 2750 wv	vw.ccgeot	echnical.com

\bigcap	γ		Contract Name Cottam Parky Contract Numb	way S		n Started	:	Logged B	Client y:		L hecked By:	.CC	Status:	Bo	orehol	le ID: NSO	6
			CCG-C-21-1			26/03/20	021		P		CB		FINAL	3	neet 1	of 1	
	nic Sam ehole L		Easting: 349101.0		North	11ng: 431388	3.0	Ground Le 20.97			'lant Used: Dando Terrie		Rig Crew: AR/CM		cale:	1:25	
Weather: Dry		0			Term	ination:	As instru	ucted				-	ner: N/R, Ener	rgy Ratio:	N/R		
	· ·	& In Situ Tes		Le		Depth (m)			Stra	ata Dei						Grour Water	dwater Backfill/
Depth 0.00 - 1.00	Sample ID	Te	est Result		OD)	(Thickness)	Legend		ov oligh	the	Strata Desc		silty organic C			Strike	Installation
0.15	ES			20	.72	0.25		Gravel mudsto surface Stiff bro	is fine for one and (TOPS own slip	to mee I sand SOIL) ghtly s	dium subangu stone. Freque	ular to v ent root	vell rounded lets, grassed a	at Gravel is			
0.40	ES	HVP=110				(0.70)		sandsto		n subi	ounded to we	ai round	ded mudstone		· · · · · · · · · · · · · · · · · · ·		
- 1.00 1.00 - 2.00	ES UT			20	.02	0.95		Mediun	n dense	e brow	vn silty clayey	SAND			- 1		
- - - -		SPT(S)N=1	16 (2,3/3,4,5,4)	19	.77	1.20	× × • • •				andy slightly unded sandst		/ silty CLAY. G	Gravel is			
1.50	D	HVP=110						<u>181 - 181 - 181 - 181 - 181 - 181 - 181 - 181 - 181 - 181 - 181 - 181 - 181 - 181 - 181 - 181 - 181 - 181 - 18</u>						-	- - - - -		
-2.00 - 3.00	UT	SPT(S)N=1	19 (2,2/4,5,4,6)					21-1X-1X-1X-1X						-	- 2		
- - - - - - -		HVP=110				(2.80)		1							- - - -		
-3.00 - 4.00	UT	SPT(S)N=1	16 (2,3/3,4,5,4)					171-171-171-171-1							- 3		
3.50	D	HVP=110						1X1-1X1-1X						-	· · · · · · · · · · · · · · · · · · ·		
- - - - - - -		SPT(S)N=1	14 (2,1/3,2,4,5)	16	.97	4.00	X				End of Borehole	e at 4.00r	n		- 4		
- - - - - -														- - - - - - - - - - - - - - - - - - -	- - -		
- - - - - - - - - - - - - - - - - - 	art & End o	of Shift Obse	ervations	В	oreho	ole Diame	eter C	asing Diam	neter II	Rema	rks:			-	- 5		
Date	Time	Depth (m)	Casing (m) Water					th (m) Dia	(mm)								
From (m) To		Chiselling tration Rer	marks	<u>т</u>	op (m		nstallatio (m) T		(mm)	0.9	5		Water Strik (m) Time (mins) 0	Rose to (m)			
										(CC GEOTECHN	NICAL L	TD 0151 545 27	750 www.c	cgeote	echnical.	com

			Contract Name Cottam Parky		tation				Clien	t:		сс		B	oreho	le ID:	
((Contract Numb	-		I Started:		Logged B	BV:	Cł	L necked By:		atus:		١	NS0	7
			CCG-C-21-1			4/03/20			SP		СВ		FINAL		heet 1		
Dynam	nic Sam	plina	Easting:		North			Ground L	evel:	Pla	ant Used:	Ri	g Crew:	0	cale:	011	
Bore	ehole L	og	349139.4	Ļ	2	431362	.6	20.70	mAOE	ס ס	ando Terriei	r Rig	AR/CM	G		1:25	
Weather: Dry		& In Situ Tes	ting		Termi	nation:	As instru	cted	Str	rata Deta		Hamme	er: N/R, Ene	rgy Ratio:	N/R	Groun	ndwater
Depth	Sample ID		est Result	Le (mA	vel OD) (Depth (m) Thickness)	Legend				Strata Desci	ription				Water Strike	Backfill/ Installatio
0.00 - 1.00	UT					, ,		Soft gr	ey sligh	htly san	dy slightly gr	avelly si	Ity organic C	CLAY.			
0.20	ES			20	.50	0.20		mudsta	one and	d sands	ium subangu tone. Freque	ar to we	ell rounded ets, grassed	at			
							×	Stiff br	e (TOP) own sli	SOIL) ahtly sa	andy slightly g	aravelly	silty CLAY. (Gravel is	.		
							×	fine to	coarse	subrou	inded to well	rounded	sandstone				
		HVP=100					×	×							-		
0.60	ES						×	×									
							×	×									
							×	×									
-1.00 - 2.00	UT		5 (2,3/3,4,4,4)				×	×							-1		
1.10	ES	HVP=110					×	×									
							×	×									
							×	×									
1.50	D						×	××							.		
						(2.80)	×	×									
							×	×									
							×	×							.		
0.00 0.00		007/011/0					×	r. X									
-2.00 - 3.00	UT	HVP=110	21 (3,3/4,4,6,7)				×								-2		
							×	×									
							×_×_	- 									
							×	- 									
2.50	D						×								-		
							×	8							.		
							×										
							×										
_		SPT(S)N=1	6 (3,3/3,4,4,5)	17	.70	3.00	- २७	<u>~</u>			End of Borehole	at 3.00m			- 3		
		HVP=110															
															-		
															.		
-															- 4		
															.		
															-		
_															- 5		
	art & End	of Shift Obse	ervations	В	orehol	e Diame	ter Ca	asing Dian	neter	Remar	ks:						I
Date	Time	Depth (m)	Casing (m) Water (m) De	epth (m	n) Dia (n	nm) Dep	th (m) Dia	a (mm)								
		Notice a Witt								Strike (m) Casing (m)	Sealed (r	Water Stril n) Time (mins)	kes Rose to (m	Rem	arks	
From (m) To		Chiselling ration Rer	narks	т	op (m)		nstallation (m) T		a (mm)		,		, (
										1				1	1		
											C GEOTECHN						

			Contract Name Cottam Parky		tation				Client:		LCC			В	orehol	e ID:	
((Contract Numb	-		I Started:		Logged By	 r:	Checked B		Status:			V	NSO	8
			CCG-C-21-1			4/03/20		S		CE					heet 1		-
Dvnar	nic Sam	nolina	Easting:		North			Ground Le		Plant Used	:	Rig Crev	N:		cale:	011	
	ehole L		349201.2	2	4	431310	.4	20.51r	nAOD	Dando Te	rrier Rig	3	LN			1:25	
Weather:					Termi	nation: /	As instru	ucted			SPT Han	nmer: N/F	R, Enei	rgy Ratio:	N/R		
		& In Situ Tes	-	Le	vel	Denth (m)	1		Strata	Details						Grour Water	dwater Backfill/
Depth 0.00 - 1.00	Sample ID	D Te	est Result		OD) (Depth (m) Thickness)	Legend		v eliabtly	Strata I sandy slight			anic C			Strike	Installation
0.10	ES			20	.31	0.20		Gravel i mudstor surface Stiff bro	s fine to ne and sa (TOPSO wn slight	medium suba andstone. Fre IL) ly sandy sligt	equent ro	o well roun otlets, gra	nded assed	at Gravel is	-		
0.50	ES	HVP=110					×	국 fine to n	nedium s	ubrounded to	o well rou	inded san	dstone	9.	-		
- 1.00 1.00 - 2.00	ES UT	SPT(S)N=2	21 (2,2/4,5,5,7)					X. 1%. 1%. 1%. 1							- 1		
- 1.50	D	HVP=110				(2.80)	x	ter							-		
-2.00 - 3.00	UT	SPT(S)N=1	15 (2,2/3,5,3,4)				× · · · · · · · · · · · · · · · · · · ·	X. TX. TX. TX. TX. TX							- 2		
- 2.50	D	HVP=110					× · · · · · · · · · · · · · · · · · · ·	18. TR. TR. TR. TR. T							-		
· 		SPT(S)N=1	11 (1,2/2,3,3,3)	17	.51	3.00	<u>X</u> X 2000			End of Bor	ehole at 3.0	00m			- 3		
· · · · ·															-		
· 															- 4		
· · · · · · · · · · · · · · · · · · ·															-		
-															- 5		
Sta Date	art & End Time	of Shift Obs Depth (m)	ervations Casing (m) Water	(m) De	orehole pth (m	e Diame ı) Dia (n	ter C nm) Dep	asing Diamoth (m) Dia	eter Re (mm)	marks:					1		
												Wat	er Strik	(es			
		Chiselling	I				nstallatio			ike (m) Casing	g (m) Seale) Rema	arks	
From (m) To	(m) Di	uration Rer	marks	T	op (m)	Base	(m) T	ype Dia	(mm)								
										CC GEOTE							

Contract Name: Cottam Parkway Station									Client:	Borehole ID:					
($+$							Logged By	r:	WS09						
			CCG-C-21-12	093	2	4/03/20)21	S	Р	СВ		FINAL	Sheet 1	l of 1	
Dynam	nic Sam	pling	Easting:		North	ing:		Ground Le	vel:	Plant Used:	F	Rig Crew:	Scale:		
Bore	ehole L	og	349202.1		4	431340	.8	20.73r	nAOD	Dando Terrier	Rig	AR/CMG		1:25	
Weather: Dry					Termi	ination: A	As instru	ucted			Hamn	ner: N/R, Energy Rat	io: N/R		
		& In Situ Tes	-	Lev	vel	Denth (m)		.	Strata	Details				Grour	dwater Backfill/
Depth 0.00 - 1.00	Sample ID UT	Te	est Result	(mA		Depth (m) (Thickness)	Legend		v slightly	Strata Descr		silty organic CLAY.		Strike	Installation
0.25	ES	HVP=60		20.	.53	0.20	×	Gravel i mudstor surface	s fine to ne and s (TOPSC coming s	medium subangul andstone. Freque IL) tiff brown slightly	lar to v nt root	vell rounded lets, grassed at slightly gravelly silty			
0.65	ES	HVP=100					×		ne and s	andstone.	bangu	lar to subrounded	- - - - - - - -		
-1.00 - 2.00 	UT	HVP=110 SPT(S)N=1	2 (2,3/3,3,3,3)				×	ak ak ak					- - - - - -		
1.20	D						×	aktaktakt					-		
						(2.80)	×	kokoka							
-2.00 - 3.00	UT	SPT(S)N=1 HVP=110	3 (2,2/3,3,3,4)					an yan yan yan yan					- 2		
- - - - - - - - - - - - -		SPT(S)N=1 HVP=110	3 (2,2/2,3,4,4)	17.	.73	3.00				End of Borehole	at 3.00r	n	3		
3.50	D												- 4		
													- 5		
Sta Date	art & End o	∫ of Shift Obse Depth (m) 0	ervations Casing (m) Water (r	n) De	orehol pth (n	le Diame n) Dia (m	ter C nm) Dep	asing Diam hth (m) Dia		marks:		Water Strikes			I
		Chiselling				Ir	nstallatio		St	ike (m) Casing (m)	Sealed	(m) Time (mins) Rose to	(m) Rem	arks	
From (m) To			narks		op (m) 0.00 0.50		(m) T) Pl	ype Dia _AIN ´	(mm) 19 19			TD 0151 545 2750 www			com

			Contract Name		totion				Client	t:		<u> </u>		B	oreho	le ID:			
Cottam Parkway Station Contract Number: Date Started: L							Loaged By	.ogged By: Checked By: Status:							WS10				
CCG-C-21-12093 24/03/								S		CB FINAL					Sheet 1 of 1				
Dynam	nic Sam	nling	Easting:		– North			Ground Le		Pla	ant Used:	R	ig Crew:		cale:	OFI			
	ehole L		349299.7			431309	9.4	18.35r		D Da	ando Terrie		AR/CM			1:25			
Weather: Dry		•	I		Termi	ination:	As instru	ucted		1		Hamm	er: N/R, Ene	rgy Ratio:	N/R				
Depth	Samples Sample ID	& In Situ Tesi	ting est Result	Le		Depth (m)	Legend		Str	ata Deta	ils Strata Desc	rintion				Water	ndwater Backfill/		
0.00 - 1.00	UT			(mA	OD) (Thickness)		Soft are	ey sligh	ntly sand	dv sliahtlv ar	avellv s	ilty organic C	LAY	-	Strike	Installation		
0.15	ES			18	.15	0.20		lo well r ∐∖grasseo	rounde d at su	ed muds rface (T	tone and sa OPSOIL)	ndstone	nedium suba . Frequent ro	ootlets,	-				
0.40	ES	HVP=100					×	Stiff bro	nediun	ghtly sa n subro	ndy slightly unded to we	gravelly Il rounde	silty CLAY. C ed mudstone	Gravel is and	-				
0.70	ES						×	4.1X1.1X							-				
-1.00 - 2.00	UT	HVP=110 SPT(S)N=1	1 (1,2/2,3,3,3)				×	X. X.							- - - - 1				
1.20	ES						×								-				
- 1.50	D					(0.00)	× ×								- - -				
						(2.80)	X X X	kink. K							-				
-2.00 - 3.00	UT	SPT(S)N=2 78mm/4,5,6 HVP=110	0 (5 for 6,5)				×								2				
							× · · · · · · · · · · · · · · · · · · ·								-				
2.50	D						×								-				
							X X X	kink. K							-				
- 		SPT(S)N=1 HVP=110	6 (2,2/3,4,5,4)	15	.35	3.00		<u></u>		E	End of Borehole	at 3.00m			- 3				
															-				
- - - -															-				
															-				
-															- 4 - -				
															-				
•															-				
															- - - - 5				
	art & End	of Shift Obse	ervations			e Diame		asing Diam		Remark	(S:						1		
Date	Time	Depth (m)	Casing (m) Water (m) De	epth (m	n) Dia (n	nm) Der	oth (m) Dia	<u>(mm)</u>										
													Water Stril	kes					
		Chiselling					nstallatio			Strike (r	n) Casing (m)	Sealed (m) Time (mins)	Rose to (m	Rema	arks			
From (m) To			narks	Т	op (m)	Base			(mm)										
									-	C	GEOTECHN	IICAL LT	D 0151 545 2	750 www.c	cgeote	chnical.	com		

Contract Number: Date Started: Logged By: Checked By: Status: WS11 Dynamic Sampling Borehole Log Easting: 24/03/2021 SP CB FINAL Sheet 1 of 2 Weather: Dry Termination: As instructed Ground Level: Plant Used: Rig Crew: Scale: 1:25 Samples & In Situ Testing Termination: As instructed SPT Hammer: N/R, Energy Ratio: N/R Groundwate				Contract Name Cottam Parky		Station	<u></u>			Clien	t:		сс		В	oreho	le ID:	
Dynamic Sampling Borchold Edg Earling 340333 Horting 340333 Horting 3403	({			:	Logged	By:				tatus:		WS11						
Bit Description Control				CCG-C-21-1	2093	2	4/03/20	021		SP		СВ		FINAL	s	heet 1	of 2	
Meather Dry Immunition: As instructed SPT Hammer: NR. Energy Ratic NR. Convertext Convertext Setting State Lines Description Convertext Note State				-			-									cale:		
Concent Sample 3 in 150 mining Concents Concents Concents 0.00 - 1.00 UT Intel Result (Arco) Amenia Lagred Soft gray slightly samty slightly gravelly slik organic CLA? Intel Result Intel Result (Bray Slightly samty slightly gravelly slik organic CLA? Intel Result Intel Result Intel Result (Bray Slightly samty slightly gravelly slik organic CLA? Intel Result I			og	349333.3	3					4mAO[D Da		-				1:25	
Due ho Image in the second in th	vveatner: Dry		& In Situ Tes	ting		Iermi	nation: /	As instri	lcted	St	rata Detai		Hamm	er: N/R, Ener	gy Ratio:	: N/R	Grou	ndwater
0.00 1.00 UT Soft grey alighty sandy alighty gravuly ally organic CLV. Graval and standard multiple gravuly alighty gravuly alight	Depth			*			Depth (m) Thickness)	Legend	ł				ription				Water Strike	Backfill/ Installation
0.50 ES HVP-70 Find both signify alloy and parket and both signify alloy all							(0.35)		Grave muds	el is fine stone an	to medi d sandst	um subangu	lar to w	ell rounded		-		
- 18.8 0.75 Greyah brown very clayer gravelly SAND. Gravel is fine to caree subanguar substrate and states. - 1.00 - 2.00 UT apr(5)+11 (1,12,2,3,4) 10.54 1.00 - 1.00 - 2.00 UT apr(5)+20 (2,34,5,6) 10.54 1.00 Stiff from adjuity gravely slipt (CAN: Gravel is fine to modulin substrated by well rounded mudstone and mudstone	0.50	ES	HVP=70		17	.29		×	is fine	e to med						-		
Low 2.00 UT SPT(5)N=11 (1.102.2.3.4) HVP=100 16.54 1.10 Carey and the matching of an address. Statistic from very any of gave graving SNUL Carevel is in the D course understandard. -1 - 1.00 - 2.00 UT SPT(5)N=10 (1.102.2.3.4) HVP=100 16.54 1.10 Statistic from very any of gave graving SNUL Carevel is in the D course understandard. -1 - 1.50 D SPT(5)N=20 (2.344.6.5.0) 16.54 1.10 -1 -1 - 2.00 - 3.00 UT HVP=110 -1 -1 -1 -1 - 2.00 - 3.00 UT HVP=110 -1 -1 -1 -1 - 3.50 D HVP=110 -1 -1 -1 -1 - 4.00 - 5.00 UT SPT(5)N=11 (1.22.3.3.5) -1 -1 -1 -1 - 4.50 D HVP=110 -1 -1 -1 -1 -1 - 4.50 UT SPT(5)N=11 (1.22.2.3.3) -1 -1 -1 -1 -1 - 4.50 UT SPT(5)N=10 (3.444.4.4) -1 -1<					16	.89	. ,	× · · · · · · · · · · · · · · · · · · ·					0.4115			-		
1.00 - 2.00 UT HVP=100 16.54 1.10 Stiff Grown slightly gravely slightl	- 1.00	ES	SPT(S)N=1	1 (1 1/2 2 3 4)				×					y SANE). Gravel is fi	ne to	- - - - 1		
1.50 D SPT(5)N=20 (2.34,5.5,6)				(1,1/2,2,0, 1)	16	.54	1.10	×—, –	fine to	o mediui	ghtly sai m subrou	ndy slightly g unded to we	gravelly Il rounde	silty CLAY. G ed mudstone	Gravel is and	-		
-2.00 - 3.00 UT HVP=1102 -2 -2 -2 -2 -2 -2 -2 -2 -2 -2 -2 -	- 1.50	D						×								-		
- 2.50 D HVP=110 3			SPT(S)N=2	20 (2,3/4,5,5,6)				×								-		
-3.00 - 4.00 UT SPT(S)N=13 (1.22.3.3.5) (4.90)	-2.00 - 3.00	UT	HVP=110					×								-2		
- 3.50 D HVP=110 - 4.00 - 5.00 UT SPT(S)N=11 (1.2/3,2,3,3) -4.00 - 5.00 UT SPT(S)N=11 (1.2/3,2,3,3) - 4.1 -4.50 D HVP=90 - 4.1 -5.00 - 6.00 UT SPT(S)N=16 (3.4/4,4.4,4) - 5.1 -5.00 - 6.00 UT SPT(S)N=16 (3.4/4,4.4,4) - 4.1	2.50	D	HVP=110													-		
-4.00 - 5.00 UT SPT(S)N=11 (1.2/3.2.3.3)	-3.00 - 4.00	UT	SPT(S)N=1	13 (1,2/2,3,3,5)			(4.90)	× · · · · · · · · · · · · · · · · · · ·	kokokokok							- 3		
- 4.50 D HVP=90 -5.00 - 6.00 UT SPT(S)N=16 (3,4/4,4.4) -5.00 - 6.00 UT SPT(S)N=16 (3	3.50	D	HVP=110						kirkirkiri							-		
-5.00 - 6.00 UT SPT(S)N=16 (3,4/4,4,4) Continued next sheet 5 -5.00 - 6.00 UT SPT(S)N=16 (3,4/4,4,4) Start & End of Shift Observations Borehole Diameter Casing Diameter C	-4.00 - 5.00	UT	SPT(S)N=1	11 (1,2/3,2,3,3)					지정이었지않지?							- 4		
Start & End of Shift Observations Borehole Diameter Casing Diameter Remarks: Date Time Depth (m) Casing (m) Water (m) Depth (m) Dia (mm) Depth (m) Dia (mm) Image: Start & End of Shift Observations Borehole Diameter Casing Diameter Remarks:	4.50	D	HVP=90					×	kokokok							-		
Date Time Depth (m) Casing (m) Water (m) Depth (m) Dia (mm) Dia (mm) Image: Strike of the second s								×					t sheet			5		
Chiselling Installation Strike (m) Casing (m) Sealed (m) Time (mins) Rose to (m) Remarks									asing Dia oth (m) D	ameter)ia (mm)	Remark	s:						
Chiselling Installation Strike (m) Casing (m) Sealed (m) Time (mins) Rose to (m) Remarks							Ì			/								
Chiselling Installation Strike (m) Casing (m) Sealed (m) Time (mins) Rose to (m) Remarks																		
Chiselling Installation Strike (m) Casing (m) Sealed (m) Time (mins) Rose to (m) Remarks																		
				marks	_	or (Strike (n	n) Casing (m)	Sealed (m) Time (mins)			arks	
	rom (m) To	<u>(m)</u> Du	ration Rer	TIARKS		op (m)	Base	(m) 1	ype D	via (mm)								
CC GEOTECHNICAL LTD 0151 545 2750 www.ccgeotechnical.com											cc	GEOTECHN	ICAL LT	D 0151 545 27	′50 www.c	cgeote	chnical	.com

\bigcap	Contract Name: Cottam Parkway Station Contract Number: Date Started: Lo									Client: LCC Logged By: Checked By: Status:							Borehole ID:				
U			Contract Numb			Started: 4/03/20			y: P	Cne	CB	S	tatus: FINAL	. 0	heet 2		•				
Dynan	nic Sam	pling	Easting: 349333.3		North	ing:	-	Ground Le	evel:		nt Used:		ig Crew:	S	cale:						
Bor		431347		17.64r	nAOD) Da	ndo Terrier	-	AR/CM			1:25									
Weather: Dry		In Situ Tes	ting		Iermi	nation: A	As instru	cted	Stra	ata Detail		Hamm	er: N/R, Ene	rgy Ratio:	N/R	Grour	Idwater				
Depth	Sample ID		est Result	Lev (mA0	/el OD) (Depth (m) Thickness)	Legend				Strata Descri					Water Strike	Backfill/ Installation				
Depth	Sample ID	Tr HVP=90		Lev (mAC		6.00		Stiff bro fine to r sandsto	own slig mediun	ghtly sar	Strata Descri idy slightly g	ravelly I round	silty CLAY. C	Gravel is and	6		Backfill/				
															- 8						
	Time [f Shift Obs Depth (m) o hiselling ration Rer	Casing (m) Water (m) Dej		In	m) Dep	1	<u>(mm)</u>	Remarks Strike (m		Sealed (Water Strik m) Time (mins) 0) <u>Rema</u>	arks					

\frown			Contract Name Cottam Parkv		Statio	'n			Client	t:	L	.CC		В	orehol	le ID:	
((- 7	Contract Numb	-		Started	:	Logged B	y:	Ch	ecked By:		Status:		١	NS1	2
			CCG-C-21-12	2093	2	23/03/20	021	S	SP		СВ		FINA	L s	heet 1	of 2	
	nic Sam		Easting:		Nort	-		Ground Le			nt Used:		Rig Crew:		cale:	4.05	
	ehole L	og	349341.0)		431312		17.18	mAOL) Da	Indo Terrie	-	LN/A			1:25	
Weather: Dry		& In Situ Tes	tina	1	lerm	nination:	As Instru	icted	Stra	ata Detai		Hamm	ner: N/R, En	ergy Ratio:	N/R	Grour	ndwater
Depth	Sample ID		est Result	Le (mA	vel .OD)	Depth (m) (Thickness)	Legend	I			Strata Desc	ription				Water Strike	Backfill/ Installatio
0.00 - 1.00	UT ES				.88	(0.30) 0.30		Gravel mudsto surface Stiff bro	is fine one and e (TOPS own slig	to mediu d sandst SOIL) ghtly sau	um subangu one. Freque	ular to w ent rootl gravelly	silty organic vell rounded ets, grassed silty CLAY.	d at Gravel is			
0.60	ES	HVP=110					X	Sandsto		n subrou	inded to su	brounde	ed mudstone	e and	-		
-1.00 - 2.00 1.10	UT ES	SPT(S)N=1	16 (1,2/3,4,4,5)					1%-1%-1%-1%-							- - - - - -		
- 1.50	D	HVP=110						XurXurXurX							-		
-2.00 - 3.00	UT	SPT(S)N=1	16 (2,3/3,4,4,5)					te twe twe twe t							- - - - - - - -		
- 3.00	D	HVP=110	19 (2,2/3,4.6.6)			(5.70)		XF 1%F 1%F 1%F 1%F 1									
3.00 - 4.00	UT	HVP=110	((),),))					ixt ixt ixt ixt ixt							-		
-4.00 - 5.00	UT	SPT(S)N=1	14 (2,3/3,3,4,4)					r na da tat tat tat ta							- - - - - - - - - - - - - - - -		
4.50	D	HVP=80					× × × × × × × × × × × × ×	17.17.17.17.17.17.17.17.17.17.17.17.17.1									
	UT	SPT(S)N=1	17 (2,4/4,5,4,4)				×	×			Continued	vt choc*			-5		
	art & End	of Shift Obse				ole Diame m) Dia (r		asing Diam th (m) Dia	neter a (mm)	Remark	Continued ne	AL SHEEL					<u> </u>
		Chiselling					nstallatio				ו) Casing (m)	Sealed	Water St (m) Time (min				
From (m) To			marks	T	op (m				a (mm)	4.10 cc	GEOTECH		0 FD 0151 545	2750 www.c		t seepag	

C	\mathbb{T}	3	Contract Name: Cottam Parkwa Contract Numbe CCG-C-21-12	ay Stati er: Dat	on te Started: 23/03/20		_ogged By			L ked By: CB	CC Sta	atus: FINAL		orehol	NS1	2
Dynar	nic Sam	pling	Easting:		rthing:		Ground Lev	vel:		Used:		g Crew:	S	cale:		
	rehole L	og	349341.0		431312		17.18m	nAOD	Dano	do Terriei	-	LN/AS			1:25	
Weather: Dr		& In Situ Tes	tina	Ter	mination: A	As instruc	cted	Strat	ta Details	SPT	Hamme	er: N/R, Ene	rgy Ratio:	N/R	Groun	dwater
Depth	Sample ID		est Result	Level (mAOD)	Depth (m) (Thickness)	Legend		ouu		Strata Desci	ription				Water Strike	Backfill/ Installation
5.50	D	HVP=100 HVP=110		11.18	6.00		Stiff brow fine to m sandstor	nedium	subround	y slightly g ded to sub	prounded	silty CLAY. (Gravel is and	- 6		
•														- 7		
· · · · · · ·														- 8		
														- 9		
- Date		of Shift Obs Depth (m)	ervations Casing (m) Water (n		nole Diame (m) Dia (m		ising Diame h (m) Dia (eter R (mm)	Remarks:					- 10		
From (m) To		Chiselling ration Rei	marks	Тор (nstallation (m) Ty		(mm)	4.10			Water Stril	Rose to (m)	Slight	seepag	
									UU G	BEUTECHN		0 0151 545 2	1 30 WWW.C	uyeote	cnnical.	Join

			Contract Name Cottam Parky		totion				Client	:		LCC			Bor	rehole	e ID:	
(Contract Numb	-		Started:		Logged By	v:	C	hecked B		Status:			V	VS1	3
			CCG-C-21-1			2/03/20			SP		CE		FIN	IAL	She	eet 1		
Dynam	nic Sam	pling	Easting:		North	ing:		Ground Le	evel:	P	lant Used	:	Rig Crew:		Sca			
Bore	ehole L	og	349342.8	3	4	431341	.3	17.45	mAOD		Dando Te	-					1:25	
Weather: Dry				-	Termi	ination:	Refusal	on suspec				SPT Harr	nmer: N/R, E	Energy	Ratio: N	I/R		
Depth	Samples Sample ID	& In Situ Test	ting est Result	Le		Depth (m) (Thickness)	Legend		Stra	ata De		Description				_	Water	dwater Backfill/
0.00 - 1.00 0.10	UT ES					(Thickness) (0.30) 0.30	Legenc	Soft gre Gravel mudsto surface	is fine for one and (TOPS own slig	to me I sand SOIL) ghtly s	ndy slightl dium suba Istone. Fre	y gravelly ingular to equent roo	/ silty organ well rounde otlets, grass lly silty CLA	ed sed at Y. Grav	- - -		Strike	Installation
0.45	ES	HVP=110					×	fine to ו איז איז דאר איז איז איז איז איז איז איז איז איז איז	medium	n subr	ounded to	subangu	ular sandsto	ne.				
0.90	ES UT	SPT(S)N=1	3 (1,1/3,3,3,4)					1X,1 1X,1 1X,1 1X,1								1		
- 1.50	D	HVP=110				(2.60)	× × × × × × × × × × × × × ×	1%1 1%1 1%1 1%1 1										
-2.00 - 2.90	UT	SPT(S)N=3	87 (2,5/5,7,17,8)				×	177177177177177								2		
- 2.50	D	HVP=110						1.1%1.1%1.1%										
• • •		SPT(S)N=5 275mm)	50 (4,9/50 for	14	.55	2.90	×	*			End of Bor	ehole at 2.9	0m		-	3		
- - - - - -																5		
																4		
- - - - - -																		
- - - - - - -																5		
	art & End	of Shift Obse	ervations			le Diame		asing Diam		Rema	ırks:				1	1		L
Date			Casing (m) Water	(m) De	epth (m					Strike	(m) Casing	(m) Seale	Water : d (m) Time (m	Strikes	se to (m)]	Rema	rks	
From (m) To		Chiselling ration Rer	narks	Т	op (m)		nstallatio (m) T		(mm)						- ()	d		
											CC GEOTE	CHNICAL	LTD 0151 54	5 2750	www.ccę	geote	chnical.c	:om

\bigcap	γ		Contract Nam Cottam Parl	way S		ו Started:		Logged By	Client:		Le ked By:	CC	atus:	E	Borehol	∍ ID: VS1	4
			CCG-C-21-			3/03/20		S			CB		FINA	L e	- Sheet 1		
	nic Sam		Easting:		North	•		Ground Le			Used:		g Crew:	S	Scale:		
	ehole L	og	349349	.2		431307			mAOD	Dan	do Terrier	-	LN/A			1:25	
Neather: Dry		& In Situ Tes	ting		Iermi	nation: A	As Instru	icted	Stra	ta Details	SPT	Hamm	er: N/R, Ene	ergy Ratio	: N/R	Groun	dwater
Depth	Sample ID		est Result		vel (OD)	Depth (m) Thickness)	Legend	1			Strata Desci	ription				Water Strike	Backfill/ Installatio
0.00 - 1.00	UT	HVP=90		16	.69	0.20		Gravel mudsto surface Stiff bro	is fine to ne and (TOPS wn sligt nedium	o mediun sandstor OIL) htly sand	n subangu ne. Freque y slightly g	lar to we nt rootle	Ity organic ell rounded ets, grassec silty CLAY. ed mudston	l at / Gravel is			
0.60	ES							1%-1%-1%-1%							-		
-1.00 - 2.00	UT	SPT(S)N=1 HVP=90	15 (1,3/3,3,4,5)					XIIXI							- 1		· · · - ·
1.20	ES D							X. IX. IX.							- - - -		
-2.00 - 3.00	UT	SPT(S)N=1 HVP=110	17 (1,3/3,4,5,5)				x x x x x x x x x x	ie fizie fizie fizie fizie							- 2		
2.50	D					(5.80)		R. 18. 18. 18. 18. 18.							-		
3.00 - 4.00	UT	SPT(S)N=1 HVP=110	13 (1,3/2,3,4,4)					r 1%r 1%r 1%r 1%r 1%r							- 3	-	
4.00 - 5.00	UT	SPT(S)N=1 HVP=80	13 (2,3/3,3,4,3)					R. T. K.							- 4	•	
4.50	D							X,L1X,L1X,L1X,L1X,L1							-		
-5.00 - 6.00	UT	SPT(S)N=1	2 (2,2/3,3,3,3)				×	*** **		С	ontinued nex	t sheet			- 5		
Sta Date		of Shift Obs	ervations Casing (m) Water			e Diame		asing Diam		Remarks:					1 1		1
Date	ıme	Deptn (m)	Jasing (m) (Wate		<u>-pru (m</u>	וט <u>ו</u> ע (m		ui (n) Dia	<u>(mm)</u>				Water Str	ikes			
l		Chiselling					stallatio			Strike (m) 3.50	Casing (m)	Sealed (m) Time (mins			rks seepage	<u> </u>
rom (m) To	(m) Du	ration Rei	narks	T	op (m) 0.00	Base 1.00) Pl	AIN	(mm) 19	0.00			U		Siight	seepage	J.
					1.00	6.00			19 _		EOTECHN						

\bigcap	γ		Contract Name: Cottam Parkwa	ay Sta	tion ate Starte	ed:	Log	CI ged By:	ient:	Checked	LCC By:	Status:	Bo	orehol	e ID: NS14	4
			CCG-C-21-12		23/03/			SP		C	В	FINAL	- si	heet 2		
Dynan	nic Sam ehole Lo	pling	Easting: 349349.2	No	orthing: 4313	07.9		und Leve 6.89mA		Plant Use Dando T		Rig Crew: LN/AS		cale:	1:25	
Weather: Dry		by	349349.2	Te	rminatio						-	nmer: N/R, Ene		N/R	1.25	
	Samples &	& In Situ Tes	ting						Strata	Details			57	-	Ground	
Depth 	Sample ID	Ti HVP=100	est Result	Level (mAOD	Depth (r (Thickne	n) ss) Lege	S 	tiff brown ne to meo andstone	dium s	tly sandy slig	Descriptior ghtly grave to well rou	ı Ily silty CLAY. (nded mudstone	Gravel is and		Water Strike	Backfill/ Installation
- 5.50	D	HVP=110		10.89	6.00					End of Bc	orehole at 6.0	10m		- 6	- - - - - - - - - - - - 	
- - - - - - - - - - - - - - - - - - -														7		
														- 8		
· · · · · · · ·														- 9		
- 	art & End o	of Shift Obs Depth (m)	ervations Casing (m) Water (n		hole Dia n (m) Dia			g Diamete n) Dia (m		emarks:				- 10		
From (m) To		Chiselling ration Rei	narks	Top 0.0 1.0	0 1		ion Type PLAIN _OTTE			3.50		Water Stril ed (m) Time (mins) 0 LTD 0151 545 2	Rose to (m)	Slight	t seepage	

			Contract Name		tation				Client	t:		сс		Bo	orehol	le ID:	
((Cottam Park	-		i Started:		Logged B	V:	C	hecked By:		tatus:		V	NS1	5
			CCG-C-21-1			2/03/20			SP SP		СВ		FINAL		neet 1		-
Dynam	nic Sam	pling	Easting:		Northi	ing:		Ground Le	evel:	PI	ant Used:	R	ig Crew:		cale:		
Bore	ehole L	og	349363.	0	4	31336	.7	17.70	mAOE	ם כ	ando Terrier	⁻ Rig	LN/AS	;		1:25	
Weather: Dry		& In Situ Tes	tina		Termir	nation: /	As instru	icted	Str	rata Det		Hamm	er: N/R, Ene	rgy Ratio:	N/R	Groun	dwater
Depth	Sample ID		est Result	Le	vel [.OD) (1	Depth (m) Thickness)	Legend		01		Strata Descr	ription				Water Strike	Backfill/ Installation
0.00 - 1.00 0.10 0.40	UT ES ES	HVP=110				(0.30) 0.30		Gravel mudsto surface Stiff bro	is fine one and e (TOPS own slig mediun	to meo d sands SOIL) ghtly sa	ndy slightly gra lium subangul stone. Freque andy slightly g bunded to wel	lar to w nt rootl gravelly	ell rounded ets, grassed silty CLAY. (at Gravel is			
- 1.00 1.00 - 2.00	ES UT		2 (1,2/6,8,4,4)					ki aki aki aki aki aki a							- 1		
- 1.50 -2.00 - 3.00	UT	HVP=110 SPT(S)N=1	9 (1,2/3,4,6,6)			(2.70)		<u>4: 1%: 1%: 1%: 1%: 1%: 1%</u> : 1%							- 2		
2.50	D	HVP=110						1									
-		SPT(S)N=1	4 (1,3/2,4,4,4)	14	.70	3.00	<u></u>	<u>···</u>			End of Borehole	at 3.00m		- - - - - - - - - - - - - - - - - - -	- 3		
•														- - - - - - - - - - - - - - 	-		
-														- - - - - - - - - - - - - - - - - - -	- 4		
															- 5		
Sta Date	Time		ervations Casing (m) Water	(m) De	orehole	e Diame) Dia (n	ter C nm) Dep	asing Diam th (m) Dia	<u>a (mm)</u>	Remar			Water Stril				
From (m) To		Chiselling ration Rer	narks	Т	op (m)		nstallatio (m) T		a (mm)	SITIKE	(m) Casing (m)	Sealed (m) nme (mins)	ntose to (m)	rema	arks	
	, Du			-†'	· r· 、 · · · /	2400	,										
														1			

			Contract Name Cottam Park		tation				Clien	t:		сс		Во	orehol	le ID:	
((- 7	Contract Numb	-		Started:		Logged B	y:	C	hecked By:		Status:		۱	NS1	6
			CCG-C-21-1	2093	2	2/03/20	021	S	P		СВ		FINAL	. sł	neet 1	of 1	
Dynam	nic Sam	pling	Easting:		North	-		Ground Le	evel:	P	Plant Used:	F	Rig Crew:		cale:		
Bore	ehole L	og	349419.	5	4	131319).1	19.23	mAOE		Dando Terrier	-	LN/AS			1:25	
Weather: Dry		& In Situ Tes	ting	-	Termi	nation:	As instru	icted	C+r	rata Dei		Hamn	ner: N/R, Ene	rgy Ratio:	N/R	Crour	dwater
Depth	Sample ID		est Result		vel	Depth (m) Thickness)	Legend		50	rata De	Strata Desci	ription				Water Strike	Backfill/ Installatio
0.00 - 1.00	UT			(mA	.OD) (mickness)		Soft gre	ey sligł	htly sa	ndy slightly gra	avelly	silty organic C	LAY.		Suike	Installatio
0.15	ES					(0.30)		Gravel mudsto	is fine ne and	to me d sand	dium subangu Istone. Freque	lar to v nt root	vell rounded lets, grassed	at			
				18	.93	0.30		surface			andy slightly g	way calls					
-							×	fine to d	coarse	subro	ounded to suba	angular	mudstone ar	nd			
-							×	∷ sandsto ⊻	one.					-	-		
0.60	ES	HVP=110					×	×						-			
							×	×									
							×	×						-			
-1.00 - 2.00	UT	SPT(S)N=1 HVP=110	1 (1,2/2,3,3,3)				×	×						-	-1		
							×	×						-			
1.20	ES						×	×						-			
							×	×						-			
1.50	D						×	×						-	-		
						(2.70)	<u>>-</u> X							-			
						,	×	×						-			
							×	×						-			
-2.00 - 3.00	UT	SPT(S)N=1	7 (1,3/3,4,4,6)				×	×						-	- 2		
		HVP=110					×	×						Ē			
							×							-			
							×							-			
- 2.50	D						×										
2.00							×							-			
- -							×	×						-			
							×	×						-			
		SDT(S)N-2	20 (1,3/3,5,6,6)	16	.23	3.00	×	×						-	- 3		
		HVP=110	.0 (1,0/0,0,0,0,0)		.25	5.00					End of Borehole	at 3.00r	n	-			
														-			
														-			
														-			
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-															- 5		
Sta Date	art & End Time	of Shift Obse Depth (m)	ervations Casing (m) Water	(m) De	orehol epth (m	e Diame ı) Dia (n	ter C nm) Dep	asing Diam th (m) Dia	ieter (mm)	Rema	irks:						
													Water Stril				
		Chiselling	marka	1.	on ()		nstallatio		(mm-)	Strike	(m) Casing (m)	Sealed	(m) Time (mins)	Rose to (m)	Rema	arks	
From (m) To	(m) Du	ration Rer	marks		op (m)	Base	(m) 1	ype Dia	(mm)								
										(CC GEOTECHN		TD 0151 545 2	750 www.co	cgeote	chnical.	com
I						1											

			Contract Name Cottam Parky		statio	n			Client	:	1	.cc		E	Boreho	le ID:	
() +		- 7	Contract Numb	-		Started	:	Logged By	/:	Ch	ecked By:		Status:			WS1	7
			CCG-C-21-1	2093	2	2/03/20		S			СВ		FINA	L s	Sheet 1		
Dynam	nic Sam	pling	Easting:		North	ing:		Ground Le	evel:	Pla	int Used:	F	Rig Crew:		Scale:		
	ehole L		349440.5	5		431319	9.5	19.36r	nAOD	Da	ando Terrie	r Rig	LN/A	S		1:25	
Weather: Dr					Term	ination:	As instru	ucted				Г Hamn	ner: N/R, En	ergy Ratio	: N/R		
Depth	Samples a	In Situ Test &	ting est Result	Le		Depth (m) (Thickness)	Legend		Stra	ata Detai	Strata Deso	ription				Water	dwater Backfill/
- 0.00 - 1.00	UT			(mA	OD)	(Thickness)	Ecgene	Soft gre			dy slightly g	ravelly s	silty organic		-	Strike	Installation
- 0.20	ES				00	(0.30)		mudstoi	ne and (TOPS	l sandst SOIL)	one. Freque	ent root	vell rounded lets, grassed	d at	- - -		
- 0.50	ES	HVP=90		19	.06	0.30	×	Stiff bro	nedium	phtly sai n subroi	ndy slightly unded to we	gravelly ell rounc	v silty CLAY. led mudston	Gravel is le and	- - -		
- 0.80	ES						×	N. IXI IXI							- - -		
-1.00 - 2.00	UT	SPT(S)N=1 HVP=110	5 (1,2/3,3,4,5)				× × ×	X. X.							- - - 1		
- - - -		HVP=110					×								-		
- 1.50	D						× ×								-		
-						(2.70)	×								-		
-2.00 - 3.00	UT	SPT(S)N=2 78mm/5,5,6	2 (5 for 5,6)				×	X							- 2		
-		HVP=110					×								-		
- 2.50	D						×								-		
- - - -							×								-		
-		SPT(S)N=1 HVP=110	5 (2,3/3,3,4,5)	16	.36	3.00	X	**		E	End of Borehole	e at 3.00n	n		-3		
- - - -															- - -		
-															- - -		
-															-		
- 															- 4		
-															- - -		
 - - -															-		
- - - -																	
St=	art & End (of Shift Obse	ervations	 R	oreho	le Diame	ter C	asing Diam	eter I	Remark	s:				- 5		
Date	Time	Depth (m)	Casing (m) Water	m) De	epth (n	n) Dia (n	nm) Dep	oth (m) Dia	(mm)		-						
									F				Water Str	rikes			
	(Chiselling					nstallatio			Strike (n	n) Casing (m)	Sealed	(m) Time (mins		n) Rem	arks	
From (m) To	(m) Du		narks	Т	op (m)) Base	(m) T	ype Dia	(mm)								
										co	C GEOTECHI	NICAL L	TD 0151 545 2	2750 www.o	ccgeot	echnical.	com

Optimie Dark Starte WS1 Dynamic Sampling Extra Worker Serie CB FINAL Status: West Dynamic Sampling Extra Worker 349/72.9 X3195.2 Toronal Lavie Bart Murker View Serie	~			Contract Name Cottam Parkv		tatio	n			Client:		LCC		Boreho		
Dynamic Sampling Easting: Nothing Orond Level Not Used: Reg Crew: Solation:		+	7		-				Logged By	/:	Checked By	<i>'</i> :	Status:	1 1	WS1	8
Deprint of Log 349472.9 431355.2 19.47mAOD Dano Territer Rig LNAS 1.25 Weather: Dy SPT Hammer: NR, Enurgy Rate: NR					2093	2	22/03/20				СВ			Sheet ?	1 of 1	
Weather: Dry Termination As instructed SPT Hammer: NR, Energy Rate: NR Concernsol Group Group Group SPT Hammer: NR, Energy Rate: NR Group Set and Decisity Concernsol SPT Group SPT							•						-	Scale:	4.05	
Samples & In: Starts Decorption Other 0.001 Text Result (minitial provide file starts starts) (minitial provide file starts starts) (minitial provide file starts)		nole Lo	og	349472.9)					nAOD		-			1:25	
Depth Samouni Test Result Under Instance Legend State Description Masket 0.001-1.00 UT 0.00 0.00 ES 0.00 0.00 0.00 0.00 ES 0.00 <td></td> <td>amples</td> <td>R In Situ Tee</td> <td>ting</td> <td>1</td> <td>lerm</td> <td>ination: /</td> <td>As instru</td> <td>icted</td> <td>Strata</td> <td></td> <td>SPT Ham</td> <td>mer: N/R, Energy Ra</td> <td>tio: N/R</td> <td>Groui</td> <td>dwater</td>		amples	R In Situ Tee	ting	1	lerm	ination: /	As instru	icted	Strata		SPT Ham	mer: N/R, Energy Ra	tio: N/R	Groui	dwater
0.00-1.00 UT Soft gree alightly sandy slightly gravely alight gra						vel	Depth (m)	Leaend		Strata		escription			Water	Backfill/ Installatior
0.00 Ed 19.17 0.30 Suff scon algolity sandy slightly gravely slightly gravel is fine to coarse subrounded to subangular sandstone. 1 0.60 ES HVP=110 III.17 D.30 Suff scon algolity sandy slightly gravely slightly gravel is fine to coarse subrounded to subangular sandstone. -1 1.20 ES III.17 D.30 III.17 IIII.17 IIII.17 IIII.17 III.1	1.00	UT			(mA	00)			Soft gre Gravel i	s fine to	sandy slightly medium subar	/ gravelly	well rounded		Suike	Installation
0.60 ES HVP=110 1 1.00 - 2.00 UT SPT(S)k=13 (1.23.3.3.4) 1 1.20 ES (2.70) (2.70) 1.50 D (2.70) (2.70) 2.50 D SPT(S)k=17 (2.33.3.5.6) (2.70) 2.50 D SPT(S)k=16 (2.24.3.4.5) 16.47 3.00 End of Barenole at 3.00m 3 -4 -4	0	ES			19	.17	0.30		surface	(TOPSO wn slight	IL) ly sandy slight	tly gravel	ly silty CLAY. Gravel i	is -		
1.20 ES Propertion 1.50 D 1.50 D Propertion (2.70) -2.00 - 3.00 UT SPT(6)N=17 (2.33.3.5.6) (2.70) 2.50 D SPT(6)N=16 (2.243.4.5) 16.47 3.00 SPT(6)N=16 (2.243.4.5) 16.47 3.00 End of Borehole at 3.00m 30	0	ES	HVP=110									abangaic		-		· · · · · · · · · · · · · · · · · · ·
1.50 D	2.00	UT	SPT(S)N=1 HVP=110	3 (1,2/3,3,3,4)				×	X					- 1		
-2.00 - 3.00 UT SPT(S)N=17 (2,3/3,3,5,6) -2.50 D SPT(S)N=16 (2,2/4,3,4,5) 16.47 3.00 End of Borehole at 3.00m 3 SPT(S)N=16 (2,2/4,3,4,5) 16.47 3.00 End of Borehole at 3.00m 4 -4	0	ES						×	X					-		
2.50 D SPT(S)N=16 (2.2/4.3.4.5) 16.47 SPT(S)N=16 (2.2/4.3.4.5) 16.47 Subscription 3.00 End of Borehole at 3.00m 3 Start & End of Shift Observations Borehole Diameter Casing Diameter	0	D					(2.70)	× ×						-		
2.50 D SPT(S)N=16 (2.2/4.3.4.5) 16.47 MVP=110 3.00 End of Borehole at 3.00m 3 Image: Second secon	3.00	UT	SPT(S)N=1	7 (2,3/3,3,5,6)				X						- 2		
SPT(S)N=16 (2,2/4,3,4,5) 16.47 3.00 End of Borehole at 3.00m 3 HVP=110 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4			HVP=110					×						-		
End of Borehole at 3.00m	0	D						×	1×1×1×1×1×1×1×1					-		
Start & End of Shift Observations Borehole Diameter Casing Diameter Remarks:			SPT(S)N=1 HVP=110	6 (2,2/4,3,4,5)	16	.47	3.00	×	×		End of Bore	hole at 3.00)m	3		
Start & End of Shift Observations Borehole Diameter Casing Diameter Remarks:																
Start & End of Shift Observations Borehole Diameter Casing Diameter Remarks:														- 4		
Start & End of Shift Observations Borehole Diameter Casing Diameter Remarks:														-		
Start & End of Shift Observations Borehole Diameter Casing Diameter Remarks:														-		
Start & End of Shift Observations Borehole Diameter Casing Diameter Remarks: Date Time Depth (m) Casing (m) Water (m) Depth (m) Dia (mm)														- 5		
		& End c Time	of Shift Obso Depth (m)	crvations Casing (m) Water (B m) De	oreho epth (r	ole Diame n) Dia (n	ter Ca nm) Dep	asing Diam th (m) Dia	eter Re (mm)	marks:					
Water Strikes													Water Strikes			
Chiselling Installation Strike (m) Casing (m) Sealed (m) Time (mins) Rose to (m) Remarks											ike (m) Casing	(m) Seale		(m) Rem	arks	
From (m) To (m) Duration Remarks Top (m) Base (m) Type Dia (mm) 0.00 0.50 PLAIN 19	i) To (m)			marks	Т	op (m 0.00) Base	(m) T	ype Dia							
0.50 3.00 SLOTTED 19 CC GEOTECHNICAL LTD 0151 545 2750 www.ccgeotechnical.															ook=!!	

\bigcap		Contract Name: Cottam Parkwa Contract Numbe		on te Started:		Logged By	Client:	L(Checked By:	сс	Status:	Trial Pit	TP0	1
		CCG-C-21-12	093	23/03/20	021	S	Р	СВ		FINAL	Sheet 1	of 1	
Tria	l Pit Log	Easting: 349157.0	No	rthing: 431325		Ground Le 20.56r		Plant Used: 8T Tracked Mac		Date Printed: 26/05/2021	Scale:	1:25	:
Weather: Dry		549157.0	Ho	le Termina			IIAOD			Stable		1.20	
		Situ Testing		.			Strata	Details				Water	Backfill
Depths	Sample ID	Test Result	Reduced Level	Depth (m) (Thickness)	Legend		abtly son	Strata Desci y slightly gravelly				\$	
0.10 0.20 0.30 0.40 0.50 0.70 1.00 1.20 1.50 2.00	B D ES D ES B B B B B	HVP=75kPa HVP=100kPa HVP=110kPa HVP=110kPa	20.32	0.25		Stiff brov		d grey slightly san ne to coarse sub-a	ndy sli	ghtly gravelly silty ar to rounded	2		
Dimensions	s:					Gene	ral Rem	arks:					
Final Depth:	2.00m	Length (m) 2.00m Orientation:				Strike	€ (m)	Casing (m) Seal	V led (m		cose to (m)	Remar	(5
↓ ↓										0		TP DR	Y
Inclination:	>							CC GEOTECHNICA	L LTD (0151 545 2750 www.ccgeo	technical.com		

\bigcap		Contract Name: Cottam Parkwa Contract Number	: D	ate Started:		Logged By		Checked E		Status:	Trial Pit I	D: TP02	2
		CCG-C-21-120 Easting:		23/03/20 lorthing:		S Ground Le		C Plant Used		FINAL Date Printed:	Sheet 1 o Scale:	of 1	
Tria	l Pit Log	249247.9		431322		19.96r		8T Tracke		26/05/2021	Scale.	1:25	
Weather: Dry	-		н	lole Termina	tion: As i	nstructed			Stability: S	Stable			
	nples & In S						Ctrata	Deteile					
Depths	Sample ID	Test Result	Reduce	ed Depth (m) (Thickness)	Legend	4	Strata	Details	Descriptior			Water	Backfil
0.15 0.20 0.20	ES B D	iest result	Level	(0.30)		Grey sli medium (TOPSC) Stiff bro	sub-angu DIL) wn mottle Gravel is fi	dy slightly gra ular to round d grey slight ne to coarse	avelly silty ed mudstor	CLAY. Gravel is fine to ne and sandstone ightly gravelly silty ar to rounded			
0.50 0.60 0.70	B ES D	HVP=75kPa			×	mudstor	ne and sa	ndstone					
- 1.00	B	HVP=110kPa		(1.70)			of SAND. Not wa	ter bearing at 1.20 - 1	<u>30</u> mbgl		- 1 		
- 1.50 - 1.80	ES D	HVP=110kPa				<u> </u>							
2.00	В		17.9	6 2.00		2		End of Tr	iai Pit at 2.00	m	2		
											- 3		
- - -													
-													
Dimension	s:				1	Gene	ral Rem	arks:					
Final Depth:													
	4	Length (m) - 2.60m		•									
Width (m)	1.00m	Orientation: °											
						Strike	e (m) (Casing (m)	V Sealed (m	Vater Strikes 1) Time (mins) Ro 0		Remark TP DR\	
										0151 545 2750 www.ccgeote	chnical com		
Inclination:	,							US GEOTEC					

\mathbf{C}		Contract Name: Cottam Parkwa Contract Number CCG-C-21-120	r: [ation Date Started 23/03/2		Logged By S		Checked	LCC By: CB	Status: FINAL		ial Pit	TP03	3
Trial	Ditlog	Easting:	1	Northing:		Ground Le		Plant Use		Date Printed:	So	ale:		
Weather: Dry	Pit Log	349285.0		431336 Hole Termina		19.28r	naod	81 Tracke	ed Machine Stability: S	26/05/202 ⁻	1		1:25	
Troution. Dry						motraotoa			otability: C					
	ples & In Si	tu Testing			-		Strat	a Details					Water	Backfill
Depths s	Sample ID	Test Result	Reduc Leve	el Depth (m) (Thickness)	Legen		abtly oo		Description		avalia		3	
0.15 0.15 0.25 0.40 0.50 0.60	B D ES B D B ES	HVP=80kPa HVP=110kPa	18.9 18.5	(0.40)		fine to n sandsto	wn mot Gravel is ne and s k brown s fine to	sub-rounded PSOIL) tled grey sligh fine to coarse sandstone	to rounded r tly sandy sli e sub-angul y slightly gra	organic CLAY. Gr mudstone and ghtly gravelly silt ar to sub-rounded avelly silty CLAY. Jb-rounded muds	y d	- 1		
- 1.50 - 1.90 - 2.00	D D B	HVP=110kPa HVP=110kPa	17.2	28 2.00		التلكات الحالية الم			rial Pit at 2.00r			- 2		
												- 3		
Dimensions:	:					Gene	ral Re	marks:						
Final Depth:	4	Length (m) 2.50m Orientation: ° ◀				Strike	e (m)	Casing (m)	W Sealed (m	/ater Strikes) Time (mins) 0	Rose to	<u>o (m)</u>	Remarks TP DRY	
•										Ŭ				
Inclination: °								CC GEOTE	L CHNICAL LTD ()151 545 2750 www.co	geotechnic	al.com	1	
Inclination: °														

\bigcap		Contract Name: Cottam Parkwa Contract Numbe		ition Date Started	:	Logged By:	Client:	Checked E	LCC By:	Status:	Trial Pi	t ID: TP0	4
		CCG-C-21-12		23/03/2	021	SI	Р	с	В	FINAL	Sheet ?	1 of 1	
Tric	al Pit Log	Easting: 349324.7	N	Northing:		Ground Lev		Plant Used 8T Tracke		Date Printed: 26/05/2021	Scale:	1.05	
Weather: Dry		349324.7		431322 Hole Termina		17.82n	NAOD	от паске	Stability: S			1:25	1
Weather: Dry			P		11011.7431	nstructed			Otability. C				
Sa	mples & In S	Situ Testing					Strata	a Details				Water	Backfill
Depths	Sample ID	Test Result	Reduc Leve	ed Depth (m) (Thickness)	Legend				Description		-	Ň	
0.20 0.25	B ES		17.5	(0.30)		sandsto	ne (TOF	PSOIL)		organic CLAY. Gravel mudstone and	IS		
0.40	ES	HVP=90kPa	17.5	0.50	×	Very stif	f brown s fine to	slightly sandy coarse sub-a	slightly gra ngular mud	avelly silty CLAY. Istone, sandstone and	1 - - -		
0.60	В				×						-		
- 0.80 1.00	B	HVP=110kPa			×						- - - 1		
-				(1.70)	×	X					- ' - -		
- 1.30 1.50	ES D				×	×					- - -		
- 1.50		HVP=110kPa			×						-		
1.90 2.00	D B		15.8	2 2.00	×			End of Tr	ial Pit at 2.00r	n	2		
											- 3		
Dimension	s:			•		Gene	ral Re	marks:					
Final Depth:	2.00m	Length (m) 2.70m Orientation:				Steile		Casing (m)	W Sealed (m	/ater Strikes		Remo	
↓						Strike	= (111)	Casing (m)	Sealed (M) Time (mins) Ro 0	ose to (m)	Remarl TP DR	
Inclination:	•							CC GEOTEC	HNICAL LTD (0151 545 2750 www.ccgeote	chnical.com		

C	\mathbb{T}	Contract Name: Cottam Parkw. Contract Numbe CCG-C-21-12	ay Sta er: D	tion late Started: 24/03/20		Logged By:		Checked	LCC By: CB	Status: FINAL	Trial P	TPC)5
		Easting:	N	lorthing:		Ground Lev	vel:	Plant Use	d:	Date Printed:	Scale:		
	al Pit Log	349381.3		431309		17.86n	nAOD	8T Tracke	ed Machine	26/05/2021		1:25	5
Weather: Dry			H	lole Termina	uon: As i	nstructed			Stability: S				
Sa	mples & li	n Situ Testing					Strata	a Details				Water	Backfill
Depths	Sample ID	Test Result	Reduce Level	ed Depth (m) (Thickness)	Legend				Description			Š	
0.10	ES B		17.5	(0.30) 6 0.30		frequent rounded	t rootlets I mudsto	. Gravel is fir	ne to mediur stone (Gras	organic CLAY with n sub-angular to sed TOPSOIL)	-		
0.40	ES B	HVP=80kPa	11.0	0.00	×	🔬 a low co	bble co	tly sandy slig ntent. Gravel ne and sand	is fine to co	silty friable CLAY w arse sub-rounded to	ith - - -		
0.70	D	HVP=110kPa			× ×						-		
- 0.90 - 1.00	B ES			(1.70)		XurXurX					- 1		
1.40	D	HVP=110kPa				u Ku Ku Ku					- - - - - -		
1.80	D				×						-		
- 2.00	В	HVP=110kPa	15.8	6 2.00				Ēnd of T	rial Pit at 2.00	n	2		
											- 3		
-													
Dimension	s:		1	I	1	Gener	ral Rer	narks:			I	1	
Final Depth:	2.00m	Length (m) 2.20m		►									
Width (m)	1.00m	Orientation:	•										
						Strike	e (m)	Casing (m)	W Sealed (m	/ater Strikes) Time (mins) R 0	ose to (m)	Remar TP DR	
lu all' d'	•							CC GEOTE)151 545 2750 www.ccgeol	echnical.com		
Inclination:	0							50 52012					

\bigcap	γ	Contract Name: Cottam Parkw Contract Numbe	ay Sta	ation Date Started	:	Logged By	Client:	Checked B	LCC	Status:	Trial Pit		6
		CCG-C-21-12		24/03/2		S		C		FINAL	Sheet 1	of 1	
		Easting:	1	Northing:		Ground Le		Plant Used		Date Printed:	Scale:		
	I Pit Log	349425.1		431336			mAOD	8T Tracke		26/05/2021		1:25	
Weather: Dry			ŀ	Hole Termina	tion: As i	nstructed			Stability: S	table			
Sar	mples & In	Situ Testing					Strata	Details				Water	Pookfill
Depths	Sample ID	Test Result	Reduo Leve	ced Depth (m) el (Thickness)	Legen				Description			Wa	Backfill
- 0.15	в			(0.30)		🕅 fine to c	coarse sul	dy slightly gra p-angular to i	avelly silty o rounded mu	organic CLAY. Gravel is udstone and sandstone	s -		
0.15	ES					(TOPSC	JIL)						
- 0.40	в		18.7	78 0.30	<u>~</u>	Stiff bro	wn slightl	y sandy sligh	tly gravelly	silty CLAY. Gravel is udstone, sandstone			
- 0.50	D					and gra	inite	b-angular to i	ounded mu	idstone, sandstone	E		
0.60	ES	HVP=75kPa			×	×					-		
0.70	В	11VI -75KI a			×	×					-		
0.70					×	×					-		
0.90	ES				×						-		
- 1.00	D	HVP=110kPa			× ×						-1		
		inter interaction			$\rightarrow \times$	<u>-</u>					: '		
-				(1.70)		× *					‡		
1.30	ES				×	×							
1.40	В				X	×					F		
-	_	HVP=110kPa			×	×					-		
1.60	D				×	~					-		
-	_				× ×	-					-		
-		HVP=110kPa			<u> </u>	*					-		
1.90	D				×	×					-		
- 2.00	в		17.0	2.00	×	<u> </u>			ial Pit at 2.00r		2		
											- 3		
.													
Dimensions Final Depth:						Gene	eral Rem	iarks:					
	2.0011												
		Length (m)		►									
		2.60m			_								
Ê	_	0 • • • •											
Width (m)	1.00m	Orientation:	~										
Widt	~`	◀											
									W	ater Strikes			
						Strike	e (m)	Casing (m)	Sealed (m) Time (mins) Ros	e to (m)	Remark	(S
. ▲										0		יאט או	I
Inclination: °	,							CC GEOTEC	HNICAL LTD 0	151 545 2750 www.ccgeotecl	hnical.com		



APPENDIX C

FALLING HEAD TEST WORKSHEETS

FALLING HEAD TEST

CCG-C-21-12093: Cottam Parkway Station: FH 8/9



Client: LCC			Calcs by: SP	Checked by: CB	Job Number: 21 -12093
Notes: Test carried out under Tes Basic lag time extrapolate			Color hu	Chasked by	lak Number
	K= A/FT K= 6.23E-08 m	Where: I/s	A= Cross sectiona 0.00567 F= Intake Factor (0.275 T= Basic time Lag 331200	7 (m) see BS5930 5 9 (s)	2)
2 4 6 8 10 30 60 90 120 150	0.055 0.100 0.140 0.170 0.185 0.185 0.190 0.190 0.190	5 0 0 0 5 5 0 0	0.950 0.905 0.865 0.835 0.835 0.820 0.820 0.815 0.815 0.815 0.815	2.0 2.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0	969 923 952 952 937 937 932 932 932
Time Elapsed t (mins)	Depth at Time t casing (0.025	(m)	Head at Time t 0.980		tio (H/Ho)
Depth of Casing (mbgl) Strata: 0.25: Grass		asing Diameter	85mm		
Depth below top of standpipe to response zone Initial depth to water (mbgl)	N/A Bo	asing Elevation (mAOI orehole Diameter (m) tandpipe Diameter:	D) 20.505 0.100 N/A)	BS5930:2015
Height of standpipe	N/A Fi	ilter Length	N/A	A	
Details of test Section	Situation B - BS5930 G	round Level (mAOD)	20.505	5	

Cottam FALLING HEAD TEST

CCG-C-21-12093: Cottam Parkway Station: FH 13/12



	Cituation D				l	
Dataila of toot Soction	Situation B -			17 466		
Details of test Section Height of standpipe	BS5930	Ground Level (mAOI Filter Length)	17.466 N/A		
Depth below top of	IN/A	Casing Elevation (m/		17.466		
standpipe to response zone	Ν/Α	Borehole Diameter (r		0.100		
Initial depth to water (mbgl)		Standpipe Diameter:		0.100 N/A	Pof	BS5930:2015
Depth of Casing (mbgl)		Casing Diameter		85mm	Nel.	D33930.2013
Strata: 0.25: Grassed		Casing Diameter		0311111		
		ntly gravelly silty CLAY	,			
	ty clayey SAND	illy gravelly silly GLAT				
Time Elapsed t (mins)		e t From top of	Head at Time	+	Hood Po	tio (H/Ho)
Time Elapsed (Timis)		ng (m)	neau at nine	L	neau na	
0		00C	0.980		1 (000
1		200	0.780			796
2		200	0.780			
						796 786
3		210	0.770			786
4		210	0.770			786
6		210	0.770			786
8		215	0.765			781
10		215	0.765			781
30		215	0.765			781
60		220	0.760			76
90		220	0.760			76
120	0.2	220	0.760		0.7	76
Permeability: K=	A/FT	Whe	re:			
K=	1.41E-07	m/s		0.00567 Factor (n 0.275	area of FH1 (m n) see BS5930 (s)	2)
Notes: Test carried out under Test E	B of Section 4 -	BS 5930-2015				
Basic lag time extrapolated f						
Client: LCC				cs by: SP	Checked by: CB	Job Number: 21 -12093

FALLING HEAD TEST

CCG-C-21-12093: Cottam Parkway Station: FH 17/18



	Situation B -		7
Details of test Section	BS5930 Ground Level (r		
Height of standpipe	N/A Filter Length	N/A	A
Depth below top of	Casing Elevatio	n (mAOD) 19.388	3
standpipe to response zone	N/A Borehole Diame	eter (m) 0.100	D
Initial depth to water (mbgl)	N//A Standpipe Diam		Ref: BS5930:2015
Depth of Casing (mbgl)	0.985 Casing Diameter	er 85mm	1
Strata: 0.25: Grassed			_
1.00: Brown sl	ightly sandy slightly gravelly silty	CLAY	
Time Elapsed t (mins)	Depth at Time t From top of casing (m)	Head at Time t	Head Ratio (H/Ho)
0	0.000	0.985	1.000
1	0.000	0.985	1.000
2	0.005	0.980	0.995
2			
3	0.005	0.980	0.995
4	0.005	0.980	0.995
6	0.010	0.975	0.990
8	0.010	0.975	0.990
10	0.015	0.970	0.985
30	0.030	0.955	0.970
60	0.035	0.950	0.964
90	0.035	0.950	0.964
120	0.035	0.950	0.964
^D ermeability: K=	- A/FT	Where:	al area of FH1 (m2)
K=	= 4.83E-08 m/s	0.00567	7
		F= Intake Factor (0.275	
		T= Basic time Lag	
		426600	J
Notes:			
	B of Section 4 - BS 5930:2015		
Basic lag time extrapolated	or H/Ho to equal 0.370	-	.
Client: LCC		Calcs by: SP	Checked by: Job Number CB 21 -12093
		0	21-12095



APPENDIX D

SPT HAMMER CALIBRATION CERTIFICATES

James Fisher Testing Services



James Fisher Testing Services 40a Ruby House Warrington WA1 4RF

Instrumented Rod Data

Diameter d _r (mm):	54
Wall Thickness t_r (mm):	6.5
Assumed Modulus E _a (GPa):	208
Accelerometer No.1:	11855
Accelerometer No.2:	9983

SPT Hammer Energy Test Report

in accordance with BSEN ISO 22476-3:2005

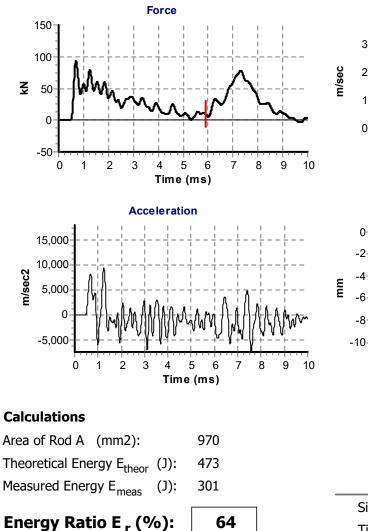
SPT Hammer Ref:	CCG6
Test Date:	12/05/2020
Report Date:	12/05/2020
File Name:	CCG6.spt
Test Operator:	MVAABM

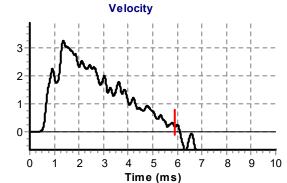
SPT Hammer Information

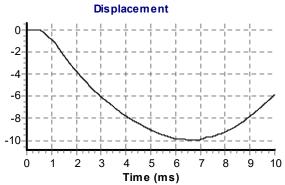
Hammer Mass	m (kg):	63.5
Falling Height	h (mm):	760
SPT String Leng	th L (m):	14.5

Comments / Location

Location: JFTS Laboratory Client: CCG SPT Refernece: CCG6







Signed: M.Valentine Title: Technician



APPENDIX E

TRIAL PIT PHOTOGRAPHS





Site	Cottam Parkway Station
Job Number:	CCG-C-21-12093
Trial Pit Number:	TP01
Plate Number	1

CC GEOTECHNICAL LIMITED Consulting Geotechnical and Geoenvironmental Engineers



Site	Cottam Parkway Station	Trial Pit Number	TP01
Job Number:	CCG-C-21-12093	Plate Number	2



Consulting Geotechnical and Geoenvironmental Engineers



Site	Cottam Parkway Station	Trial Pit Number	TP01
Job Number:	CCG-C-21-12093	Plate Number	3





Site	Cottam Parkway Station	
Job Number:	CCG-C-21-12093	
Trial Pit Number:	TP01	
Plate Number	4	





Site	Cottam Parkway Station	
Job Number:	CCG-C-21-12093	
Trial Pit Number:	TP02	
Plate Number	1	

Consulting Geotechnical and Geoenvironmental Engineers



Site	Cottam Parkway Station	Trial Pit Number	TP02
Job Number:	CCG-C-21-12093	Plate Number	2

Consulting Geotechnical and Geoenvironmental Engineers



Site	Cottam Parkway Station	Trial Pit Number	TP02
Job Number:	CCG-C-21-12093	Plate Number	3





Site	Cottam Parkway Station	
Job Number:	CCG-C-21-12093	
Trial Pit Number:	TP02	
Plate Number	4	





Site	Cottam Parkway Station	
Job Number:	CCG-C-21-12093	
Trial Pit Number:	ТРОЗ	
Plate Number	1	



Site	Cottam Parkway Station	Trial Pit Number	TP03
Job Number:	CCG-C-21-12093	Plate Number	2