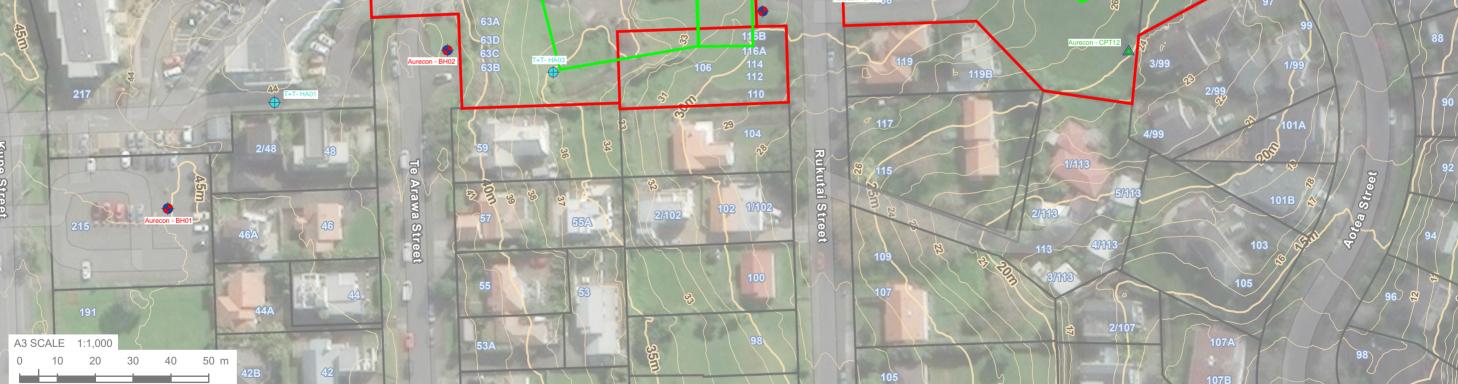
Appendix A Figures





Exceptional thinking together www.tonkintaylor.co.nz

CRS: NZGD 2000 New Zealand Transverse Mercator Credits: Esri Community Maps Contributors, LINZ, Stats NZ, Esri, TomTom, Garmin, Foursquare, METI/NASA, USGS, Earthstar Geographics, Maxar, LINZ, Stats NZ, Esri, TomTom, Garmin, Foursquare, METI/NASA, USGS

	PROJECT No.	1098049.0	0000	CL
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Mission	DRAWN	SCZH	JUN.25	
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多 种 国 图 图				

CLIENT GENERUS LIVING GROUP LIMITED PROJECT THE POINT DEVELOPMENT

TITLE GEOTECHNICAL INVESTIGATION SITE PLAN

LOCATION PLAN APPROVED DATE SCALE (A3) 1:1,000 FIG No. FIGURE 1. REV ()



SCALE (A3) AS SHOWN FIG No. 2



	PROJECT No.	1098049.0	0000	CLIENT	GENERUS LIVING GROUP LIMITED
Mission	DESIGNED DRAWN	SCZH SCZH	JUN.25	PROJECT	THE POINT DEVELOPMENT
	CHECKED	SCZH	JUN.25	TITLE	ROCK CONTOUR ISOPACH SITE PLAN
LOCATION PLAN	APPROVED	D.	ATE	SCALE (A3)	1:1,000 FIG No. 4 REV



Exceptional thinking together www.tonkintaylor.co.nz

CRS: NZGD 2000 New Zealand Transverse Mercator Credits: Esri Community Maps Contributors, LINZ, Stats NZ, Esri, TomTom, Garmin, Foursquare, METI/NASA, USGS, Earthstar Geographics, Maxar, LINZ, Stats NZ, Esri, TomTom, Garmin, Foursquare, METI/NASA, USGS

	PROJECT No.	1098049.0	0000	CLIEN
Mission	DESIGNED	SCZH	JUN.25	PROJEC
MISSION	DRAWN	SCZH	JUN.25	
	CHECKED			TITL

LOCATION PLAN

CLIENT GENERUS LIVING GROUP LIMITED
PROJECT THE POINT DEVELOPMENT

TITLE SETTLEMENT CONTOUR PLAN

SCALE (A3) 1:1,000 FIG No. 5 REV 0

Appendix B Investigation Logs



Level 4, 139 Carlton Gore PO Box 9762, Newmarket Auckland, New Zealand Tel: +64 9 520 6019

Client: Ngati Whatua Orakei Whai Rawa Ltd

Project: Eastcliffe Retirement Village Location: 217 Kupe Street, Auckland

Project Reference: 255232 **BH01**

Sheet 1 of 3

CO-ORDINATES: Mt Eden Circuit 2000 **BOREHOLE INFORMATION** Date started: 3/04/2018 Logged by: **BGW** Method: Rotary Core Wireline Easting: 405347.8m Date completed: 3/04/2018 Input by: BGW Equipment: Tracked Rig Contractor: Pro-Drill Ltd Northing 803113.9m Inclination: -90° Checked by: RAB MFSL N/A Reduced level: 45m Azimuth: Verified by: (Auckland MSL 1946 Datum) Weathering/USC Graphic Log Code Fracture Log Length (m) Installation Stratigraphy Ξ Testing % 8 % Method Defect Description TCR (SCR (RQD (Material Description R.L. Layer Additional Notes MWS CS CS CS 0m: SILT with minor clay and trace building debris; brown. 0m: FILL Stiff; moist; non-plastic. [FILL] 1111111111 ML ₹ 100 44 1 11111 **1.4m:** Fine ASH; light greyish brown, spotted brownish orange. Stiff; moist; high plasticity. (Silty CLAY with trace 1.4m: AUCKI AND VOI CANIC FIFI D IIIIII.5m: SPT $\Pi\Pi\Pi\Pi$ completely weathered fine gravel) 6// 2,3,3,3 N = 11 IIIIIISPT 100 43 \Box 2 OB 100 CH 42 3 3m: SPT 4// 3,4,4,4 N = 15 3m: IBHSV 148/54 kPa SPT 100 3.4m to 4.2m:...Minor sand: banded brownish orange 1111141 OB 4 70 **4.2m:** Sandy CLAY; grey banded orange. Stiff; moist; high plasticity. [RESIDUAL ECBF] 4.2m; EAST COAST BAYS FORMATION 11111 4.5m: SPT 5// 3,3,3,4 N = 13 4.5m: IBHSV 76/34 ERc СН \perp SPT 100 30x3 \Box 40 Database File: 255232.GPJ Library Water Level Readings:

Date Time | Hole Depth | Water Level
(1) 04/04/18 08:15 | 6.00m | 2.08 m bgl
(2) 05/04/18 08:00 | 6.00m | 4.2 m bgl
(3) 06/04/18 07:30 | 6.00m | 5.23 m bgl
(4) 09/04/18 07:45 | 6.00m | 5.41 m bgl
(5) 23/04/18 11:42 | 6.00m | 3.89 m bgl 1) Hole depth specified in Water Level Readings is the bottom of the piezometric screen.
2) IBHSV = In Barrel Hand Shear Vane, SPT = Standard Penetration Test, SPTC = Solid Cone Standard Penetration Test.
3) Locations were estimated using Auckland Council GeoMaps and are in terms of Mount Eden 2000 Circuit with an approximate accuracy of +/- 5m.
4) Reduced level reading was obtained from an existing LIDAR dataset with an approximate accuracy of +/- 1.0m.

5) ECBF = East Coast Bays Formation.

HSV Serial No: DR4938 Correction Factor: 1.546



Ngati Whatua Orakei Whai Rawa Ltd Client:

Project: Eastcliffe Retirement Village Location: 217 Kupe Street, Auckland

Project Reference: 255232

BH01

Sheet 2 of 3

Me Ea	thod:	: F ent:∃	INFOF Rotary Fracked Pro-Dril	Core	Wireline	CO-ORDINATES Easting: Northing: Reduced level:	: Mt Eden Circuit 20 405347.8m 803113.9m 45m (Auckland MSL 194		Inclina Azimu	complet ition:	ed:	3/04/ 3/04/ -90° N/A		Logged by: Input by: Checked by: Verified by:	BGW BGW RAB MFSL
Method	R.L. (m)	Length (m)	Graphic Log	Layer Code	٨	Material Descripti	on	Weathering/USC	Testing	(%) dJT	SCR (%)	RQD (%)	wws Fracture wws Fracture cs Log cs Log ecs	Stratig Defect De Additiona	escription <u></u>
08	39			ERx	4.95m : CORELOSS.					C					
SPT	_	- - - -	× * * * * * * * * * * * * * * * * * * *	ERz	6.55m to 6.6m:CLA	low plasticity.	wn mottled brownish	ML	6m: SPT 4// 2,2,2,2,2 N = 8	10	00				
80	38	7		ERc	6.75m: CLAY; yellow high plasticity. [Comp. 7.05m: Silty CLAY; liqhigh plasticity. 7.3m to 7.4m:Silty	ght brown mottled or	CBF]	СН		10	00				
SPT	37		× × × × × × ×	ERs	7.45m: Silty SAND; li		range. Loose; wet.	SM	7.5m: SPT 3// 1,2,2,2 N = 7	10	00				
08	36	- - - - - -	× × × × × × × × × × × × × × × × × × ×		8.15m to 8.27m:Br 8.3m: Highly weather (very stiff).	_	NE; extremely weak			10	00				
SPT	30	- 9 - - -	× × × × × × × × × × × × × × × × × × ×	EWZ				HW	9m: SPT 4// 2,3,4,4 N = 13	C					
80	35_		× × × × × × × × × × × × × × × × × × ×		9.65m to 9.7m:CL	AY.				10	00 13	13		Water Level Readings:	

NEMARKS:

1) Hole depth specified in Water Level Readings is the bottom of the piezometric screen.

2) IBHSV = In Barrel Hand Shear Vane, SPT = Standard Penetration Test, SPTC = Solid Cone Standard Penetration Test.

3) Locations were estimated using Auckland Council GeoMaps and are in terms of Mount Eden 2000 Circuit with an approximate accuracy of +/- 5m.

4) Reduced level reading was obtained from an existing LIDAR dataset with an approximate accuracy of +/- 1.0m.

5) ECBF = East Coast Bays Formation.

HSV Serial No: DR4938 Correction Factor: 1.546

Water Level Readings: Date Time | Hole Depth | Water Level (1) 04/04/18 08:15 | 6.00m | 2.08 m bgl (2) 05/04/18 08:00 | 6.00m | 4.2 m bgl (3) 06/04/18 07:30 | 6.00m | 5.23 m bgl (4) 09/04/18 07:45 | 6.00m | 5.41 m bgl (5) 23/04/18 11:42 | 6.00m | 3.89 m bgl



Level 4, 139 Carlton Gore Road PO Box 9762, Newmarket Auckland, New Zealand Tel: +64 9 520 6019

Ngati Whatua Orakei Whai Rawa Ltd Client:

Project: Eastcliffe Retirement Village Location: 217 Kupe Street, Auckland

BH01

			ro-Dri			Reduced level: 45m (Auckland MSL 1		um)	muth:			/A	ø	Verified by:	MFSL	$\overline{\parallel}$
Method	K.L. (m)	Length (m)	Graphic Log	Layer Code	M	aterial Description	Weathering/USC	Testing		TCR (%)	SCR (%)	RQD (%)	MWS Fracture MWS Fracture CS Log	Stratigr Defect Des Additiona	scription	:
ocl	k L	.e\	* * * * * * /el		8.3m: Highly weathers (very stiff).	d, grey, SILTSTONE; extremely weak			1	100	13					
2 J. S.	34	- - - 11	× × × × × × × × × × × × × × × × × × ×	EW	10.5m: Moderately we weak.	athered, grey, SILTSTONE; very	MW	10.5m: SP1 50// for 140mm N = 50+		N/A				10.5m: SPT test termina penetration.	ted in seating	
HQ3	333	12	× ×	EUS	cemented. 11.23m to 12.19m:V	ered, grey, SANDSTONE; weak. We ery weak. Moderately cemented.	sw		\$	97	88	72				
2	-	-	× × × × × × × × × × × × × × × × × × ×	s EUz	12.57m: Slightly weath	ered, grey, SANDSTONE; weak. We		12.5m: SPT -50// for 65mm	ıc N	N/A				12.5m: SPT test termina penetration.	ted in seating	
HQ3	32	- 13 - -	× × × × × × × × × × × × × × × × × × ×	EUZ	12.8m: Slightly weathe Laminated with very th	ry weak. Moderately cemented. Pred, grey, SILTSTONE; very weak. in sandstone lenses.	sw	N = 50+	1	100	100	90				
3	31	- - - 14		EUs	\13.51m to 13.56m:∨	ered, grey, silty fine SANDSTONE; .TSTONE Well cemented.	sw	14m: SPTC -50// for 65mm N = 50+		N/A				14m: SPT test terminate \penetration.	d in seating	

REMARKS:

1) Hole depth specified in Water Level Readings is the bottom of the piezometric screen.

2) IBHSV = In Barrel Hand Shear Vane, SPT = Standard Penetration Test, SPTC = Solid Cone Standard Penetration Test.

3) Locations were estimated using Auckland Council GeoMaps and are in terms of Mount Eden 2000 Circuit with an approximate accuracy of +/- 5m.

4) Reduced level reading was obtained from an existing LIDAR dataset with an approximate accuracy of +/- 1.0m.

5) ECBF = East Coast Bays Formation.

HSV Serial No: DR4938 Correction Factor: 1.546

Water Level Readings: Date Time | Hole Depth | Water Level (1) 04/04/18 08:15 | 6.00m | 2.08 m bgl (2) 05/04/18 08:00 | 6.00m | 4.2 m bgl (3) 06/04/18 07:30 | 6.00m | 5.23 m bgl (4) 09/04/18 07:45 | 6.00m | 5.41 m bgl (5) 23/04/18 11:42 | 6.00m | 3.89 m bgl

Database File: 255232.GPJ L

Borehole Reference:

BH01

Date Drilled:

Photographed By:

RAB

Date Photographed:

aurecon03/04/2018
03/04/2018



Box 1. - Depth: 0.00m to 1.50m.



Box 2. - Depth: 1.50m to 4.50m.

Borehole Reference: BH01 Date Drilled:





Box 3. - Depth: 4.50m to 7.95m.



Box 4. - Depth: 7.95m to 10.36m.

Borehole Reference: BH01 Date Drilled:





Box 5. - Depth: 10.36m to 12.90m.



Box 6. - Depth: 12.90m to 14.07m.



Level 4, 139 Carlton Goi PO Box 9762, Newmark Auckland, New Zealand Tel: +64 9 520 6019

Client: Ngati Whatua Orakei Whai Rawa Ltd Project: Eastcliffe Retirement Village

Location: Outside 65 Te Arawa Street, Auckland

BH02

Project Reference: 255232 Sheet 1 of 3 CO-ORDINATES: Mt Eden Circuit 2000 **BOREHOLE INFORMATION** Date started: 5/04/2018 Logged by: AGM Method: Rotary Core Wireline Equipment: Tracked Rig Contractor: Pro-Drill Ltd Easting: 405415m Date completed: 6/04/2018 Input by: AGM -90° N/A Checked by: RAB MFSL Northing 803159.1m Inclination: Reduced level: 41m Azimuth: Verified by: (Auckland MSL 1946 Datum) Weathering/USC Graphic Log Code Fracture Log Length (m) TCR (%) Installation Testing Stratigraphy Ξ 8 % Method Defect Description SCR (RQD (Material Description R.L. Layer Additional Notes WS WS CS CS CS CS 0m: SILT; dark brown. Firm; moist; low plasticity. [TOPSOIL] 0m: TOPSOIL 14 М 0.2m: Silty CLAY; brownish yellow mottled light and dark 0.2m: FILL 41 grey. Firm; moist; moderate plasticity. [FILL] 11111 ₹ 100 111111.1m to 5.26m:...Yellowish brown mottled light grey. High 40 .5m: SPT 4// 1,2,2,3 N = 8 100 SPT 2 39 OB 70 FEc 3 3m: SPT 6// 3,4,4,6 N = 17 SPT 93 38 4 OB 83 37 4.27m to 4.5m:...CORELOSS. 4.5m: SPT 6// 4,4,3,3 N = 14 4.5m: IBHSV 117/49 kPa Database File: 255232.GPJ Library file: AURECON_AKL_NOF! SPT \Box

- 1) Hole depth specified in Water Level Readings is the bottom of the piezometric screen.
 2) IBHSV = In Barrel Hand Shear Vane, SPT = Standard Penetration Test, SPTC = Solid Cone Standard Penetration Test.
 3) Locations were estimated using Auckland Council GeoMaps and are in terms of Mount Eden 2000 Circuit with an approximate accuracy of +/- 5m.
 4) Reduced level reading was obtained from an existing LIDAR dataset with an approximate accuracy of +/- 1.0m.

5) ECBF = East Coast Bays Formation.

Water Level Readings: Date Time | Hole Depth | Water Level (1) 09/04/18 07:50 | 6.00m | 2.86 m bgl (2) 23/04/18 11:48 | 6.00m | 2.32 m bgl



Client: Ngati Whatua Orakei Whai Rawa Ltd
Project: Eastcliffe Retirement Village
Location: Outside 65 Te Arawa Street, Auckland
Project Reference: 255232

BH02

Sheet 2 of 3

N	/leth Equi	od: pm	ent:	: INFOI Rotary Tracke Pro-Dri	Core d Rig	Wireline	CO-ORDINATES: Easting: Northing: Reduced level:	Mt Eden Circuit 200 405415m 803159.1m 41m (Auckland MSL 1946		Date starte Date comp Inclination: Azimuth:	oletec	l: 6		2018 2018		Logged by: Input by: Checked by Verified by:	AGM AGM : RAB MFSL	
1 7 7	Method	R.L. (m)	Length (m)	Graphic Log	Layer Code	٨	/laterial Descriptio		Weathering/USC	Testing	TCR (%)	SCR (%)	RQD (%)	ws Fracture ss Log	S S	Stratig Defect De Additiona	escription	Installation
Box 2	- 80	36		× × × × × × × × × × × × × × × × × × ×	FEC	4.95m to 5.26m:CC 0.2m: Silty CLAY; bro grey. Firm; moist; mo 5.26m: SILT; light gre medium plasticity. [R	ownish yellow mottled oderate plasticity. [FIL	.L.]	CL-MI		49				5.26m:	: EAST COAST B	AYS FORMATION	
	<u></u>	35_	- - - -	× × × × × × × × × × × × × × × × × × ×	ERZ	6.45m: SILT; brownis		t; medium plasticity.		6m: SPT 2// 1,2,2,2 N = 7 6m: IBHSV 62/49 kPa	100							
Box 3		_	- - - -	× × × × × × × × × × × × × × × × × × ×		[Completely weather	·	NE, extremely	cw									
	9 0	34	7	× × × × × × × × × × × × × × × × × × ×		7.3m: Highly weather (very stiff). 7.32m to 7.38m:SA	ANDSTONE. Poorly of	•	HW		62	40	30					
i	<u>_</u>	_	8	× × × × × × × × × × × × × × × × × × ×	EWZ	7.38m to 7.5m:CO	RELOSS.		HW	7.5m: SPT 14// 8.8.8,10 N = 34	100	100	100					
_ {	3 -	33	_	× × × × × × × ×		8.3m: Moderately we	athered. dull grev. S.	ANDSTONE:			100	100	100					
Box 4	103	32	9		EWs	extremely weak (den 200mm thick. 8.4m to 8.7m:SILT	se). Interbedded silts STONE.		MW		91	91	72					
	טורעט פאר	_	10			9.55m to 9.6m:Lan	ninated SILTSTONE.			9.75m: SPTC 32// 24,26 for 25mm N = 50+	N/A							
	2) IBI 3) Lo 4) Re 5) E0	ole d HSV ocation educ CBF	lepth / = In ons w ced le	Barrel H ere estir vel read st Coast	land S mated ing wa Bays	using Auckland Council C	ard Penetration Test, SF GeoMaps and are in terr	tric screen. TC = Solid Cone Standarr ns of Mount Eden 2000 Ci n approximate accuracy o	rcuit v	vith an approximate a	occura	cy of +	-/- 5m		(1) 09	Level Readings: Time Hole Depth 1/04/18 07:50 6. 1/04/18 11:48 6.	Water Level 00m 2.86 m bgl 00m 2.32 m bgl	MV3



Ngati Whatua Orakei Whai Rawa Ltd Client: Project: Eastcliffe Retirement Village

Location: Outside 65 Te Arawa Street, Auckland

Project Reference: 255232

BH02

Sheet 3 of 3

BOREHOLE INFORMATION Method: Rotary Core Wireline Equipment: Tracked Rig Contractor: Pro-Drill Ltd Easting:

CO-ORDINATES: Mt Eden Circuit 2000 405415m Northing: Reduced leve 803159.1m 41m

Date started: Date completed: -90° N/A Inclination:

5/04/2018 6/04/2018

Logged by: AGM Input by: Checked by: Verified by: AGM RAB MFSL

	ont	ract	or: F	ro-Dri	II Ltd			11m <u>'Auckland MSL 1946</u>	Date	Azimuth: um)		١	I/A		Verified by: MFS	L
10 d+0 M	Netrion	R.L. (m)	Length (m)	Graphic Log	Layer Code		faterial Description		Weathering/USC	Testing	TCR (%)	SCR (%)	RQD (%)	www. wws. Fracture wws. Log	Stratigraphy Defect Descripti Additional Note	
Box 4	300	31	- - - - -		EWs	extremely weak (den 200mm thick. 10.5m to 10.77m:S		one beds up to	MW		95	91	91		0.13m: JT -45° PISm Cn	
Box 6	:- 	30 -		···· ××××××××××××××××××××××××××××××××	EWz	10.9m: Moderately w weak. Interbedded w disseminated black o	Thin black carbonaces eathered, light grey, Sith moderately thin sai arbonaceous material SANDSTONE. Well ca	ILTSTONE; very ndstone beds with	sw	11m: SPTC 48// 8 for 50mm N = 50+	N/A 95	94	85			

End of borehole at 12.5m (Target Depth)

REMARKS:

REMARKS:

1) Hole depth specified in Water Level Readings is the bottom of the piezometric screen.

2) IBHSV = In Barrel Hand Shear Vane, SPT = Standard Penetration Test, SPTC = Solid Cone Standard Penetration Test.

3) Locations were estimated using Auckland Council GeoMaps and are in terms of Mount Eden 2000 Circuit with an approximate accuracy of +/- 5m.

4) Reduced level reading was obtained from an existing LIDAR dataset with an approximate accuracy of +/- 1.0m.

5) ECBF = East Coast Bays Formation.

HSV Serial No: DR4938 Correction Factor: 1.546

Water Level Readings: Date Time | Hole Depth | Water Level (1) 09/04/18 07:50 | 6.00m | 2.86 m bgl (2) 23/04/18 11:48 | 6.00m | 2.32 m bgl

Database File: 25232 GPU Library file: AURECON AKL_NOFRACLOG_201612. GLB Tompitate: AURECON_AKL_20130722. GDT Report File: AURECON DH LOG V3.9 Date Generated: 3/05/2018

Borehole Reference: BH02 Date Drilled:





Box 1. - Depth: 0.00m to 2.47m.



Box 2. - Depth: 2.47m to 5.43m.

Borehole Reference:

BH02

Date Drilled:

Photographed By:

RAB

Date Photographed:

QUIECON 05/04/2018 - 06/04/2018 05/04/2018 - 06/04/2018



Box 3. - Depth: 5.43m to 8.16m.



Box 4. - Depth: 8.16m to 11.00m.

Borehole Reference: **BH02** Date Drilled:





Box 5. - Depth: 11.0m to 12.50m.



Client: Ngati Whatua Orakei Whai Rawa Ltd
Project: Eastcliffe Retirement Village
Location: 54 Te Arawa Street, Auckland
Project Reference: 255232

BH03

Sheet 1 of 2

M	ethoo quipn	l: nent:	E INFOR Rotary Tracke Pro-Dri	Core	e Wireline	CO-ORDINATES Easting: Northing: Reduced level:	5: Mt Eden Circuit 20 405443.4m 803186.7m 37m (Auckland MSL 194		Date starte Date comp Inclination: Azimuth:	oletec	l: 6	5/04/2 5/04/2 90° N/A			Logged by: Input by: Checked by: Verified by:	RAB RAB MFSL EMR		
Method	R.L. (m)	Length (m)	Graphic Log	Layer Code		/laterial Descripti	on	Weathering/USC	Testing	TCR (%)	SCR (%)	RQD (%)	ws ws Fracture	S S	Stratig Defect De Additiona	scription	Installation	
SPT OB OB	36		XX	ERC	0.7m: Medium to coa and trace rootlets; br 0.8m: Silty CLAY; bo moist; high plasticity. 0.81m to 1m: Trace	own. Soft; moist; lov rwnish yellow mottle [RESIDUAL ECBF]	v plasticity. [FILL] ed light grey. Firm;	SM CL-MI	1m: IBHSV 34/15 kPa 1.5m: SPT 2// 1,2,1,2 N = 6 1.5m: IBHSV 108/53 kPa	80					: EAST COAST BA	YS FORMATION		
OBO .	-			ERs	2.5m: Fine to mediur [Completely weather	m silty SAND; brown ed ECBF]	ı. Medium dense.	sw-sr	- V1	71								
SPT	34	 - - -			3m: Highly weathere (medium dense). Inte	d, grey, SANDSTON erbedded with lamin	NE; extremely weak ated siltstone lenses.		3m: SPT 3// 2,4,4,3 N = 13 3m: IBHSV 148/28 kPa	100	87	22						-
2 OB	33	4	× × ×	EWs	4.1m: Moderately we With laminated to ve	eathered, grey, SILT ry thin black carbon	STONE; very weak. aceous banding	HW		100	100	100						The second secon
SPTC	-		× × × × × × × × × × × × × × × × × × ×	EWs EWz	4.4m: Moderately we weak. Interbedded w	athered, grey, SAN	DSTONE; very	MW	4.5m: SPTC 16// 20,19,11 for 40mm N = 50+	N/A	07	02						-
1 2 3 4 5 6	IBHS Loca Redu ECBI No pi	KS: depth V = In tions v ced le = = Ea ezome	specified Barrel H vere estir vel readi st Coast eter was	and S nated ing wa Bays install	using Auckland Council C	ard Penetration Test, S SeoMaps and are in ter ng LIDAR dataset with a	etric screen. PTC = Solid Cone Standa rms of Mount Eden 2000 (an approximate accuracy	rd Pen	vith an approximate a					Wate Date	er Level Readings: Time Hole Depth ater level recorded	Water Level	1	



Client: Ngati Whatua Orakei Whai Rawa Ltd

Project: Eastcliffe Retirement Village Location: 54 Te Arawa Street, Auckland

Project Reference: 255232 **BH03**

Sheet 2 of 2

CO-ORDINATES: Mt Eden Circuit 2000 **BOREHOLE INFORMATION** Date started: 6/04/2018 Logged by: RAB Method: Rotary Core Wireline Easting: 405443.4m Date completed: 6/04/2018 Input by: RAB Equipment: Tracked Rig Contractor: Pro-Drill Ltd Northing 803186.7m Inclination: -90° Checked by: MFSL N/A **FMR** Reduced level: 37m Azimuth: Verified by: (Auckland MSL 1946 Datum) Weathering/USC Graphic Log Code Fracture Log Length (m) Installation Testing Stratigraphy Ξ % 8 % Defect Description TCR (SCR (RQD (Material Description R.L. Layer Additional Notes WS WS CS CS CS 4.95m: Slightly weathered, grey, SILTSTONE; very weak. 32 With thinly laminated sandstone lenses and black carbonaceous banding. 11111 $\Pi \Pi \Pi$ \Box 11111£ 97 97 93 +1111111111IIIIII6 31 sw 6.5m: SPTC 20// 17,33 for 30mm N = 50+ 6.5m to 6.65m:...SANDSTONE. Well Cemented. IIIIIISPTC N/A 11111IIIIII30 11111HQ3 100 94 11111 IIIIII7.7m: Slightly weathered, grey, SANDSTONE; very weak. 8 EUs 8m: SPTC 48// 10 for 0mm N = 50+ SW SPTC 29 N/A $\Pi\Pi\Pi$ **8.35m:** Slightly weathered, grey, SILTSTONE; weak. Interbedded with laminated sandstone lenses. 1111189 83 81 50 $\Pi\Pi\Pi$ 9 Database File: 255232.GPJ Library file: AURECON_AKL_NOFRACLOG_201612.GLB Template: EUz 28 SW \perp 9.65m: SPTC 9.65m: SPT test terminated in seating N/A 50// penetration. for 115mm End of borehole at 9.765m (Target Depth) N = 50 +REMARKS Water Level Readings: Date Time | Hole Depth | Water Level No water level recorded NEMARKS:

1) Hole depth specified in Water Level Readings is the bottom of the piezometric screen.

2) IBHSV = In Barrel Hand Shear Vane, SPT = Standard Penetration Test, SPTC = Solid Cone Standard Penetration Test.

3) Locations were estimated using Auckland Council GeoMaps and are in terms of Mount Eden 2000 Circuit with an approximate accuracy of +/- 5m.

4) Reduced level reading was obtained from an existing LIDAR dataset with an approximate accuracy of +/- 1.0m.

5) ECBF = East Coast Bays Formation.

6) No piezometer was installed for recording water levels.

HSV Serial No: DR4938 Correction Factor: 1.546

Borehole Reference: BH03 Date Drilled:





Box 1. - Depth: 0.00m to 3.45m.



Box 2. - Depth: 3.45m to 5.90m.

Borehole Reference:

BH03

Date Drilled:

Photographed By:

RAB

Date Photographed:

aurecon 06/04/2018 06/04/2018



Box 3. - Depth: 5.90m to 9.05m.



Box 4. - Depth: 9.05m to 9.62m.



Client: Ngati Whatua Orakei Whai Rawa Ltd
Project: Eastcliffe Retirement Village

Location: Outside 112 Rukutai Street, Auckland

255232 Project Reference:

BH04

Sheet 1 of 3

BOREHOLE INFORMATION CO-ORDINATES: Mt Eden Circuit 2000 Date started: 9/04/2018 Logged by: AGM Method: Rotary Core Wireline Easting: 405498.8m Date completed: 9/04/2018 Input by: AGM Equipment: Tracked Rig Contractor: Pro-Drill Ltd Northing 803167.7m Inclination: -90° Checked by: RAB MFSL N/A Reduced level: 31m Azimuth: Verified by: (Auckland MSL 1946 Datum) Weathering/USC Graphic Log Code Fracture Log Length (m) Installation Testing Stratigraphy Ξ % 8 % Method Defect Description TCR (SCR (RQD (Material Description R.L. Layer Additional Notes WS WS CS CS CS 0m: VACUUM EXCAVATION. $\Pi\Pi\Pi$ 1111131 HYDRO VAC EX 111110 IIIIII1 1111130 11111 IIIII**1.65m:** Clayey SILT; light grey mottled brownish orange. Firm; moist; medium plasticity. [Residual ECBF] .65m: SPT 1.65m: EAST COAST BAYS FORMATION IIIIII1,1,1,1 N = 4 11111SPT 100 ++++× 2 СС-М 1111129 2.25m: Silty CLAY; light brownish yellow mottled light grey. Firm; moist; moderate plasticity. CL-M 2.5m: CORELOSS OB 56 ERX 2.9m: Silty CLAY; light brownish yellow mottled light grey.
 Stiff; moist; moderate plasticity. [Completely Weathered ECBF]
 3.02m: Highly weathered, grey, SILTSTONE; extremely 111113 Сц-мі $\Pi\Pi\Pi$ 3m: SPT 111118// 4,4,3,4 N = 15 3m: IBHSV 60/36 kPa HW weak (very stiff). SPT 100 **3.22m:** Highly weathered, grey, sandy SILTSTONE; extremely weak (medium dense). 28 \square EWz HW 11111**3.8m:** Highly weathered, grey, SANDSTONE; extremely weak (medium dense). Disseminated black carbonaceous 4 OB EWs 100 100 100 HW Database File: 255232.GPJ Library file: AURECON_AKL_NOFRACLOG_201612.GLB Template $\Pi\Pi\Pi$ **4.2m:** Moderately weathered, grey, sandy SILTSTONE; extremely weak (very stiff). 27 4.5m: SPTC 10// 10,12,14,14 for 15mm N = 50+ EWZ MW \perp SPTC N/A $\Pi\Pi\Pi\Pi$ 4.89m: CORELOSS. 100 89 REMARKS Water Level Readings: Date Time | Hole Depth | Water Level No water level recorded NEMPARKS:

1) Hole depth specified in Water Level Readings is the bottom of the piezometric screen.

2) IBHSV = In Barrel Hand Shear Vane, SPT = Standard Penetration Test, SPTC = Solid Cone Standard Penetration Test.

3) Locations were estimated using Auckland Council GeoMaps and are in terms of Mount Eden 2000 Circuit with an approximate accuracy of +/- 5m.

4) Reduced level reading was obtained from an existing LIDAR dataset with an approximate accuracy of +/- 1.0m.

5) ECBF = East Coast Bays Formation.

6) No piezometer was installed for recording water levels.

HSV Serial No: DR4938 Correction Factor: 1.546



Level 4, 139 Carlton Goi PO Box 9762, Newmark Auckland, New Zealand Tel: +64 9 520 6019

Client: Ngati Whatua Orakei Whai Rawa Ltd Project: Eastcliffe Retirement Village

Location: Outside 112 Rukutai Street, Auckland

255232 Project Reference:

Sheet 2 of 3

AGM

AGM

RAB

BH04

BOREHOLE INFORMATION CO-ORDINATES: Mt Eden Circuit 2000 Date started: 9/04/2018 Logged by: Rotary Core Wireline Easting: 405498.8m Date completed: 9/04/2018 Input by: Equipment: Tracked Rig Contractor: Pro-Drill Ltd Northing 803167.7m Inclination: -90° Checked by: N/A Reduced level: 31m Azimuth: Verified by:

MFSL (Auckland MSL 1946 Datum) Weathering/USC Graphic Log Code Fracture Log Length (m) Installation Stratigraphy Ξ Testing % 8 % Method Defect Description TCR (SCR (RQD (Material Description R.L. Layer Additional Notes WS WS CS CS CS CS 4.89m: CORELOSS. 26 **5.34m:** Moderately weathered, grey, sandy SILTSTONE; extremely weak (very stiff). ΜV £ 5.72m: Moderately weathered, grey, SILTSTONE; extremely 100 89 60 11111weak (very stiff). 1111 6 MW 6m to 6.06m:...Moderately weathered, grey, SANDSTONE; very weak. Moderately cemented. **6.2m:** Moderately weathered, grey, SANDSTONE; very weak. Moderately cemented. 25 MW .5m: SPTC SPTC IIIIII42// 10 for 0mm N = 50+ N/A 6.57m: Moderately weathered, grey, SILTSTONE; very 24 HQ3 93 93 72 7.67m to 7.71m:...Moderately weathered, grey, SANDSTONE; very weak. Moderately cemented. 8 8m: SPTC 25// 25,15,10 for 30mm N = 50+ $\Pi\Pi\Pi$ SPTC N/A 23 11111 111118.6m: Slightly weathered, light grey, SANDSTONE; weak. 111118.71m: JT -75° StSm Cn 8.73m: JT -80° UnRo Vn(CLAY) Н 97 97 86 +11118.9m to 9.5m:...SILTSTONE. 9 Database File: 255232.GPJ Library file: AURECON_AKL_NOFRACLOG_201612.GLB Template 1111122 EUs SW 9.5m: SPTC 50// for 115mm N = 50+ $I \mid I \mid I \mid I$ 9.5m: SPT test terminated in seating penetration. 9.615m to 10m: JT -90° UnRo Cg(IRON) SPT(N/A \Box HQ3 90 90 81

NEMPARKS:

1) Hole depth specified in Water Level Readings is the bottom of the piezometric screen.

2) IBHSV = In Barrel Hand Shear Vane, SPT = Standard Penetration Test, SPTC = Solid Cone Standard Penetration Test.

3) Locations were estimated using Auckland Council GeoMaps and are in terms of Mount Eden 2000 Circuit with an approximate accuracy of +/- 5m.

4) Reduced level reading was obtained from an existing LIDAR dataset with an approximate accuracy of +/- 1.0m.

5) ECBF = East Coast Bays Formation.

6) No piezometer was installed for recording water levels.

HSV Serial No: DR4938 Correction Factor: 1.546

Water Level Readings: Date Time | Hole Depth | Water Level No water level recorded



Ngati Whatua Orakei Whai Rawa Ltd Client: Project: Eastcliffe Retirement Village

Location: Outside 112 Rukutai Street, Auckland

Project Reference: 255232

Sheet 3 of 3

BOREHOLE INFORMATION Method: Rotary Core Wireline Equipment: Tracked Rig Contractor: Pro-Drill Ltd

CO-ORDINATES: Mt Eden Circuit 2000 Easting: 405498.8m Northing: 803167.7m Reduced level: 31m

Date started: Date completed: -90° N/A Inclination: Azimuth.

9/04/2018 9/04/2018 In C

ogged by:	AGM
put by:	AGM
hecked by:	RAB
erified by:	MFSL

BH04

١	Ontia	JUI. I	ווט-טוו	II Ltu		ISL 1946 Datum)	Azimum.			W/ /~		Vermed by. Wil OL	
MO+th M	R.L. (m)	_ =	Graphic Log	Layer Code	Material Description	Weathering/USC	Testing	TCR (%)	SCR (%)	RQD (%)	wws Fracture	Stratigraphy Defect Description Additional Notes	Installation
Box 3	21	- - - - - - - 11		EUs	8.6m: Slightly weathered, light grey, SANDSTONE; weather statement of the second state	sw		90	90	81		: JT -85° UnRo Cg(IRON) :5m: JT -60° PISm Cn	-

End of borehole at 11m (Target Depth)

REMARKS:

REMARKS:

1) Hole depth specified in Water Level Readings is the bottom of the piezometric screen.

2) IBHSV = In Barrel Hand Shear Vane, SPT = Standard Penetration Test, SPTC = Solid Cone Standard Penetration Test.

3) Locations were estimated using Auckland Council GeoMaps and are in terms of Mount Eden 2000 Circuit with an approximate accuracy of +/- 5m.

4) Reduced level reading was obtained from an existing LIDAR dataset with an approximate accuracy of +/- 1.0m.

5) ECBF = East Coast Bays Formation.

6) No piezometer was installed for recording water levels.

HSV Serial No: DR4938 Correction Factor: 1.546

Water Level Readings: Date Time | Hole Depth | Water Level No water level recorded

Database File: 25232.GPJ Library file: AURECON AKL_NOFRACLOG_201612.GLB Tompiate: AURECON_AKL_20130722.GDT Report File: AURECON DH LOG V3.9 Date Generated: 3/05/2018

Borehole Reference: **BH04** Date Drilled:





Box 1. - Depth: 0.00m to 5.52m.



Box 2. - Depth: 5.52m to 8.33m.

Borehole Reference: **BH04** Date Drilled:





Box 3. - Depth: 8.33m to 11.00m.



Tel: +64 9 520 6019

5) ECBF = East Coast Bays Formation.

HSV Serial No: DR4938 Correction Factor: 1.546

Client: Ngati Whatua Orakei Whai Rawa Ltd

Project: Eastcliffe Retirement Village Location: 124 Rukutai Street, Auckland

255232 Project Reference:

BH05

Sheet 1 of 3 **BOREHOLE INFORMATION** CO-ORDINATES: Mt Eden Circuit 2000 5/04/2018 Logged by: RAB Date started: Easting: 405521.7m Date completed: 5/04/2018 Input by: RAB Rotary Core Wireline Equipment: Tracked Rig Contractor: Pro-Drill Ltd Northing 803228.1m Inclination: -90° Checked by: MFSL N/A **FMR** Reduced level: 33m Azimuth: Verified by: (Auckland MSL 1946 Datum) Weathering/USC Graphic Log Code Fracture Log Length (m) Installation Testing Stratigraphy Ξ % 8 % Method Defect Description TCR (SCR (RQD (Material Description R.L. Layer Additional Notes WS WS CS CS CS CS **0m:** SILT with some sand and clay and trace rootlets; brown. Firm; moist; low plasticity. [TOPSOIL] 0m: TOPSOIL 14 31 · <u>///</u> · · MI : <u>d'i</u> 11111 0.6m; Silty CLAY with trace rootlets; vellowish brown mottled 0.6m: EAST COAST BAYS FORMATION \Box 32 dark brown. Firm; moist; low plasticity. [RESIDUAL ECBF] 11111₹ 100 111111111 IIIIII__× -Z-_--Z-_-1m to 1.55m:...Brownish vellow mottled orange. CL-M 11111 .5m: SPT 1.511. 3 2// 1,1,1,2 N = 5 **1.55m:** Clayey SILT; light grey mottled brownish orange. Firm; moist; low plasticity. × 31 100 SPT × × ERZ \Box 2 × **2.23m:** Silty CLAY; light grey mottled brownish orange. Firm; moist; high plasticity. [Completely Weathered ECBF] OB 63 30 <u>Z</u>bl-м 111113 3m: SPT 3m: SPI 2// 1,2,2,2 N = 7 3m: IBHSV 167/28 kPa $\Pi\Pi\Pi$ 3.15m: Highly weathered, grey, SILTSTONE; extremely SPT 100 96 22 weak (stiff) EWz 29 HW 4 OB 90 85 76 **4.2m:** Highly weathered, grey, SANDSTONE; extremely weak (loose). Uncemented. EWs HW 4.28m to 4.4m:...Light yellowish grey 4.4m: CORELOSS 4.5m: SPT 4// 2,3,3,4 N = 12 4.5m: IBHSV 90/25 28 ΕW× SPT 100 67 80 $\Pi\Pi\Pi\Pi$ Database File: 255232.GPJ Library Water Level Readings: Date Time | Hole Depth | Water Level (1) 06/04/18 07/48 | 6.00m | 1.28 m bgl (2) 09/04/18 08:02 | 6.00m | 2.24 m bgl (3) 23/04/18 12:18 | 6.00m | 2.15 m bgl 1) Hole depth specified in Water Level Readings is the bottom of the piezometric screen.
2) IBHSV = In Barrel Hand Shear Vane, SPT = Standard Penetration Test, SPTC = Solid Cone Standard Penetration Test.
3) Locations were estimated using Auckland Council GeoMaps and are in terms of Mount Eden 2000 Circuit with an approximate accuracy of +/- 5m.
4) Reduced level reading was obtained from an existing LIDAR dataset with an approximate accuracy of +/- 1.0m.



Tel: +64 9 520 6019

Client: Ngati Whatua Orakei Whai Rawa Ltd
Project: Eastcliffe Retirement Village

Location: 124 Rukutai Street, Auckland

Project Reference: 255232 **BH05**

Sheet 2 of 3

CO-ORDINATES: Mt Eden Circuit 2000 **BOREHOLE INFORMATION** Date started: 5/04/2018 Logged by: RAB Rotary Core Wireline Easting: 405521.7m Date completed: 5/04/2018 Input by: RAB Equipment: Tracked Rig Contractor: Pro-Drill Ltd Northing 803228.1m Inclination: -90° Checked by: MFSL N/A EMR Reduced level: 33m Azimuth: Verified by: (Auckland MSL 1946 Datum) Weathering/USC Graphic Log Code Fracture Log Length (m) TCR (%) Installation Testing Stratigraphy Ξ 8 % Method Defect Description RQD (SCR (Material Description R.L. Layer Additional Notes WS WS CS CS CS CS **5.05m:** Highly weathered, grey, SILTSTONE; extremely weak (very stiff). 80 86 27 HW 6 6m: SPT 5// 3,4,4,4 N = 15 SPT 100 93 6.45m: Moderately weathered, grey, SILTSTONE; very weak. 26 MW OB 85 85 85 7.1m: Slightly weathered, grey, SILTSTONE; very weak. EUz 7.5m: SPT 14// SW 8,10,12,12 N = 42 25 SPT 100 100 100 8 7.95m: CORELOSS Ē 8.45m: Slightly weathered, grey, SANDSTONE; very weak. Moderately cemented. 24 HQ3 66 8.76m to 9.4m:...Weak 9 EUs SW 9.17m; JT 70° PISm Cn 9.5m: SPTC 15// 10,10,12,10 N = 42 23 SPTC N/A $\Pi\Pi\Pi\Pi$ Water Level Readings: Date Time | Hole Depth | Water Level (1) 06/04/18 07/48 | 6.00m | 1.28 m bgl (2) 09/04/18 08:02 | 6.00m | 2.24 m bgl (3) 23/04/18 12:18 | 6.00m | 2.15 m bgl 1) Hole depth specified in Water Level Readings is the bottom of the piezometric screen.
2) IBHSV = In Barrel Hand Shear Vane, SPT = Standard Penetration Test, SPTC = Solid Cone Standard Penetration Test.
3) Locations were estimated using Auckland Council GeoMaps and are in terms of Mount Eden 2000 Circuit with an approximate accuracy of +/- 5m.
4) Reduced level reading was obtained from an existing LIDAR dataset with an approximate accuracy of +/- 1.0m.

5) ECBF = East Coast Bays Formation.

HSV Serial No: DR4938 Correction Factor: 1.546



EUz

Н

SPTC

22

11

Ngati Whatua Orakei Whai Rawa Ltd Client:

Project: Eastcliffe Retirement Village Location: 124 Rukutai Street, Auckland

Project Reference: 255232

BH05

Sheet 3 of 3

Installation

Me	thod: uipme	F ent: T	INFOF Rotary Fracked Pro-Dril	Core d Rig	Wireline	CO-ORDINATES: Mt Eden Circ Easting: 405521.7m Northing: 803228.1m Reduced level: 33m (Auckland MS		tum)	Date starte Date comp Inclination: Azimuth:	letec	l: 5		2018 2018	Logged by: Input by: Checked by: Verified by:	RAB RAB MFSL EMR	
Method	R.L. (m)	Length (m)	Graphic Log	Layer Code	N	Material Description	Weathering/USC		Testing	TCR (%)	SCR (%)	RQD (%)	ws Fracture wws Fracture cs Log ecs	Stratigra Defect Des Additional	cription	
	_		× × × × × × × × × ×			hered, grey, SILTSTONE; very weak SANDSTONE. Moderately cemente										

SW

11m: SPTC 23// 17,17,16 for 25mm N = 50+

N/A

 $\Box\Box\Box\Box$

End of borehole at 11.325m (Target Depth)

REMARKS:

REMARKS:

1) Hole depth specified in Water Level Readings is the bottom of the piezometric screen.

2) IBHSV = In Barrel Hand Shear Vane, SPT = Standard Penetration Test, SPTC = Solid Cone Standard Penetration Test.

3) Locations were estimated using Auckland Council GeoMaps and are in terms of Mount Eden 2000 Circuit with an approximate accuracy of +/- 5m.

4) Reduced level reading was obtained from an existing LIDAR dataset with an approximate accuracy of +/- 1.0m.

5) ECBF = East Coast Bays Formation.

HSV Serial No: DR4938 Correction Factor: 1.546

Water Level Readings: Date Time | Hole Depth | Water Level (1) 06/04/18 07:48 | 6.00m | 1.28 m bgl (2) 09/04/18 08:02 | 6.00m | 2.24 m bgl (3) 23/04/18 12:18 | 6.00m | 2.15 m bgl

Borehole Reference: BH05

Date Drilled:

Photographed By: RAB Date Photographed:

aurecon 05/04/2018 05/04/2018



Box 1. - Depth: 0.00m to 2.48m.



Box 2. - Depth: 2.48m to 5.52m.

Borehole Reference:

BH05

Date Drilled:

Photographed By:

RAB

Date Photographed:

aurecon 05/04/2018 05/04/2018



Box 3. - Depth: 5.52m to 8.76m.



Box 4. - Depth: 8.76m to 11.33m.



HSV Serial No: DR4938 Correction Factor: 1.546

Client: Ngati Whatua Orakei Whai Rawa Ltd
Project: Eastcliffe Retirement Village

Location: 138 Rukutai Street, Auckland Project Reference: 255232

BH06

Sheet 1 of 3

Database File: 2552

	Met Equ	hod:	F ent: 1	INFOF Rotary Fracked Pro-Dri	Core d Rig	Wireline	CO-ORDINATES Easting: Northing: Reduced level:	: Mt Eden Circuit 20 405588.6m 803179.3m 26m (Auckland MSL 194		um)	Date starte Date comp Inclination: Azimuth:	letec	l: 4 -	1/04/2 1/04/2 90° N/A				Logged by Input by: Checked Verified by	R by: M	AB AB FSL MR		
	Method	R.L. (m)	Length (m)	Graphic Log	Layer Code	N	Material Description		Weathering/USC		Testing	TCR (%)	SCR (%)	RQD (%)		cs Log		Strat Defect I Additio		ption	2 3 3 3	Installation
			_	×× × _ × × _ ×	-	0m: Clayey SILT with low plasticity. [TOPS		brown. Firm; moist;	CL-M						 		0m: T0	OPSOIL				T
		_	_		Fc	0.3m: Silty CLAY with medium plasticity. [F		brown. Firm; moist;	CL-M						 		0.3m:	FILL				ŀ
	H	25		- - - -		0.65m: CLAY; brown [RESIDUAL ECBF]	nish yellow. Firm; moi	st; high plasticity.				100			 		0.65m	: EAST COAST	T BAYS F	FORMATION	I .	ŀ
			1	 	ERc				CL						 	 						20st20st20
Box 1		_	_			1.5m: CORELOSS.				1.5m:	SPT				 							
	SPT	24	_ _ _ _ _		ERx					2// 2,2,2,3 N = 9	3	0			 						V CAN CAN CAN CAN CAN	
		_		$\left \right $	E										 						Q.	UF.
	0B		_ 	/ -X x X	ERc	2.41m: Silty CLAY; y Stiff; moist; high plas		light grey streaks.	CL-M			56			11	Ϊİ						-
		23	_ _ _ 3	X X ×× × ××		2.88m: Clayey SILT; Stiff; moist; medium		ownish orange.														ŀ
	SPT	_		× × × × × × × × × × × × × × × × × × ×	ERz	oun, moist, medium	ріазіюцу.		CL-M	3m: SF 2// 1,1,2,2 N = 6 3m: IB kPa		100			 	 						∄[
		22		× × × × × × × × × × × × × × × × × × ×		3.72m: CLAY; brown	nish orange mottled li	ght grey. Stiff;							 							
Box 2	OB		4	 	ERc	moist; high plasticity.			CL			90										
		_	_ _ _	 		4.31m: CLAY; yellow	rish brown. Stiff; mois	st; high plasticity.	CL						11	 						
	SPT	21_	- - -	X X X X X X X X X X X X X X X X X X X	ERz	4.5m: SILT; grey. Sti Weathered ECBF]	ff; moist; low plasticit	y. [Completely	cw	4.5m: 4// 2,2,3,3 N = 10 4.5m: kPa	3	100	100	29								
	1) H 2) IE 3) L 4) R	3HSV ocatio teduc	epth s = In I ons we ed lev	Barrel H ere estir /el readi	and S nated ng wa	ater Level Readings is the hear Vane, SPT = Standa using Auckland Council (is obtained from an existin Formation.	ard Penetration Test, SF GeoMaps and are in ter	PTC = Solid Cone Standa ms of Mount Eden 2000 (Circuit v	with an a	Test. approximate a			100 +/- 5m	ш		(1) 06 (2) 09	Level Reading Fime Hole De 5/04/18 07:42 5/04/18 07:55 5/04/18 12:11	pth Wat 6.00m 6.00m	er Level 3.73 m bgl 4.41 m bgl 4.78 m bgl		∃:[



Client: Ngati Whatua Orakei Whai Rawa Ltd
Project: Eastcliffe Retirement Village

Location: 138 Rukutai Street, Auckland

Project Reference: 255232

BH06

Sheet 2 of 3

	Met Equ	hod:	F ent: T	INFOR Rotary (Fracked Pro-Dril	Core d Rig	Wireline	CO-ORDINATES: Mt Eden Circuit 20 Easting: 405588.6m Northing: 803179.3m Reduced level: 26m (Auckland MSL 194		Date starte Date comp Inclination: Azimuth:	leted	: 4		2018 2018	Logged by: RAB Input by: RAB Checked by: MFSL Verified by: EMR	
	Method	R.L. (m)	Length (m)	Graphic Log	Layer Code	Μ	Material Description	Weathering/USC	Testing	TCR (%)	SCR (%)	RQD (%)	wws Fracture	Stratigraphy Defect Description Additional Notes	Installation
Box 2	OB	_		× × × × × × × × × × × × × × × × × × ×	××××××××	Weathered ECBF]	ff, moist; low plasticity. [Completely	cw			100	100			
		20			EWs	thin to thin siltstone le	red, grey, SANDSTONE; extremely e). Uncemented. Interbedded with very enses. d, grey, SANDSTONE; extremely weak	HW	6m: SPT						
	SPT	_	_		Ш	(medium dense). Und		HW	4// 4,5,5,4 N = 18 6m: IBHSV 117/17 kPa		100	100			
Box 3		19		EWx	6.45m: CORELOSS. 6.68m: Highly weathered, greyweak (medium dense). Uncem	ered, grey, SANDSTONE; extremely e). Uncemented.		_							
	90	_	7		EWs			HW	7.5m: SPT	78	78	78			
	Ld 9 18	- 8	× × × × × × × ×		7.75m: Highly weath	ered, grey, SILTSTONE; very weak.	HW	6// 4,5,6,6 N = 21 7.5m: IBHSV 93/39 kPa	100	93	93				
	OB	_	X X X X X X X X X X	EWX EWX	EWz	8.1m: Moderately we	athered, grey, SILTSTONE; very weak.	MW	-	72	72	2 72			
		17	9		EWx	8.7m: CORELOSS.	hered, grey, SILTSTONE; very weak.		9m: SPTC						
Box 4	NO3 SPTC	- - -	× × × × × × × × × × × × × × × × × × ×		S.II. Moderately weather	iolog, groy, oie for oive, very weak.		12// 10,18,14,8 for 35mm N = 50+	N/A					100000 1000000000000000000000000000000	
		16	- - -	 _ _ _	× × × × × × × × × × × × × × × × × × ×	EWZ			MW		100	65	36		
		EMARKS: Hole depth specified in Water Level Readings is the bottom of the piezometric screen. Hole depth specified in Water Level Readings is the bottom of the piezometric screen. Hole depth specified in Water Level Readings is the bottom of the piezometric screen. Hole State Time Hole Depth Water Level 12 12 12 12 13 13 13 14 15 15 15 15 15 15 15													

2) IBHSV = In Barrel Hand Shear Vane, SPT = Standard Penetration Test, SPTC = Solid Cone Standard Penetration Test.
3) Locations were estimated using Auckland Council GeoMaps and are in terms of Mount Eden 2000 Circuit with an approximate accuracy of +/- 5m.
4) Reduced level reading was obtained from an existing LIDAR dataset with an approximate accuracy of +/- 1.0m.
5) ECBF = East Coast Bays Formation.

HSV Serial No: DR4938 Correction Factor: 1.546

(1) 06/04/18 07:42 | 6.00m | 3.73 m bgl (2) 09/04/18 07:55 | 6.00m | 4.41 m bgl (3) 23/04/18 12:11 | 6.00m | 4.78 m bgl



Ngati Whatua Orakei Whai Rawa Ltd Client:

Project: Eastcliffe Retirement Village Location: 138 Rukutai Street, Auckland

Project Reference: 255232

BH06

Sheet 3 of 3

BOREHOLE INFORMATION CO-ORDINATES: Mt Eden Circuit 2000 4/04/2018 Logged by: Date started: RAB Method: Rotary Core Wireline Equipment: Tracked Rig Contractor: Pro-Drill Ltd Input by: Checked by: Easting: 405588.6m Date completed: 4/04/2018 RAB -90° N/A MFSL EMR Northing: 803179.3m Inclination: Verified by: Reduced level: 26m Azimuth: 26m (Auckland MSL 1946 Datum) O Т

	Method	R.L. (m)	Length (m)	Graphic Log	Layer Code	Material Description	Weathering/USC	Testing	TCR (%)	SCR (%)	RQD (%)	ws Fracture cs Log	Stratigraphy Defect Description Additional Notes	Installation
			_	× × × ×	EWz	9m: Moderately weathered, grey, SILTSTONE; very weak.	MW							
Box 4	с наз	15	- - - - - - - 11	× ×	EUz EUs E	10.12m: Slightly weathered, grey, SANDSTONE; very weak. Poorly cemented. 10.44m to 10.7m:Moderately cemented. 10.95m: Slightly weathered, grey, SILTSTONE; very weak.	sw	11m: SPTC	100	65	36		11m: SPT test terminated in seating	
4	SPTC		_	××	Щ	End of borehole at 11.125m (Target Depth)	J SW	50// for 100mm	N/A			<u> Lititi</u>	penetration.	
						Life of boreflore at 11.120m (Target Deptil)		N = 50+						

REMARKS:

REMARKS:

1) Hole depth specified in Water Level Readings is the bottom of the piezometric screen.

2) IBHSV = In Barrel Hand Shear Vane, SPT = Standard Penetration Test, SPTC = Solid Cone Standard Penetration Test.

3) Locations were estimated using Auckland Council GeoMaps and are in terms of Mount Eden 2000 Circuit with an approximate accuracy of +/- 5m.

4) Reduced level reading was obtained from an existing LIDAR dataset with an approximate accuracy of +/- 1.0m.

5) ECBF = East Coast Bays Formation.

Water Level Readings: Date Time | Hole Depth | Water Level (1) 06/04/18 07:42 | 6.00m | 3.73 m bgl (2) 09/04/18 07:55 | 6.00m | 4.41 m bgl (3) 23/04/18 12:11 | 6.00m | 4.78 m bgl

Eastcliffe Retirement Village Redevelopment Ground Investigation

Borehole Reference: BH06 Date Drilled:

Photographed By: RAB Date Photographed:





Box 1. - Depth: 0.00m to 3.00m.



Box 2. - Depth: 3.00m to 5.7m.

Eastcliffe Retirement Village Redevelopment Ground Investigation

Borehole Reference: BH06 Date Drilled:

Photographed By: RAB Date Photographed:





Box 3. - Depth: 5.7m to 8.27m.



Box 4. - Depth: 8.27m to 11.13m.



Client: Ngati Whatua Orakei Whai Rawa Ltd Project: Eastcliffe Retirement Village

Location: Phase 1 - Block A Project Reference: 255232 **BH41**

Sheet 1 of 4

Met Equ	nod: ipme	F ent: E	INFOR Rotary Excava Pro-Dill	Core tor M	TION Wireline lounted Rig	CO-ORDINATES: Easting: Northing: Reduced level:	Mt Eden Circuit 200 405509m 803225m 33.3m (Auckland MSL 1946	S Datu	Date start Date com Inclination Azimuth:	pleted	l: 2	21/02 22/02 90° N/A	:/2019 :/2019	Logged by: AD Input by: AD Checked by: JME Verified by: BL		
Method	R.L. (m)	Length (m)	Graphic Log	Layer Code		∕laterial Descriptic		Weathering/USC	Testing	TCR (%)	SCR (%)	RQD (%)		Stratigraphy Defect Description Additional Notes	3. J. H. A. S. I	Installation
90	33		<u></u>	Т	Om: SILT with some saybrown. Firm, dry, low po.1m: CLAY; brownish plasticity. [RESIDUAL I	olasticity. [TOPSOIL]	,	ML		100			0m: TOPSOIL 0.1m: EAST COA	ST BAYS FORMATION		-
3	_		 		0.5m to 1.1m: moist			СН								
OB	32	- - - -	X 	ERc	1.1m: Silty CLAY; brow plasticity.	wnish yellow mottled g	grey. Soft, moist, high	СН	1.5m: SPT	100						
SPT	_	- - - 2	X x x x x		2m : Sandy CLAY with				0// 0,1,0,1 N = 2	100						
OB	31	- - -	× _×		Firm, moist, low plastic 2.5m: Clayey SILT; bro	city. Sand, fine to med	ium grained.	CL		100						-
	_	- - - - 3	× × × × × × × × × × × × × × × ×	ERz	low plasticity. 2.8m: Completely wea (very stiff) [Completely	thered, grey, SILTST0		ML								-
SPT	30	- - -	× × × × × × × × × × × × × × × × × × ×						3m: SPT 2l/ 1,2,3,4 N = 10	100						
OB	_		× × × × × × × × × × × × × × × × × × ×	ERC				CW		86	77	55				-
4.1m to 4.2m:stained with black carbonaceous material 4.2m: Highly weathered, grey, SILTSTONE. Very weak. 4.2m: Highly weathered, grey, SILTSTONE. Very weak.								HW		100	100	100				
1) C																



Client: Ngati Whatua Orakei Whai Rawa Ltd Project: Eastcliffe Retirement Village

Location: Phase 1 - Block A Project Reference: 255232

BH41

Sheet 2 of 4

BOREHOLE	INFORMATION	
Method:	Rotary Core Wireline	
Equipment:	Excavator Mounted Rig	
Contractor:	Pro-Dill Ltd	

CO-ORDINATES: Mt Eden Circuit 2000 Easting: Northing: 405509m 803225m

Date started: 21/02/2019 22/02/2019 Date completed: Inclination: 90°

Logged by: AD Input by: AD Checked by: JME

ntracto	л. г			Reduced level: 33.3m (Auckland MSL 1946	Datu O	Azimuth:		r	N/A	Verified by: BL
R.L. (m)	Length (m)	Graphic Log	Layer Code	Material Description	Weathering/USC	Testing	TCR (%)	SCR (%)	RQD (%)	Stratigraphy Defect Description Additional Notes
_	-		EWs	5m: Highly weathered, grey, SANDSTONE. Very weak.	HW	5m: SPTC 11// 7,8,8,9 N = 32	N/A			
28	- - - - -	× × × × × × × × × × × × × × × × × × ×		5.3m: Highly weathered, grey, SILTSTONE. Very weak.						
27	6	× × × × × × × × × × × × × × × × × × ×	EWz		HW	6.5m: SPTC 8//	100	100	65	
+	- - 	× × × × × × × × × × × ×				6,6,7,8 N = 27	N/A			
26	7 - - -	× × × × × × × × × × × × × × × × × × ×		7m to 7.1m:black carbonaceous material			100	100	80	6.95m: Corebound
_	- - - 8		EWs	7.5m: Moderately weathered, grey, SANDSTONE. Very weak.	MW	8m: SPTC	100	100	58	
25	-					18// 17,20,13 for 40mm N = 50+	N/A			
	- - - - 9 -		EUs	8.5m: Slightly weathered, grey, SANDSTONE. Very weak.	SW		100	100	90	
	- - - - - 10					9.5m: SPTC 8// 3,3,4,5 N = 15	N/A	100	81	
MARKS B = O orehol	pen l	Barrel coations	drilling and r	Educed levels were surveyed and provided Woods.						Water Level Readings: Date Time Hole Depth Water Level No water level recorded



Client: Ngati Whatua Orakei Whai Rawa Ltd Project: Eastcliffe Retirement Village

Location: Phase 1 - Block A Project Reference: 255232

BH41

Sheet 3 of 4

BOREHOLE INFORMATION Method: Rotary Core Wireline Equipment: Excavator Mounted Rig

CO-ORDINATES: Mt Eden Circuit 2000 Easting: Northing: 405509m 803225m

Date started: 21/02/2019 Date completed: 22/02/2019 Inclination: 90°

Logged by: AD Input by: AD Checked by: JME

ontractor: I	Pro-Dill	Ltd	ounted Rig Northing: 803225m Reduced level: 33.3m (Auckland MSL 1946	Datu O	Inclination: Azimuth: um)		١	90° N/A	Checked by: JME Verified by: BL
R.L. (m) Length (m)	Graphic Log	Layer Code	Material Description	Weathering/USC	Testing	TCR (%)	SCR (%)	RQD (%)	Stratigraphy Defect Description Additional Notes
23	× × × × × × × × × × × × × × × × × × ×		10m: Slightly weathered, grey, SILTSTONE. Weak.			100	100	81	
	× × × × × × × × × × × × × × × × × × ×				11m: SPTC	100	100	01	
22	× × × × × × × × × × × × × × × × × × ×	EUz		SW	10// 10,14,13,13 for 60mm N = 50+	N/A			
12	× × × × × × × × × × × × × × × × × × ×					100	100	54	
-	× × × × × × × × × × × × × × × × × × ×				12.5m: SPTC 21// 21,29 for 75mm N = 50+	N/A			12.8m: Corebound
20 _		EUx	13m: CORELOSS 13.2m: Slightly weathered, grey, SILTSTONE. Weak.			0			
	× × × × × × × × × × × × × × × × × × ×					100	100	46	
19	× × × × × × × × × × × × × × × × × × ×	EUz		sw	14m: SPTC 31// 50 for 60mm N = 50+	N/A			
	× × × × × × × × × × × × × × × × × × ×					100	90	45	
EMARKS: OB = Open Borehole lo	Barrel d	rilling and re	duced levels were surveyed and provided Woods.						Water Level Readings: Date Time Hole Depth Water Level No water level recorded



Client: Ngati Whatua Orakei Whai Rawa Ltd
Project: Eastcliffe Retirement Village
Location: Phase 1 - Block A
Project Reference: 255232

BH41

Sheet 4 of 4

www.au	ırecong	roup.com		Project Reference: 255232							Sheet 4 of 4	
BOREHO Method: Equipme Contract	F ent: E	Rotary Excava	Core tor M	CO-ORDINATES: Mt Eden Circuit 20 Easting: 405509m Northing: 803225m Reduced level: 33.3m (Auckland MSL 19-		Dat Incl Azii	e started: e comple ination: muth:		21/0 22/0 90° N/A	2/2019 2/2019	Logged by: AD Input by: AD Checked by: JME Verified by: BL	
Method R.L. (m)	Length (m)	Graphic Log	Layer Code	Material Description	Weathering/USC	Testing		TCR (%)	RQD (%)		Stratigraphy Defect Description Additional Notes	Installation
80 ± 18	-	× × × × × × × × × × × × × × × × × × ×		13.2m: Slightly weathered, grey, SILTSTONE. Weak.		15.5m: SPT		100 91	0 45			-
SPTC	16	× × × × × × × × × × × × × × × × × × ×	EUz		sw	19.311.361 50// for 100mm N = 50+		N/A				- - -
80 <u>17</u>	- - - -	× × × × × × × × × × × × × × × × × × ×					1	100 98	8 48			-
	17	× × × × × × · · · · · · · · · · · · · ·		16.8m: Slight weathered, grey, SANDSTONE, weak.		17m: SPTC 50// for 70mm N = 50+	N	N/A				-
10 10 10 10 10 10 10 10 10 10 10 10 10 1				17.5m to 17.7m:black carbonaceous material			1	100 10	77			-
DLdS	- - - - -		EUs		SW	18.5m: SPT 50// for 130mm N = 50+	C N	N/A				-
89 <u>14</u>	19						1	100 10	00 52			
REMARK 1) OB = 0 2) Boreho	Open	Barrel cations	drilling and r	End of borehole at 20m (Target Depth) 3. educed levels were surveyed and provided Woods.						Da	ater Level Readings: te Time Hole Depth Water Level water level recorded	

Borehole Reference: BF Photographed By: AD

BH41 AD Date Drilled:
Date Photographed:

21/02/2019 – 22/02/2019 21/02/2019 – 22/02/2019



Box 1. - Depth: 0 m to 1.5 m.



Box 2. - Depth: 1.5 m to 4 m.

Borehole Reference: Photographed By:

BH41 AD Date Drilled:

Date Photographed:

aurecon

21/02/2019 - 22/02/2019 21/02/2019 - 22/02/2019



Box 3. - Depth: 4. m to 8 m.



Box 4. - Depth: 8 m to 12 m.

Borehole Reference: Photographed By:

BH41 AD Date Drilled:
Date Photographed:

21/02/2019 – 22/02/2019 21/02/2019 – 22/02/2019



Box 5. - Depth: 12 m to 15.5 m.



Box 6. - Depth: 15.5 m to 18.5 m.

Borehole Reference: Photographed By: AD

BH41

Date Drilled:

Date Photographed:



21/02/2019 - 22/02/2019



Box 7. - Depth: 18.5 m to 20 m.



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Client: Ngati Whatua Orakei Whai Rawa Ltd Project: Eastcliffe Retirement Village

Location: Phase 1 - Block A Project Reference: 255232

BH42

Sheet 1 of 5

CO-ORDINATES: Mt Eden Circuit 2000 **BOREHOLE INFORMATION** Date started: 22/02/2019 Logged by: AD Method: Rotary Core Wireline Easting: 405514m Date completed: 25/02/2019 Input by: AD Equipment: Excavator Mounted Rig Contractor: Pro-Drill Ltd Checked by: Northing 803210m Inclination: 90° JME N/A BL Reduced level: 33.0m Azimuth: Verified by: (Auckland MSL 1946 Datum) Weathering/USC Graphic Log Code TCR (%) Fracture Installation Length (m) Stratigraphy Testing Ξ 8 8 Method Log Defect Description SCR (RQD Material Description R.L. Layer Additional Notes WS WS CS CS CS 0m: Coarse GRAVEL; dark grey. Very loose, dry. [FILL] GP OB 100 $\Pi \Pi \Pi$ 0.3m: Coarse GRAVEL with some sand and silt; dark grey and Fg brown. Very loose, dry. GP OB 100 0.8m: CLAY; brownish yellow mottled grey. Firm, moist, high 0.8m: EAST COAST BAYS FORMATION \perp plasticity. [RESIDUAL ECBF] $\Pi\Pi\Pi$ 32 1m: IBHSV 82/45 kPa $\Pi\Pi\Pi$ 8 100 0,1,0,1 N = 2 1.5m: IBHSV 75/42 kPa SPT 100 2 31 ERc OB 100 2.7m: Silty CLAY with some fine sand; grey. Firm, moist, high 3 3m: SPT 1// 0,1,1,1 N = 3 3m: IBHSV 60/12 kPa 30 СН SPT 100 3.5m: Silty CLAY, trace organics; grey. Very stiff, moist, high AD V1.GPJ Library file: AURECON AKL NOFRACLOG 201612.GLB Template: AURECON СН 4 OB 100 29 **4m:** Highly weathered, grey, fine to medium SANDSTONE. Extremely weak (very stiff) [Highly weathered ECBF]. HW 4.5m: SPT 5// 4,6,9,10 N = 29 SPT 0 \square 100 100 80 Water Level Readings:
Date Time | Hole Depth | Water Level
(1) 28/02/19 17:11 | 9.00m | 5.39 m bgl
(2) 01/03/19 10:00 | 9.00m | 5.48 m bgl
(3) 04/03/19 16:27 | 9.00m | 5.4 m bgl
(4) 06/03/19 14:51 | 9.00m | 5.42 m bgl
(5) 12/03/19 10:08 | 9.00m | 5.42 m bgl
(6) 13/03/19 12:08 | 9.00m | 5.42 m bgl
(7) 15/03/19 12:08 | 9.00m | 5.48 m bgl REMARKS 1) Hole depth specified in Water Level Readings is the bottom of the piezometric screen. Readings taken post-drilling.
2) OB = Open Barrel drilling.
3) Borehole locations and reduced levels were surveyed and provided by Woods.

Database File:



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Client: Ngati Whatua Orakei Whai Rawa Ltd Project: Eastcliffe Retirement Village

Location: Phase 1 - Block A Project Reference: 255232

BH42

Sheet 2 of 5

CO-ORDINATES: Mt Eden Circuit 2000 22/02/2019 **BOREHOLE INFORMATION** Date started: Logged by: AD Method: Rotary Core Wireline Easting: 405514m Date completed: 25/02/2019 Input by: AD Equipment: Excavator Mounted Rig Contractor: Pro-Drill Ltd Checked by: Northing 803210m Inclination: 90° JME N/A Verified by: Reduced level: BL 33.0m Azimuth: (Auckland MSL 1946 Datum) Weathering/USC **Graphic Log** Code Stratigraphy Defect Description Installation Length (m) Testing $\widehat{\mathbb{E}}$ TCR (%) 8 8 Method SCR (RQD R.L. Material Description Layer Additional Notes **4m:** Highly weathered, grey, fine to medium SANDSTONE. Extremely weak (very stiff) [Highly weathered ECBF]. НÖЗ 100 100 80 HW 5.6m: Moderately weathered, grey, fine to medium SANDSTONE. Extremely weak (hard). 6 HQ3 100 100 80 27 EWs 6.5m: SPTC 9// 12,10,11,13 N = 46 SPTC N/A MW 26 БÖ 97 100 65 8 25 8m: SPTC 8m: Slightly weathered, grey, fine to medium SANDSTONE. 20// 18,32 for 75mm N = 50+ SPTC N/A Database File: 255232 - 20190329 AD_V1.GPJ Library file: AURECON_AKL_NOFRACLOG_201612.GLB Template HQ3 EUs SW 100 100 9 24 9.5m: SPTC 20// 24,26 for 60mm N = 50+ SPTC N/A 9.8m: CORELOSS 84 70 100 Water Level Readings:
Date Time | Hole Depth | Water Level
(1) 28/02/19 17:11 | 9.00m | 5.39 m bgl
(2) 01/03/19 10:00 | 9.00m | 5.48 m bgl
(3) 04/03/19 16:27 | 9.00m | 5.39 m bgl
(4) 06/03/19 14:51 | 9.00m | 5.39 m bgl
(5) 12/03/19 10:08 | 9.00m | 5.42 m bgl
(6) 13/03/19 12:08 | 9.00m | 5.43 m bgl
(7) 15/03/19 12:30 | 9.00m | 5.48 m bgl REMARKS:

1) Hole depth specified in Water Level Readings is the bottom of the piezometric screen. Readings taken post-drilling.
2) OB = Open Barrel drilling.
3) Borehole locations and reduced levels were surveyed and provided by Woods.



Client: Ngati Whatua Orakei Whai Rawa Ltd Project: Eastcliffe Retirement Village

Location: Phase 1 - Block A Project Reference: 255232

BH42

Sheet 3 of 5

BOREHOLE INFORMATION

Method: Rotary Core Wireline Equipment: Excavator Mounted Rig

CO-ORDINATES: Mt Eden Circuit 2000 Easting: Northing:

405514m 803210m

22/02/2019 Date started: Date completed: 25/02/2019 Logged by: AD Input by: Checked by:

Equ	uipm ntrac	ent: E tor: F	Excava Pro-Dri	tor M II Ltd	lounted Rig Northing: 803210m Reduced level: 33.0m (Auckland MSL 194	6 Dat	Inclination: Azimuth:	:	9	0° N/A	Checked by: JME Verified by: BL
Method	R.L. (m)	Length (m)	Graphic Log	Layer Code	Material Description	Weathering/USC	Testing	TCR (%)	SCR (%)	RQD (%)	Stratigraphy Defect Description Additional Notes
НОЗ	- 22	- - - - - - - - 11		EUs	10m: Slightly weathered, grey, fine to medium SANDSTONE. Weak.	sw		84	100	70	
HQ3 SPTC		- - - - - - -		EUx	11.4m: CORELOSS		11m: SPTC 19// 13,11,16,10 for 25mm N = 50+	N/A			11.4m: Corebound
SPTC HQ3	21	12	/ × × × × × × × × × × × × × × × × × × ×		11.9m: Slightly weathered, grey, SILTSTONE. Very weak.		12.5m: SPTC 29// 50 for 45mm	100	100	75	11.4m: Corebound
ноз	20	13	× × × × × × × × × × × × × × × × × × ×	EUz		sw	50 for 45mm N = 50+	1000	100	55	
НД3 SPTC	19	14	× × × × × × × × × × × × × × × × × × ×		14.6m to 15.2m: .weak		14m: SPTC 50// for 140mm N = 50+	N/A	100	41	

REMARKS:

¹⁾ Hole depth specified in Water Level Readings is the bottom of the piezometric screen. Readings taken post-drilling.
2) OB = Open Barrel drilling.
3) Borehole locations and reduced levels were surveyed and provided by Woods.

Water Level Readings:
Date Time | Hole Depth | Water Level | 19 28/02/19 17:11 | 9.00m | 5.39 m bg| (2) 01/03/19 10:00 | 9.00m | 5.48 m bg| (3) 04/03/19 16:27 | 9.00m | 5.4 m bg| (4) 06/03/19 14:51 | 9.00m | 5.39 m bg| (5) 12/03/19 10:08 | 9.00m | 5.42 m bg| (6) 13/03/19 12:08 | 9.00m | 5.42 m bg| (7) 15/03/19 12:30 | 9.00m | 5.48 m bg|



Client: Ngati Whatua Orakei Whai Rawa Ltd Project: Eastcliffe Retirement Village

Location: Phase 1 - Block A Project Reference: 255232

BH42

Sheet 4 of 5

BOREHOLE INFORMATION Method: Rotary Core Wireline Equipment: Excavator Mounted Rig CO-ORDINATES: Mt Eden Circuit 2000 Easting: 405514m 803210m Northing:

22/02/2019 Date started: Date completed: 25/02/2019 Inclination: 90°

Logged by: AD Input by: AD Checked by: JME

Cor	ntrac	tor: F	≘xcava Pro-Dri	II Ltd	ounted Rig Nort Red	hing: uced level:	803210m 33.0m <u>(Auckland MSL 1946</u>	Datı	Inclination: Azimuth: um)) 	l0° I/A	Checked by: JME Verified by: BL	
Method	8 R.L. (m)	Length (m)	Graphic Log	Layer Code	Materi	al Descriptio		Weathering/USC	Testing	TCR (%)	SCR (%)	RQD (%)	Stratigraphy Defect Description Additional Notes	Installation
· ·	18_	_	× × × × × × ×		11.9m: Slightly weathered, gr			sw						
HQ3		-	× × × × × × × × × × × × × × × × × × ×		15.2m: Slightly weathered, gr	rey, SILTSTON	E. Weak.			100	100	41		
SPTC	_	-	× × × × × ×						15.5m: SPTC 50// for 100mm N = 50+	N/A				
		_	× × × × × ×											
	17	16	× × × × × ×											
НФЗ		_	× × × × × × × × × × × × × × × × × × ×	EUz				sw		100	100	63		
	_	_	$I \times \times$											
		<u>-</u>	× × × × × × × ×											
SPTC	16	17	× × × × × × × × × × × × × × × × × × ×						17m: SPTC 50// for 90mm	N/A				
		_	× × × × × ×						for 90mm N = 50+					
	_		× × × × × × × × × × × × × × × × × × ×											
HQ3		<u>-</u>			17.6m: Slightly weathered, gr Weak.	rey, fine to med	lium SANDSTONE.			100	98	66		
	15	18												
		- -		EUs				sw						
SPTC	_	_							18.5m: SPTC 50//	N/A				
آه	1	_							for 105mm N = 50+					
	14	19	× × × × × ×		18.9m: Slightly weathered, gr	rey, SILTSTON	E. Weak.							
НДЗ		_	× × × × × × × × × × × × × × × × × × ×							100	90	30	19.2m to 19.9m: Very closely spaced drilling induced fractures.	
Ĭ		_	× × × × × ×	EUZ				sw		100	30	50		
		<u> </u>	X X X X X X X X											
	MARI	20	× × × × × ×										Water Level Pearlings	

REMARKS:

1) Hole depth specified in Water Level Readings is the bottom of the piezometric screen. Readings taken post-drilling.
2) OB = Open Barrel drilling.
3) Borehole locations and reduced levels were surveyed and provided by Woods.

Water Level Readings:
Date Time | Hole Depth | Water Level | 19 28/02/19 17:11 | 9.00m | 5.39 m bg| (2) 01/03/19 10:00 | 9.00m | 5.48 m bg| (3) 04/03/19 16:27 | 9.00m | 5.4 m bg| (4) 06/03/19 14:51 | 9.00m | 5.39 m bg| (5) 12/03/19 10:08 | 9.00m | 5.42 m bg| (6) 13/03/19 12:08 | 9.00m | 5.42 m bg| (7) 15/03/19 12:30 | 9.00m | 5.48 m bg|



Ngati Whatua Orakei Whai Rawa Ltd Client: Project: Eastcliffe Retirement Village

Location: Phase 1 - Block A Project Reference: 255232

BH42

Sheet 5 of 5

BOREHOLE INFORMATION CO-ORDINATES: Mt Eden Circuit 2000 Date started: 22/02/2019 Logged by: AD Input by: Checked by: Verified by: Method: Rotary Core Wireline Equipment: Excavator Mounted Rig Contractor: Pro-Drill Ltd Easting: 405514m Date completed: 25/02/2019 AD JME BL Northing: 803210m Inclination: 90° Reduced level: N/A 33.0m Azimuth:

Cor	ııracı	OI. P	וזט-סזי	II Lla	Reduced level: 33.0m (Auckland MSL 194	6 Dati	um) Azimuth:		ľ	N/A	Verified by: BL
Method	å R.L. (m)	Length (m)	Graphic Log	Layer Code	Material Description	Weathering/USC	Testing	TCR (%)	SCR (%)	RQD (%)	Stratigraphy Defect Description Additional Notes Stratigraphy Defect Description Defect Description Defect Description
SPTC		-			20m : Slightly weathered, grey, fine to medium SANDSTONE. Weak.		20m: SPTC 50// for 95mm N = 50+	N/A			
HQ3				EUs		sw	N = 50+	100	99	88	
		_									
SPTC	_	_					21.5m: SPTC 50//	N/A			
"		- [\times		21.6m: CORELOSS		for 90mm N = 50+				
		- -	× × × × × ×		21.8m: Slightly weathered, grey, SILTSTONE. Weak.						
	11		× × × ×								
НДЗ		-	× × × × × × × × × × × × × × × × × × ×					85	98	100	
I		-	× × × × × × × ×								
		_	\times \times								
		_	× × × × × ×								
9	10	_ 23	× × × × × × × × × × × × × × × × × × ×				23m: SPTC				
SPTC		-	× × × ×	EUz		sw	23m: SPTC 50// for 110mm N = 50+	N/A			
		-	× × × × × ×	Ш		Jow					
		_	(
		- -	× × × × × ×								
HQ3		_	× × × × ×					100	100	100	
	9	24	× × × × × ×								
		-	× × × × × × × × × × × × × × × × × × ×								
		_	× × × ×								
SPTC			× × × ×				24.5m: SPTC 50//	N/A			
					End of borehole at 24.62m (Target Depth)		for 45mm N = 50+	/			

REMARKS:

Water Level Readings:
Date Time | Hole Depth | Water Level | 19 28/02/19 17:11 | 9.00m | 5.39 m bg| (2) 01/03/19 10:00 | 9.00m | 5.48 m bg| (3) 04/03/19 16:27 | 9.00m | 5.4 m bg| (4) 06/03/19 14:51 | 9.00m | 5.39 m bg| (5) 12/03/19 10:08 | 9.00m | 5.42 m bg| (6) 13/03/19 12:08 | 9.00m | 5.42 m bg| (7) 15/03/19 12:30 | 9.00m | 5.48 m bg|

Database File: 25222 - 20190329 AD_V1.GFJ LIbrary file: AURECON_AKL_NOFRACJOG_201612.GLB Tampatas: AURECON_AKL_20130722.GDT Report File: AURECON DH LOH V4.0 NO FRACTURE LOG Data Generated: 1/05/2019

¹⁾ Hole depth specified in Water Level Readings is the bottom of the piezometric screen. Readings taken post-drilling.
2) OB = Open Barrel drilling.
3) Borehole locations and reduced levels were surveyed and provided by Woods.

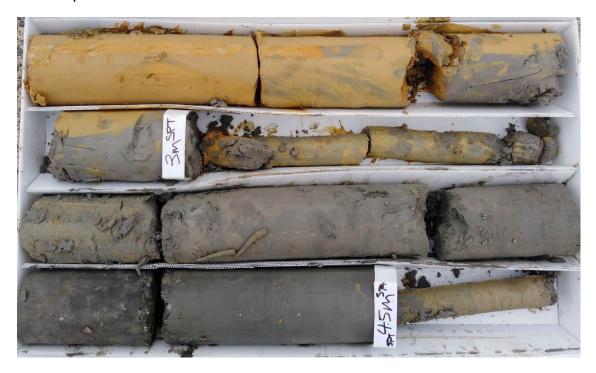
Borehole Reference: BH42
Photographed By: AD

Date Drilled:
Date Photographed:





Box 1. - Depth: 0 m to 2 m.



Box 2. - Depth: 2 m to 4.5 m.

Borehole Reference: Photographed By:

BH42 AD Date Drilled:
Date Photographed:

22/02/2019 - 25/02/2019 22/02/2019 - 26/02/2019

aurecon



Box 3. - Depth: 4.5 m to 8 m.



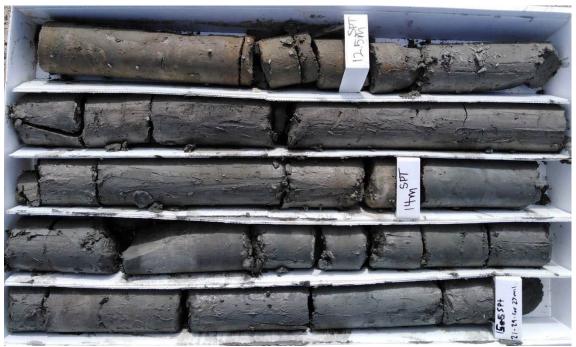
Box 4. - Depth: 8 m to 11.5 m.

Borehole Reference: Photographed By: AD

BH42

Date Drilled: Date Photographed:





Box 5. - Depth: 11.5 m to 15.5 m.



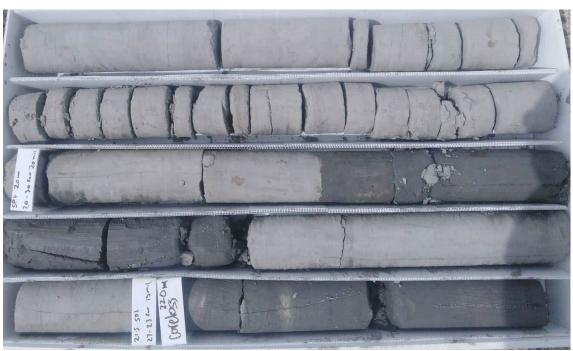
Box 6. - Depth: 15.5 m to 18.5 m.

Borehole Reference: Photographed By:

BH42 AD Date Drilled:

Date Photographed:

aurecon 22/02/2019 – 25/02/2019 22/02/2019 – 26/02/2019



Box 7. - Depth: 18.5 m to 22m.



Box 8. - Depth: 22 m to 24.5 m.



Client: Ngati Whatua Orakei Whai Rawa Ltd Project: Eastcliffe Retirement Village

Location: Phase 1 - Block A Project Reference: 255232

BH43

Sheet 1 of 5

Met Equ	hod: iipme	F ent: E	INFOR Rotary Excava Pro-Dri	Core tor M	Wireline Easting: 405516m lounted Rig Northing: 803196m		um)	Date starte Date comp Inclination: Azimuth:	leted	l: 2		/2019 /2019	Logged by: AD Input by: AD Checked by: JME Verified by: BL	
Method	R.L. (m)	Length (m)	Graphic Log	Layer Code	Material Description	Weathering/USC		Testing	TCR (%)	SCR (%)	RQD (%)	С	Stratigraphy Defect Description Additional Notes	Installation
OB	32	-		Fx	Om: CORELOSS 0.4m: SILT with some fine gravel; dark brown. Low plasticity.				20			0.4m: FILL		PACAN.
OB	31		XX XX X X X X X X	Fc	O.6m: Sitty CLAY, brownish yellow mottled grey. Stiff, dry, high plasticity [RESIDUAL ECBF]. O.9m to 2.8m:Firm, moist.	ML		207	100			0.6m: EAST COA	ST BAYS FORMATION	
SPT	_		X x x x x x	ERc		СН	1.5m: \$ 3// 1,1,2,1 N = 5		100					
08	30				2.8m: CLAY; grey. Soft, moist, high plasticity.				89					
SPT	29	3			3.2m: Silty SAND; grey. Very loose, moist. Fine to medium grained.	СН	3m: SF 1// 0,1,1,1 N = 3		100					
OB	_		× × × × × × × × × × × × × × × × × × ×	ERs		SM			100					
3	28	- - -	X - X - X - X - X - X - X - X - X - X -	ERc	4m: Silty CLAY; grey. Very stiff, moist, high plasticity. 4.2m: Highly weathered, grey, SILTSTONE. Extremely weak (hard). [Highly weathered ECBF] 4.4m to 4.5m:black carbonaceous material	СН		ODTO.	.00					
SPTC	_	_ _ _ _ 5	× × × × × × × × × × × × × × × × × × ×	EWz		HW	4.5m: \$ 7// 7,10,1: N = 44	2,15	N/A	100	88]			
1) F	MARK Refer t	(S: to ma	sterpla	n Drav	wing No. SK-012 dated 22/02/2019 provided by Klein. Vater Level Readings is the bottom of the piezometric screen. Rea	dings take	n noot	drilling				Date '	r Level Readings: Time Hole Depth Water Le 8/02/19 17:06 6.00m 2.8 n	vel a bal

Hole depth specified in Water Level readings is the bottom of the piezometric screen. Readings taken post-drilling.
 IBHSV = In Barrel Hand Shear Vane, SPT = Standard Penetration Test, SPTC = Solid Cone Standard Penetration Test.
 Borehole locations and reduced levels were surveyed and provided by Woods.

(1) 28/02/19 17:06 | 6.00m | 2.8 m bgl (2) 01/03/19 09:58 | 6.00m | 2.87 m bgl (3) 04/03/19 04:31 | 6.00m | 2.89 m bgl (4) 06/03/19 14:52 | 6.00m | 2.89 m bgl (5) 12/03/19 12:30 | 6.00m | 2.8 m bgl (6) 13/03/19 12:10 | 6.00m | 2.81 m bgl (7) 15/03/19 12:30 | 6.00m | 2.87 m bgl

Database File: 255232



Client: Ngati Whatua Orakei Whai Rawa Ltd Project: Eastcliffe Retirement Village

BH43

Location: Phase 1 - Block A Tel: +64 9 520 6019 www.aurecongroup.com Project Reference: 255232 Sheet 2 of 5 CO-ORDINATES: Mt Eden Circuit 2000 25/02/2019 **BOREHOLE INFORMATION** Date started: Logged by: AD Method: Rotary Core Wireline Easting: 405516m Date completed: 27/02/2019 Input by: AD Equipment: Excavator Mounted Rig Contractor: Pro-Drill Ltd Checked by: Northing 803196m Inclination: 90° JME N/A 32.4m BL Reduced level: Azimuth: Verified by: (Auckland MSL 1946 Datum) Weathering/USC **Graphic Log** Code Installation Length (m) Testing Stratigraphy Ξ TCR (%) 8 8 Method Defect Description SCR (RQD Material Description R.L. Layer Additional Notes **4.2m:** Highly weathered, grey, SILTSTONE. Extremely weak (hard). [Highly weathered ECBF] НÖЗ 100 100 88 27 HW 5.8m: Moderately weathered, grey, fine to medium SANDSTONE. 6 HQ3 100 100 88 6.1m to 6.5m: fine to coarse SANDSTONE 26 6.5m: SPTC 21// 11,8,11,12 N = 42 6.5m to 8.4m:...fine to medium SANDSTONE SPTC N/A MW 25 БÖ 100 97 78 7.5m to 7.7m:...black carbonaceous material

> 8m: SPTC 11// 13,15,22 for 65mm N = 50+

SW

9.5m: SPTC 12// 9,16,15,10 for 30mm N = 50+

N/A

91 100 94

N/A

0

8.4m: Slightly weathered, grey, SILTSTONE. Weak.

REMARKS:

23

8

9

EUz

SPTC

HQ3

SPTC

24

9.9m: CORELOSS

New Inc.

1) Refer to masterplan Drawing No. SK-012 dated 22/02/2019 provided by Klein.

2) Hole depth specified in Water Level Readings is the bottom of the piezometric screen. Readings taken post-drilling.

3) IBHSV = In Barrel Hand Shear Vane, SPT = Standard Penetration Test, SPTC = Solid Cone Standard Penetration Test.

4) Borehole locations and reduced levels were surveyed and provided by Woods.

Water Level Readings:
Date Time | Hole Depth | Water Level (1) 28/02/19 17:06 | 6.00m | 2.8 m bgl (2) 01/03/19 09:58 | 6.00m | 2.87 m bgl (3) 04/03/19 04:31 | 6.00m | 2.89 m bgl (4) 06/03/19 14:52 | 6.00m | 2.89 m bgl (5) 12/03/19 12:30 | 6.00m | 2.8 m bgl (6) 13/03/19 12:10 | 6.00m | 2.8 m bgl (7) 15/03/19 12:30 | 6.00m | 2.87 m bgl (7) 15/03/19 12:30 | 6.00m | 2.87 m bgl



Client: Ngati Whatua Orakei Whai Rawa Ltd Project: Eastcliffe Retirement Village

Location: Phase 1 - Block A Project Reference: 255232

BH43

Sheet 3 of 5

BOREHOLE INFORMATION Method: Rotary Core Wireline Equipment: Excavator Mounted Rig

Easting: Northing:

CO-ORDINATES: Mt Eden Circuit 2000 Date started: 405516m 803196m Date completed:

25/02/2019 27/02/2019 Logged by: AD Input by: Checked by:

Equ	uipme ntract	ent: E tor: F	Excava Pro-Dri	tor M II Ltd	lounted Rig I	Northing: Reduced level:	803196m 32.4m		Inclination Azimuth:	:	9	0° 1/A	Checked by: JME Verified by: BL
Method	R.L. (m)	Length (m)	Graphic Log	Layer Code		 Material Descriptio	(Auckland MSL 194) on	Weathering/USC	Testing	TCR (%)	SCR (%)	RQD (%)	
HQ3	22	_ _ _ _		EUx	9.9m: CORELOSS					0			
HQ3	_				10.5m: Slightly weath Weak.	ered, grey, fine to med	dium SANDSTONE.			100	100	58	10.5m: Corebound
SPTC	- 21			EUs				sw	11m: SPTC 27// 24,8,9 for 50mm N = 50+	N/A]	
HQ3	_	12	× × × × × × × × × × × × × × × × × × ×		11.6m: Slightly weath	ered, grey, SILTSTON			73	100	17		
SPTC	20	- - - - -	× × × × × × × × × × × × × × × × × × ×						12.5m: SPTC 17// 15,19 for 55mm N = 50+	N/A			
HQ3	19	13	× × × × × × × × × × × × × × × × × × ×	EUz				sw		95	100	100	
SPTC	_	14	x x x x x x x x x x x x x x x x x x x						14m: SPTC 50// for 85mm N = 50+	N/A			
HQ3	18	 - - - - -	x x x x x x x x x x x x x x x x x x x						100	100	70		
RE	 MARI	15 (S:	x x										Water Level Readings:

- REMARKS:
 1) Refer to masterplan Drawing No. SK-012 dated 22/02/2019 provided by Klein.
 2) Hole depth specified in Water Level Readings is the bottom of the piezometric screen. Readings taken post-drilling.
 3) IBHSV = In Barrel Hand Shear Vane, SPT = Standard Penetration Test, SPTC = Solid Cone Standard Penetration Test.
 4) Borehole locations and reduced levels were surveyed and provided by Woods.

- Water Level Readings:
 Date Time | Hole Depth | Water Level |
 1) 28/02/19 17:06 | 6.00m | 2.8 m bg| (2) 01/03/19 09:58 | 6.00m | 2.87 m bg| (3) 04/03/19 04:31 | 6.00m | 2.89 m bg| (4) 06/03/19 14:52 | 6.00m | 2.89 m bg| (5) 12/03/19 12:30 | 6.00m | 2.8 m bg| (6) 13/03/19 12:10 | 6.00m | 2.81 m bg| (7) 15/03/19 12:30 | 6.00m | 2.87 m bg|



Client: Ngati Whatua Orakei Whai Rawa Ltd Project: Eastcliffe Retirement Village

Location: Phase 1 - Block A Project Reference: 255232

BH43

Sheet 4 of 5

BOREHOLE INFORMATION Method: Rotary Core Wireline Equipment: Excavator Mounted Rig Contractor: Pro-Drill Ltd CO-ORDINATES: Mt Eden Circuit 2000 Easting: 405516m 803196m 32.4m Northing:

25/02/2019 Date started: Date completed: 27/02/2019 90° N/A Inclination:

Logged by: AD Input by: Checked by: Verified by: AD JME BI

Cor	ontractor: Pro-Dri			II Ltd	lountou rug	Reduced level:	32.4m (Auckland MSL 1946) Dati	Azimuth:	•	Ň	I/A	Verified by: BL	
Method	R.L. (m)	Length (m)	Graphic Log	Layer Code		∕laterial Description	Weathering/USC	Testing	TCR (%)	SCR (%)	RQD (%)	Stratigraphy Defect Description Additional Notes	Installation	
HQ3	17	_	× × × × × × × × × × × × × × × × × × ×	EUz	11.6m: Slightly weather	ered, grey, SILTSTONE	E. Weak.	sw		100	100	70		9898888
SPTC			××						15.5m: SPTC 50//	N/A		_		
	_	16		EUs	15.6m: Slightly weather Weak.			sw	for 95mm N = 50+					
НФЗ	16	- - -	× × × × × × × × × × × × × × × × × × ×		16m: Slightly weathere	ed, grey, SILTSTONE.	Weak.			94	100	75		
SPTC	_	17	× × × × × × × × × × × × × × × × × × ×	EUz				sw	17m: SPTC 50//	N/A				
S			× × × ×						for 130mm N = 50+					
	15	-	× × × × × × × × · · · · ·		17.5m: Slightly weath	arou fine to modi	SANDSTONE							
HQ3	_	18		EUs	Weak.			SW		95	100	56		
			× × × ×		18.1m: Slightly weather	ered, grey, SILTSTONE	E. Weak.							
с наз	14	-	× × × × × × × ×						40.5 CDTC	100	100	100	18.3m: Corebound	
SPT¢		L	× × × ×						18.5m: SPTC 50// for 110mm	N/A				2
	_	19	× × × × × × × × × ×						N = 50+					3000
HQ3	13	- - - - -	EUZ			SW		94	100	81				
	20	× × × × × × × × × × × × × × × × × × ×											1000 B	

REMARKS:

REMARKS:
1) Refer to masterplan Drawing No. SK-012 dated 22/02/2019 provided by Klein.
2) Hole depth specified in Water Level Readings is the bottom of the piezometric screen. Readings taken post-drilling.
3) IBHSV = In Barrel Hand Shear Vane, SPT = Standard Penetration Test, SPTC = Solid Cone Standard Penetration Test.
4) Borehole locations and reduced levels were surveyed and provided by Woods.

Water Level Readings:
Date Time | Hole Depth | Water Level | 11 28/02/19 17:06 | 6.00m | 2.8 m bgl | (2) 01/03/19 09:58 | 6.00m | 2.87 m bgl | (3) 04/03/19 04:31 | 6.00m | 2.89 m bgl | (4) 06/03/19 14:52 | 6.00m | 2.89 m bgl | (5) 12/03/19 12:30 | 6.00m | 2.8 m bgl | (6) 13/03/19 12:10 | 6.00m | 2.8 m bgl | (6) 13/03/19 12:10 | 6.00m | 2.87 m bgl | (7) 15/03/19 12:30 | 6.00m | 2.87 m bgl |



Client: Ngati Whatua Orakei Whai Rawa Ltd Project: Eastcliffe Retirement Village

Location: Phase 1 - Block A

Project Reference: 255232

BH43

Sheet 5 of 5

BOREHOLE INFORMATION CO-ORDINATES: Mt Eden Circuit 2000 25/02/2019 Logged by: Date started: AD Method: Rotary Core Wireline Equipment: Excavator Mounted Rig Contractor: Pro-Drill Ltd Input by: Checked by: Easting: 405516m Date completed: 27/02/2019 AD JME BL Northing: 803196m Inclination: 90° N/A Verified by: Reduced level: 32.4m Azimuth:

Coi	ntrac	ractor: Pro-D		II Ltd	Reduced level: 32.4m (Auckland MSL 1946	3 Dat	Azimuth: um)		ı	N/A	Verified by: BL	
Method	R.L. (m)	Length (m)	Graphic Log	Layer Code	Material Description	Weathering/USC	Testing	TCR (%)	SCR (%)	RQD (%)	Stratigraphy Defect Description Additional Notes	Installation
наз \$РТС		-	/κ×× (κ××	znaxna	18.1m: Slightly weathered, grey, SILTSTONE. Weak.	SW		N/A				2000
HQ3		-	<u>~~</u>	EU	20.12m: CORELOSS 20.2m: Slightly weathered, grey, fine to medium SANDSTONE.		for 120mm N = 50+	0				鋄
	12			EUs	Very weak.	sw					20.3m: Corebound	
		_	× × ×		20.5m: Slightly weathered, grey, SILTSTONE. Weak.		-					
			× × × × × × × ×									
0.	_	-	× × × × × × × ×									
HQ3		21	× × × ×					94	100	70		
		-	× × × ×	EUz		sw						
			× ×									
	11	-	× × × ×									
SPTC			× × × × × × × × × × × × × × × × × × ×				21.5m: SPTC 50//	N/A				贸
8		_	× ×		21.7m: Slightly weathered, grey, fine to medium SANDSTONE.		for 130mm N = 50+					
	_	-			Weak.							
		22										
		-		EUs		sw						協
Н С								100	100	54		
Ĭ	10	-						100	100			
					22.5m: Slightly weathered, grey, SILTSTONE. Weak.		-					
		_	× × × × × ×									
	_	-	× × × ×									
2	-	23	× × × × × ×				23m: SPTC 50//					
SPTC		-	× × × × × ×				50// for 110mm N = 50+	N/A				
			X X									
	9	-	× × ×									
			× × ×	EUz		sw						協
		-	× × × ×	_								
HQ3	_		××××××××××××××××××××××××××××××××××××××					93	100	95		
		24	× × × ×									
		-	× × × ×									
			V V I									図
	8	-	X X X X									
SPTC			× × × × × × × × × × × × × × ×				24.5m: SPTC 50//	N/A				500
S			XX		End of borehole at 24.64m (Target Depth)		for 140mm N = 50+	—			ı	_

REMARKS:

- REMARKS:
 1) Refer to masterplan Drawing No. SK-012 dated 22/02/2019 provided by Klein.
 2) Hole depth specified in Water Level Readings is the bottom of the piezometric screen. Readings taken post-drilling.
 3) IBHSV = In Barrel Hand Shear Vane, SPT = Standard Penetration Test, SPTC = Solid Cone Standard Penetration Test.
 4) Borehole locations and reduced levels were surveyed and provided by Woods.

- Water Level Readings:
 Date Time | Hole Depth | Water Level | 11 28/02/19 17:06 | 6.00m | 2.8 m bgl | (2) 01/03/19 09:58 | 6.00m | 2.87 m bgl | (3) 04/03/19 04:31 | 6.00m | 2.89 m bgl | (4) 06/03/19 14:52 | 6.00m | 2.89 m bgl | (5) 12/03/19 12:30 | 6.00m | 2.8 m bgl | (6) 13/03/19 12:10 | 6.00m | 2.8 m bgl | (6) 13/03/19 12:10 | 6.00m | 2.87 m bgl | (7) 15/03/19 12:30 | 6.00m | 2.87 m bgl |

Borehole Reference: BH43
Photographed By: AD

Date Drilled:
Date Photographed:





Box 1. - Depth: 0 m to 3 m.



Box 2. - Depth: 3 m to 6.5 m.

Borehole Reference: BH43
Photographed By: AD

Date Drilled:
Date Photographed:









Box 4. - Depth: 11 m to 15.5 m.

Borehole Reference: Photographed By:

BH43 AD Date Drilled:
Date Photographed:

26/02/2019 - 27/02/2019 26/02/2019 - 27/02/2019

aurecon



Box 5. - Depth: 11.5 m to 15.5 m.



Box 6. - Depth: 15.5 m to 18.5 m.

Borehole Reference: BH43
Photographed By: AD

Date Drilled:
Date Photographed:





Box 7. - Depth: 18.5 m to 21.5m.



Box 8. - Depth: 22 m to 24.5 m.



Tel: +64 9 520 6019 www.aurecongroup.com

Client: Ngati Whatua Orakei Whai Rawa Ltd

Project: Eastcliffe Retirement Village

Location: Phase 1 - Block C Project Reference: 255232

BH44

Sheet 1 of 5

CO-ORDINATES: Mt Eden Circuit 2000 **BOREHOLE INFORMATION** Date started: 28/02/2019 Logged by: AD Method: Rotary Core Wireline Easting: 405527m Date completed: 28/02/2019 Input by: AD Equipment: Excavator Mounted Rig Contractor: Pro-Drill Ltd Checked by: Northing 803174m Inclination: 90° JME N/A BL Reduced level: 31.3m Azimuth: Verified by: (Auckland MSL 1946 Datum) Weathering/USC Graphic Log Code Installation Length (m) Testing Stratigraphy Ξ TCR (%) 8 8 Defect Description SCR (RQD Material Description R.L. Layer Additional Notes 0m: Gravelly SILT; dark brown. Firm, dry, low plasticity. Gravel, 0m: FILL М medium. [FILL] 0.2m: SILT with some medium gravel; brown. Very stiff, dry, low OB 100 31 0.5m: IBHSV UTP ß OB 100 0.9m: EAST COAST BAYS FORMATION 0.9m: Silty CLAY; brownish yellow mottled grey. Firm, moist, high plasticity. [RESIDUAL ECBF] 1m: IBHSV UTP B 100 30 1.5m: SPT 2// 1,1,2,2 N = 6 1.5m: IBHSV 120/60 kPa 1.5m to 3.3m:...trace fine gravel SPT 2 СН 29 OB 90 3 3m: SPT 1// 0,1,1,1 N = 3 3m: IBHSV 45/18 kPa SPT 100 28 3.3m: Silty SAND; grey. Very loose, moist. ERS SM OB 4 95 4m: Silty CLAY; grey. Very stiff, moist, high plasticity. 27 4.5m: SPT 5// 5,4,5,5 N = 19 4.5m: IBHSV 200+ kPa CH SPT 100 100 Water Level Readings:
Date Time | Hole Depth | Water Level
(1) 06/03/19 15:03 | 6.00m | 4.44 m bgl
(2) 12/03/19 10:01 | 6.00m | 3.87 m bgl
(3) 13/03/19 12:12 | 6.00m | 3.89 m bgl
(4) 15/03/19 12:30 | 6.00m | 3.94 m bgl REMARKS:

New Inc.

1) Refer to masterplan Drawing No. SK-012 dated 22/02/2019 provided by Klein.

2) Hole depth specified in Water Level Readings is the bottom of the piezometric screen. Readings taken post-drilling.

3) IBHSV = In Barrel Hand Shear Vane, SPT = Standard Penetration Test, SPTC = Solid Cone Standard Penetration Test.

4) Borehole locations and reduced levels were surveyed and provided by Woods.



Client: Ngati Whatua Orakei Whai Rawa Ltd Project: Eastcliffe Retirement Village

Location: Phase 1 - Block C

Project Reference: 255232 **BH44**

Sheet 2 of 5

BOREHOLE INFORMATION CO-ORDINATES: Mt Eden Circuit 2000 28/02/2019 Date started: Logged by: AD Method: Rotary Core Wireline Easting: 405527m Date completed: 28/02/2019 Input by: AD Equipment: Excavator Mounted Rig Contractor: Pro-Drill Ltd 90° N/A Checked by: Northing: 803174m Inclination: JME BI

Contra	Contractor: Pro-Drill Ltd				Reduced	level:	31.3m (Auckland MSL 1	946 Dat	tum)	Azimuth:			I/A		Verified by:	BL	
Method	K.L. (m)	Length (m)	Graphic Log	Layer Code	Material De		on	Weathering/USC		Testing	TCR (%)	SCR (%)	RQD (%)		Stratigraph efect Descri Additional No	ny ption otes	Installation
08		-	*''' 	ERc	4m: Silty CLAY; grey. Very stiff, mo	oist, high	plasticity.	СН	1		100						
2	26	-		ERx	5.2m: CORELOSS												
	F	-	X X X X X X X X X X X X X X X X X X X	EWz	5.5m: Moderately weathered, grey, [Moderately weathered ECBF].	d ECBF].	MW	v									
HQ3	-	-	× × × × × × × × × ×	EUz	5.7m: Slightly weathered, grey, SIL		sw	1			100	97					
2	25_	-		s	6m: Slightly weathered, grey, fine t	o mediun	n SANDSTONE.							6m to 6.5m: JT 75	i-90° UnRo Sn(Fe	a)	
SPTC				EUS			SW	18,1 20m	6.5m: SPTC 22// 18,14,14,14 for 20mm N = 50+	N/A							
2 80 1	-	7	 × × × × × × × × × × × × × × × × × × ×		7m: Slightly weathered, grey SILTS 7.4m to 7.5m:black carbonaceou				8m:	SPTC	100	100	90				
SPTC	23		× × × × × × × × × × × × ×	EUz				sw	8// 10,1	0.14.16 for	N/A						
89 H		9	× × × × × × × × × × × × × × × × × × ×								95	100	77				
SPTC	ARK	- - - - 10		EUs	9.4m: Slightly weathered, grey, me Very weak.	aium to c	oarse SANUSTONE	sw	35// 17,1	n: SPTC 1,10,12 for m 50+	N/A	100	86	Wator	Level Readings:		

- NEMARAS:

 1) Refer to masterplan Drawing No. SK-012 dated 22/02/2019 provided by Klein.

 2) Hole depth specified in Water Level Readings is the bottom of the piezometric screen. Readings taken post-drilling.

 3) IBHSV = In Barrel Hand Shear Vane, SPT = Standard Penetration Test, SPTC = Solid Cone Standard Penetration Test.

 4) Borehole locations and reduced levels were surveyed and provided by Woods.

Water Level Readings:
Date Time | Hole Depth | Water Level
(1) 06/03/19 15:03 | 6.00m | 4.44 m bg|
(2) 12/03/19 10:01 | 6.00m | 3.87 m bg|
(3) 13/03/19 12:12 | 6.00m | 3.89 m bg|
(4) 15/03/19 12:30 | 6.00m | 3.94 m bg|



Client: Ngati Whatua Orakei Whai Rawa Ltd Project: Eastcliffe Retirement Village

Location: Phase 1 - Block C Project Reference: 255232

BH44

Sheet 3 of 5

BOREHOLE INFORMATION Method: Rotary Core Wireline CO-ORDINATES: Mt Eden Circuit 2000 Easting: 405527m

28/02/2019 Date started: Date completed: 28/02/2019

Logged by: Input by:

R.L. (m)	Length (m)	Graphic Log	Layer Code	Material Description	Weathering/USC	Testing	TCR (%)	SCR (%)	RQD (%)	Stratigraphy Defect Description Additional Notes
~	Ler	Gra	Lay	9.4m: Slightly weathered, grey, medium to coarse SANDSTONE.	Weath	F	Ĭ	S	Ž	
21			EUs	Very weak.	sw					
2		::::		10.5m: Slightly weathered, grey, SILTSTONE. Very weak.	+	-	100	100	86	
-	-	× × × × × × × × × × × × × × × × × × ×		10.8m to 15.4m:weak						
	11	× × × × × × × ×				11m: SPTC 21// 22,28 for 75mm N = 50+	N/A			
	<u>[</u> -	× × × × × ×								
	_	× × × × × × × × × ×								
-	12	× × × × × × × × × × × × × × × × × × ×					100	100	97	
19	_	× × × × × × × × × × × × × × × × × × ×								
	-	××				12.5m: SPTC 12//				
-	-	× × × × × × × × × × × × × × × × × × ×	EUz		sw	14,18,18 for 70mm N = 50+	N/A			
	13	× × × × × × × ×								
18	-	× × × × × × × ×								
	-	× × × × × × × ×					85	100	83	
-	[- -	× × × × × × × ×								
	-	× × × × × × × ×				14m: SPTC 50// for 140mm N = 50+	N/A			
17	-	× × × × × × × × × × × × × × × × × × ×								
	1	X X	: 1		1	1			1 1	NCO

REMARKS:

REMARKS:
1) Refer to masterplan Drawing No. SK-012 dated 22/02/2019 provided by Klein.
2) Hole depth specified in Water Level Readings is the bottom of the piezometric screen. Readings taken post-drilling.
3) IBHSV = In Barrel Hand Shear Vane, SPT = Standard Penetration Test, SPTC = Solid Cone Standard Penetration Test.
4) Borehole locations and reduced levels were surveyed and provided by Woods.

Water Level Readings:
Date Time | Hole Depth | Water Level
(1) 06/03/19 15:03 | 6.00m | 4.44 m bgl
(2) 12/03/19 10:01 | 6.00m | 3.87 m bgl
(3) 13/03/19 12:12 | 6.00m | 3.89 m bgl
(4) 15/03/19 12:30 | 6.00m | 3.94 m bgl



Client: Ngati Whatua Orakei Whai Rawa Ltd Project: Eastcliffe Retirement Village

Location: Phase 1 - Block C Project Reference: 255232

BH44

Sheet 4 of 5

Installation

BOREHOL	LE INFORMATION	
Method:	Rotary Core Wireline	

Equipment: Excavator Mounted Rig

CO-ORDINATES: Mt Eden Circuit 2000

Easting: Northing 405527m 803174m

28/02/2019 Date started: Date completed: 28/02/2019

Logged by: AD Input by: Checked by: AD JME BL

Equ	uipme ntrac	ent: E tor: F	Excava Pro-Dri	tor M II Ltd	ounted Rig Northing: 803174 Reduced level: 31.3m (Auckla	4m <u>and MSL 1946 Datum</u>	Inclination: Azimuth:		9 N	0° I/A	Checked by: JME Verified by: BL
Method	R.L. (m)	Length (m)	Graphic Log	Layer Code	Material Description	Weathering/USC	Testing	TCR (%)	SCR (%)	RQD (%)	Stratigraphy Defect Description Additional Notes
НОЗ	16	-	× × × × × × × × × ×	EUz	10.5m: Slightly weathered, grey, SILTSTONE. Very w			100	100	28	
SPTC	-	H			15.4m: Slightly weathered, grey, medium to coarse SANDSTONE. Weak.		5.5m: SPTC 0//	N/A		┛╽	
155	_	16		EUs		l lfc	on 120mm I = 50+				
НФЗ	80 15 -	- - -	× × × × × × × × × × × × × × × × × × ×	EUz	16.1m: Slightly weathered, grey, SILTSTONE. Weak.	SW		94	100	68	
		_ _ _ _		EUs	16.5m: Slightly weathered, grey, fine to medium SAN Weak.	SW					
SPTC	14_		X X X X X X X X X X X X X X X X X X X		16.9m: Slightly weathered, grey, SILTSTONE. Weak.	1: 50	7m: SPTC 0// or 70mm = 50+	N/A			
НОЗ	-	- - -	× × × × × × × × × × × × × × × × × × ×	EUz		sw		100	100	87	
	13	18		EUs	18.1m: Slightly weathered, grey, fine to medium SAN Weak.	sw					
SPTC	-	 - -	× × × × × × × × × × × × × × × × × × ×		18.4m: Slightly weathered, grey, SILTSTONE. Weak.	18 50 fc	8.5m: SPTC 0// or 130mm = 50+	N/A			
HQ3	12	19	× × × × × × × × × × × × × × × × × × ×	EUz		sw		93	100	95	
	MARI	20	× ×								Water Level Readings

REMARKS:

REMARKS:
1) Refer to masterplan Drawing No. SK-012 dated 22/02/2019 provided by Klein.
2) Hole depth specified in Water Level Readings is the bottom of the piezometric screen. Readings taken post-drilling.
3) IBHSV = In Barrel Hand Shear Vane, SPT = Standard Penetration Test, SPTC = Solid Cone Standard Penetration Test.
4) Borehole locations and reduced levels were surveyed and provided by Woods.

Water Level Readings:
Date Time | Hole Depth | Water Level
(1) 06/03/19 15:03 | 6.00m | 4.44 m bgl
(2) 12/03/19 10:01 | 6.00m | 3.87 m bgl
(3) 13/03/19 12:12 | 6.00m | 3.89 m bgl
(4) 15/03/19 12:30 | 6.00m | 3.94 m bgl



Client: Ngati Whatua Orakei Whai Rawa Ltd Project: Eastcliffe Retirement Village

(Auckland MSL 1946 Datum)

Location: Phase 1 - Block C Project Reference: 255232

BH44

Sheet 5 of 5

BOREHOLE INFORMATION Method: Rotary Core Wireline Equipment: Excavator Mounted Rig Contractor: Pro-Drill Ltd CO-ORDINATES: Mt Eden Circuit 2000 Easting: 405527m Northing: 803174m Reduced level: 31.3m

28/02/2019 Date started: Date completed: 28/02/2019 Inclination: 90° N/A Azimuth:

N/A

Logged by: AD Input by: Checked by: AD JME BL Verified by:

Graphic Log Code R.L. (m) Length (m) Method Layer SPTC

Material Description

Weathering/USC 20m: SPTC 50// for 150mm N = 50+

Testing

TCR (%) 8 8 SCR (RQD

Stratigraphy Installation Defect Description Additional Notes

End of borehole at 20.15m (Target Depth)

REMARKS:

REMARKS:
1) Refer to masterplan Drawing No. SK-012 dated 22/02/2019 provided by Klein.
2) Hole depth specified in Water Level Readings is the bottom of the piezometric screen. Readings taken post-drilling.
3) IBHSV = In Barrel Hand Shear Vane, SPT = Standard Penetration Test, SPTC = Solid Cone Standard Penetration Test.
4) Borehole locations and reduced levels were surveyed and provided by Woods.

Water Level Readings:
Date Time | Hole Depth | Water Level
(1) 06/03/19 15:03 | 6.00m | 4.44 m bgl
(2) 12/03/19 10:01 | 6.00m | 3.87 m bgl
(3) 13/03/19 12:12 | 6.00m | 3.89 m bgl
(4) 15/03/19 12:30 | 6.00m | 3.94 m bgl

Borehole Reference: BH44
Photographed By: AD

Date Drilled:
Date Photographed:

28/02/2019 – 28/02/2019 28/03/2019 – 1/03/2019



Box 1. - Depth: 0 m to 3 m.



Box 2. - Depth: 3 m to 5.5 m.

Borehole Reference: BH44
Photographed By: AD

Date Drilled:
Date Photographed:





Box 3. - Depth: 5.5 m to 9 m.



Box 4. - Depth: 9 m to 12.5 m.

Borehole Reference: BI Photographed By: AI

BH44 AD Date Drilled:
Date Photographed:

28/02/2019 – 28/02/2019 28/03/2019 – 1/03/2019



Box 5. - Depth: 12.5 m to 16 m.



Box 6. - Depth: 16 m to 19 m.

Borehole Reference: Photographed By: AD

BH44

Date Drilled:

Date Photographed:

aurecon 28/02/2019 - 28/02/2019 28/03/2019 - 1/03/2019



Box 7. - Depth: 19 m to 20m.



Client: Ngati Whatua Orakei Whai Rawa Ltd Project: Eastcliffe Retirement Village

Location: Phase 1 - Block D Project Reference: 255232

BH45

Sheet 1 of 4

Met Equ	hod: ipme	F ent: E		Core tor M	Wireline ounted Rig	Easting: Northing: Reduced level:	Mt Eden Circuit 200 405556m 803200m 28.8m (Auckland MSL 1946	Datu	Date Inclir Azim	started comple nation: nuth:		: 1 g		/2019 /2019	Logged by: AD Input by: AD Checked by: JME Verified by: BL		
Method	R.L. (m)	Length (m)	Graphic Log	Layer Code		Material Description	n	Weathering/USC	Testing		TCR (%)	SCR (%)	RQD (%)		Stratigraphy Defect Description Additional Notes	Installation	
VAC EX	28	- - - - - - - -			0m: CORELOSS						0			0m: Vacuum exca	avation.		
SPT	27	- - - - 2	X x x 	ERc	1.5m: Silty CLAY; brox plasticity [RESIDUAL B	ECBF].		СН	1.5m: SPT 1// 0,1,0,1 N = 2		100			1.5m: EAST COA	AST BAYS FORMATION		erated: 1/05/2019
00	26	 - - - - - -		ERc ERs	2.2m: Clayey SAND; g2.7m: Silty CLAY; grey2.9m: Silty SAND; gree	/. Firm, moist, high pla		CL SC			100						ort File: AURECON DH LOH V4.0 NO FRACTURE LOG Date Generated:
SPT	_		× · · · × · · · × · · · · ×	ERs				SM	3m: SPT 0// 0,1,0,1 N = 2		100						Rep
08	25		× × × × × × × × × × × × × × × × × × ×		4m: Silty CLAY, grey. weathered ECBF].	Stiff, moist, high plasti	city [Completely				100						Library file: AURECON_AKL_NOFRACLOG_201612.GLB Template: AURECON_AKL_20130722.GDT
SPT	24	5	X X X X X X	ERc	4.5m to 5.5m: very s	tiff		cw	4.5m: SPT 2// 2,3,1,3 N = 9		100						AD_V1.GPJ
1) F 2) F 3) IE 4) B	ole d 3HSV oreho	to ma epth : ' = In ole lo	specifie Barrel I cations	d in V dand s and re	wing No. SK-012 dated 2 Vater Level Readings is Shear Vane, SPT = Stan educed levels were survilled for recording water I	the bottom of the piezo dard Penetration Test, eyed and provided Woo	ometric screen. Water lev SPTC = Solid Cone Star	el rea	adings taken Penetration	post drill				Date 1	r Level Readings: Time Hole Depth Water Level 3/03/19 16:30 m 6.26 m bgl		Database File: 255232 - 20190329_



Client: Ngati Whatua Orakei Whai Rawa Ltd Project: Eastcliffe Retirement Village

Location: Phase 1 - Block D Project Reference: 255232

BH45

Sheet 2 of 4

CO-ORDINATES: Mt Eden Circuit 2000 13/03/2019 **BOREHOLE INFORMATION** Date started: Logged by: AD Method: Rotary Core Wireline Easting: 405556m Date completed: 13/03/2019 Input by: AD Equipment: Excavator Mounted Rig Contractor: Pro-Drill Ltd Checked by: Northing 803200m Inclination: 90° JME N/A Reduced level: 28.8m BL Azimuth: Verified by: (Auckland MSL 1946 Datum) Weathering/USC Graphic Log Code Installation Length (m) Stratigraphy Testing Ξ TCR (%) 8 8 Method Defect Description SCR (RQD Material Description R.L. Layer Additional Notes 4m: Silty CLAY; grey. Stiff, moist, high plasticity [Completely weathered ECBF1 OB 100 23 CW 6 **E** 0 6.5m: SPT 2// 1,2,2,3 N = 8 **6.5m:** Highly weathered, grey, medium to coarse SANDSTONE. Extremely weak (dense). HW 100 100 SPT 100 22 6.9m: Highly weathered, grey, SILTSTONE. Extremely weak 7 HQ3 86 100 53 HW 21 8 Database File: 25523 - 20190329 AD V1.GPU Library file: AURECON, AKL NOFRACLOG, 201612.GLB Template: AURECON, AKL, 20130722.GDT Report File: 8m: SPTC 2// 1,2,3,4 N = 10 SPTC N/A 8.5m: Moderately weathered, grey, SILTSTONE. Extremely weak 20 HQ3 9 100 100 100

MW

9.5m: SPTC 10// 9,10,10,11 N = 40

N/A

100 100 100

REMARKS:

19

SPTC

NEMARKS:

1) Refer to masterplan Drawing No. SK-012 dated 22/02/2019 provided by Klein.

2) Hole depth specified in Water Level Readings is the bottom of the piezometric screen. Water level readings taken post drilling.

3) IBHSV = In Barrel Hand Shear Vane, SPT = Standard Penetration Test, SPTC = Solid Cone Standard Penetration Test.

4) Borehole locations and reduced levels were surveyed and provided Woods.

5) No piezometer was installed for recording water levels.

Water Level Readings: Date Time | Hole Depth | Water Level (1) 13/03/19 16:30 | m | 6.26 m bgl



Client: Ngati Whatua Orakei Whai Rawa Ltd Project: Eastcliffe Retirement Village

Location: Phase 1 - Block D Project Reference: 255232

BH45

Sheet 3 of 4

BOREHOLE INFORMATION CO-ORDINATES: Mt Eden Circuit 2000

Method: Rotary Core Wireline

Easting: 405556m Date started: 13/03/2019 Date completed: 13/03/2019 Logged by: Input by:

Eqι	uipmo	ent: E	Excava Pro-Dri	tor M	lounted Rig	Northing: Reduced level:	803200m 28.8m (Auckland MSL 19		Inclination Azimuth	on:	ç	90° N/A	Checked by: JME Verified by: BL
Method	R.L. (m)	Length (m)	Graphic Log	Layer Code	١	Material Descripti	on	Weathering/USC	Testing	TCR (%)	SCR (%)	RQD (%)	Stratigraphy Defect Description Additional Notes
НФЗ	18		× × × × × × × × × × × × × × × × × × ×	EWz	8.5m: Moderately wea (hard).	ithered, grey, SILTST	TONE. Extremely weak	MW		100	100	100	
SPTC	_		× × × × × ×						11m: SPTC 11// 11,13,15,11 for 45mm N = 50+	N/A			
HQ3	17	12	× × × × × × × × × × × × × × × × × × ×	EUz	11.5m: Slightly weather	ered, grey, SILTSTOI	NE. Very weak.	SW		93	100	85	
SPTC	_	- - - -		EUs	12.1m: Slightly weather Weak.	ered, grey, fine to me	dium SANDSTONE.	sw	12.5m: SPTC	N/A			
S	16	- - -	× × × × × × ×		12.7m: Slightly weather	ered, grey, SILTSTOI	NE. Weak.		50// for 130mm N = 50+	IN/A			
3		13	× × × × × × × × × × × × × × × × × × ×	EUz				sw					
HQ3	15	- - - -	× ×	EUs	13.3m: Slightly weath SANDSTONE. Weak.			sw		84	100	100	
SPTC	-	14	× × × × × × × × × × × × × × × × × × ×		13.8m: Slightly weather	ered, grey, SILTSTOI	NE. Weak.		14m: SPTC 25// 20,30 for 45mm N = 50+	N/A			
НОЗ	14	- - - -	× × × × × × × × × × × × × × × × × × ×	EUz				sw		100	100	100	
	MARI	15	× × × ×										Water Level Readings

REMARKS:

REMARKS:

1) Refer to masterplan Drawing No. SK-012 dated 22/02/2019 provided by Klein.

2) Hole depth specified in Water Level Readings is the bottom of the piezometric screen. Water level readings taken post drilling.

3) IBHSV = In Barrel Hand Shear Vane, SPT = Standard Penetration Test, SPTC = Solid Cone Standard Penetration Test.

4) Borehole locations and reduced levels were surveyed and provided Woods.

5) No piezometer was installed for recording water levels.

Water Level Readings: Date Time | Hole Depth | Water Level (1) 13/03/19 16:30 | m | 6.26 m bgl



EUz

HQ3

SPTC

Client: Ngati Whatua Orakei Whai Rawa Ltd

Project: Eastcliffe Retirement Village

Location: Phase 1 - Block D Project Reference: 255232

BH45

Sheet 4 of 4

BOREHOLE INFORMATION CO-ORDINATES: Mt Eden Circuit 2000 13/03/2019 Date started: Logged by: AD Method: Rotary Core Wireline Equipment: Excavator Mounted Rig Contractor: Pro-Drill Ltd Input by: Checked by: Easting: 405556m Date completed: 13/03/2019 AD JME BL Northing: 803200m Inclination: 90° N/A Verified by: Reduced level: 28.8m Azimuth: (Auckland MSL 1946 Datum) Weathering/USC **Graphic Log** Code Installation Length (m) Stratigraphy Testing $\widehat{\mathbb{E}}$ TCR (%) 8 8 Method Defect Description SCR (RQD R.L. Material Description Layer Additional Notes 15m: Slightly weathered, grey, fine to medium SANDSTONE. SW

SW

15.5m: SPTC

r 130mm = 50+

100 100 100

N/A

End of borehole at 15.63m (Target Depth)

15.2m: Slightly weathered, grey, SILTSTONE. Weak.

REMARKS:

NEMARKS:

1) Refer to masterplan Drawing No. SK-012 dated 22/02/2019 provided by Klein.

2) Hole depth specified in Water Level Readings is the bottom of the piezometric screen. Water level readings taken post drilling.

3) IBHSV = In Barrel Hand Shear Vane, SPT = Standard Penetration Test, SPTC = Solid Cone Standard Penetration Test.

4) Borehole locations and reduced levels were surveyed and provided Woods.

5) No piezometer was installed for recording water levels.

Water Level Readings: Date Time | Hole Depth | Water Level (1) 13/03/19 16:30 | m | 6.26 m bgl

Database Flie: 25222 - 20190329 AD_V1 GPJ Library flie: AURECON_AKL_NOFRACLOG_201612.GLB Template: AURECON_AKL_20130722.GDT Report Flie: AURECON DH LOH V4.0 NO FRACTURE LOG Date Generated: 1/65/2019

Borehole Reference: BH45
Photographed By: AD





Box 1. - Depth: 0 m to 4 m.



Box 2. - Depth: 4 m to 7.5 m.

Borehole Reference: BH45
Photographed By: AD





Box 3. - Depth: 7.5 m to 12 m.



Box 4. - Depth: 12 m to 15.5 m.



Client: Ngati Whatua Orakei Whai Rawa Ltd Project: Eastcliffe Retirement Village

Location: Phase 1 - Block B Project Reference: 255232

BH46

Sheet 1 of 4

BOREHOLE INFORMATION CO-ORDINATES: Mt Eden Circuit 2000 4/03/2019 Date started: Logged by: AD Method: Rotary Core Wireline Equipment: Excavator Mounted Rig Contractor: Pro-Drill Ltd Input by: Checked by: Easting: 405545m Date completed: 4/03/2019 AD JME BL Northing: 803222m Inclination: 90° N/A Verified by: Reduced level: 28.9m Azimuth:

	iiiao		ווט-טוו		(Auckland MSL 1946	Datu	ım)			W//~	vermed by. BE	
Method	R.L. (m)	Length (m)	Graphic Log	Layer Code	Material Description	Weathering/USC	Testing	TCR (%)	SCR (%)	RQD (%)	Stratigraphy Defect Description Additional Notes	Installation
SSA				Fx	Om: CORELOSS			0			0m: No material recovered from auger; drillers observed gravel between 0-0.8m.	
OB	28	_ _ 1 _ _ _	 	ERc	Silty CLAY with some gravel; brownish yellow mottled grey. Moist, firm, high plasticity [RESIDUAL ECBF].	СН		100			0.8m: EAST COAST BAYS FORMATION	
SPT	27		 X X- X- X X		2m: CORELOSS		1.5m: SPT 1// 0,1,0,1 N = 2	100				
OB	_			ERX	2.5m: CLAY trace gravel; grey. Firm, moist, high plasticity. Gravel, fine.			50				
	26	3	- - - - - - - -		3m: Silty CLAY; grey. Firm, moist, high plasticity.	СН	3m: SPT 1//					
SPT		_	X X X X X X				1.0.1.2 N = 4	100				
OB	25	_ _ _ 4 _ _	X X X X X X X X	ERc	4.2m to 4.5m:iron staining	СН		100				
SPT			× 		4.5m: Sandy CLAY; grey. Stiff, moist, high plasticity.	СН	4.5m: SPT 1// 0,1,1,2 N = 4 4.5m: IBHSV 135/30 kPa					
RE] MARI	5 (S:	ı——			1		100			Water Level Readings:	TH.

REMARKS:
1) Refer to masterplan Drawing No. SK-012 dated 22/02/2019 provided by Klein.
2) Hole depth specified in Water Level Readings is the bottom of the piezometric screen. Readings taken post-drilling.
3) IBHSV = In Barrel Hand Shear Vane, SPT = Standard Penetration Test, SPTC = Solid Cone Standard Penetration Test.
4) Borehole locations and reduced levels were surveyed and provided by Woods.

Water Level Readings:
Date Time | Hole Depth | Water Level
(1) 06/03/19 14:33 m | 2.75 m bg|
(2) 12/03/19 10:20 m | 2.72 m bg|
(3) 13/03/19 11:45 | m | 3.7 m bg|
(4) 15/03/19 12:25 | m | 2.81 m bg|

Database File: 25522 - 20190329_AD_V1.GPJ Library file: AURECON_AKL_NOFRACJ.0G_201612.GLB Template: AURECON_AKL_20130722.GDT Report File: AURECON DH LIDH V4.0 NO FRACTURE LOG Date Generated: 1/05/2019



Client: Ngati Whatua Orakei Whai Rawa Ltd Project: Eastcliffe Retirement Village

Location: Phase 1 - Block B Project Reference: 255232

BH46

Sheet 2 of 4

BOREHOLE INFORMATION CO-ORDINATES: Mt Eden Circuit 2000 4/03/2019 Date started: Logged by: AD Input by: Checked by: Verified by: Method: Rotary Core Wireline Easting: 405545m Date completed: 4/03/2019 AD Equipment: Excavator Mounted Rig Contractor: Pro-Drill Ltd 803222m 28.9m JME BL Northing: Inclination: 90° N/A Reduced level:

Coi	ntrac	tor: F	Pro-Dri	I Ltd	Reduced level: 28.9m (Auckland MSL 1946	S Dati	Azimuth: um)		1	N/A	Verified by: BL
Method	R.L. (m)	Length (m)	Graphic Log	Layer Code	Material Description	Weathering/USC	Testing	TCR (%)	SCR (%)	RQD (%)	Stratigraphy Defect Description Additional Notes
08		6		ERc	4.5m: Sandy CLAY; grey. Stiff, moist, high plasticity.	СН		100			
SPT	_	_ _ _ _		B			6m: SPT 3// 2,2,2,2 N = 8 6m: IBHSV 135/36 kPa	100			
80	22	- - - 7	X X X X X X		Silty CLAY; grey. Very stiff, moist, high plasticity. The Highly weathered grey. SILTSTONE Extremely weak (hard).	СН		100			
13	_	- - - -	× × × × × × × × × × × × × × × × × × ×		 7m: Highly weathered, grey, SILTSTONE. Extremely weak (hard) [Highly weathered ECBF]. 7.2m: Moderately weathered, grey, SILTSTONE. Very weak. 	HW					
HQ3	21_	8	× × × × × × × × × × × × × × × × × × ×	EWz			8m: SPT	100	100	100	
SPT	_	- - - -	× × × × × × × ×	Ē		MW	4// 4,5,7,10 N = 26	100	100	100	
НФЗ	20	9	× × × × × × × × × × × × × × × × × × ×					100	98	87	
	_	- - -	× × ×	EUs	9.1m: Slightly weathered, fine to medium SANDSTONE. Weak. 9.4m: Slightly weathered, grey, SILTSTONE. Very weak.	sw					
SPTC	19		× × × × × × × × × × × ×	EUz		sw	9.5m: SPTC 17// 13,14,12,11 for 60mm N = 50+	N/A	465		
RE 1) F	MARI Refer	(S: to ma		n Drav	ving No. SK-012 dated 22/02/2019 provided by Klein.		l	100	100	85	Water Level Readings: Date Time Hole Depth Water Level

1) Refer to masterplan Drawing No. SK-012 dated 22/02/2019 provided by Klein.
2) Hole depth specified in Water Level Readings is the bottom of the piezometric screen. Readings taken post-drilling.
3) IBHSV = In Barnel Hand Shear Vane, SPT = Standard Penetration Test, SPTC = Solid Cone Standard Penetration Test.
4) Borehole locations and reduced levels were surveyed and provided by Woods.

Water Level Readings: Date Time | Hole Depth | Water Level (1) 06/03/19 14:33 | m | 2.75 m bgl (2) 12/03/19 10:20 | m | 2.72 m bgl (3) 13/03/19 11:45 | m | 3.7 m bgl (4) 15/03/19 12:25 | m | 2.81 m bgl



Client: Ngati Whatua Orakei Whai Rawa Ltd Project: Eastcliffe Retirement Village

Location: Phase 1 - Block B Project Reference: 255232

BH46

Sheet 3 of 4

BOREHOLE INFORMATION CO-ORDINATES: Mt Eden Circuit 2000 4/03/2019 Logged by: Date started: AD Method: Rotary Core Wireline Easting: 405545m Date completed: 4/03/2019 Input by: Equipment: Excavator Mounted Rig Checked by: JME Northing: 803222m Inclination: 90°

Con	ntrac	ent: E tor: F	excava Pro-Dri	tor IV	Northing: 803222m Reduced level: 28.9m (Auckland MSL	<u>. 1946 E</u>	Datu	Inclination: Azimuth: <u>im)</u>			90° N/A	Checked by: JME Verified by: BL
Method	R.L. (m)	Length (m)	Graphic Log	Layer Code	Material Description		Weathering/USC	Testing	TCR (%)	SCR (%)	RQD (%)	Stratigraphy Defect Description Additional Notes
НОЗ	_	- - - -	× × × × × × × × × × × × × × × × × × ×	EUz	9.4m: Slightly weathered, grey, SILTSTONE. Very weak. 10.6m: Slightly weathered, grey, fine to medium SANDSTONE.	,	sw		100	100	85	
	18	11		EUs	Weak.			11m: SPTC 33//				
SPTC		_						14,20,16 for 50mm N = 50+	N/A			
			× × × × × × × × × × × × × × × × × × ×	EUz	11.4m: Slightly weathered, grey, SILTSTONE. Weak.	,	SW					
HQ3	17	12		EUs	11.8m: Slightly weathered, grey, medium to coarse, SANDSTONE. Weak.	,	SW		100	100	77	
	_	- - - -	× × × × × × × × × × × × × × × × × × ×	EUz	12.1m: Slightly weathered, grey, SILTSTONE. Weak.	:	SW					
SPTC		_	× × × × × × × × × × × × × × × × × × ×					12.5m: SPTC 13// 12,17,12 for 35mm N = 50+	N/A			
	16	13		EUs	12.8m: Slightly weathered, grey, fine to medium, SANDSTONI Weak.		SW					12.84m: 200 mm drilled in excess
HQ3	15	- - - -	× × × × × × × ×		13.4m: Slightly weathered, grey, SILTSTONE. Weak.				100	100	100	
sРтс		14 _ _	× × × × × × × × × × × × × × × × × × ×	EUz			SW	14.2m: SPTC 50// for 90mm	N/A			
HQ3	_	 - - - -	× × × × × × × × × × × × × × × × × × ×					for 90mm N = 50+	93	100	95	
DEN	14 MARI	15	× × × ×									Water Level Readings:

REMARKS:
1) Refer to masterplan Drawing No. SK-012 dated 22/02/2019 provided by Klein.
2) Hole depth specified in Water Level Readings is the bottom of the piezometric screen. Readings taken post-drilling.
3) IBHSV = In Barrel Hand Shear Vane, SPT = Standard Penetration Test, SPTC = Solid Cone Standard Penetration Test.
4) Borehole locations and reduced levels were surveyed and provided by Woods.

Water Level Readings:
Date Time | Hole Depth | Water Level
(1) 06/03/19 14:33 m | 2.75 m bg|
(2) 12/03/19 10:20 m | 2.72 m bg|
(3) 13/03/19 11:45 m | 3.7 m bg|
(4) 15/03/19 12:25 m | 2.81 m bg|



Client: Ngati Whatua Orakei Whai Rawa Ltd Project: Eastcliffe Retirement Village

Location: Phase 1 - Block B

Project Reference: 255232

BH46

Sheet 4 of 4

BOREHOLE INFORMATION CO-ORDINATES: Mt Eden Circuit 2000 Date started: Method: Rotary Core Wireline Equipment: Excavator Mounted Rig Contractor: Pro-Drill Ltd Easting: 405545m

Northing: 803222m Reduced level: 28.9m

4/03/2019 Date completed: 4/03/2019 Inclination: 90° N/A Azimuth:

Logged by: AD Input by: Checked by: AD JME BL Verified by:

						(Auckland MSL 194	<u>6 Datı</u>	um)				
Mothod	R.L. (m)	Length (m)	Graphic Log	Layer Code	N	Material Description	Weathering/USC	Testing	TCR (%)	SCR (%)	RQD (%)	Stratigraphy Defect Description Additional Notes
ферти	-	- - - -	× × × × × × × × × × × × × × × × × × ×	EUz		ered, grey, SILTSTONE. Weak.	SW	15.5m: SPTC 50//	93 N/A	100	95	
"					End of borehole at 15.6	61m (Target Depth)		for 110mm N = 50+	/			

REMARKS:

REMARKS:
1) Refer to masterplan Drawing No. SK-012 dated 22/02/2019 provided by Klein.
2) Hole depth specified in Water Level Readings is the bottom of the piezometric screen. Readings taken post-drilling.
3) IBHSV = In Barrel Hand Shear Vane, SPT = Standard Penetration Test, SPTC = Solid Cone Standard Penetration Test.
4) Borehole locations and reduced levels were surveyed and provided by Woods.

Water Level Readings:
Date Time | Hole Depth | Water Level
(1) 06/03/19 14:33 m | 2.75 m bg|
(2) 12/03/19 10:20 m | 2.72 m bg|
(3) 13/03/19 11:45 m | 3.7 m bg|
(4) 15/03/19 12:25 m | 2.81 m bg|

Borehole Reference: BH46
Photographed By: AD





Box 1. - Depth: 0 m to 4 m.



Box 2. - Depth: 4 m to 6 m.

Borehole Reference: BH46
Photographed By: AD





Box 3. - Depth: 6 m to 9 m.



Box 4. - Depth: 9 m to 12.5 m.

Borehole Reference: BH46
Photographed By: AD

Date Drilled: Date Photographed: **aurecon** 05/03/2019 – 05/03/2019 05/03/2019 – 05/03/2019



Box 5. - Depth: 12.5 m to 15.5 m.



Client: Ngati Whatua Orakei Whai Rawa Ltd Project: Eastcliffe Retirement Village

Location: Phase 1 - Block B

Project Reference: 255232 **BH47**

Sheet 1 of 4

BOREHOLE INFORMATION CO-ORDINATES: Mt Eden Circuit 2000 27/02/2019 Date started: Logged by: AD Method: Rotary Core Wireline Equipment: Excavator Mounted Rig Contractor: Pro-Drill Ltd Input by: Checked by: Verified by: Easting: 405559m Date completed: 27/02/2019 AD Northing: Reduced level: 803234m 28.6m JME BL Inclination: 90° N/A

	tor: I	Pro-Dri	II Ltd	Reduced level: 28.6m (Auckland MSL 1946) Dati	Azimuth:		ſ	N/A	Verified by: BL
R.L. (m)	Length (m)	Graphic Log	Layer Code	Material Description	Weathering/USC	Testing	TCR (%)	SCR (%)	RQD (%)	Stratigraphy Defect Description Additional Notes
_	-	<u></u>	-	0m: Clayey SILT; dark brown. Firm, dry, low plasticity.	ML					0m: TOPSOIL
	-			0.2m: Silty CLAY; brown. Stiff, dry, low plasticity.	CL	_	80			0.2m: FILL
28	_			0.4m: Clayey SILT with some gravel, trace rootlets; brown. Firm, moist, low plasticity. Gravel, medium.	CL	-				
20	-			0.6m: Silty CLAY; brown. Firm, moist, high plasticity.	СН	-	90			
	1_		요	0.8m: CLAY with some sand and minor gravel; brown. Firm, moist, high plasticity.	СН					
-				1m: Silty CLAY; brown. Firm, moist, high plasticity.	СН					
	_ _			Sandy CLAY with some silt; brown with mottled dark brown and grey. Firm, moist, high plasticity.	СН		100			
27	-	X 		1.5m: Silty CLAY trace rootlets; brownish yellow mottled grey and dark red. Firm, moist, high plasticity [RESIDUAL ECBF].	СН	1.5m: SPT 2// 1,1,1,1 N = 4				1.5m: EAST COAST BAYS FORMATION
	_	× - <u>-</u> -×		1.8m: CLAY; brownish yellow mottled grey. Firm, moist, high		N = 4	100			
	2	<u>X</u>		plasticity. 2m: Silty CLAY; brownish yellow mottled grey and dark red. Firm, moist, high plasticity.	СН	-				1.95m: Driller advised of trouble drilling through the material. Rods were pull out and a new run was undertaken from 2.7m
	_			mood, fight placeony.			100			
	_	X:					100			
26	-	× ×								
	3	Z-:			СН					
-	<u>-</u>	X X	ERc				100			
	_	Z								
25	-	 X X				3.5m: SPT 1// 0,0,1,1 N = 2				
	_			3.7m: CLAY; brownish yellow mottled grey. Firm, moist, high plasticity.			100			3.7m: Water loss of 50%
-	4_	<u> </u>								
	_				СН		100			
24						4.5m: SPT 0//				
						0,1,1,2 N = 4	100			
	5	<u> </u>		4.8m to 4.9m:grey 4.9m: Silty SAND; grey. Loose, moist.	SM	_				



Client: Ngati Whatua Orakei Whai Rawa Ltd Project: Eastcliffe Retirement Village

Location: Phase 1 - Block B

Project Reference: 255232

BH47

Sheet 2 of 4

Met Equ	hod: ipme	F ent: E	INFOR Rotary Excavat Pro-Dri	Core tor M	Wireline lounted Rig	CO-ORDINATES: Easting: Northing: Reduced level:	Mt Eden Circuit 200 405559m 803234m 28.6m (Auckland MSL 1946		Date start Date com Inclination Azimuth:	plete	d: 2		Z2019 Logged by: Al Input by: Al Checked by: JN Verified by: Bl	D ME	
Method	R.L. (m)	Length (m)	Graphic Log	Layer Code	N	/laterial Descriptio		Weathering/USC	Testing	TCR (%)	SCR (%)	RQD (%)	Stratigraphy Defect Description Additional Notes	Installation	
	_		×	ERs	4.9m: Silty SAND; gre	y. Loose, moist.		SM					4.95m: Wider casing placed	-	
		_			5.2m: CLAY; grey. Firm	m, moist, high plasticit	ty.								
OB										100					
	23	_		ERc				СН							
		6			5.9m to 6m:stiff 6m: CORELOSS				6m: SPTC 2//						_
SPTC	_	-	X	ERX					2,3,3,3 N = 11	N/A					
S		_	× × × × × ×		6.3m: Clayey SILT; gre [Completely weathered	ey. Very stiff, moist, hiç I ECBF].	gh plasticity								
	22		× × × ×	ERz				cw							
		L	× × × × × × × × × × × × × × × × × × ×	ш											
OB		7	× × × × × × × ×		6.9m: Highly weathere	ed, grey, SILTSTONE.	Very weak.			100				-	
	_		$\begin{bmatrix} \times & \times \\ \times & \times \end{bmatrix}$												
		_	× × × × × ×					HW							
			× × × × × × × ×		7.5Marilandah	W OII TOTO	DAIE M/I.								
HQ3	21		× × × × × × × × × × × × × × × × × × ×		7.5m: Moderately wear	rnered, grey, SILTSTC	JNE. Weak.			93	95	85			
		_	× × × × × ×											-	,
		8	× × × ×						8m: SPTC						-
SPTC	_	-	× × × × × × × × × × × × × × × × × × ×	EWz					6// 8,8,8,10 N = 34	N/A					
S			× × × × × ×												
	20		× × × × × ×					MW							
			× × × × × ×												
НФЗ		9	× × × × × ×							100	100	100			
Ĭ	_	_	× × × × × ×							100	100	100			
		_	× × × ×												
			× × × × × × × ×	z	9.4m: Slightly weather	ed, grey, SILTSTONE	. Very weak.		9.5m: SPTC						
SPTC	19	_	* * * * * *	EUz				SW	9.5m: SPTC 22// 36,14 for 15mm N = 50+	N/A					
НДЗ				EUs	9.7m: Slightly weather Weak.	ed, grey, fine to mediu	um SANDSTONE.	sw		94	100	53			
	//AR	10 (S:	::::	-									Water Level Readings:		_

NEMARS:

1) Refer to masterplan Drawing No. SK-012 dated 22/02/2019 provided by Klein.

2) Hole depth specified in Water Level Readings is the bottom of the piezometric screen. Water level readings taken post drilling.

3) IBHSV = In Barrel Hand Shear Vane, SPT = Standard Penetration Test, SPTC = Solid Cone Standard Penetration Test.

4) Borehole locations and reduced levels were surveyed and provided Woods.

5) No piezometer was installed for recording water levels.

Date Time | Hole Depth | Water Level No water level recorded



Client: Ngati Whatua Orakei Whai Rawa Ltd Project: Eastcliffe Retirement Village

Location: Phase 1 - Block B

BH47

Sheet 3 of 4

Project Reference: 255232

BOREHOLE INFORMATION CO-ORDINATES: Mt Eden Circuit 2000 27/02/2019 Date started: Logged by: AD Method: Rotary Core Wireline Equipment: Excavator Mounted Rig Contractor: Pro-Drill Ltd Input by: Checked by: Verified by: Easting: 405559m Date completed: 27/02/2019 AD Northing: Reduced level: 803234m 28.6m JME BL Inclination: 90° N/A

DOUBLY A DOUBLE DESCRIPTION OF THE PROPERTY OF	Cor	ntrac	tor: F	Pro-Dril	I Ltd	Reduced level: 28.6m (Auckland MSL 1946	3 Dati	Azimuth:		١	I/A	Verified by: BL
18	Method	R.L. (m)	Length (m)	Graphic Log	Layer Code	Material Description			TCR (%)	SCR (%)	RQD (%)	Stratigraphy Defect Description Additional Notes
18	03	_			EUs	Weak.	sw		94	100	53	
201	I	18	_ _ _ _ _ 	× × × × × × × × × × × × × × × × × × ×		10.5m: Slightly weathered, grey, SILTSTONE. Weak.		11m; SPTC				
17	SPTC	_	_	× × × × × × × × × ×				29// 21,29 for 30mm N = 50+	N/A			
12 12 12 12 12 13 14 15 15 15 15 15 15 15		17	 - - -	× × × × × × × × × × × × × × × × × × ×	EUz		SW					
12.5m SPTC Sightly weathered, grey, fine to medium SANDSTONE. SW 12.5m SPTC Sightly weathered, grey, SILTSTONE. Weak 13 X X X X X X X X X	НОЗ		_ _ _ 	× × × × × × × × × × × ×					92	100	95	
SW 12.5m; SPTC Sulf to 110mm N = 50 + 1 SW 13.5m; Silghtly weathered, grey, Sil.TSTONE. Weak. SW 13.5m; Silghtly weathered, grey, Sil.TSTONE. Weak. SW SW SW SW SW SW SW S		_	<u>_</u>			12.2m: Slightly weathered, grey, fine to medium SANDSTONE. Moderately strong.						
13	SPTC	16	_		EUs		sw	50//	N/A			
80			_ _ _ 			12.8m: Slightly weathered, grey, SILTSTONE. Weak.		-				
15	НОЗ	_	<u>-</u> -	× ×					100	100	90	
Note Section		15	_ -	× × × × × × × × × × × × × × × × × × ×								
### Total Deciling:	РТС		14	× × × × × × × × × × ×	EUz			50//	N/A			
8 14 100 100 93 14 100 100 93 The state of the state	S	_	<u></u>	× × × × × × × × ×				for 140mm N = 50+				
	НФЗ	14	- - -	× × × × × × × × × ×					100	100	93	
Mater Level Deadings	-			× × × × × × × × × ×								

REMARKS:

1) Refer to masterplan Drawing No. SK-012 dated 22/02/2019 provided by Klein.

2) Hole depth specified in Water Level Readings is the bottom of the piezometric screen. Water level readings taken post drilling.

3) IBHSV = In Barrel Hand Shear Vane, SPT = Standard Penetration Test, SPTC = Solid Cone Standard Penetration Test.

4) Borehole locations and reduced levels were surveyed and provided Woods.

5) No piezometer was installed for recording water levels.

Water Level Readings: Date Time | Hole Depth | Water Level No water level recorded



Client: Ngati Whatua Orakei Whai Rawa Ltd Project: Eastcliffe Retirement Village

Location: Phase 1 - Block B Project Reference: 255232

BH47

Sheet 4 of 4

Me	thod: uipme	F ent: E		Core tor M	Wireline ounted Rig	CO-ORDINATES: Easting: Northing: Reduced level:	Mt Eden Circuit 200 405559m 803234m 28.6m (Auckland MSL 1946			Date starte Date comp Inclination: Azimuth:	letec	l: 2		/2019 /2019	Logged by: Input by: Checked by: Verified by:	AD AD JME BL	
Method	R.L. (m)	Length (m)	Graphic Log	Layer Code	ı	Material Descriptic	on	Weathering/USC		Testing	TCR (%)	SCR (%)	RQD (%)		Stratigraphy Defect Descripl Additional Not	tion	Installation
НОЗ	_	_	X X X X	s∩∃	12.8m: Slightly weather 15.1m: Slightly weather Weak.			SW	-		100	100	93				

15.5m: SPTC 50// for 110mm N = 50+

N/A

End of borehole at 15.61m (Target Depth)

REMARKS:

REMARKS:

1) Refer to masterplan Drawing No. SK-012 dated 22/02/2019 provided by Klein.

2) Hole depth specified in Water Level Readings is the bottom of the piezometric screen. Water level readings taken post drilling.

3) IBHSV = In Barrel Hand Shear Vane, SPT = Standard Penetration Test, SPTC = Solid Cone Standard Penetration Test.

4) Borehole locations and reduced levels were surveyed and provided Woods.

5) No piezometer was installed for recording water levels.

Water Level Readings: Date Time | Hole Depth | Water Level No water level recorded

Database File: 255322 - 20190329 AD_V1GPJ Library file: AURECON_AKL_NOFRACLOG_201612.GLB Tamplate: AURECON_AKL_20130722.GDT Report File: AURECON DH LOH V4.0 NO FRACTURE LOG Date Generated: 1/6/5/2019

Borehole Reference: Photographed By: AD

BH47





Box 1. - Depth: 0 m to 2 m.



Box 2. - Depth: 2 m to 4.5 m.

Borehole Reference: BH47
Photographed By: AD





Box 3. - Depth: 4.5 m to 7 m.



Box 4. - Depth: 7 m to 10.5 m.

Borehole Reference: Photographed By:

BH47 AD Date Drilled:
Date Photographed:

aurecon 27/02/2019 – 27/02/2019 27/02/2018 – 27/02/2019



Box 5. - Depth: 10.5 m to 14 m.



Box 6. - Depth: 14 m to 15.5 m.



Client: Ngati Whatua Orakei Whai Rawa Ltd Project: Eastcliffe Retirement Village Location: Phase 1 - Block B Project Reference: 255232

BH48

Sheet 1 of 4

Met Equ	hod: ipme	F ent: E	INFOR Rotary Excavat Pro-Dri	Core for M	Wireline ounted Rig	CO-ORDINATES: Easting: Northing: Reduced level:	Mt Eden Circuit 2000 405585m 803225m 27.2m (Auckland MSL 1946		Date starte Date comp Inclination: Azimuth:	leted	l: 5/ 90	/03/2 /03/2)° /A			Logged by: Input by: Checked by: Verified by:	AD AD JME BL			
Method	R.L. (m)	Length (m)	Graphic Log	Layer Code	N	Material Descriptio	on	Weathering/USC	Testing	TCR (%)	SCR (%)	RQD (%)	www. www. Fracture cs Log		Stratigr Defect Des Additiona	scription		Installation	
OB	27	_		Fc Fg	Om: Silty fine GRAVEL [FILL]. 0.2m: SILT with some plasticity.	,		GM ML		80				0m: Fl	LL		200	SACAN'S	
OB	_			Ϋ́	0.5m: CORELOSS 0.9m: Silty CLAY with	some gravel; brown, b	Hard, moist, high	СН	0.5m: IBHSV UTP	24				0.5m: result	Core affected by d not representative.	rilling; shear va	ne		ייייייייייייייייייייייייייייייייייייי
OB	26	- - - - -			plasticity. 1m: CLAY trace rootle moist, high plasticity.				1m: IBHSV 200+ kPa	100				1m: Coresult	ore affected by dril not representative.	ling; shear vand			
SPT	25			Fc				СН	2m: SPT 1// 0,1,1,1 N = 3 2m: IBHSV 90/30 kPa	100									Generated: 1/05/2019
OB					2.5m: Silty CLAY; olive high plasticity.2.9m: Silty CLAY; brown			СН		100									AURECON DH LOG V3.9 Date
SPT	24				2.9m: Silly CLAY; DIO	wn mowed grey. Firm,	moisi, nign piasucity.	СН	3m: SPT 0// 0,1,0,1 N = 2 3m: IBHSV 45/33 kPa	100									AKL 20130722.GDT Report File:
08	23		XXXXXXXXXXXXX-	ERc	3.8m: Silty CLAY; broplasticity [RESIDUAL E	ECBF].	grey. Firm, moist, high	СН	4m: IBHSV 60/20 kPa	100				3.8m:	EAST COAST BA	YS FORMATIO	N		RECON AKL NOFRACLOG 201612.GLB Template: AURECON ,
SPT	-	5	<u>X</u> X X X						4.5m: SPT 0// 0/,0,0,1 N = 1	100					Jan B. T				329 AD V1.GPJ Library file: AUF
	MARK Lefer 1		sterplar	Drav	ving No. SK-012 dated 2	22/02/2019 provided by	/ Klein.	4-1	on one of all the or					Date T	Level Readings:	Water Level			201903

- 2) Hole depth specified in Water Level Readings is the bottom of the piezometric screen. Readings taken post-drilling.
 3) IBHSV = In Barrel Hand Shear Vane, SPT = Standard Penetration Test, SPTC = Solid Cone Standard Penetration Test.
 4) Borehole locations and reduced levels were surveyed and provided by Woods.

(1) 06/03/19 14:30 | m | 3.53 m bgl (2) 12/03/19 10:21 | m | 3.47 m bgl (3) 13/03/19 11:41 | m | 3.38 m bgl (4) 15/03/19 12:20 | m | 3.72 m bgl

Database File: 255232



Client: Ngati Whatua Orakei Whai Rawa Ltd Project: Eastcliffe Retirement Village

Location: Phase 1 - Block B Project Reference: 255232

BH48

Sheet 2 of 4

CO-ORDINATES: Mt Eden Circuit 2000 **BOREHOLE INFORMATION** Date started: 5/03/2019 Logged by: AD Method: Rotary Core Wireline Easting: 405585m Date completed: 5/03/2019 Input by: AD Equipment: Excavator Mounted Rig Contractor: Pro-Drill Ltd Northing Checked by: 803225m Inclination: 90° JME N/A BL Reduced level: 27.2m Azimuth: Verified by: (Auckland MSL 1946 Datum) Weathering/USC Graphic Log Code TCR (%) Fracture Installation Length (m) Stratigraphy Testing Ξ 8 8 Log Defect Description SCR (RQD Material Description R.L. Layer Additional Notes WS WS CS CS VCS **3.8m:** Silty CLAY; brownish yellow mottled grey. Firm, moist, high plasticity [RESIDUAL ECBF]. 22 СН OB 86 5.5m: Silty CLAY; grey. Stiff, moist, high plasticity. 6 6m: SPT 2// 2,1,2,2 N = 7 6m: IBHSV 76/20 kPa 21 SPT 100 **6.5m:** Completely weathered, grey, SILTSTONE. Extremely weak (very stiff) [Completely weathered]. OB 100 100 100 7.1m to 7.2m:...black carbonaceous material 20 ERZ CW 7.5m: SPT 5// 4,4,5,6 N = 19 7.5m: IBHSV 200+ kPa SPT 100 100 100

HW

MW

SW

9.5m: SPTC 13// 10,12,12,16 for 65mm

N = 50+

100 100 100

99 100 72

N/A

100 100 100

 \square

SPTC

8

8

9

××××××

× × × × × ×

EUz

18

EWz

EWs

19

Extremely weak (hard)

1) Refer to masterplan Drawing No. SK-012 dated 22/02/2019 provided by Klein.
2) Hole depth specified in Water Level Readings is the bottom of the piezometric screen. Readings taken post-drilling.
3) IBHSV = In Barrel Hand Shear Vane, SPT = Standard Penetration Test, SPTC = Solid Cone Standard Penetration Test.
4) Borehole locations and reduced levels were surveyed and provided by Woods.

9.55m: Slightly weathered, grey, SILTSTONE. Very weak

7.95m: Highly weathered, grey, SILTSTONE. Extremely weak

8.5m: Moderately weathered, grey, fine to medium SANDSTONE.

Water Level Readings:
Date Time | Hole Depth | Water Level
(1) 06/03/19 14:30 | m | 3.53 m bgl
(2) 12/03/19 10:21 | m | 3.47 m bgl
(3) 13/03/19 11:14 | m | 3.38 m bgl
(4) 15/03/19 12:20 | m | 3.72 m bgl



Client: Ngati Whatua Orakei Whai Rawa Ltd Project: Eastcliffe Retirement Village

Location: Phase 1 - Block B

255232

BH48

Sheet 3 of 4

Project Reference: CO-ORDINATES: Mt Eden Circuit 2000 BOREHOLE INFORMATION Date started: 5/03/2019 Logged by: AD Method: Rotary Core Wireline Easting: 405585m Date completed: 5/03/2019 Input by: AD Equipment: Excavator Mounted Rig Contractor: Pro-Drill Ltd Checked by: Northing 803225m Inclination: 90° JME N/A BL Reduced level: 27.2m Azimuth: Verified by: (Auckland MSL 1946 Datum) Weathering/USC Graphic Log Code Fracture Stratigraphy Defect Description Installation Length (m) Ξ TCR (%) 8 8 Testing Method Log SCR (RQD Material Description R.L. Layer Additional Notes WS WS CS CS CS 9.55m: Slightly weathered, grey, SILTSTONE. Very weak. 17 SW 10.3m: Slightly weathered, grey, fine to medium SANDSTONE. HQ3 100 100 100 EUs SW 10.7m to 10.8m:...medium to coarse SANDSTONE 10.8m: Slightly weathered, grey, SILTSTONE. Very weak. 11 11m: SPTC 14// 8,9,17,16 for 40mm N = 50+ EUz 16 SPTC N/A 11.5m: Slightly weathered, grey, fine to medium SANDSTONE. Very weak EUs SW HQ3 12 100 100 78 12m: Slightly weathered, grey SILTSTONE. Very weak. 15 12.4m to 12.5m:...black carbonaceous material 12.5m; SPTC 21// 12,12,10,12 N = 46 SPTC N/A 13 SW 14 HQ3 100 100 100 14 14m: SPTC 50// for 110mm N = 50+ SPTC N/A 13 14.3m: Slightly weathered, grey, fine to medium SANDSTONE. HQ3 100 100 80 EUs SW

REMARKS:

New Inc.

1) Refer to masterplan Drawing No. SK-012 dated 22/02/2019 provided by Klein.

2) Hole depth specified in Water Level Readings is the bottom of the piezometric screen. Readings taken post-drilling.

3) IBHSV = In Barrel Hand Shear Vane, SPT = Standard Penetration Test, SPTC = Solid Cone Standard Penetration Test.

4) Borehole locations and reduced levels were surveyed and provided by Woods.

Water Level Readings:
Date Time | Hole Depth | Water Level
(1) 06/03/19 14:30 | m | 3.53 m bgl
(2) 12/03/19 10:21 | m | 3.47 m bgl
(3) 13/03/19 11:14 | m | 3.38 m bgl
(4) 15/03/19 12:20 | m | 3.72 m bgl



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Client: Ngati Whatua Orakei Whai Rawa Ltd Project: Eastcliffe Retirement Village

Location: Phase 1 - Block B Project Reference: 255232

BH48

Sheet 4 of 4

CO-ORDINATES: Mt Eden Circuit 2000 **BOREHOLE INFORMATION** Date started: 5/03/2019 Logged by: AD Method: Rotary Core Wireline Easting: 405585m Date completed: 5/03/2019 Input by: AD Equipment: Excavator Mounted Rig Contractor: Pro-Drill Ltd Checked by: Northing 803225m Inclination: 90° JME N/A Reduced level: BL 27.2m Azimuth: Verified by: (Auckland MSL 1946 Datum) Weathering/USC Graphic Log Code Fracture Stratigraphy Defect Description Installation Length (m) Testing Ξ TCR (%) 8 8 Log SCR (RQD Material Description R.L. Layer Additional Notes WS WS CS CS VCS 15m: Slightly weathered, grey, SILTSTONE. Weak. 12 HQ3 EUz SW 100 100 80 SPTC 15.5m: Slightly weathered, grey, fine to medium SANDSTONE. 15.5m: SPTC N/A 50// for 90mm N = 50+ EUs SW 16 16m: Slightly weathered, grey, SILTSTONE. Weak. $\Pi\Pi\Pi$ 11 **E** 100 100 90 EUz

17m: SPTC

50// for 90mm N = 50+ N/A

REMARKS:

1) Refer to masterplan Drawing No. SK-012 dated 22/02/2019 provided by Klein.
2) Hole depth specified in Water Level Readings is the bottom of the piezometric screen. Readings taken post-drilling.
3) IBHSV = In Barrel Hand Shear Vane, SPT = Standard Penetration Test, SPTC = Solid Cone Standard Penetration Test.
4) Borehole locations and reduced levels were surveyed and provided by Woods.

End of borehole at 17.09m (Target Depth)

Water Level Readings:
Date Time | Hole Depth | Water Level
(1) 06/03/19 14:30 | m | 3.53 m bgl
(2) 12/03/19 10:21 | m | 3.47 m bgl
(3) 13/03/19 11:41 | m | 3.38 m bgl
(4) 15/03/19 12:20 | m | 3.72 m bgl

Borehole Reference: BH48
Photographed By: AD





Box 1. - Depth: 0 m to 2.5 m.



Box 2. - Depth: 2.5 m to 4.5 m.

Borehole Reference: Photographed By: AD

BH48





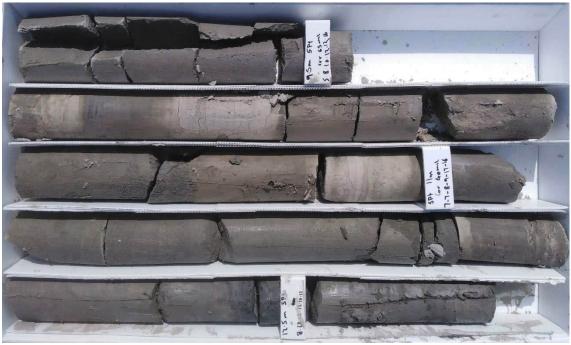
Box 3. - Depth: 4.5 m to 7 m.



Box 4. - Depth: 7 m to 9 m.

Borehole Reference: BH48
Photographed By: AD





Box 5. - Depth: 9 m to 13 m.



Box 6. - Depth: 13 m to 16 m.

Borehole Reference: Photographed By:

BH48 AD Date Drilled:

Date Photographed:

aurecon 05/03/2019 – 05/03/2019 05/03/2019 – 05/03/2019



Box 7. - Depth: 16 m to 17 m.



Client: Ngati Whatua Orakei Whai Rawa Ltd Project: Eastcliffe Retirement Village

Location: Phase 1 - Block B Project Reference: 255232

BH49

Sheet 1 of 4

CO-ORDINATES: Mt Eden Circuit 2000 27/02/2019 **BOREHOLE INFORMATION** Date started: Logged by: AD Input by: Checked by: Method: Rotary Core Wireline Easting: 405581m Date completed: 27/02/2019 AD Equipment: Excavator Mounted Rig Contractor: Pro-Drill Ltd Northing 803209m Inclination: 90° JME N/A Verified by: Reduced level: 27.4m BL Azimuth: (Auckland MSL 1946 Datum) Weathering/USC Graphic Log Code Installation Length (m) Testing Stratigraphy Ξ TCR (%) 8 8 Method Defect Description SCR (RQD Material Description R.L. Layer Additional Notes 0m: No material recovered from auger; drillers noted gravel between 0-0.6m. 0m: CORELOSS 27 SSA 0 0.9m: FILL 0.9m; CLAY: dark green mottled dark grev. Firm. moist, high 1 СН OB 100 **1.2m:** CLAY brownish yellow mottled grey. Stiff, moist, high plasticity [RESIDUAL ECBF]. 1.2m: EAST COAST BAYS FORMATION 26 1.5m: SPT 2// 1,1,2,2 N = 6 1.5m: IBHSV 195/105 kPa .5m: SPT 89 SPT 2 25 OB 86 СН 2.8m to 3.9m:...Stiff 3 3m: SPT 1// 1// 1,0,1,1 N = 3 3m: IBHSV 75/42 kPa SPT 100 24 255232 - 20190329 AD_V1.GPJ Library file: AURECON_AKL_NOFRACLOG_201612.GLB Template: **3.9m:** Silty CLAY with some sand; brownish yellow mottled grey. Firm, moist, low plasticity. OB 4 CL 23 4.5m: SPT 4.5m: Silty SAND; grey mottled brownish yellow. Very loose, 0// 0,0,0,0 N = 0 moist SPT 100 ERs SM

1) Refer to masterplan Drawing No. SK-012 dated 22/02/2019 provided by Klein.
2) Hole depth specified in Water Level Readings is the bottom of the piezometric screen. Water level readings taken post drilling.
3) IBHSV = In Barrel Hand Shear Vane, SPT = Standard Penetration Test, SPTC = Solid Cone Standard Penetration Test, SSA = Solid Stem

Auger.
4) Borehole locations and reduced levels were surveyed and provided Woods
5) No piezometer was installed for recording water levels.

Water Level Readings: Date Time | Hole Depth | Water Level No water level recorded



Client: Ngati Whatua Orakei Whai Rawa Ltd Project: Eastcliffe Retirement Village

Location: Phase 1 - Block B Project Reference: 255232

BH49

Sheet 2 of 4

Me ⁱ Equ	hod:	ent:	INFOR Rotary Excavat Pro-Dri	Core tor M	Wireline Sounted Rig	CO-ORDINATES: Easting: Northing: Reduced level:	Mt Eden Circuit 200 405581m 803209m 27.4m (Auckland MSL 1946		Date Incli Azir	e starte e comp ination: nuth:	leted	l: 2		2/2019 Logged by: AD 2/2019 Input by: AD Checked by: JME Verified by: BL	
Method	R.L. (m)	Length (m)	Graphic Log	Layer Code	,	Material Descriptio	,	Weathering/USC	Testing		TCR (%)	SCR (%)	RQD (%)	Stratigraphy Defect Description Additional Notes	Installation
08	22		* * * * * * * * * * * * * * * * * * *	ERs	4.5m: Silty SAND; gremoist.			SM			65				-
SPT	21	-	× × × × × × × × × × × × × × × × × × ×	3					6m: SPT 2// 1,1,1,1 N = 4 6m: IBHSV 8 kPa	31/27	100				
OB		7	*** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***	Z	6.9m: Highly weathers (very stiff); widely span	ed, grey, SILTSTONE. ced [Highly weathered	Extremely weak ECBF].				100				- - - - -
наз spтс	_		× × × × × × × × × × × × × × × × × × ×	EWz				HW	7.5m: SPTC 7// 4,7,6,8 N = 25 7.5m: IBHS\		N/A				
НОЗ	19	_ _ _ _ _ _	× × × × × × × × × × × × × × × × × × ×	EWz EWs	8.1m: Moderately weak Very weak. 8.3m: Moderately wea			MW			100				-
_ I	_	9	× × × × × × × ×	EWs	8.8m: Moderately weak. Very weak. 9.1m: Moderately wea 9.15m to 9.3m:blac	athered arev SILTST(ONE Verv weak	MW							-
SPTC SPTC	18 MARI	10 KS:	× × × × × × × × × × × × × × × × × × ×	EW2	wing No. SK-012 dated 4	22/02/2019 provided by	/ Klein. ometric screen. Water le	MW	8,7,8,10 N = 33			100	100	Water Level Readings: Date Time Hole Depth Water Level	-

2) Hole depth specified in Water Level Readings is the bottom of the piezometric screen. Water level readings taken post drilling.
 3) IBHSV = In Barrel Hand Shear Vane, SPT = Standard Penetration Test, SPTC = Solid Cone Standard Penetration Test, SSA = Solid Stem Auger.
 4) Borehole locations and reduced levels were surveyed and provided Woods.
 5) No piezometer was installed for recording water levels.



Client: Ngati Whatua Orakei Whai Rawa Ltd Project: Eastcliffe Retirement Village

Location: Phase 1 - Block B

Project Reference: 255232

BH49

Sheet 3 of 4

Met Equ	CO-ORDINATES: Mt Eden Circuit 2000 Date started: 27/02/2019										
Method	R.L. (m)	Length (m)	Graphic Log	Layer Code	Material Description	Weathering/USC	Testing	TCR (%)	SCR (%)	RQD (%)	Stratigraphy Defect Description Additional Notes
НФЗ	17	- - - - - -	× × × × × × × × × × × × × × × × × × ×	EUz	10m: Slightly weathered, grey, SILTSTONE. Very weak. 10.7m: Slightly weathered, grey, fine to medium SANDSTONE. Very weak.	sw		100	100	100	
SPTC				EUs							
НОЗ	16	-	× × ×		11.3m to 11.5m:medium to coarse SANDSTONE 11.5m: Slightly weathered, grey, SILTSTONE. Very weak, widely		N = 50+				
	-	X X Space X X X			spaced.	sw		96	100	100	
	15			EUs	12m: Slightly weathered, grey, medium to coarse SANDSTONE. Very weak.	sw					
SPTC		- - - -	× × × × × × × × × × × × × × × × × × ×	EUz	12.3m: Slightly weathered, grey, SILTSTONE. Very weak.	sw	12.5m: SPTC 13// 11,15,19,5 for 15mm N = 50+	N/A			
HQ3	14	13		EUs	13m: Slightly weathered, grey, fine to medium SANDSTONE. Very weak.	SW		100	100	99	
SPTC	ı	14	× × × × × × × ×		13.8m: Slightly weathered, grey, SILTSTONE. Very weak.		14m: SPTC	N/A			
\\$ -		<u> </u>	× × × × × × × ×	EUz		sw	50// for 100mm N = 50+				
13 EOH	13	- - - -	× × × × × × × × × × × × × × × × × × ×	EUs	14.5m: Slightly weathered, grey, fine to medium SANDSTONE. Very weak.	sw		93	100 97	97	
	MARI			n Dra	wing No. SK-012 dated 22/02/2019 provided by Klein.						Water Level Readings: Date Time Hole Depth Water Level

2) Hole depth specified in Water Level Readings is the bottom of the piezometric screen. Water level readings taken post drilling.
3) IBHSV = In Barrel Hand Shear Vane, SPT = Standard Penetration Test, SPTC = Solid Cone Standard Penetration Test, SSA = Solid Stem Auger.
4) Borehole locations and reduced levels were surveyed and provided Woods.
5) No piezometer was installed for recording water levels.



Client: Ngati Whatua Orakei Whai Rawa Ltd Project: Eastcliffe Retirement Village

Location: Phase 1 - Block B Project Reference: 255232

BH49

Sheet 4 of 4

					•								5.1551 1 51 1
BOREHOLE INFORMATION Method: Rotary Core Wireline Equipment: Excavator Mounted Rig Contractor: Pro-Drill Ltd						CO-ORDINATES: Mt Eden Circuit 2000 Easting: 405581m Northing: 803209m Reduced level: 27.4m (Auckland MSL 1946 Datum)			Date comp Inclination: Azimuth:	Date started: Date completed: Inclination: Azimuth:			2/2019 Logged by: AD 2/2019 Input by: AD Checked by: JME Verified by: BL
Method	R.L. (m)	Length (m)	Graphic Log	Layer Code	ı	Material Descriptio	•	Weathering/USC	Testing	TCR (%)	SCR (%)	RQD (%)	Stratigraphy Defect Description Additional Notes Stratigraphy Defect Description Additional Notes
SPTC HO3	12			EUs	14.5m: Slightly weath Very weak.	ered, grey, fine to med	lium SANDSTONE.	sw	15.5m: SPTC	93 N/A	100	97	
8					End of borehole at 15.	61m (Target Depth)			50// for 110mm N = 50+			<u> </u>	

REMARKS:

REMARKS:

1) Refer to masterplan Drawing No. SK-012 dated 22/02/2019 provided by Klein.

2) Hole depth specified in Water Level Readings is the bottom of the piezometric screen. Water level readings taken post drilling.

3) IBHSV = In Barrel Hand Shear Vane, SPT = Standard Penetration Test, SPTC = Solid Cone Standard Penetration Test, SSA = Solid Stem Auger.

4) Borehole locations and reduced levels were surveyed and provided Woods.

5) No piezometer was installed for recording water levels.

Water Level Readings: Date Time | Hole Depth | Water Level No water level recorded

Database Flie: 25222 - 20190329 AD_V1.GFJ LIbrary file: AURECON_AKL_NOFRACJOG_201612.GLB Tamplate: AURECON_AKL_20130722.GDT Report Flie: AURECON DH LOH V4.0 NO FRACTURE LOG Date Generated: 1/05/2019

Borehole Reference: BH49
Photographed By: AD





Box 1. - Depth: 0 m to 3.5 m.



Box 2. - Depth: 3.5 m to 6.5 m.

Borehole Reference: Photographed By: AD

BH49

Date Drilled: Date Photographed: aurecon 05/03/2019 - 05/03/2019 05/03/2019 - 05/03/2019



Box 3. - Depth: 6.5 m to 9.5 m.



Box 4. - Depth: 9.5 m to 13.5 m.

Borehole Reference: BH4
Photographed By: AD

BH49





Box 5. - Depth: 13.5 m to 15.5 m.



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Client: Ngati Whatua Orakei Whai Rawa Ltd Project: Eastcliffe Retirement Village

Location: Phase 1 - Block D Project Reference: 255232

BH50

Sheet 1 of 4

BOREHOLE INFORMATION CO-ORDINATES: Mt Eden Circuit 2000 Method: Rotary Core Wireline Easting: 405558m

Date started: Date completed:

7/03/2019 7/03/2019 Logged by: Input by:

R.L. (m)	Length (m)	Graphic Log	Layer Code	Material Description	Weathering/USC	Testing	TCR (%)	SCR (%)	RQD (%)	Stratigraphy Defect Description Additional Notes	Installation
29	-		Fc Fx	Om: CORELOSS O.3m: SILT with some gravel; dark brown. Stiff, moist, low	ML		40			Om: Driller noted that material may have been compressed. 0.3m: FILL	AU'S
 -	-	× × × × × × × × × × × × × × × × × × ×	ERz Fi	plasticity. 0.4m: Clayey SILT with some gravel; dark brown. Firm, moist, low plasticity [RESIDUAL ECBF].	ML					0.4m: EAST COAST BAYS FORMATION	
	_ _ 1	× ×		0.8m: Silty CLAY; brownish yellow mottled grey. Very stiff, high plasticity.	СН		90				UZBUZBU
28				Sandy CLAY with some silt; brownish yellow mottled grey. Stiff, moist, low plasticity. CLAY: brownish yellow mottled grey. Stiff, moist, high	CL	1m: IBHSV 127/60 kPa					SACSACS
				plasticity.	СН		100				20852085
-	- - -	-: -: X ×		Sandy CLAY with some silt; brownish yellow mottled grey. Stiff, moist, low plasticity. Trm: Silty CLAY; brownish yellow mottled grey. Soft, moist, high plasticity. Locally stiff.	CL						
27	2	X X X X X X X X				2m: SPT 0// 0,0,0,0 N = 0 2m: IBHSV 67/21 kPa	100				
-	- - -	× × × ×	ERc				100				
26	3	X		3m to 4.2m:grey	SM	3m: SPT 0// 0,1,1,1 N = 3 3m: IBHSV 48/15 kPa	100				
25	_ _ _ _ _ 4	X x X X X x x					97				
	- - - -	X X X X X X X		4.1m to 4.2m:black carbonaceous material 4.2m: Silty CLAY with some sand; grey. Very stiff, moist, low plasticity.	CL	4.5m: SPT				4.2m to 4.2m: 0° UnRo Black carbonaceous material	
_	- - -	×	ERs	4.6m: Clayey SAND; grey. Loose, moist, low plasticity.	SC	4.5m: SP1 2// 2,2,2,3 N = 9 4.5m: IBHSV 108/30 kPa	100				
MAR Refer Hole BHS	to madepth	asterpla specifie Barrel I	n Draved in V	wing No. SK-012 dated 22/02/2019 provided by Klein. Vater Level Readings is the bottom of the piezometric screen. Readin Shear Vane, SPT = Standard Penetration Test, SPTC = Solid Cone St educed levels were surveyed and provided by Woods.	gs take	en post-drilling.	86)			Water Level Readings: Date Time Hole Depth Water Level No water level recorded	<u>l:</u>



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Client: Ngati Whatua Orakei Whai Rawa Ltd Project: Eastcliffe Retirement Village

Location: Phase 1 - Block D Project Reference: 255232

BH50

Sheet 2 of 4

Me Equ	hod:	: F ent: E	INFOR Rotary Excava Pro-Dri	Core tor M	Wireline ounted Rig	CO-ORDINATES: Easting: Northing: Reduced level:	Mt Eden Circuit 200 405558m 803178m 29.1m (Auckland MSL 1946		Date starte Date comp Inclination: Azimuth:	letec	d: 7		2019 Logged by: AD 2019 Input by: AD Checked by: JME Verified by: BL	
Method	R.L. (m)	Length (m)	Graphic Log	Layer Code		Material Descriptio		Weathering/USC	Testing	TCR (%)	SCR (%)	RQD (%)	Stratigraphy Defect Description Additional Notes	ווסומוומייםו
	24	 - - -		ERs	4.6m: Clayey SAND; ç			sc						
OB	_		× × × × × × × × × × × × × × × × × × ×		5.4m : Highly weathere (hard) [Highly weather	ad, grey, SILTSTONE. ed ECBF].	Extremely weak	HW	6m: SPTC	86				
SPTC	23	- - -	× × × × × × × × × × × × × × × × × × ×	EWz					9// 5,6,6,6 N = 23	N/A				
08	_	-	× × × × × × × × × × × × ×		6.5m: Moderately wea	thered, grey, SILTSTC	DNE. Very weak.			100			į.·	
НОЗ	22	7	× × × × × × × × × × × × × × × × × × ×					MW		100	100	92		
	_	 - - -		EWs	7.3m: Moderately weak Weak.			MW						なな
		- - 8	× × × × × × × × × × × × × × × × × × ×		7.7m: Moderately wea	thered, grey, SILTSTC	DNE. Weak.		8m: SPTC					S S S
SPTC	21	- - -	× × × × × × × × × ×	EWz				MW	12// 8,6,5,7 N = 26	N/A				N N N N N
	_	 - -	x x		8.5m: Moderately weak Very weak.	thered, grey, fine to m	edium SANDSTONE.							A TOTAL
HQ3	20	9		EWs				MW		88	100	100		
SPTC	_	- - -	× × × × × × ×	٧z	9.6m: Moderately wea	thered, grey, SILTSTC	DNE. Very weak.		9.5m: SPTC 19// 17,16,11,6 for 30mm N = 50+	N/A				A RIPLES
DE DE	MARI	10	× × × × × × × ×	EWz				MW		100	100	85	Water Level Readings:	

Nefer to masterplan Drawing No. SK-012 dated 22/02/2019 provided by Klein.

2) Hole depth specified in Water Level Readings is the bottom of the piezometric screen. Readings taken post-drilling.

3) IBHSV = In Barrel Hand Shear Vane, SPT = Standard Penetration Test, SPTC = Solid Cone Standard Penetration Test.

4) Borehole locations and reduced levels were surveyed and provided by Woods.

Date Time | Hole Depth | Water Level
No water level recorded

Database File: 25522 - 20190329_AD_V1.GPJ Library file: AURECON_AKL_NOFRACLOG_201612.GLB Template: AURECON_AKL_20130722.GDT Report File: AURECON DH L0H V4.0 NO FRACTURE LOG Date Generated: 1/05/2019



Level 4, 139 Carlton Gore Road PO Box 9762, Newmarket Auckland, New Zealand Tel: +64 9 520 6019 www.aurecongroup.com

Client: Ngati Whatua Orakei Whai Rawa Ltd

Location: Phase 1 - Block D Project Reference: 255232

Project: Eastcliffe Retirement Village

BH50

Sheet 3 of 4

BOREHOLE INFORMATION Method: Rotary Core Wireline Equipment: Excavator Mounted Rig

Easting: Northing:

CO-ORDINATES: Mt Eden Circuit 2000 405558m 803178m

Date started: Date completed: Inclination: 90°

7/03/2019 7/03/2019

Logged by: AD Input by: AD Checked by: JME

Eq. Cor	uipm ntrac	ent: l ctor: l	Excava Pro-Dri	tor M II Ltd	ounted Rig Northing: 80317 Reduced level: 29.1m (Auckl	8m <u>and MSL 1946 Da</u>	<u>atu</u>	Inclination: Azimuth: m)		9 N	0° I/A	Checked by: JME Verified by: BL
Method	R.L. (m)	Length (m)	Graphic Log	Layer Code	Material Description	Ol lloringthough	wearnering/USC	Testing	TCR (%)	SCR (%)	RQD (%)	Stratigraphy Defect Description Additional Notes
	19	-	× × × ×		9.6m: Moderately weathered, grey, SILTSTONE. Ver							
HQ3	_	- - - - - - - 11	× × × × × × × × × × × × × × × × × × ×						100	100	85	
SPTC	18		× × × × × × × × × × × × × × × × × × ×		11m to 13.5m:extremely weak (hard)		- 1	11m: SPTC 8// 5,5,6,9 N = 25	N/A			
HQ3	17	12	× × × × × × × × × × × × × × × × × × ×	EWz		M	iw		100	100	100	
SPTC	_	-	× × × × × × × × × × × × × × × × × × ×					12.5m: SPTC 12// 7,7,6,12 N = 32	N/A			
ноз	16		× × × × × × × × × × × × × × × × × × ×						100	100	63	
	_	14	× × × × × × × × × × × × × × × × × × ×	EUz	13.5m: Slightly weathered, grey, SILTSTONE. Very	weak.		14m: SPTC				
SPTC	15	-	× × × × × ×					27// 23,27 for 75mm N = 50+	N/A			
НОЗ	_	- - - - -		EUs	14.3m: Slightly weathered, grey, medium to coarse SANDSTONE. Weak.	SI	w		100	100	100	
		- - 15	× × × × × ×	EUz	14.8m: Slightly weathered, grey, SILTSTONE. Weak	K. SI	w					
REI	MAR	KS:					_					Water Level Readings:

REMARKS:
1) Refer to masterplan Drawing No. SK-012 dated 22/02/2019 provided by Klein.
2) Hole depth specified in Water Level Readings is the bottom of the piezometric screen. Readings taken post-drilling.
3) IBHSV = In Barrel Hand Shear Vane, SPT = Standard Penetration Test, SPTC = Solid Cone Standard Penetration Test.
4) Borehole locations and reduced levels were surveyed and provided by Woods.

Water Level Readings: Date Time | Hole Depth | Water Level No water level recorded



BOREHOLE INFORMATION

Client: Ngati Whatua Orakei Whai Rawa Ltd Project: Eastcliffe Retirement Village

CO-ORDINATES: Mt Eden Circuit 2000

Location: Phase 1 - Block D Project Reference: 255232

BH50

Logged by:

Sheet 4 of 4 AD

Met Equ	hod: iipme	F ent: E		Core tor M	Wireline Easting: ounted Rig Northing: Reduced level:	405558m 803178m 29.1m (Auckland MSL 1946 Dat	atun	Date compliance inclination: Azimuth:	leted	l: 7 9	/03/2 /03/2 0° I/A		
Method	R.L. (m)	Length (m)	Graphic Log	Layer Code	Material Descripti	oo weathering/USC	900	Testing	TCR (%)	SCR (%)	RQD (%)	Stratigraphy Defect Description Additional Notes	Installation
НОЗ	14		× × × × × × × ×	EUz	14.8m: Slightly weathered, grey, SILTSTO	sw	٧		100	100	100		2022 2022
SPTC		_		EUs	15.3m: Slightly weathered, grey, fine to me Weak.	dium SANDSTONE.	V 5	15.5m: SPTC 50// for 140mm	N/A				名名名
HQ3	13		× × × × × × × × × × × × × × × × × × ×	EUz	15.8m: Slightly weathered, grey, SILTSTO	sw		N = 50+	100	100	100		
SPTC	_	- - - - 17		EUs	16.5m: Slightly weathered, grey, medium to SANDSTONE. Weak. End of borehole at 17.09m (Target Depth)	o coarse sw	1	17m: SPTC 50// 0r 90mm	N/A				

Date started:

for 90mm N = 50+

7/03/2019

REMARKS:

REMARS:

1) Refer to masterplan Drawing No. SK-012 dated 22/02/2019 provided by Klein.

2) Hole depth specified in Water Level Readings is the bottom of the piezometric screen. Readings taken post-drilling.

3) IBHSV = In Barrel Hand Shear Vane, SPT = Standard Penetration Test, SPTC = Solid Cone Standard Penetration Test.

4) Borehole locations and reduced levels were surveyed and provided by Woods.

End of borehole at 17.09m (Target Depth)

Water Level Readings: Date Time | Hole Depth | Water Level No water level recorded

Database File: 255:22 - 2019/329 AD_V1.GP Library file: AURECON_AKL_NOFRACLOG_2016/12.GLB Template: AURECON_AKL_2013072.GDT Report File: AURECON DH LOH V4.0 NO FRACTURE LOG Date Generated:

Eastcliffe Phase 1 Ground Investigation

Borehole Reference: BH50
Photographed By: AD

Date Drilled:
Date Photographed:





Box 1. - Depth: 0 m to 2.5 m.



Box 2. - Depth: 2.5 m to 4.5 m.

Eastcliffe Phase 1 Ground Investigation

Borehole Reference: BH50
Photographed By: AD

Date Drilled:
Date Photographed:









Box 4. - Depth: 8 m to 12 m.

Eastcliffe Phase 1 Ground Investigation

Borehole Reference: Photographed By:

BH50 AD Date Drilled:
Date Photographed:

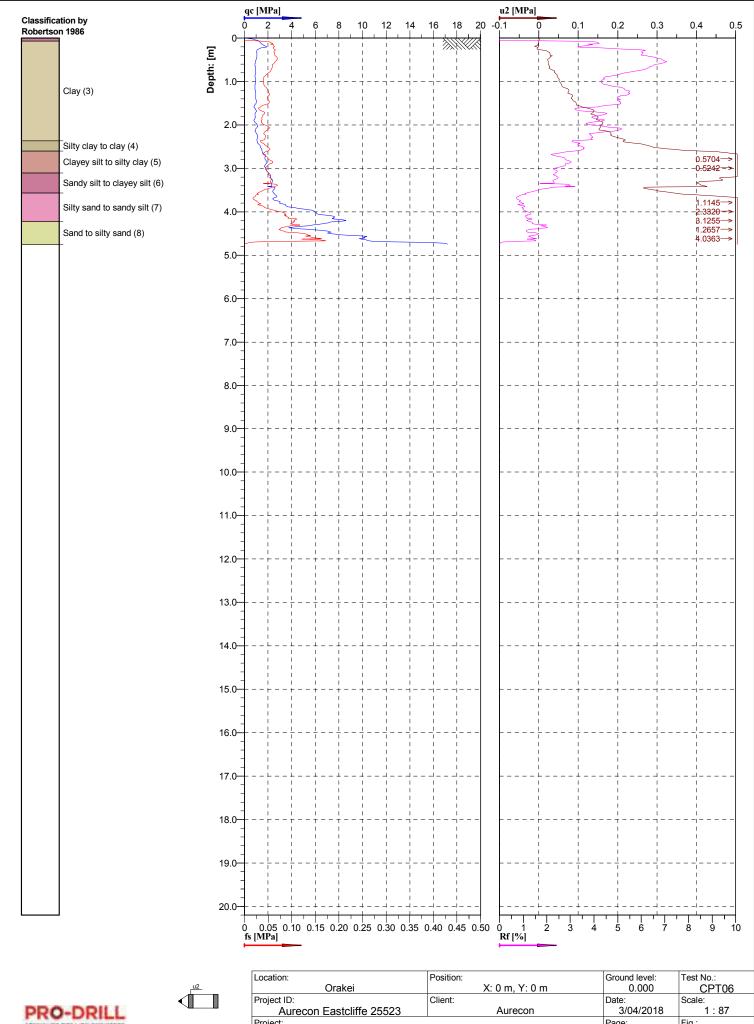
aurecon 07/03/2019 – 07/03/2019 07/03/2019 – 07/03/2019



Box 5. - Depth: 12 m to 17 m.



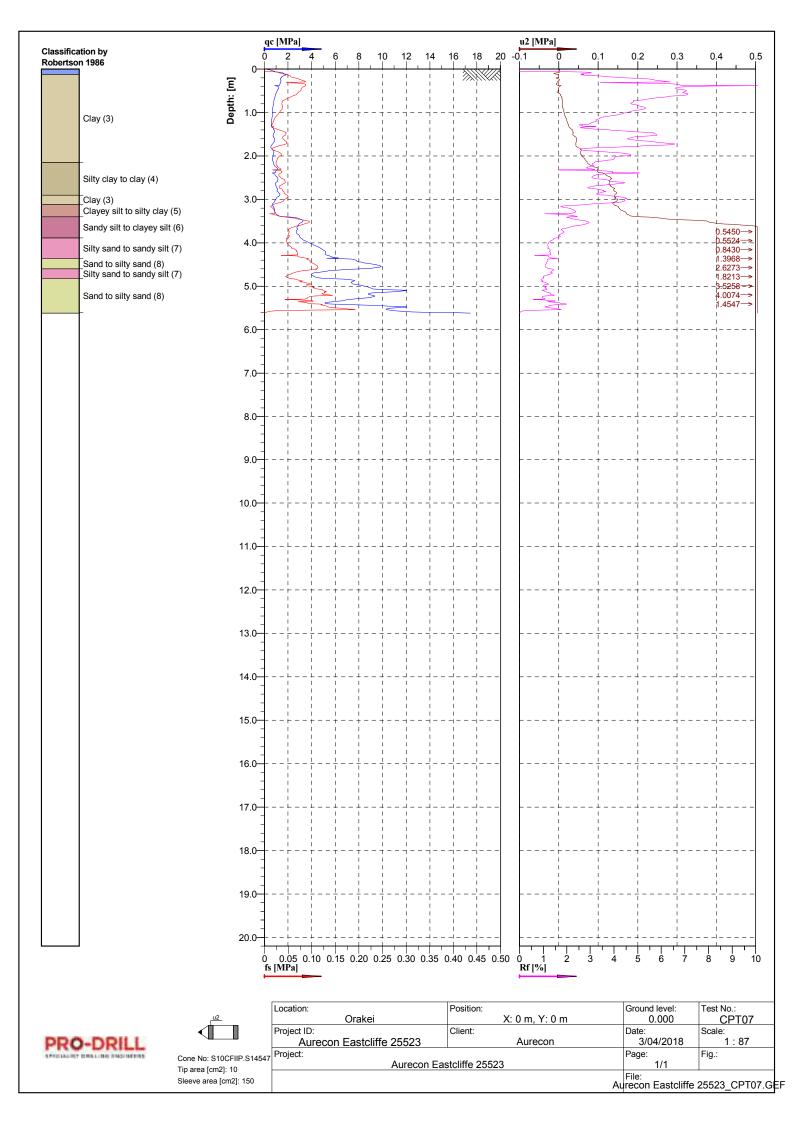
Box 6. - Depth: 17 m to 17.5 m.

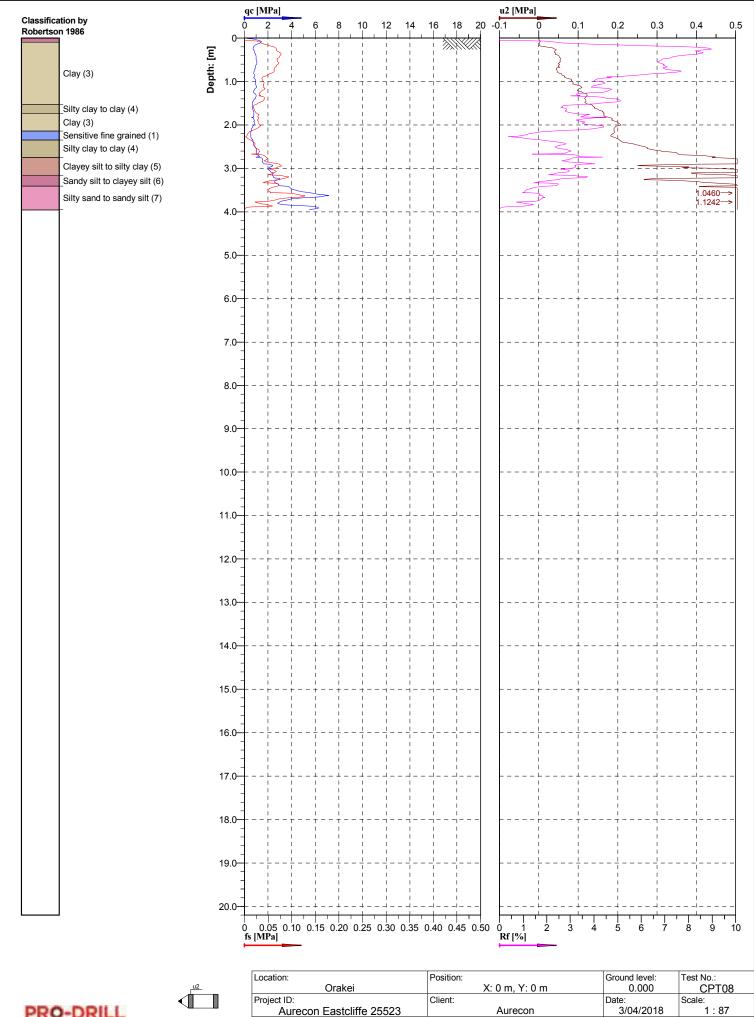




	ľ
Cone No: S10CFIIP.S14547 Tip area [cm2]: 10	
Sleeve area [cm2]: 150	ľ

Location:	Position:	Ground level:	Test No.:
Orakei	X: 0 m, Y: 0 m	0.000	CPT06
Project ID:	Client:	Date:	Scale:
Aurecon Eastcliffe 25523	Aurecon	3/04/2018	1:87
Project:		Page:	Fig.:
Aurecon Eas	stcliffe 25523	1/1	
		File:	
	Αι	recon Eastcliffe	25523_CPT06.GEF

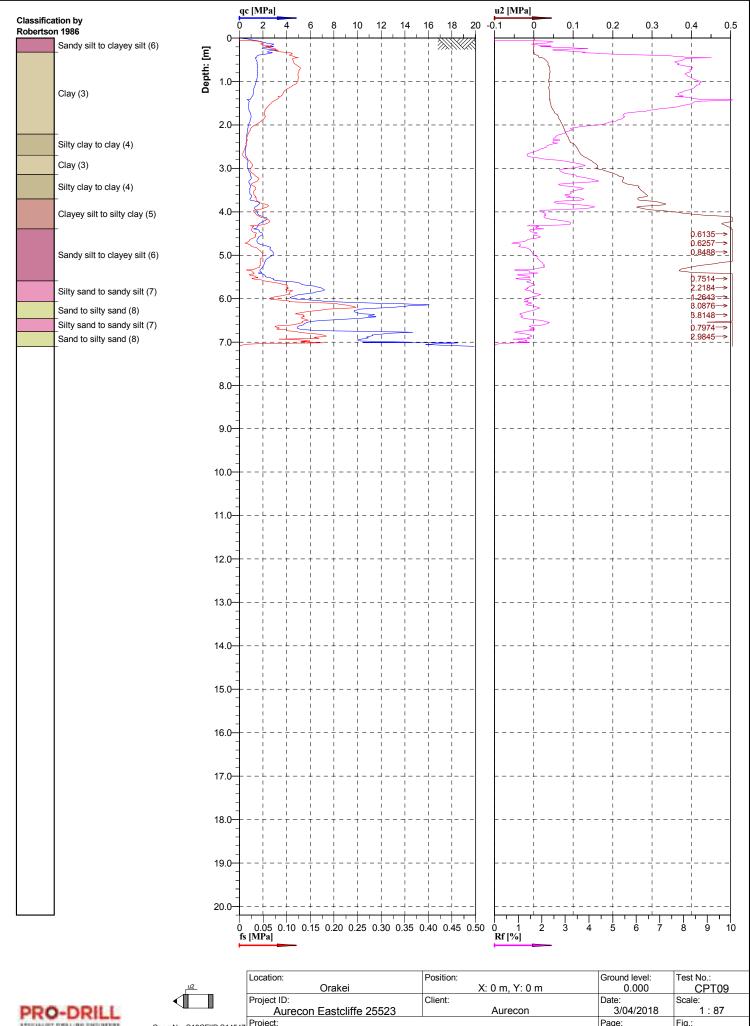






Cone No: S10CFIIP.S14547 Tip area [cm2]: 10 Sleeve area [cm2]: 150

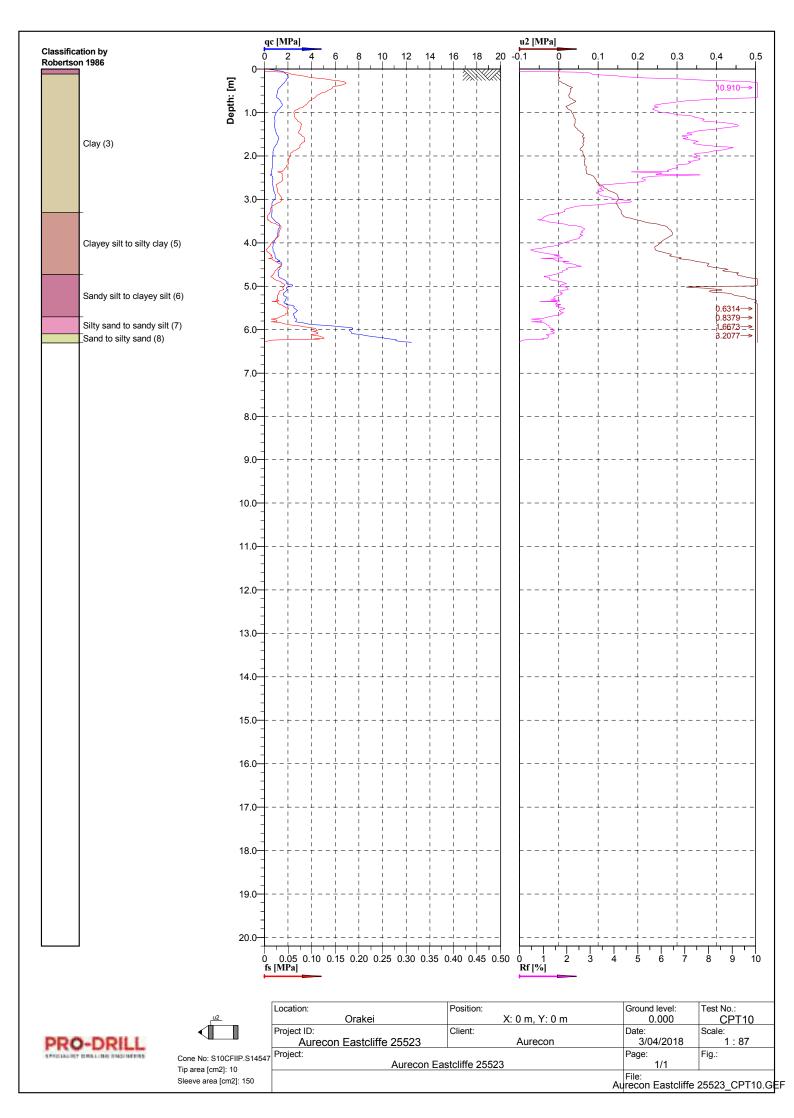
Location:	Position:	Ground level:	Test No.:	
Orakei	X: 0 m, Y: 0 m	0.000	CPT08	
Project ID:	Client:	Date:	Scale:	
Aurecon Eastcliffe 25523	Aurecon	3/04/2018	1:87	
Project:		Page:	Fig.:	
Aurecon Eas	stcliffe 25523	1/1		
		File:		
	Αι	recon Eastcliffe	25523_CPT08.GE	:F

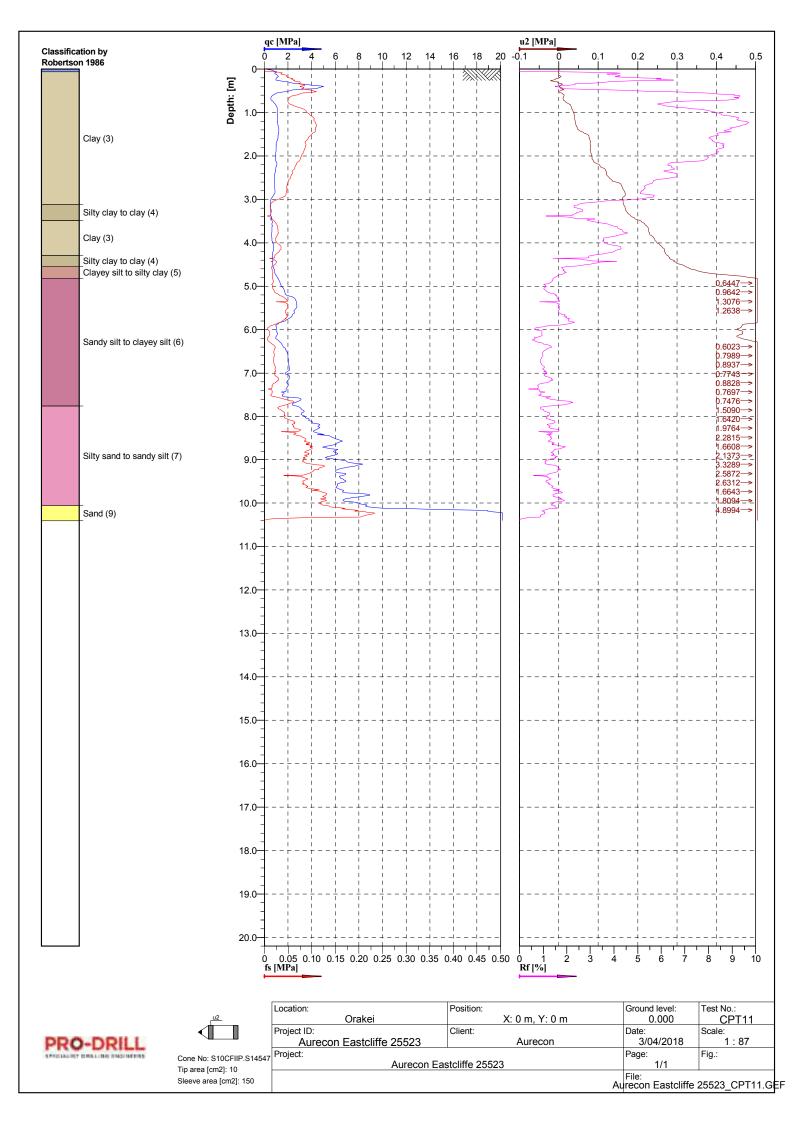


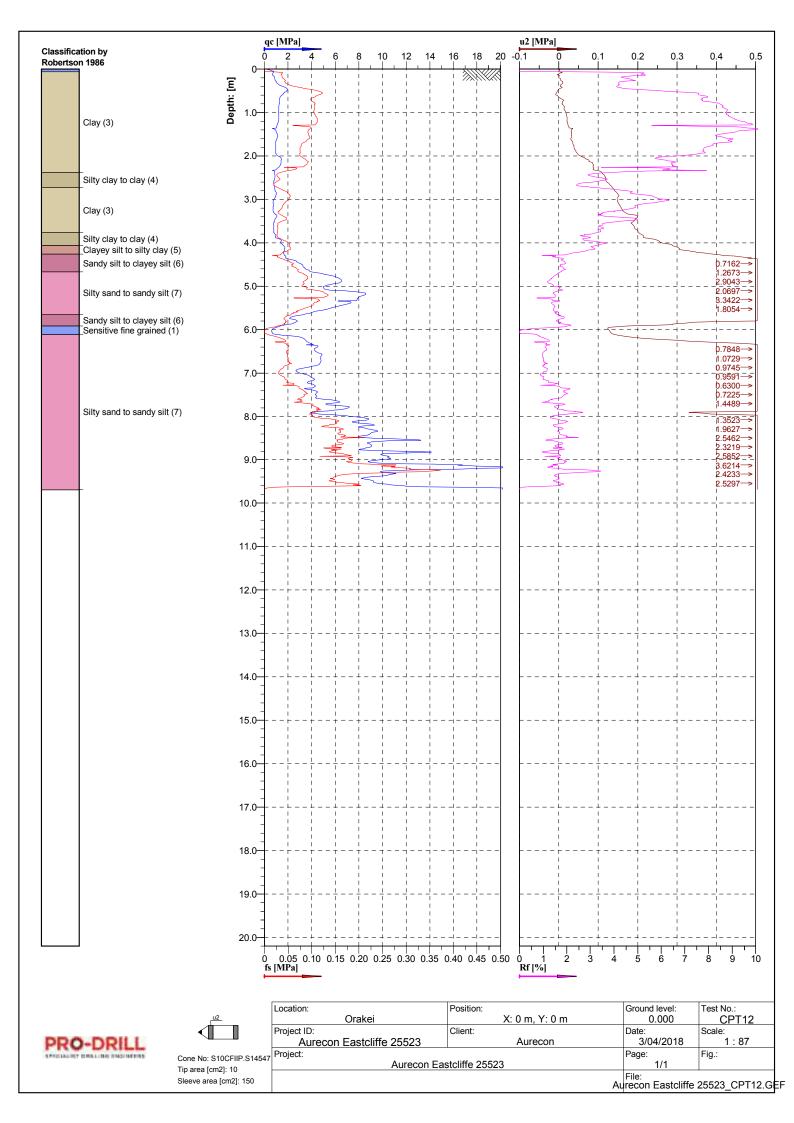


Cone No: S10CFIIP.S14547 Tip area [cm2]: 10 Sleeve area [cm2]: 150

Location:	Position:	Ground level:	Test No.:
Orakei	X: 0 m, Y: 0 m	0.000	CPT09
Project ID:	Client:	Date:	Scale:
Aurecon Eastcliffe 25523	Aurecon	3/04/2018	1:87
Project:		Page:	Fig.:
Aurecon Eas	stcliffe 25523	1/1	
		File: recon Eastcliffe	25523_CPT09.GEF









BOREHOLE LOG

BH01

SHEET: 1 OF 2

DRILLED BY: SCZH LOGGED BY: SCZH

BOREHOLE No.:

CO-ORDINATES: 5920109 mN (NZTM2000) 1762714 mE R.L. GROUND: 38.3m PROJECT: The Point Development CHECKED: RXSW 1762714 mE R.L. COLLAR: JOB No.: 1098049.0000 START DATE: 09/06/2025 DATUM: NZVD2016 LOCATION: 52-64 Rukutai Street DIRECTION: FINISH DATE: 09/06/2025 SURVEY: Handheld GPS ANGLE FROM HORIZ.: -90° CONTRACTOR: SCZH MATERIAL DESCRIPTION ROCK MASS DISCONTINUITIES

١.		MATERIAL DESCRIPTION		ے								RO	CK	MASS DISCONTINUITIES					-
TINIT	GEOEGGICAL UIVII	SOIL: Classification, colour, consistency / density, moisture, plasticity ROCK: Weathering, colour, fabric, name, strength, cementation	Rock Weathering	Rock Strength	Sampling Method	Core Recovery (%)	Testing	RL (m)	Depth (m)	Graphic Log	Defect Log	2000 600 Fracture 200 Spacing (mm)	RQD (%)	Description & Additional Observations		- H	Casing	Installation	Core Box No
	===	0.00m: Silty fine to medium GRAVEL; light grey mottled brown. Loosely packed, moist. [FILL].	MAN WAN WAN WAN WAN WAN WAN WAN WAN WAN W	SN N N N N N N N N N N N N N N N N N N	HYDRO EXCAVATION	0		- 88	0.5-	× × × ×		20			25	200	10701	0000	
		0.65m: Silty CLAY; yellowish brown mottled light grey. Stiff to very stiff, moist, high plasticity. [RESIDUAL ECBF].			HQTT HYDRO			37	1.0-	* + *									
					H	100	48/24 kPa 0/1/I/ 0/1/1/0 N=2	- - -	1.5-										
	Days Formation	2. 10m: CLAY, some silt; brownish grey. Stiff, moist, high plasticity. 2. 40m: SILT, some sand, trace clay; grey and brownish grey.			НОТТ	100		98	2.0-	(*,					V	09/ 06/2025			
	Residual East Coast Bays Formation	Very stiff, moist to wet, non-plastic to low plasticity. Sand, fine. 2. 75m: CLAY, some silt; grey. Stiff, moist, high plasticity.	-		H	-	89/27 kPa	- - -	2.5-	A HINT							F-2/12/	******	
		3.00m: SILT, some sand, trace clay; dark grey. Hard, moist to wet, non-plastic to low plasticity. Sand, fine. 3.45m: Highly to completely weathered, dark grey,			SPT	100	2/2// 2/2/4/1 N=9	35	3.5-	K 1 K 1 K 1 K 1 K 1 K 1 K 1 K 1 K 1 K 1							:		Box 0.00-3.65m
motion and a second a second and a second a second and a second and a second and a	liatoli	SANDSTONE. Extremely weak. Recovered as: Silty fine SAND; dark grey. Hard, wet. [HW ECBF]. 385 - 3.90m: Crush zone			HQTT	100		-	4.0-				19				•		Box 0.0
rottomen and socionation	Last coast bays I o				SPT	100	UTP 7/10// 12/13/205 for 5mm N≻=50	-%	4.5-								•		
	-	4.88m: Unweathered to slightly weathered, dark grey,			연	100							100				•		\rfloor

COMMENTS:

Hole Depth 9.15m



PROJECT: The Point Development

BOREHOLE LOG

5920109 mN

R.L. GROUND: 38.3m

CO-ORDINATES:

BOREHOLE No.:

BH01

SHEET: 2 OF 2

DRILLED BY: SCZH LOGGED BY: SCZH CHECKED: RXSW

1762714 mE JOB No.: 1098049.0000 R.L. COLLAR: START DATE: 09/06/2025 DATUM: NZVD2016 LOCATION: 52-64 Rukutai Street DIRECTION: FINISH DATE: 09/06/2025 SURVEY: Handheld GPS ANGLE FROM HORIZ.: -90° CONTRACTOR: SCZH MATERIAL DESCRIPTION **ROCK MASS DISCONTINUITIES** GEOLOGICAL UNIT Rock Strength Sampling Method Core Recovery (%) Water Level / Fluid Loss (%) Fracture Spacing (mm) Graphic Log Core Box No RL (m) Depth (m) Casing Defect Log RQD (%) Description SOIL: Classification, colour, consistency / density, moisture, plasticity ROCK: Weathering, colour, fabric, name, strength, cementation & Additional Observations 2000 2000 2000 2000 2000 SILTSTONE. Very weak to weak. Interbedded with: Unweathered to slightly weathered, dark grey, SANDSTONE. Very weak to weak, fine grained. HÖT 11/31// 19 for 50mm N>=50 Solid Cone 32 East Coast Bays Formation 6.5 E E 88 7.0-7. 35m: Core Loss 7.50m: Unweathered to slightly weathered, dark grey, SILTSTONE. Very weak to weak. Interbedded with: Unweathered to slightly weathered, dark grey, SANDSTONE. 8 for 5mm N>=50 Solid Cone Very weak to weak, fine grained. 8.0--00 20/50// for 70 mm 9.15m: Target depth Solid Cone 29 9.5-

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COMMENTS:

Hole Depth 9.15m

Scale 1:25



CORE PHOTOS

BOREHOLE No.: BH01

Hole Location: 52-64 Rukutai Street

SHEET: 1 OF 2

PROJECT: The Point Development LOCATION: 110-160 Rukutai Street JOB No.: 1098049.0000

CO-ORDINATES: 5920109 mN 1762714 mE

R.L.: 38.3m

NZVD2016

DATUM:

DRILL TYPE: MST-600VD
METHOD: Rotary cored

HOLE STARTED: 09/06/2025 HOLE FINISHED: 09/06/2025

DRILLED BY: SCZH

LOGGED BY: SCZH CHECKED: RXSW



0.00-3.65m



3.65-6.80m



CORE PHOTOS

BOREHOLE No.: BH01

Hole Location: 52-64 Rukutai Street

SHEET: 2 OF 2

PROJECT: The Point Development LOCATION: 110-160 Rukutai Street JOB No.: 1098049.0000

CO-ORDINATES: 5920109 mN 1762714 mE R.L.: 38.3m

NZVD2016

DATUM:

DRILL TYPE: MST-600VD

METHOD: Rotary cored

HOLE STARTED: 09/06/2025 HOLE FINISHED: 09/06/2025

DRILLED BY: SCZH

LOGGED BY: SCZH CHECKED: RXSW



6.80-9.00m



PROJECT: The Point Development

BOREHOLE LOG

BOREHOLE No.:

BH02

SHEET: 1 OF 3

R.L. GROUND: 16.6m

DRILLED BY: SCZH LOGGED BY: SCZH CHECKED: RXSW

1762965 mE R.L. COLLAR: JOB No.: 1098049.0000

CO-ORDINATES: 5920110 mN (NZTM2000) 1762965 mE

ANGLE FROM HORIZ.: -90° SURVEY: Framinged UP* CONTRACTOR: SCZ- MATERIAL DESCRIPTION P	1	OB No.: 1098049.0000 OCATION: 82 Aotea Street	DIRE	ECTIO	ON:		0200			DAT	COLLA TUM: N	ZVI	D2016	START DATE: FINISH DATE:				
Description Part			ANG	LE F	ROI	ИΗ	ORIZ.:	-90°	Ľ	SUR	KVEY: H	and	ineid GPS					
Indicate Newsharing critics, before, name, strength, commentation 2 1 2 3 3 4 5 1 5 5 4 5 5 5 5 5 5 5	L	MATERIAL DESCRIPTION	g g	£						L	R	OCK	MASS DISC	ONTINUITIES				
O. Charles Stay free to medium GRAVEL, minor day, grey mottled orange. Loosely packed, most, low plasticity, [FILL] O. Time Clayer, SILT, crange mottled dark brown and light grey. Stiff to very stiff, moist to wet, medium to high plasticity. 1. Stime Fine GRAVEL. Loosely packed, wet. 2. 20m Sity CLAY, crange mottled light grey. Stiff, moist, high plasticity, [RESIDUAL, ECRF] To still the still be sti	GEOLOGICAL UNI	1	_		S C C	Core Recovery (%	Testing	RL (m)	Graphic Log	Graphilic Edg	- 1		& Addit	•	25 Water Level / 50 Fluid Loss (%)	Casing	Installation	Core Box No
1.95m Fine GRAVEL. Loosely packed, wet. 2.20m: Silty CLAY; orange mottled light grey. Stiff, moist, high plasticity. [RESIDUAL ECBF] 486 kPg 1.00 3.50m CLAY, some silt; orange mottled grey. Stiff, moist, high plasticity. 3.60m Clay, some silt; orange mottled grey. Stiff, moist, high plasticity. 3.80m Colour becomes dark brownish grey 4.05m SILT, minor organic and minor clay; blackish grey. Very stiff, moist, low plasticity.	HE	orange. Loosely packed, moist, low plasticity. [FILL]. 0.75m: Clayey SILT; orange mottled dark brown and light grey.					112# 1.2/1/3 N =7	1 1	0-5-5-						0.00003		222	KKKK
To the desirence of the		2. 20m: Silty CLAY; orange mottled light grey. Stiff, moist, high	-		_			2	0									
380m: Colour becomes dark brownish grey 4.05m: SILT, minor organic and minor clay; blackish grey. Very stiff, moist, low plasticity.	Coast Bays Formation				_		1,0// 1/1/1/1	-		-								
	Residual Easi	3.50m: CLAY, some silt; orange mottled grey. Stiff, moist, high plasticity. 3.80m: Colour becomes dark brownish grey	-		H	00		-										
						1(1)	104/37 kPa		14741143	1								Box 0.00-4.60m
Hard, moist to wet, high plasticity. [CW ECBF].	East Coast Bays Formation	Extremely weak. Recovered as: CLAY, some silt; dark grey.			Tao	100	1/2// 2/2/2/3 N=9		5									Box 0

COMMENTS:

Hole Depth 13.8m



BOREHOLE LOG

BOREHOLE No.:

BH02

SHEET: 2 OF 3

DRILLED BY: SCZH

LOGGED BY: SCZH CO-ORDINATES: 5920110 mN (NZTM2000) 1762965 mE R.L. GROUND: 16.6m PROJECT: The Point Development CHECKED: RXSW 1762965 mE R.L. COLLAR: JOB No.: 1098049.0000

1	OB No.: 1098049.0000 OCATION: 82 Aotea Street	1	CTION						DA	TUI	:OLLA M: NZ EY: Ha	ZVE	J2016	ART DATE: ISH DATE:				
L	MATERIAL RESORRATION	ANGI	_E FR)N	THO	JKIZ.:	-90 T			I			CO	NTRACTOR	R: SCZH	 		$\overline{}$
GEOLOGICAL UNIT	MATERIAL DESCRIPTION SOIL: Classification, colour, consistency / density, moisture, plasticity ROCK: Weathering, colour, fabric, name, strength, cementation	Rock Weathering		1	Core Recovery (%)	Testing	RL (m)	Depth (m)	Graphic Log	Defect Log	2000 600 500 500 800 Spacing (mm) Z	RQD (%)	Descri & Additional C	ption	Water Level / Fluid Loss (%)	Casing	Installation	Core Box No
East Coast Bays Formation	[CONT] 450m: Completely weathered, dark grey, MUDSTONE. Extremely weak. Recovered as: CLAY, some silt; dark grey. Hard, moist to wet, high plasticity. [CW ECBF].		3 A S S S S S S S S S S S S S S S S S S	SPT HQTT SPT HQTT	100 100	UTP 1/2// 2/2//33 N=10 2/2// 3/3//3/4 N=13		5.5- 6.0- 7.0- 7.5-			5 200				\$1.00 miles 1.00			Box 4.80.7.40m
	8. 40m: Moderately to highly weathered, dark grey, SILTSTONE. Very weak. Interbedded with: Moderately to highly weathered, dark grey, SANDSTONE. Very weak, fine grained. [HW-MW ECBF].			HQTT	06 0	5.9// 11/14/18/7 for 30mm N>=50		9.0-				28						
	9. 41m: Unweathered to slightly weathered, dark grey, SILTSTONE. Very weak. Interbedded with: Unweathered to slightly weathered, dark grey, SANDSTONE. Very weak, fine grained. [SW-UW ECBF].			HQTT	100			9.5-				45						

Hole Depth 13.8m



BOREHOLE LOG

BOREHOLE No.:

BH02

SHEET: 3 OF 3

DRILLED BY: SCZH LOGGED BY: SCZH

CO-ORDINATES: 5920110 mN (NZTM2000) 1762965 mE R.L. GROUND: 16.6m PROJECT: The Point Development CHECKED: RXSW 1762965 mE JOB No.: 1098049.0000 R.L. COLLAR: START DATE: 10/06/2025

LOCATION: 82 Aotea Street	1	CTION		I HO	ORIZ.:	-90	0			UM: NZV	D2016 dheld GPS	FINISH DATE: CONTRACTOR	10/06/2	2025		
MATERIAL DESCRIPTION				П					Γ	ROCH	K MASS DISC	ONTINUITIES	. 3021	Ή		П
SOIL: Classification, colour, consistency / density, moisture, plasticity ROCK: Weathering, colour, fabric, name, strength, cementation	ww. sw. sw. Rock Weathering cw. Rock Weathering	s s Rock Strength	1	Core Recovery (%)	Testing	RL (m)	Depth (m)	Graphic Log	Defect Log	2000 Eracture 200 Eracture 200 Spacing (mm) 200 ROD (%)	& Addi	Description tional Observations	25 Water Level / 50 Fluid Loss (%)	Casing	Installation	Core Box No
[CONT] 9.41m: Unweathered to slightly weathered, dark grey, SILTSTONE. Very weak. Interbedded with: Unweathered to slightly weathered, dark grey, SANDSTONE. Very weak, fine grained. [SW-UW ECBF].			HQTT HQTT HQTT HQTT	100	21/50// for 0 mm N>=50 Solid Cone 16/50// for 0 mm N>=50 Solid Cone	3	11.5 12.0 12.5			11 14 15	10.40-10.90m: J	,80-86°, PL, R, C				Box 7.40-10.40m
13.8m: Target depth						2	14.0									

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CORE PHOTOS

BOREHOLE No.: BH02

Hole Location: 82 Aotea Street

SHEET: 1 OF 2

PROJECT: The Point Development LOCATION: 110-160 Rukutai Street JOB No.: 1098049.0000

CO-ORDINATES: 5920110 mN 1762965 mE

R.L.: 16.6m

NZVD2016

DATUM:

DRILL TYPE: MST-600VD

METHOD: Rotary cored

HOLE STARTED: 10/06/2025 HOLE FINISHED: 10/06/2025

DRILLED BY: SCZH

LOGGED BY: SCZH CHECKED: RXSW



0.00-4.60m



4.60-7.40m



CORE PHOTOS

BOREHOLE No.: BH02

Hole Location: 82 Aotea Street

SHEET: 2 OF 2

PROJECT: The Point Development LOCATION: 110-160 Rukutai Street JOB No.: 1098049.0000

CO-ORDINATES: 5920110 mN 1762965 mE R.L.: 16.6m

NZVD2016

DATUM:

DRILL TYPE: MST-600VD

METHOD: Rotary cored

HOLE STARTED: 10/06/2025 HOLE FINISHED: 10/06/2025

DRILLED BY: SCZH

LOGGED BY: SCZH CHECKED: RXSW



7.40-10.40m



10.40-13.50m



HAND AUGER LOG

HOLE Id: HA01

Hole Location: 217 Kupe Street, south

SHEET: 1 OF 1

PROJECT: The Point Development LOCATION: 110-160 Rukutai Street JOB No.: 1098049.0000 CO-ORDINATES: (NZTM2000) 5920058 mN 1762661 mE DRILL TYPE: 50mm hand auger HOLE STARTED: 08/04/2025 HOLE FINISHED: 08/04/2025

	1762661 mE 45m					METHOD: Hand auger						HOLE FINISHED: 08/04/2025 DRILLED BY: SCZH				
	ZVD2	016	6		LOGGED BY: SCZH CHECKED: RXSW											
GEOLOGICAL		_		METHOD OB	SERVATIONS	S	1						El	NGINEERING DESCRIPTION		
STRATIGRAPHY / ENG GEOLOGICAL UNIT / ADDITIONAL OBSERVATIONS	WATER	CORE RECOVERY (%)	метнор	SCALA PENETROMETER (Blows/100mm)	TESTS	SAMPLES	RL (m)	DEPTH (m)	GRAPHIC LOG	WEATHERING CLASSIFICATION	MOISTURE CLASSIFICATION	CONSISTENCY / DENSITY CLASSIFICATION	S 25 25 STIMATED F 50 SHEAR STRENGTH SKI 100 (St. IAPa) H 20 (St. IAPa)	DESCRIPTION		
Fill					● >227 kPa ● >227 kPa						D	Н		0.00m: SILT, some gravel; light brown. Hard, dry, non-plastic. Gravel, fine. [FILL].		
Auckland Volcanic Field		100	HA		 >227 kPa UTP >227 kPa 		43	1						O.70m: SILT, some clay; light brown mottled orange. Hard, dry, low to medium plasticity. [AUCKLAND VOLCANIC FIELD - ASH].		
	08/04/2025				● 104/45 kPa		-	2 _	0000		M M-W	TP		1.80m: Silty fine GRAVEL. Tightly packed, moist. [AUCKLAND VOLCANIC FIELD - TUFF]. 2.20m: Clayey SILT; yellowish grey mottled dark brown.		
East Coast Bays Formation					● 81/29 kPa ● 78/36 kPa		42	-	7 H		101-00	31		Stiff, moist to wet, medium to high plasticity. [RESIDUAL ECBF].		
					■ 84/32 NPa		39 40 41	4						3m: Target depth		



HAND AUGER PHOTOS

BOREHOLE No.: **HA01 Hole Location**: 217 Kupe Street, south

SHEET: 1 OF 1

PROJECT: The Point Development LOCATION: 110-160 Rukutai Street JOB No.: 1098049.0000

R.L.: 45m DRILLED BY: SCZH

DATUM: NZVD2016 DRILLED BY: SCZH CHECKED: RXSW



0.00-3.00m



HAND AUGER LOG

HOLE Id: HA02

Hole Location: 217 Kupe Street, north

SHEET: 1 OF 1

PROJECT: The Point Development LOCATION: 110-160 Rukutai Street JOB No.: 1098049.0000 CO-ORDINATES: (NZTM2000) 5920113 mN HOLE STARTED: 08/04/2025 DRILL TYPE: 50mm hand auger 1762605 mE HOLE FINISHED: 08/04/2025 METHOD: Hand auger R.L.: 45m DRILLED BY: SCZH DATUM: NZVD2016 LOGGED BY: SCZH CHECKED: RXSW METHOD OBSERVATIONS **GEOLOGICAL ENGINEERING DESCRIPTION** STRATIGRAPHY / ENG GEOLOGICAL UNIT / ADDITIONAL OBSERVATIONS DESCRIPTION 0.00m: Organic SILT, minor clay; dark brown. Firm, moist, low plasticity. [TOPSOIL]. TS Topsoil 0.25m: Silty CLAY; light grey mottled orange. Stiff to very stiff, moist, high plasticity. [RESIDUAL ECBF]. 100/3 kPa 61/16 kPa 165/65 kPa 1.00m: SILT, some clay; light grey mottled orange. Stiff to very stiff, moist, medium plasticity. 142/52 kPa 100 ₹ 74/32 kPa East Coast Bays 1.60m: SILT, some clay; light grey mottled orange. Stiff, moist, low to medium plasticity. St Formation 74/29 kPa 43 2.40m: Colour becomes orange 94/36 kPa 104/32 kPa 3m: Target depth 40 5

TTNZ_20240902 - HandAugerLog - 10/04/2025 9:46:05 am - Produced with Core-GS by GeRoc

Hole Depth 3m

COMMENTS:

Scale 1:30



45m

NZVD2016

HAND AUGER PHOTOS

BOREHOLE No.: HA02

Hole Location: 217 Kupe Street, north

SHEET: 1 OF 1

PROJECT: The Point Development LOCATION: 110-160 Rukutai Street JOB No.: 1098049.0000

CO-ORDINATES: (NZTM2000) 5920113 mN 1762605 mE

R.L.:

DATUM:

DRILL TYPE: 50mm hand auger

METHOD: Hand auger

HOLE STARTED: 08/04/2025 HOLE FINISHED: 08/04/2025

DRILLED BY: SCZH

LOGGED BY: SCZH CHECKED: RXSW



0.00-3.00m



HAND AUGER LOG

HOLE Id: HA03

Hole Location: 63 Rukutai Street

SHEET: 1 OF 1

PROJECT: The Point Development LOCATION: 110-160 Rukutai Street JOB No.: 1098049.0000 CO-ORDINATES: (NZTM2000) 5920070 mN HOLE STARTED: 09/06/2025 DRILL TYPE: 50mm hand auger HOLE FINISHED: 09/06/2025 METHOD: Hand auger R.L.: 34.0m DRILLED BY: SCZH DATUM: NZVD2016 LOGGED BY: SCZH CHECKED: RXSW METHOD OBSERVATIONS **GEOLOGICAL ENGINEERING DESCRIPTION** STRATIGRAPHY / ENG GEOLOGICAL UNIT / ADDITIONAL OBSERVATIONS DESCRIPTION 0.00m: Clayey SILT, some organic; dark brown. Soft, wet, medium to high plasticity. [TOPSOIL]. Topsoil M St 0.05m: Silty CLAY; yellowish brown mottled light grey. Stiff, moist, high plasticity. [RESIDUAL ECBF]. 92/27 kPa 83/36 kPa 74/45 kPa 09/06/2025 98/51 kPa W-S VSt 1.20m: SILT, trace clay; yellowish motted grey. Very stiff, wet to saturated, non-plastic to low plasticity. ₹ 19 Residual East Coast 107/18 kPa Bays Formation 1.60m: Colour becomes grey 146/9 kPa Н 1.90m: SILT, trace clay; yellowish motted grey. Hard, 2.0 wet to saturated, non-plastic to low plasticity. >208 kPa >208 kPa >208 kPa 3m: Refusal 30 4.5 COMMENTS:

TNZ_20240902 - HandAugerLog - 26/06/2025 8:57:23 am - Produced with Core-GS by GeRoc

Scale 1:25

Rev.:



HAND AUGER PHOTOS

BOREHOLE No.: **HA03 Hole Location:** 63 Rukutai Street

SHEET: 1 OF 1

PROJECT: The Point Development LOCATION: 110-160 Rukutai Street JOB No.: 1098049.0000

CO-ORDINATES: 5920070 mN | DRILL TYPE: 50mm hand auger | HOLE STARTED: 09/06/2025 | HOLE FINISHED: 09/06/2025 | HOLE FINISHED: 09/06/2025 | DRILLED BY: SCZH

R.L.: 34.0m DATUM: NZVD2016 DRILLED BY: SCZH LOGGED BY: SCZH CHECKED: RXSW



0.00-3.00m



HAND AUGER LOG

HOLE Id: HA04

Hole Location: 82 Aotea Street

SHEET: 1 OF 1

PROJECT: The Point Development JOB No.: 1098049.0000 LOCATION: 110-160 Rukutai Street CO-ORDINATES: 5920141 mN DRILL TYPE: 50mm hand auger HOLE STARTED: 10/06/2025

(NZTM2000)	1762	293			METHOD: Hand auger HOLE FINISHED: 10/06/2025														
R.L.:	16.7		040				IVIL I	ПОВ	. Hall	DRILLED BY: SCZH									
DATUM: GEOLOGICAL	NZV	שעי	016		METHOD OB	SEDVATION	<u> </u>							EN	LOGGED BY: SCZH CHECKED: RXSW ENGINEERING DESCRIPTION				
STRATIGRAPHY / ENG GEOLOGICAL UNIT / ADDITIONAL OBSERVATIO	NS				WETHOD OB	SERVATION					ATION	NO			NGINEERING DESCRIPTION				
ADDITIONAL OBSERVATIO		WATER	CORE RECOVERY (%)	МЕТНОБ	SCALA PENETROMETER (Blows/100mm)	TESTS	SAMPLES	RL (m)	DЕРТН (m)	GRAPHIC LOG	WEATHERING CLASSIFICATION	MOISTURE CLASSIFICATION	CONSISTENCY / DENSITY CLASSIFICATION	VS 12 ESTIMATED S 25 SOL F 80 SHEAR SITEMENT SITUATED SI 100 SHEAR SITEMENT H VS 200 (Su, MPa)	DESCRIPTION				
Fill						● 152/71 kPa ● 146/56 kPa		- 10	0.5-			М	St- VSt		O.00m: Gravelly SILT, minor clay; greyish brown. Stiff to very stiff, moist, low plasticity. [FILL]. O.55m: Silty CLAY; brownish orange mottled dark brown. Very stiff, moist, high plasticity.				
Residual East Coas	·					● 137/54 kPa ■ 92/27 kPa		15	1.5-				St- VSt	-	1.10m: Silty CLAY; brown mottled light grey. Stiff to very stiff, moist, high plasticity. [Residual ECBF].				
Bays Formation	_	10/06/2025	100	HA		 86/30 kPa 89/6 kPa 137/45 kPa 		- - - -	2.0-			w			1.80m: SILT, some sand, minor clay; grey mottled light brown. Stiff to very stiff, wet, low plasticity.				
						→ >208 kPa→ >208 kPa		- - - - -	2.5-	* # * * * * * * * * * * * * * * * * * *		W-S	Н		2.50m: SILT, minor sand; grey. Hard, wet to saturated, dilatant rapid. Sand, fine. [CW ECBF].				
East Coast Bays Formation						● UTP		- - -	3.5-	* * * * * * * * * * * * * * * * * * *									
								- 5	-	* * *									
COMMENTS:								12	4.0-						3.8m: Refusal				

TTNZ_20240902 - HandAugerLog - 26/06/2025 9:01:23 am - Produced with Core-GS by GeRoc



NZVD2016

HAND AUGER PHOTOS

BOREHOLE No.: HA04

Hole Location: 82 Aotea Street

SHEET: 1 OF 1

PROJECT: The Point Development LOCATION: 110-160 Rukutai Street JOB No.: 1098049.0000

CO-ORDINATES: 5920141 mN 1762939 mE R.L.: 16.7m

DATUM:

DRILL TYPE: 50mm hand auger
METHOD: Hand auger

HOLE STARTED: 10/06/2025 HOLE FINISHED: 10/06/2025

DRILLED BY: SCZH

LOGGED BY: SCZH CHECKED: RXSW

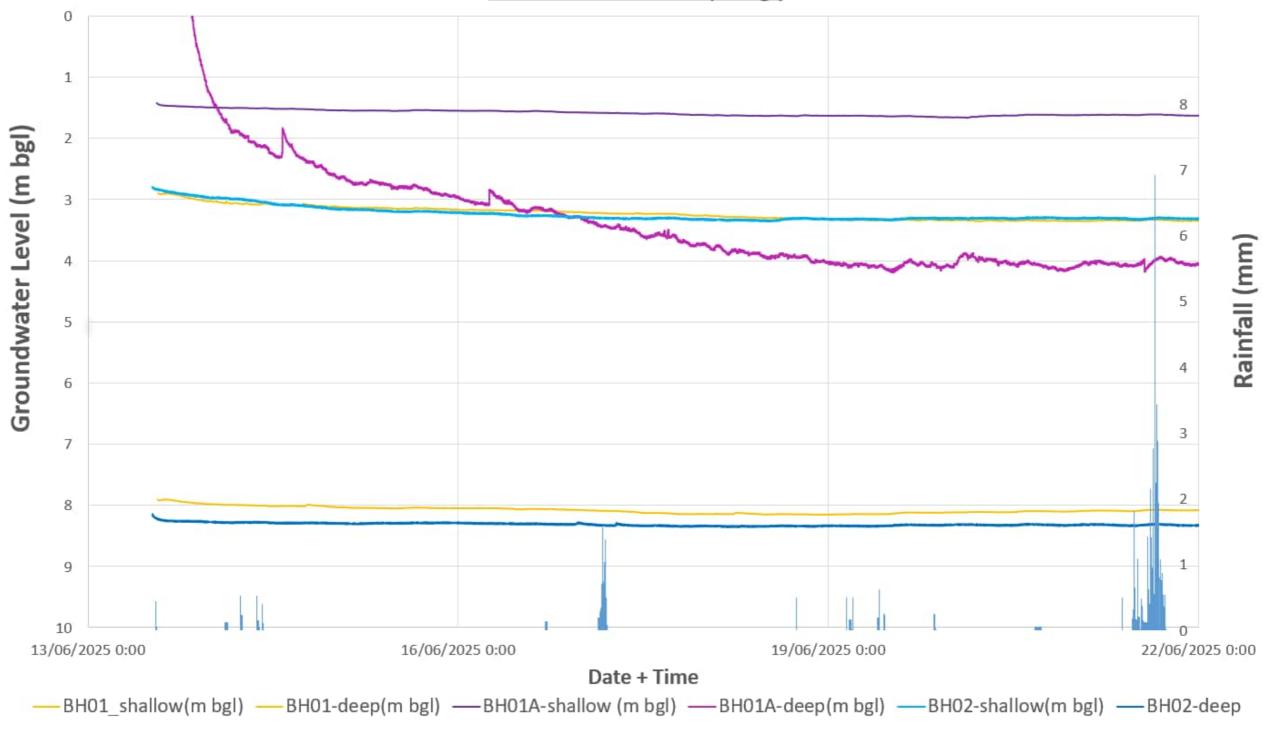


0.00-3.80m

Appendix C Groundwater Monitoring

Groundwater Monitoring

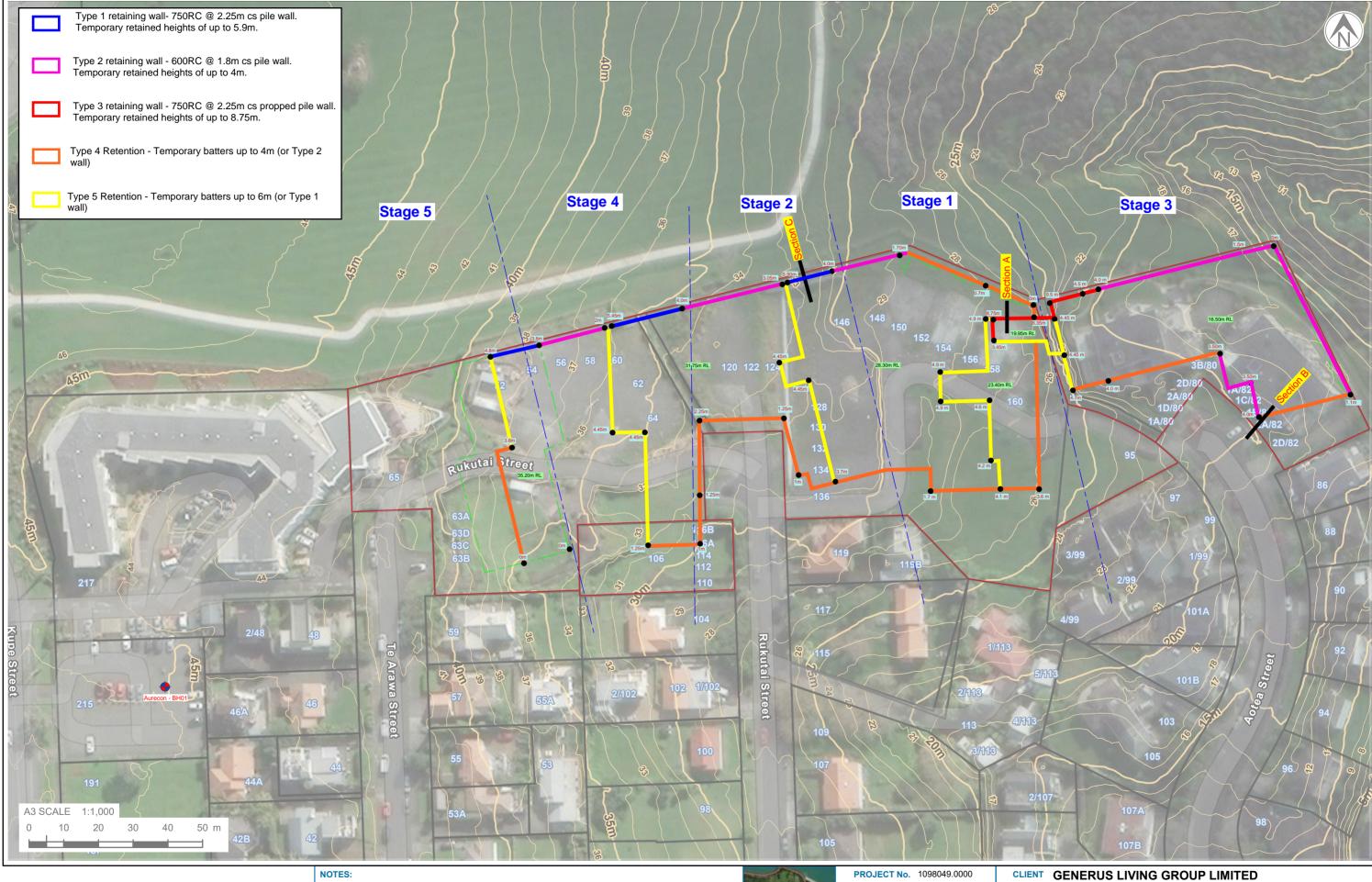
Groundwater level (m bgl)





)49.0000	PROJECT No. 1098049	CLIENT	GENERUS LIVING GROUP LIM	IITED
, ,	DESIGNED SCZH DRAWN SCZH	PROJECT	THE POINT DEVELOPMENT	
1	CHECKED	TITLE	Groundwater Monitoring Graph	DRAFT
		SCALE (A3)	AS SHOWN FIGNO. 4	REV 1

Appendix D Conceptual basement retention sequence





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CRS: NZGD 2000 New Zealand Transverse Mercator Credits: Esri Community Maps Contributors, LINZ, Stats NZ, Esri, TomTom, Garmin, Foursquare, METI/NASA, USGS, Earthstar Geographics, Maxar, LINZ, Stats NZ, Esri, TomTom, Garmin, Foursquare, METI/NASA, USGS

PROJECT No.	1098049.0	0000
DESIGNED	SCZH	JUN.:
DRAWN	SCZH	JUN.2
CHECKED		
	DESIGNED DRAWN	DRAWN SCZH

LOCATION PLAN

PROJECT THE POINT DEVELOPMENT

TITLE CONCEPUTAL TEMPORARY BASEMENT RETENTION SEQUENCE

RETENTION SEQUENCE

SCALE (A3) 1:1,000 FIG No. FIGURE 1. REV

Appendix E Draft Monitoring & Contingency Plan

Tonkin+Taylor

The Point Development Groundwater and Settlement

Monitoring Contingency Plan (GSMCP)

Prepared for

Generus Living Group Limited

Prepared by

Tonkin & Taylor Ltd

Date

August 2025

Job Number

1098049.0000 v3







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Document control

Title: The Point Development						
Date	Version	Description	Prepared by:	Reviewed by:	Authorised by:	
11 July 2025	1	Draft for Client Review	S. Zhang	R. Wilkinson		
14 August 2025	2	Draft v2 for Client Review	S. Zhang	M. Thomas		
27 August 2025	3	Draft v3 for RC Application	S. Zhang	R. Wilkinson	A. Langbein	



Distribution:

Generus Living Group Limited
Tonkin & Taylor Ltd (FILE)

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Definitions

AC	Means the Auckland Council (Team Leader, Water Allocation, NRSI) or nominated AC staff acting on the Team Leader's behalf
Bulk Excavation	Includes all excavation that affects groundwater, excluding minor enabling works and pilling
Commencement of Excavation	Means commencement of Bulk Excavation or excavation to create perimeter walls
Commencement of Dewatering	Means commencement of Bulk Excavation and/or the commencement of the taking or diversion of groundwater, other than for initial state monitoring purposes
Completion of Excavation	When all bulk excavation has been completed and all foundation/footing excavations within 10 m of the retaining wall or excavation batter have been completed
Completion of Dewatering	Means, in the case of a tanked building or structure construction, the stage when all the external base slab and walls are essentially watertight, the structures internal support mechanisms, including ground floor have been completed, any temporary retention removed, and no further groundwater is being taken for the construction on the perimeter retention system.
	Means, in the case of a drained building or structure, the stage the structures external and internal support mechanisms, including ground floors have been completed, the permanent drainage systems are in place, and no further groundwater is being taken for the construction of the perimeter retention system
Completion of Construction	Means when the code compliance Certificate (CCC) is issued by Auckland Council
Damage	Includes Aesthetic, Serviceability and Stability damage categories in accordance with building damage classification after Burland 1995 and Mair et. al. 1996
Alert Level	Monitoring reaches a level close to, or equal to the design value, which is above the level where damage could occur, and requires review to assess the future trend
Alarm Level	Is the deformation limit set at a threshold which has the potential to cause damage to buildings, structures and services, and requires immediate action including the cessation of activities that may influence ground deformation and at which the Consent Holder shall implement the relevant procedure described in this GSMCP
The Team Leader	Team Leader, Centre Monitoring, Auckland Council (AC), or nominated AC staff acting on The Team Leader's behalf
Services	Includes fibre optic cables, sanitary drainage, stormwater drainage, gas and water mains, power and telephone installations, road infrastructure assets such as footpaths, kerbs, catch-pits, pavements and street furniture
SQEP	Means Suitably Qualified Engineering Professional (Tonkin & Taylor)
SQES	Means Suitably Qualified Engineering Surveyor
GSMCP	Means Groundwater and Settlement Monitoring and Contingency Plan

1 Introduction

Tonkin & Taylor Ltd (T+T) have been engaged by Generus Living Group Ltd (Generus) to prepare a draft Groundwater and Settlement Monitoring and Contingency Plan (GSMCP) to support the Resource Consent application for the proposed development of the retirement village referred to as 'The Point Mission Bay' (TPMB).

Monitoring of the excavation works and surroundings will be undertaken to assess effects on ground and structures adjacent to the site. Monitoring plans are shown in Appendix A.

This GSMCP serves to establish a set of project controls to monitor ground settlement, and to address potential geotechnical effects related to the project works. The GSMCP also provides contingency and mitigation measures that may be applied should monitoring results indicate ground settlement are approaching or likely to exceed established alert and alarm limits.

This GSMCP is applicable for the excavation based on the T+T Geotechnical Assessment Report¹.

1.1 Project description

The proposed development involves the construction of 5 buildings across the site ranging in height between 5 to 7 stories, which includes partial basement levels of 1 to 2 stories that daylight from the sloping ground across the site that falls from west to east. A shared basement is proposed between Buildings 2, 3 & 4. The area between the buildings is to be used for recreation and hard and soft landscaping.

In accordance with the preliminary development plans provided², the basement levels across the buildings are summarised below:

• Building 1: RL 16.50 m

Building 2: RL 23.4 m to 28.3 m
 Building 3: RL 28.3 m to RL 31.75

Building 4: RL 31.75 m
 Building 5: RL 35.20 m

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Our assessment has allowed for bulk excavation up to 1.0 m below the finished floor levels to account for the floor slab and subsoil drainage construction. On this basis, the temporary retained heights of up to approximately 8.75 m are required to support the proposed excavation.

¹ T+T (August 2025), The Point Development – Geotechnical Assessment Report, v3. T+T Ref: 1094098.0000.

² Warren & Mahoney (22 August 2025). Architectural Design Report Prepared for Generus Living Group, Rev A. Job No. 10476.

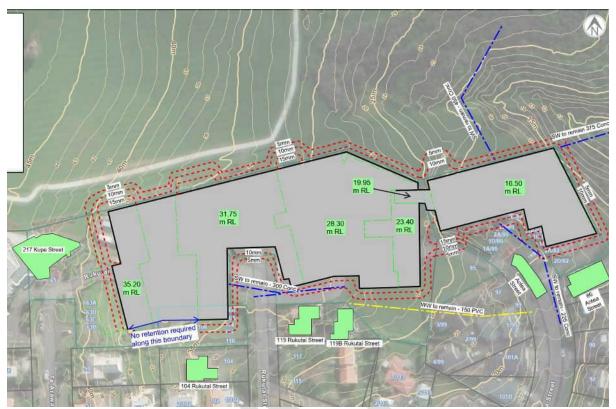


Figure 1.1: Current development site and surrounds, with locations of potentially affected structures

1.2 Nearby potentially affected structure and services

1.2.1 Structures

The structures shown in Figure 1.1 and listed in Table 1.1 have been identified as "potentially affected structures". The degree of risk to these structures as summarised below based on the assessment of effects presented in the T+T Geotechnical Assessment Report¹ for this site.

Table 1.1: Pote	itially affected	structures
-----------------	------------------	------------

Structure	Direction (N,S,E,W)	Approximate distance from excavation (m)	Risk
217 Kupe Street	W	17.5	Negligible
104 Rukutai Street		18.0	Negligible
119 Rukutai Street	c	10.0	Negligible
119B Rukutai Street	3	16.0	Negligible
86 Aotea Street		14.5	Negligible

1.2.2 Services

Potentially affected services for the purposes of monitoring were assessed using public utility services identified in the online Auckland Council GIS database³. A plan extracted from the GIS online tool is shown in Figure 1.2. A summary of the identified affected services is given in Table 1.2.

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³ https://geomapspublic.aucklandcouncil.govt.nz

The Geotechnical Assessment Report for the site concluded that the likely effect of the proposed development for identified services was negligible to moderate.

Table 1.2: Potentially affected services

Service ID	Street	Service type	Material	Diameter (mm)	Direction (N,S,E,W)	Approximate distance from excavation (m)
2000609020	Michael Joseph Savage Memorial Park	Stormwater	Concrete	450	N	0
2000403490	Michael Joseph Savage Memorial Park	Stormwater	Concrete	375	E	0
300135283, 3000135314, and 2000154512	Aotea Street	Stormwater	Concrete	225	S	6.0
2000158462, and 2000616277	Rukutai Street	Stormwater	Concrete	300	S	2.5
2601731, 2496144, and 2493377	Rukutai Street	Wastewater	VC	150	S	7.5



Figure 1.2: Auckland Council public underground services (potentially affected serviced are highlighted in bold dashed line)

1.3 Reporting requirements

1.3.1 Allocation of monitoring and reporting tasks

The completion of the Groundwater and Settlement Monitoring and Contingency Plan detailed herein shall be the overall responsibility of the consent holder. The following allocation of monitoring and reporting tasks is assumed to enable successful plan completion.

Monitoring item	Install / baseline	Regular monitoring	Individual monitoring round reporting to T+T	Bi-monthly reporting to AC
Service condition surveys	Principal contractor	Principal contractor	Principal contractor	N/A
Structural condition surveys	Principal contractor / SQEP	Principal contractor	Principal contractor	T+T
Buildings and ground deformation pin survey	Principal contractor / SQES	Principal contractor / SQES	Principal contractor / SQES	T+T

1.3.2 **General notification timeframes**

The Team Leader shall be advised by the Principal Contractor of the following project milestones:

Project milestone	Notification requirement	
Commencement of Excavation	10 working days prior	
Commencement of Dewatering	10 working days prior	

1.3.3 Monitoring records/reporting

Survey data collected during the course of the project shall be forwarded to T+T within three working days of that data being collected.

Monitoring results will be collated by T+T and compared with the specified trigger levels. These records will be held by T+T and will be available for inspection as required.

During construction, reporting of the monitoring results will be forwarded to AC at two-monthly intervals. Each report shall include the following:

- Monitoring records presented on a timeline plot.
- Comparison of monitoring data with the adopted trigger levels.
- Previous results set out with an explanation of any trends.
- A construction progress summary.
- Any other information relevant to the reporting period (i.e. exceedance of trigger levels and contingency measures being undertaken).

At the completion of the perimeter retention system construction, monitoring will continue for the timeframes required by the consent (or at such time that stable measurements are demonstrated, and written approval to cease monitoring is granted from AC).

In the event of any exceedance of the trigger levels, the relevant monitoring and reporting procedure will be implemented in accordance with Section 3 of the plan.

At the completion of the works a summary completion report will be prepared.

2 Monitoring

2.1 General

Monitoring of the excavation works and surroundings shall be undertaken to ensure that the ground and groundwater conditions are consistent with the design analyses and that the response of the structures is within design tolerances.

The monitoring requirements, including location of monitoring points, frequency of monitoring, action trigger levels, response procedures and reporting requirements, are detailed in the following sections. Survey monitoring locations are shown in the Construction Monitoring Instrumentation Plan in Appendix A.

The proposed construction phase monitoring to assess the effects on ground surrounding the site and of the services and structures identified above shall include:

- Pre and post-retention system construction, condition surveys of the potentially affected structures and services identified in Table 1.1 and Table 1.2 above.
- Regular visual external survey of the surrounding ground, pavement, associated street infrastructure and structures during construction to identify any deterioration of preconstruction baseline conditions.
- Precise levelling survey of the ground and buildings surrounding the site. The marks shall be set as low as practicable on the building on elements in direct connection with the foundation level (i.e. columns or perimeter footings).
- Precise levelling survey of pavement line levels surrounding the site.

2.2 Pre-condition surveys

2.2.1 Service condition surveys

Prior to the Commencement of Dewatering and following Completion of Dewatering (and within 6 months of completion of the retention system construction), a condition survey of potentially affected buried services (refer to Table 2.1) shall be undertaken in consultation with the relevant service provider.

Suitable condition surveys are expected to comprise CCTV survey for stormwater and wastewater services.

A condition survey is not required where written evidence is provided to the Council that the owner of that service has confirmed they do not require a condition survey.

Table 2.1: List of neighbouring underground services requiring condition surveys

Service ID	Direction (N,S,E,W)	Internal Survey	Settlement Pins (Yes/No)
2000609020	N	✓	Yes
2000403490	E	✓	Yes
300135283, 3000135314, and 2000154512	S	✓	Yes
2000158462, and 2000616277	S	✓	Yes

2.2.2 Building condition surveys

In accordance with the T+T Geotechnical Assessment Report¹, estimated settlement across all potentially affected adjacent structures is less than 5 mm. On this basis, no building condition survey is considered to be required for the proposed basement excavation.

2.2.3 Construction phase monitoring

An external visual inspection undertaken by the Principal Contractor at regular intervals shall monitor any new damage or deterioration of any pre-existing damage for the following:

The ground within 10 m of the excavation.

A photographic record of the surveys is to be maintained, including the time, date and any observations for each inspection. This record is to be maintained on site and forwarded to T+T typically monthly, but within one day if any deterioration or cracking is observed.

2.2.4 Condition survey intervals

A visual inspection of the surrounding ground and buildings listed above shall be carried out at the following intervals:

Pre-commencement of dewatering	Pre-construction survey as detailed in Section 2.2.1 and 2.2.2.
From commencement of dewatering to completion of dewatering	Fortnightly external visual inspections as detailed in Section 2.2.3.
After completion of dewatering	Post-construction survey within six months of completion of construction as detailed in Section 2.2.1 and 2.2.2.

At the reasonable request of the Council, an additional survey on any building shall be carried out for the purpose of checking for damage and for following up on a report of damage to that building.

2.3 Ground and building deformation

2.3.1 General

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Ground and building deformation monitoring marks shall be established on the pavements and buildings surrounding the excavation area at the locations shown in Appendix A.

The marks shall be set as low as practicable on the building on elements in direct connection with the foundation level (i.e. columns or perimeter footings).

Survey measurements shall be accurate to ± 2 mm.

2.3.2 Settlement monitoring intervals

Surveys shall be carried out at the following intervals:

Pre-commencement of dewatering	At least two baseline surveys are required to establish baseline readings.
Commencement of dewatering to completion of excavation	Fortnightly
Completion of excavation to completion of dewatering	Fortnightly
After the completion of dewatering	Monthly for six months or until such a time following the completion of dewatering that stable measurements are demonstrated, and written approval is granted from the Council.

Subject to the Team Leader's approval, monitoring may be reduced in frequency, subject to demonstration of consistent results below the alert/alarm levels.

2.3.3 Ground trigger levels

Monitoring data is to be compared with the design assumptions and baseline readings. Alert and Alarm Levels at which actions are required to be undertaken are summarised in Table 2.2. If the alert or alarm levels in Table 2.2 are reached, the actions outlined in Section 4 shall be carried out.

Table 2.2: Ground deformation mark trigger levels

Settlement mark ID	Description	Settlement alert level (mm)	Settlement alarm level (mm)	Differential settlement alert level	Differential settlement alarm level
GS1 to G4	North ground monitoring points	15	25	1:450 between two ground	1:550 between two ground
GS5 to G12	South ground monitoring points	10	20	monitoring marks	monitoring marks



Summary of monitoring frequency requirements 2.4

	Monitoring Points	Alert Level (mm)	Alarm Level (mm)	Monitoring Frequencies ²				
Monitoring Item				Pre-Commencement of dewatering / Baseline	From Commencement of Dewatering/Excavation	After Completion of Dewatering/Excavation	Reporting Frequency	
Differential Ground Surface Settlement ¹	GS1 to GS12	1:450 between two ground monitoring marks	1:550 between two ground monitoring marks	At least two baseline surveys for all deformation points to a horizontal and	Fortnightly to Completion of Excavation. Monthly for six months or until such a time following the completion of dewatering that stable measurements are demonstrated, and written			
Total Ground Surface	GS1 to GS4	15	25	vertical accuracy of <u>+</u> 2 mm.	vertical accuracy of ± 2 mm. Excavation.		approval for monitoring termination is	
Settlement ¹	GS5 to G12	10	20			granted from the Council.		
Services condition survey	Refer Table 2.1	N/A	N/A	Pre-construction condition survey prior to commencement of perimeter retaining walls construction or commencement of dewatering.	Fortnightly external visual inspections.	Post-construction condition survey within 6 months of the Completion of Dewatering.	Results of the monitoring programme to be reported to Council at two monthly intervals during the monitoring period.	

Notes:

¹ Deformation stations shall be surveyed to a horizontal and vertical accuracy of + 2 mm (precise survey techniques).

Subject to the Team Leader's approval, monitoring may be reduced in frequency, subject to demonstration of consistent results. 2

3 Reporting of monitoring records

3.1 Baseline readings

Baseline readings for ground and building deformation shall be established and baselined before any construction is commenced, including piling.

These baseline readings shall be compiled and submitted to the Council for certification prior to the commencement of excavation.

3.2 Reporting intervals and requirements

All monitoring records as detailed in this report shall be compiled and submitted to the Council at two monthly intervals from the commencement of construction, until six months after the completion of excavation (or at such time following the completion of excavation that stable measurements are demonstrated, and written approval for cessation of monitoring is granted from the Council), or completion of the retention system construction as appropriate.

As a minimum each report shall include the following:

- 1 Monitoring records presented in a tabulated format as well as on a timeline plot;
- 2 Comparison of monitoring data with trigger levels and the assumed design models;
- 3 Previous results set out with an explanation of any trends;
- 4 A construction progress summary; and
- Any other information relevant to the reporting period (i.e. exceedance of trigger levels and contingency measures being undertaken).

4 Alert and Alarm trigger level reponse procedures

4.1 Response procedure if the alert levels are exceeded

If any of the monitoring alert trigger levels are reached, then one or more of the contingency options described in Section 5 of this plan should be carried out together with:

- 1 Notify the Project Manager.
- 2 Notify the Council, in writing within one working day of the trigger level being exceeded, with details of any actions being undertaken.
- 3 Survey all monitoring marks within a 25 m radius of the affected monitoring mark(s) to confirm the extent of deformation and exceedance of the Alert Trigger.
- 4 Ensure the data is reviewed, and advice provided, by a SQEP on the need for mitigation measures or other actions necessary to avoid further deformation. Where mitigation measures or other actions are recommended those measures shall be implemented.
- Submit a written report, prepared by the SQEP responsible for overviewing the monitoring, to the Team Leader Central Monitoring within five working days of Alert Level exceedance. The report shall provide an analysis of all monitoring data relating to the exceedance, actions taken to date to address the issue, recommendations for additional monitoring (i.e. the need for increased frequency or repeat condition survey(s) of building or structures) and recommendations for future remedial actions necessary to prevent Alarm Levels being exceeded.
- 6 Measure and record all Monitoring Stations within 25 metres of the location of any Alert Level exceedance every three days until such time the written report referred to above has been submitted to the Team Leader Central Monitoring.

7 Once approved, the recommendations shall be implemented.

4.2 Response procedure if the alarm levels are exceeded

If the monitoring alarm trigger levels are reached for any ground or building deformation then the following shall be carried out in addition to the actions outlined in Section 5:

- Immediately halt construction activity, including excavation, dewatering or any other works that may result in increased deformation, unless halting the activity is considered by a SQEP to be likely to be more harmful (in terms of effects on the environment) than continuing to carry out the activity.
- 2 Notify the Team Leader (AC), within 24 hours of the alarm level exceedance being detected and provide details of the measurements taken.
- Undertake a condition survey (this could comprise either a detailed condition survey or an external visual inspection at the discretion of the SQEP responsible for overviewing the monitoring) by a SQEP or suitably qualified building surveyor (SQBS) of any building or structure located adjacent to any Monitoring Station where the Alarm Level has been exceeded.
- Take advice from the author of the Alert Level exceedance report (if there was one) or another SQEP on actions required to avoid remedy or mitigate adverse effects on ground, buildings or structures that may occur as a result of the exceedance.
- Submit a written report, prepared by the SQEP responsible for overviewing the monitoring, for certification by the Team Leader Compliance Monitoring NW1, on the results of the condition survey(s), the mitigation measures implemented and any remedial works and/or agreements with affected parties within five working days of recommencement of works.
- Not resume construction activities (or any associated activities), halted in accordance with paragraph (1) above, until any mitigation measures (recommended in accordance with paragraphs (4) or (5) above) have been implemented, to the satisfaction of a SQEP.

5 Contingency

5.1 General

If any of the monitoring trigger levels are exceeded, the general response will be as detailed in Section 4. Specific actions will be selected depending on the exact nature of the problem. Possible contingency actions are detailed in the following sections.

5.2 Ground and building deformation contingency measures

In the event of ground or building deformation exceeding the monitoring trigger levels, one or more of the following actions shall be taken:

- Check public safety is maintained.
- Discussions on the situation with the property/service owner that may be affected.
- Monitor the rate of settlement (assuming that other steps have been undertaken to address the cause).
- Consider options to mitigate further settlement if recommended by the SQEP, which may involve:
 - Install a berm or temporary prop in front of the retaining wall or excavation
- Accept and reinstate resultant damage.

6 Applicability

comments - 12.08.25).docx

This report has been prepared for the exclusive use of our client Generus Living Group Limited, with respect to the particular brief given to us and it may not be relied upon in other contexts or for any other purpose, or by any person other than our client, without our prior written agreement.

We understand and agree that our client will submit this report as part of an application for resource consent under the Fast-track Approvals Act 2024 and that an Expert Panel as the consenting authority will use this report for the purpose of assessing that application.

Tonkin & Taylor Ltd Environmental and Engineering Consultants	
Report prepared by:	Report reviewed by:
Scott Zhang	Ric Wilkinson
Geotechnical Engineer	Senior Geotechnical Engineer
Authorised for Tonkin & Taylor Ltd by:	
Andrew Langbein	
Project Director	
27-Aug-25	ngmaterial\3. report\the point\gsmcp\draft gscmp (bentley - gr - ae
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Appendix A Monitoring Summary

Construction monitoring instrumentation plan



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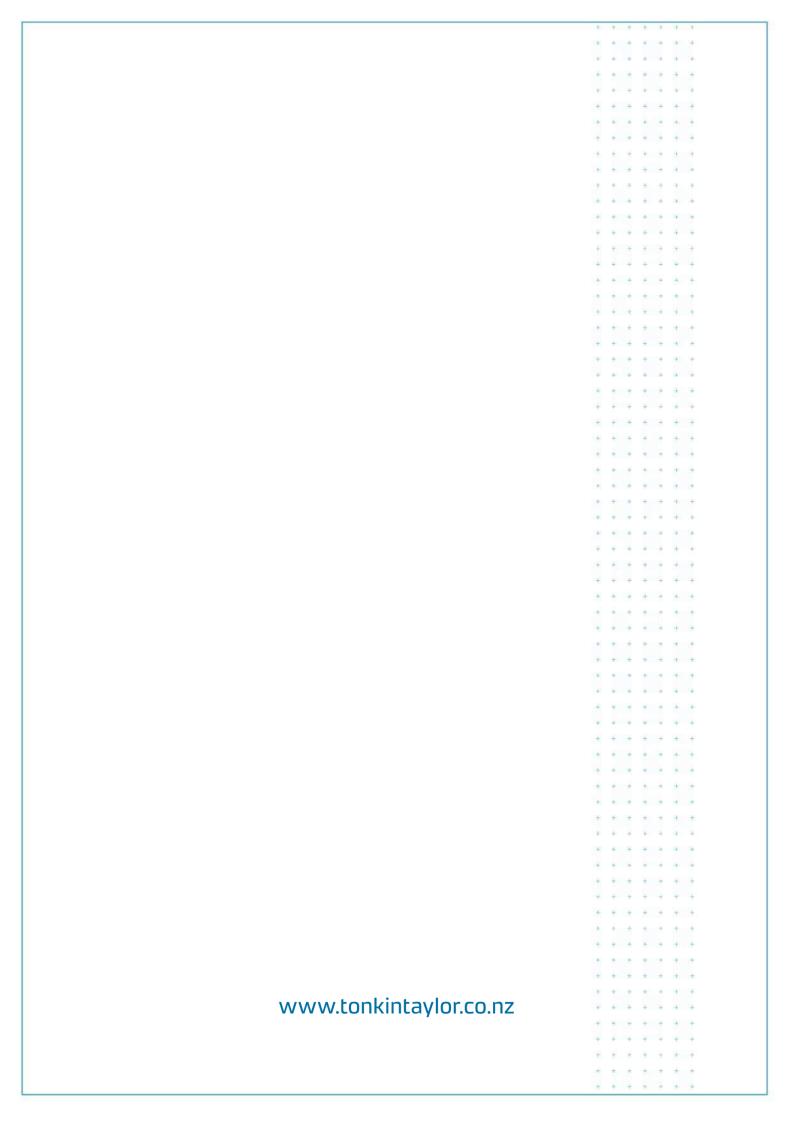
CRS: NZGD 2000 New Zealand Transverse Mercator Credits: Esri Community Maps Contributors, LINZ, Stats NZ, Esri, TomTom, Garmin, Foursquare, METI/NASA, USGS, Earthstar Geographics, Maxar, LINZ, Stats NZ, Esri, TomTom, Garmin, Foursquare, METI/NASA, USGS **LOCATION PLAN**

	PROJECT No. 1098049.0000			
Mission	DESIGNED DRAWN	SCZH SCZH	JUN.25 JUN.25	PF
	CHECKED	SUZH	JUN.25	

MENTATION PLAN SCALE (A3) 1:1,000

FIG No. FIGURE 1.

REV 0



Appendix F Proposed Consent Conditions

Proposed Conditions of Consent – Water Permit

Abbreviations and definitions:

The following abbreviations and definitions apply to these consent conditions.

Alarm Level	Means specific levels at which actions are required as described in the relevant conditions.
Alert Level	Means specific levels at which actions are required as described in the relevant conditions.
Bulk Excavation	Includes all excavation that affects groundwater excluding minor enabling works and piling less than 1.5m in diameter.
Commencement of Dewatering	Means commencement of Bulk Excavation and/or the commencement of the taking or diversion of groundwater, other than for initial state monitoring purposes.
Completion of Dewatering	Means, in the case of a drained building or structure, the stage when the structure's external and internal support mechanisms, including basement floors, have been completed, the permanent drainage system(s) are in place, and no further groundwater is being taken for the construction of the basement.
Completion of Construction	Means when the Code Compliance Certificate (CCC) is issued by Council.
Commencement of Excavation	Means commencement of Bulk Excavation or excavation to create perimeter walls.
Commencement of Excavation	Means commencement of Bulk Excavation or excavation to create perimeter walls.
Completion of Excavation	Means the stage when all Bulk Excavation and all foundation/footing excavations within ten (10) metres of the perimeter building retaining walls has been completed.
Condition Survey	Means an External Visual Inspection or a detailed Condition Survey (as defined in the relevant conditions).

Damage	Includes Aesthetic, Serviceability and Stability Damage, but does not include Negligible Damage, as described in Table 1 below.
External Visual Inspection	A Condition Survey undertaken for the purpose of detecting any new external Damage or deterioration of existing external Damage. Includes as a minimum a visual inspection of the exterior and a dated photographic record of all observable exterior Damage.
Monitoring Station	Means any monitoring instrument including a ground or building deformation station, inclinometer, groundwater monitoring bore, retaining wall deflection station, or other monitoring device required by this consent.
Seasonal Low Groundwater Level	Means the annual lowest groundwater level – which typically occurs in summer.
Services	Include fibre optic cables, sanitary drainage, stormwater drainage, gas and water mains, power and telephone installations and infrastructure, road infrastructure assets such as footpaths, kerbs, catch-pits, pavements and street furniture.
SQBS	Means Suitably Qualified Building Surveyor.

Table 1: Building Damage Classification Category of Damage					
Category of Damage	Normal Degree of Severity	Description of Typical Damage (Building Damage Classification after Burland (1995), and Mair et al (1996))	General Category (after Burland		
0	Negligible	Hairline cracks	Aesthetic		
1	Very Slight	Fine cracks easily treated during normal redecoration. Perhaps isolated slight fracture in building. Cracks in exterior visible upon close inspection. Typical crack widths up to 1mm.	Damage		
2	Slight	Cracks easily filled. Redecoration probably required. Several slight fractures inside building. Exterior cracks visible, some repainting may be required for weathertightness. Doors and windows may stick slightly. Typically, crack widths up to 5mm.			

3	Moderate	Cracks may require cutting out and patching. Recurrent cracks can be masked by suitable linings. Brick pointing and possible replacement of a small amount of exterior brickwork may be required. Doors and windows sticking. Utility services may be interrupted. Weather tightness often impaired. Typical crack widths are 5mm to 15mm or several >3mm.	Serviceability Damage
4	Severe	Extensive repair involving removal and replacement of walls especially over doors and windows. Window and door frames distorted. Floor slopes noticeably. Walls lean or bulge noticeably. Some loss of bearing in beams. Utility services disrupted. Typical crack widths are 15mm to 25mm but also depends on the number of cracks.	
5	Very Severe	Major repair required involving partial or complete reconstruction. Beams lose bearing, walls lean badly and require shoring. Windows broken by distortion. Danger of instability. Typical crack widths are greater than 25mm but depend on the number of cracks.	Stability Damage

Note: In the table above, the column headed "Description of Typical Damage" applies to masonry buildings only and the column headed "General Category" applies to all buildings

Duration of consent

1. The take (dewatering) and groundwater diversion consent [WATXXXXXXX] expires thirty-five (35) years from the date of commencement, unless it has lapsed, been surrendered, or been cancelled at an earlier date pursuant to the RMA.

Notice of Commencement of Dewatering

2. The consent holder must notify the Council in writing at least ten (10) working days prior to the date of the Commencement of Construction Phase Dewatering.

Design and Construction of Basement and Retaining Walls

3. The design and construction of the basement and retaining walls must be undertaken in accordance with the specifications contained in the report titled: "Geotechnical Assessment Report – The Point Mission Bay", prepared by Tonkin & Taylor, dated October 2025. The consent holder must provide verification in writing from an SQEP that the recommendations of this report have been implemented on the Site. This must be provided no later than ten (10) working days after completion of basement construction.

Damage Avoidance

4. All excavation, dewatering systems, retaining structures, basements and works associated with the diversion or taking of groundwater, must be designed, constructed and maintained so as to avoid damage to land, buildings, structures and services on the site and adjacent properties, outside that considered as part of the application process unless otherwise agreed in writing with the asset owner.

Alert and Alarm Levels

5. The activity must not cause any settlement or movement greater than the Alarm Level thresholds specified in **Schedule A** below. Alert and Alarm Levels are triggered when the following Alert and Alarm Trigger thresholds are exceeded:

Schedule A: Alarm and Alert Levels

Мо	ver	nent (Not	re 1)	Trigger Thresholds (+/-)	
			Alarm Alert		
a)	Differential vertical settlement between any two Ground Surface Settlement Monitoring Stations (the Differential Ground Surface Settlement Alarm or Alert Level):				
	GS01 to GS12 1:550 1:45				1:450
b)	Total vertical settlement between the pre-excavation baseline level at any Ground Surface Settlement Monitoring Station (the Total Ground Surface Settlement Alarm or Alert Level):				
	GS01 to GS04 15mm 25		25mm		
GS05 to GS12 10mm			20mm		
Note (1) The locations of the Monitoring Stations listed in Schedule A shown on the Proposed Construction Monitoring Instrument Plan included in Appendix A of the GSCMP referenced in Attachment 1.			strumentation		

These levels may be amended subject to approval by the Council as part of the GSMCP certification process and recommendations from a SQEP, but only to the extent that avoidance of Damage to building, structures and Services can still be achieved.

Advice note: There are conditions below that must be complied with when the Alert and Alarm Level triggers are exceeded. These include actions that must be taken immediately including seeking the advice of a SQEP.

Alert Level Actions

- 6. In the event of any Alert Level from **Schedule A** (**Condition 5**) being exceeded, the consent holder must:
 - (a) Notify the Council within twenty-four hours (24) of the exceedance.
 - (b) Re-measure all Monitoring Stations within twenty (20) metres of the affected monitoring location(s) to confirm the extent of apparent movement.

- (c) Ensure the data is reviewed, and advice provided, by a SQEP on the need for mitigation measures or other actions necessary to avoid further deformation. Where mitigation measures or other actions are recommended those measures must be implemented.
- (d) Submit a written report, prepared by the SQEP responsible for overviewing the monitoring, to the Council within five (5) working days of Alert Level exceedance. The report must provide an analysis of all monitoring data relating to the exceedance, actions taken to date to address the issue, recommendations for additional monitoring (i.e. the need for increased frequency or repeat Condition Survey(s)) and recommendations for future remedial actions necessary to prevent Alarm Levels being exceeded.
- (e) Measure and record all Monitoring Stations within twenty (20) metres of the location of any Alert Level exceedance every two (2) working days until such time the written report referred to above has been submitted to the Council.

Alarm Level Actions

- 7. In the event of any Alarm Level from **Schedule A** (**Condition 5**) being exceeded, the consent holder must:
 - (a) Immediately halt construction activity relevant to the location of the Alarm Level exceedance, including excavation, dewatering, or any other works that may result in increased deformation, unless halting the activity is considered by a SQEP to be likely to be more harmful (in terms of effects on the environment) than continuing to carry out the activity.
 - (b) Notify the Council within twenty-four (24) hours of the Alarm Level exceedance being detected and provide details of the measurements taken.
 - (c) Take advice from the author of the Alert Level exceedance report (if there was one) on actions required to avoid, remedy or mitigate adverse effects on ground, buildings or structures that may occur as a result of the exceedance.
 - (d) Not resume construction activities (or any associated activities), halted in accordance with paragraph (a) above, until any mitigation measures have been implemented to the satisfaction of a SQEP.
 - (e) Submit a written report, prepared by the SQEP responsible for overviewing the monitoring on the mitigation measures implemented, and any remedial works and/or agreements with affected parties within five (5) working days of recommencement of works.

Groundwater Settlement Monitoring and Contingency Plan (GSMCP)

8. At least ten (10) working days prior to the intended Commencement of Dewatering, a final GSMCP prepared by SQEP, must be submitted to the Council for certification. Any amendment of the GSMCP must also be submitted to the Council for certification. The submitted information must be generally in accordance with the draft GSMCP prepared by Tonkin + Taylor.

The overall objective of the GSMCP is to set out the practices and procedures to be adopted to ensure compliance with the consent conditions. To achieve this objective, the final GSMCP must include, at a minimum, the following information:

- (a) A monitoring location plan showing the location and type of all Monitoring Stations.
- (b) Final completed **Schedule B** (as per the conditions below) for the ground surface monitoring programme (including any proposed changes to the monitoring frequency) as required by the conditions below.
- (c) All monitoring data and the identification of services susceptible to damage required by the conditions below.
- (d) A bar chart or a schedule, showing the timing and frequency of Condition Surveys, External Visual Inspections, and all other monitoring required by this consent, and a sample report template for the two (2)-monthly monitoring required by **Condition 14**.
- (e) All Alert and Alarm Level triggers (including reasons if changes to such are proposed, for example as a result of recommendations in the Services Condition Surveys (required by **Condition 10**) or data obtained from predewatering monitoring).
- (f) Details of the contingency actions to be implemented if Alert or Alarm Levels are exceeded.
- 9. All construction, dewatering, monitoring and contingency actions must be carried out in accordance with the certified GSCMP. No Bulk Excavation (that may affect groundwater levels) or other dewatering activities must commence until the GSMCP is certified in writing by the Council.

Services Condition Surveys

- 10. The consent holder must engage a SQEP to undertake pre-condition and post-condition surveys for the following underground services:
 - (a) Service ID 2000609020 (Stormwater 450 dia. Conc);
 - (b) Service ID 2000403490 (Stormwater 375 dia. Conc);
 - (c) Service ID 300135283,3000135314 and 2000154512 (Stormwater 225 dia. Conc)
 - (d) Service ID 2000158462 and 2000616277 (Wastewater 150 dia. VC)
- 11. The Condition Survey required by **Condition 10** must include the following:
 - (a) Type of services.
 - (b) Existing levels of damage.
 - (c) Susceptibility of structure to further movement.
 - (d) Photographic evidence of items (b), (c) and (d) via CCTV Survey.
 - (e) A review and the suitability of the proposed Alarm and density of building deformation stations.

A reasonable attempt must be made to contact the service owner to carry out surveys and if access is not made available, the reasons must be recorded.

A copy of the pre-condition and post condition surveys must be provided to the Council within twenty (20) working days following completing the survey.

Advice note: This condition does not apply to any Service where written evidence is provided to the Council that the owner of that Service has confirmed they do not require a condition survey.

External Visual Inspections during Construction Phase Dewatering

12. External Visual Inspections of the surrounding ground within 10m of the basement excavation must be undertaken for the purpose of detecting any new external Damage or deterioration of existing external Damage. Inspections must be carried out fortnightly from the Commencement to Completion of Dewatering. A photographic record must be kept, including time and date, of each inspection and all observations made during the inspection, and must be of a quality that is fit for purpose.

The results of the External Visual Inspections and an assessment of the results must be reviewed by the SQEP responsible for overviewing the monitoring and must be included in the bimonthly monitoring report required by **Condition 16** for the relevant monitoring period.

Advice note: This condition does not apply to any land, building or structure where written evidence is provided to the Council confirming that the owner of the land, building or structure does not require visual inspections to be carried out.

Completion of Dewatering - Services Condition Surveys

13. Between six (6) and twelve (12) months after the Completion of Dewatering, a detailed Condition Survey of all previously surveyed Services referenced in Condition 10 must be undertaken by a SQEP and a written report must be prepared. The report must be prepared and/or reviewed by the SQEP responsible for overviewing the monitoring and submitted to the Council, within 20 working days of completion of the Condition Survey.

The Condition Survey report must make specific comment on those matters identified in the Condition Surveys required by **Condition 10**. It must also identify any new Damage that has occurred since the condition surveys were undertaken and must provide an assessment of the likely cause of any such Damage.

Advice note: This condition does not apply to any building, structure or Service where written evidence is provided to the Council confirming that the owner of that building, structure, or Service does not require a condition survey to be undertaken.

Ground Surface Deformation Monitoring

14. Ground Surface Deformation Monitoring Stations must be established and maintained in the locations shown on the monitoring location plan in the certified GSMCP, as required in accordance with **Condition 8(a)**.

The Monitoring Stations must be monitored at the frequency set out in **Schedule B** below. The purpose of the Monitoring Stations is to record any vertical or horizontal (including differential) movement. Benchmark positions must be established no less than twenty (20) metres away from the excavated area.

The monitoring frequency may be changed through amendment to the GSMCP.

Schedule B: Monitoring frequency				
Monitoring period	Monitoring station and type			
	GS01 to GS12	Services Condition Survey		
Pre-Commencement of Dewatering/Baseline	At least two (2) baseline surveys for all deformation points to a horizontal and vertical accuracy of +2mm.	Pre-construction Condition Survey prior to commencement of perimeter retaining walls construction or commencement of dewatering.		
From Commencement of Dewatering/Excavation	Fortnightly to Completion of Excavation. Fortnightly following Completion of Excavation.	Fortnightly external visual inspections.		
After Completion of Dewatering/Excavation	Monthly for six (6) months or until such a time following the completion of dewatering that stable measurements are demonstrated, and written approval for monitoring termination is granted from the Council.	Post-construction Condition Survey within six (6) months of the Completion of Dewatering.		

Contingency Actions

- 15. If the consent holder becomes aware of any Damage to buildings, structures or Services potentially caused wholly, or in part, by the exercise of this consent, the consent holder must:
 - (a) Notify the Council and the asset owner within two (2) working days of the consent holder becoming aware of the Damage.
 - (b) Provide a report prepared by a SQEP (engaged by the consent holder at their cost) that describes the Damage, identifies the cause of the Damage, identifies methods to remedy and/or mitigate the Damage that has been caused, identifies the potential for further Damage to occur, and describes actions that will be taken to avoid further Damage.
 - (c) Provide a copy of the report, prepared under (b) above, to the Council and the asset owner within ten (10) working days of notification under (a) above.
 - (d) Where the report provided by the SQEP in accordance with (b) above identifies the cause of the Damage to be activities authorised by this consent, the consent holder must offer to and, if accepted by the asset owner, rectify the Damage at the consent holder's cost, as soon as practicable, in consultation with the asset owner.

Advice note: It is anticipated the consent holder will seek the permission of the damaged asset owner to access the property and asset to enable the inspection/investigation. It is understood that if access is denied the report will be of limited extent.

Reporting of Monitoring Data

16. At two (2) monthly intervals, until the Completion of Dewatering, and at six (6) monthly intervals until twelve (12) months following Completion of Dewatering, a report containing all monitoring data required by conditions of this consent must be submitted to the Council. This report must include a construction progress timeline, the monitoring data recorded in that period, and a comparison of that data with previously recorded data and with the Alert and Alarm Levels for each Monitoring Station.

Notice of Completion

17. The Council must be advised in writing within ten (10) working days of when Bulk Excavation and Completion of Dewatering has been completed.

Groundwater Maintenance Program

18. Within twelve (12) months of Completion of Dewatering, the Council must be provided with a maintenance program for any permanent groundwater drainage system used to manage groundwater levels.

Advice note: The consent holder is advised that the discharge of pumped groundwater to a stormwater system or waterbody will need to comply with any other regulations, bylaws or discharge rules that may apply.

