Geotechnical Assessment Sutton Block Extension

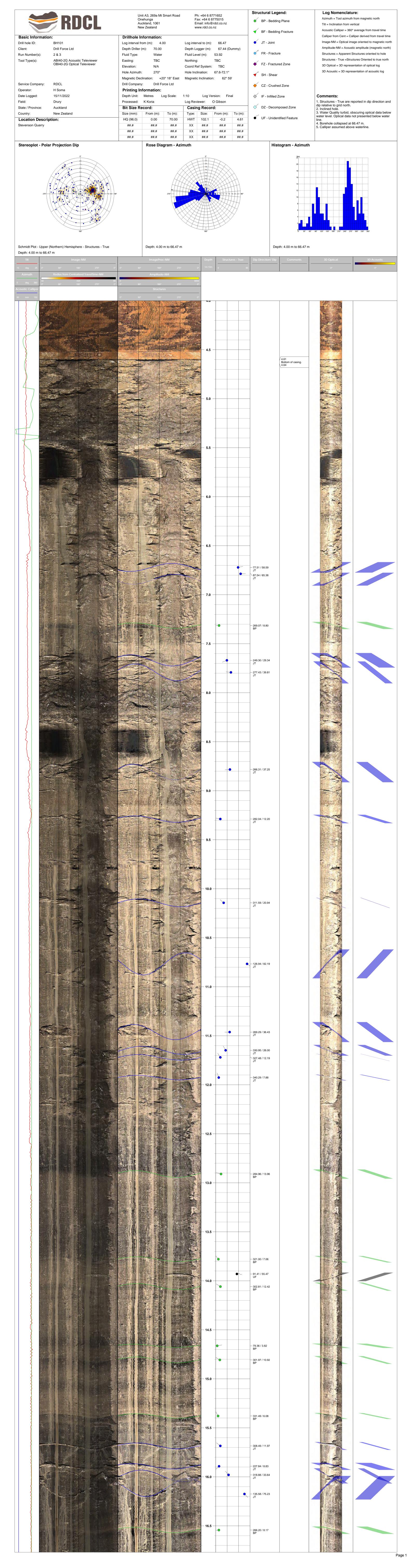
Drury Quarry, Drury

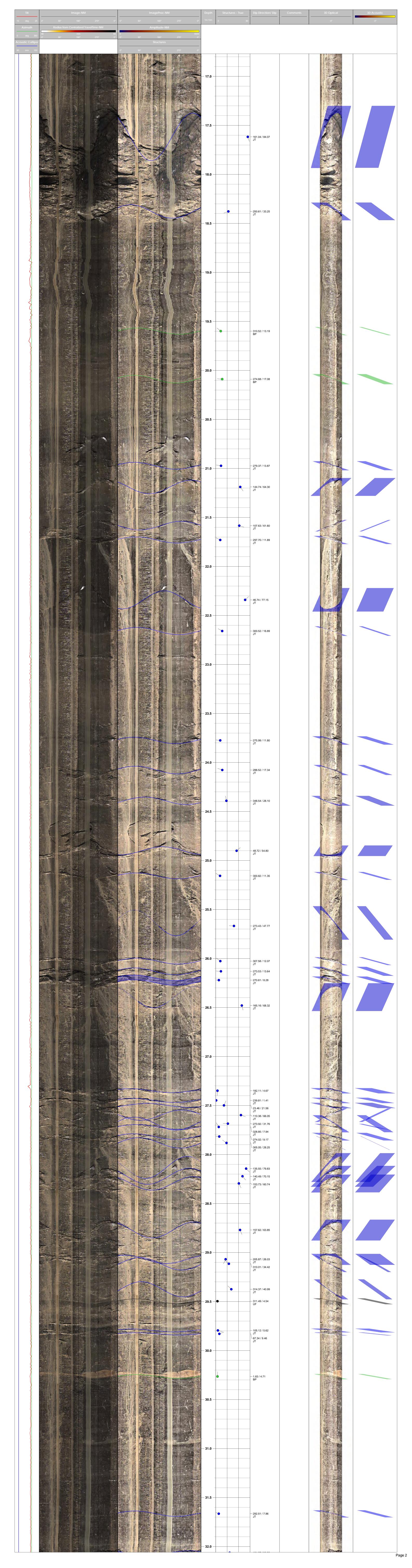
Part 2 of 2 - Appendix E to Appendix I

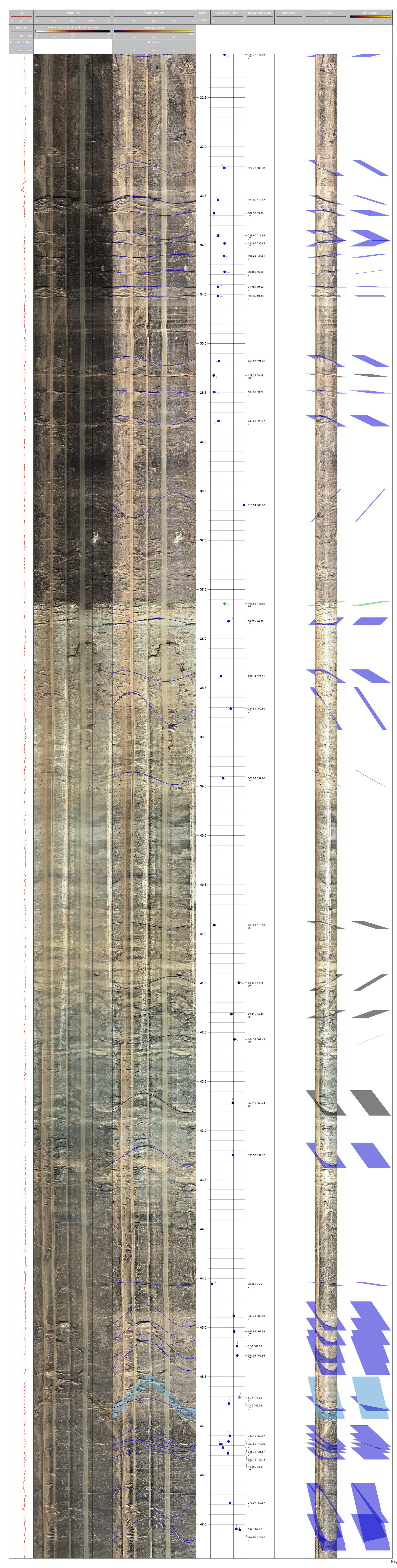


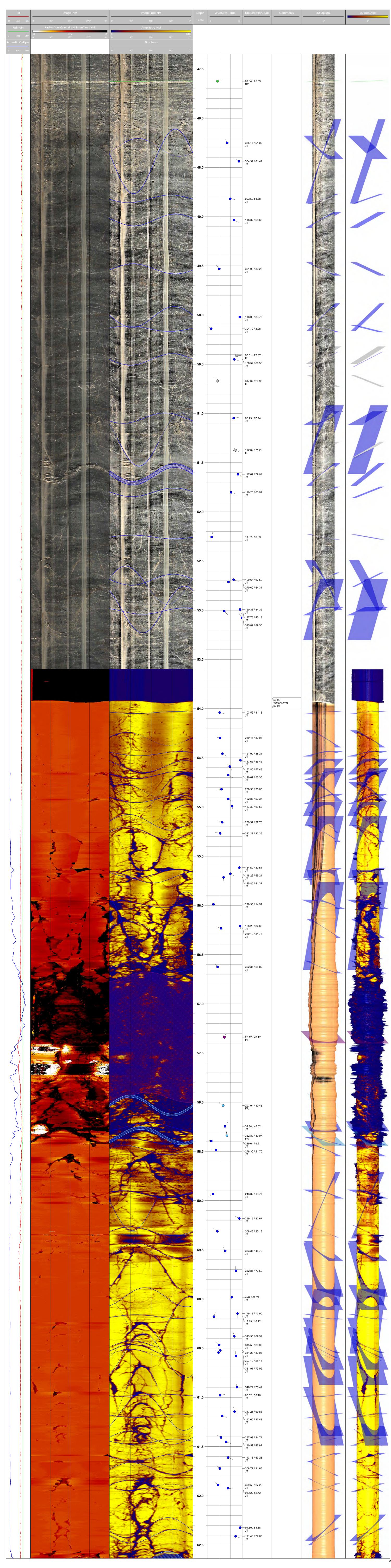
Appendix E **RDCL Borehole Logs**

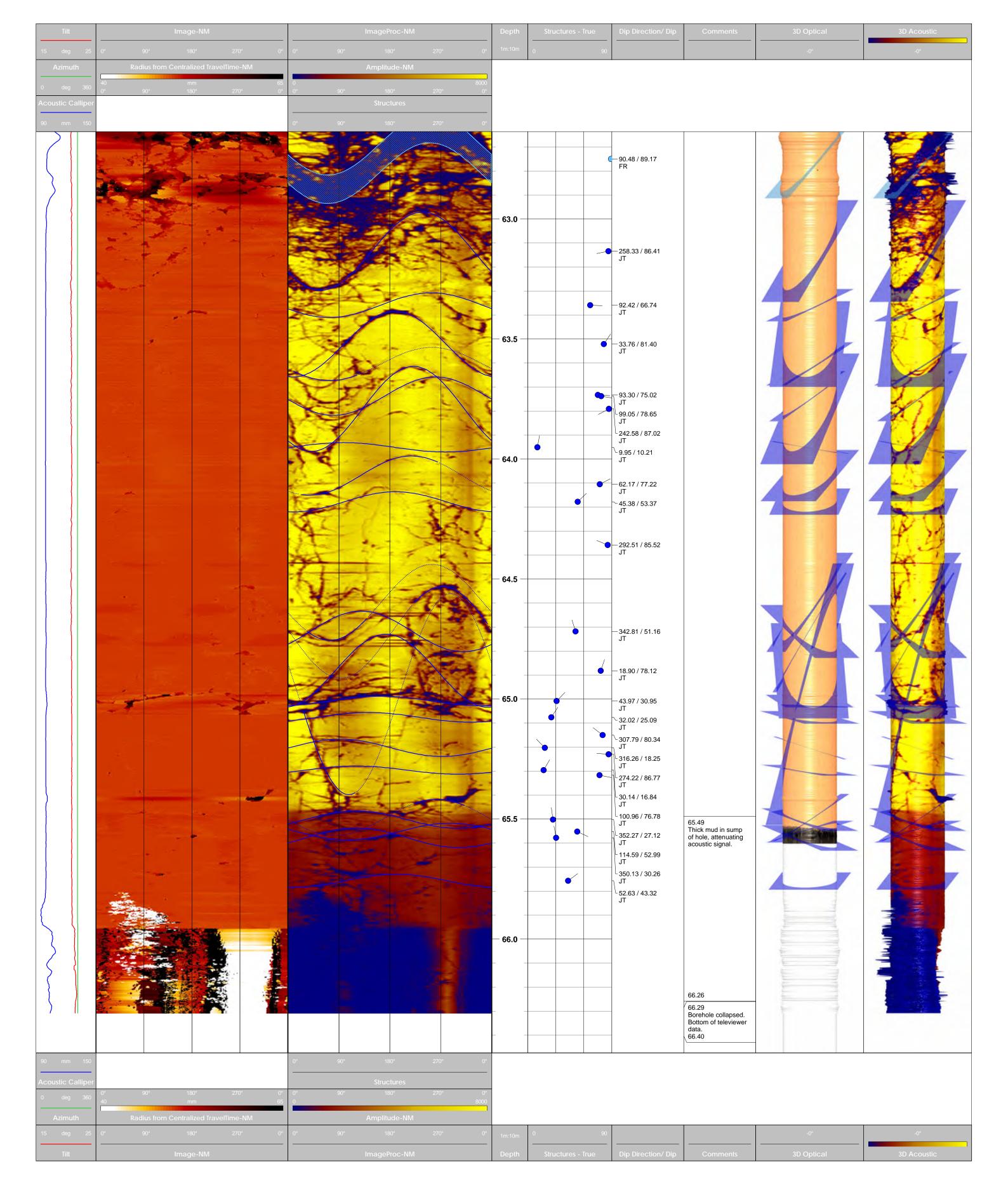


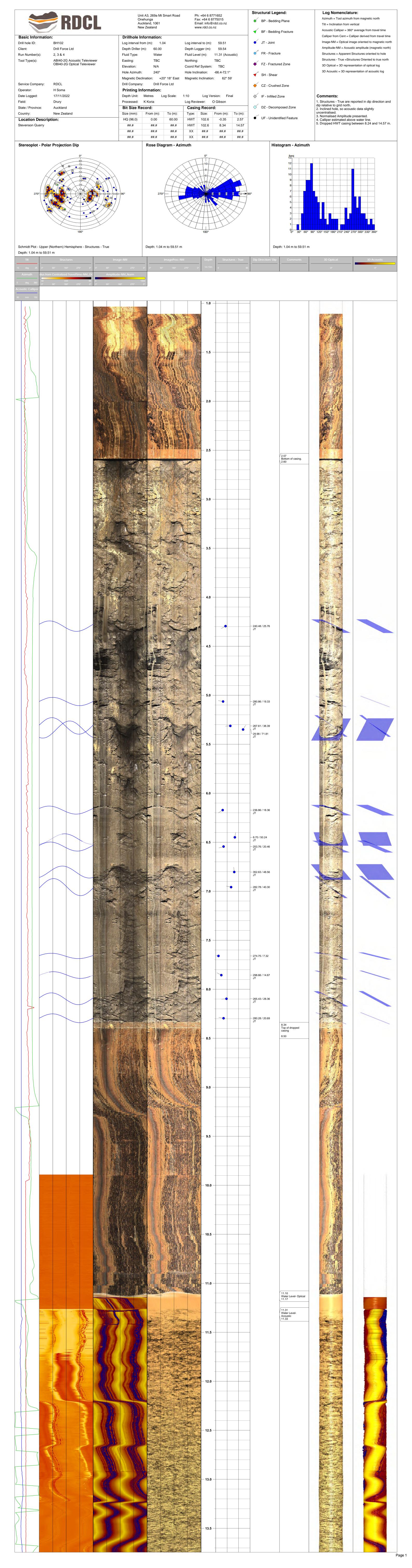


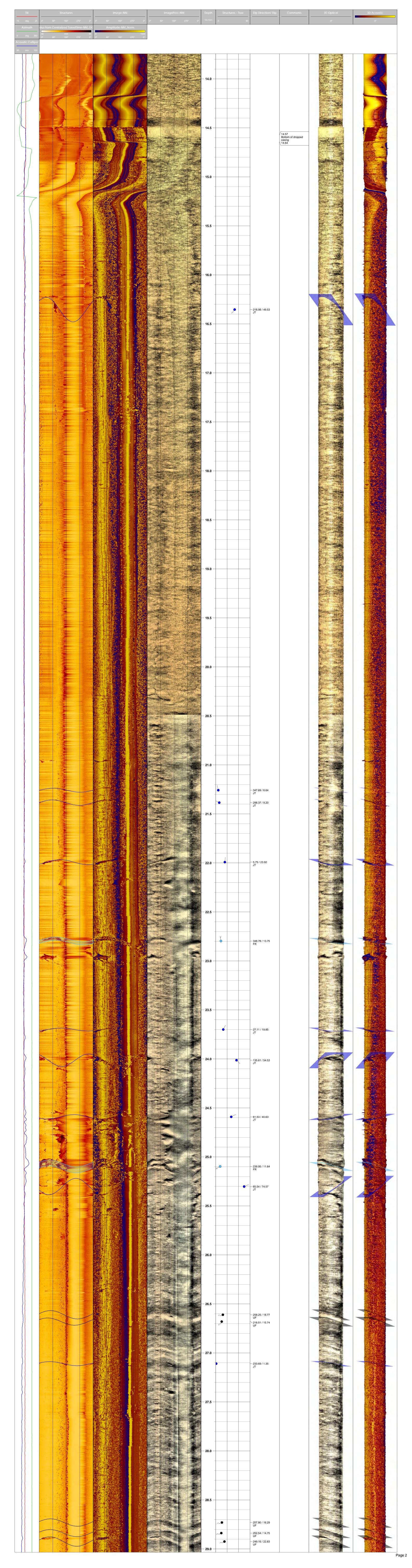


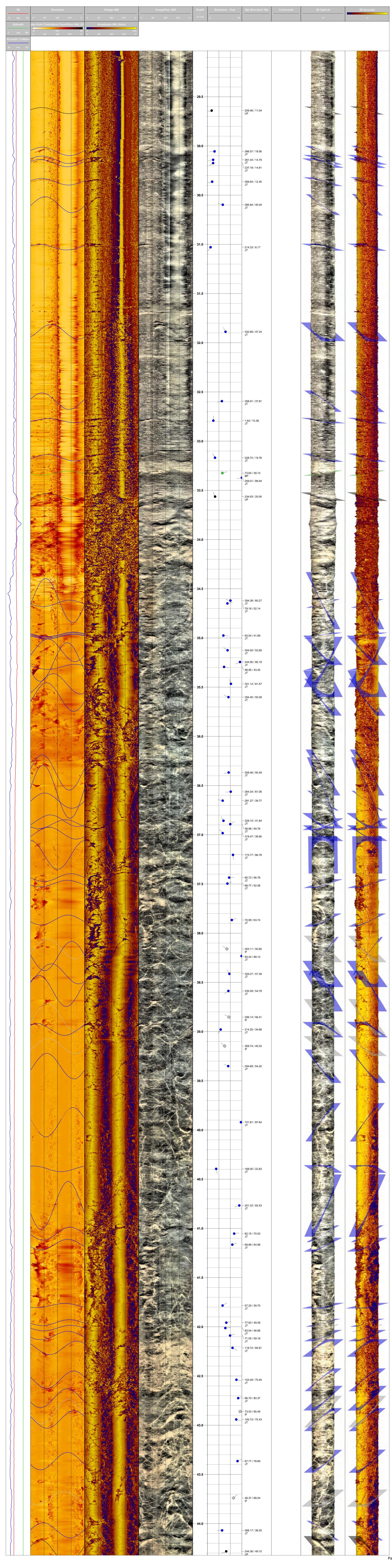


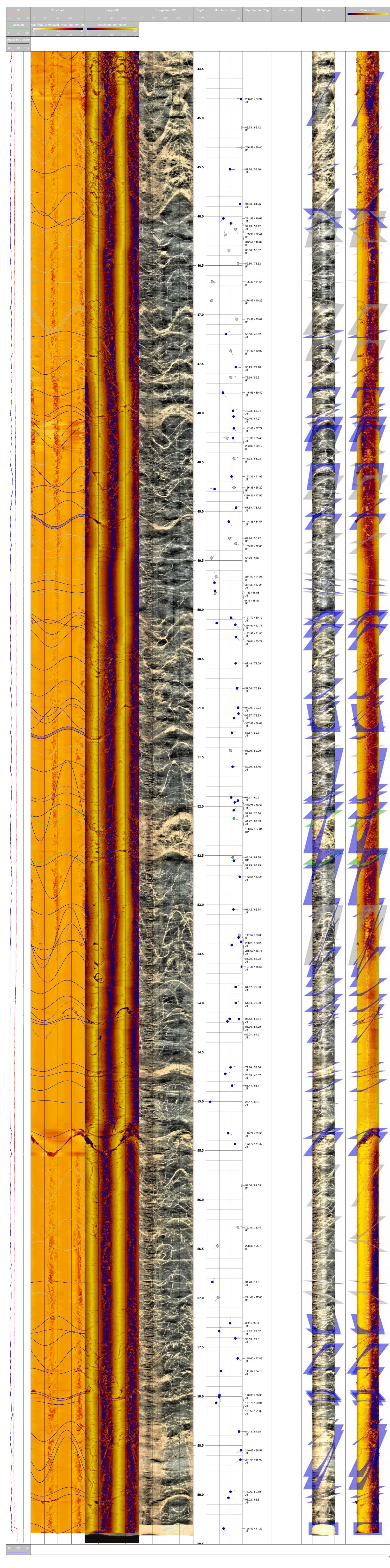




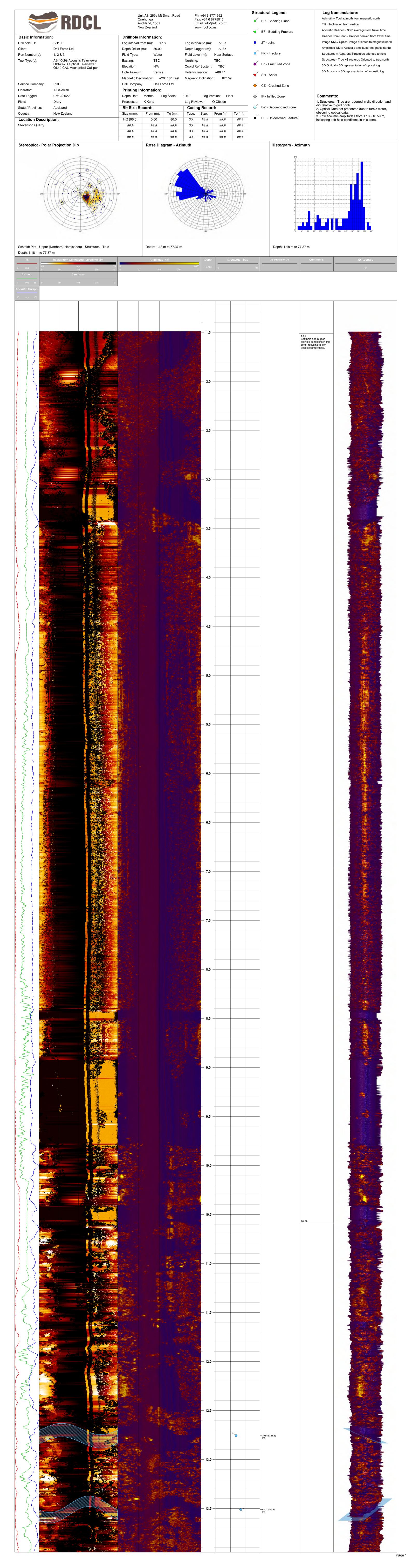


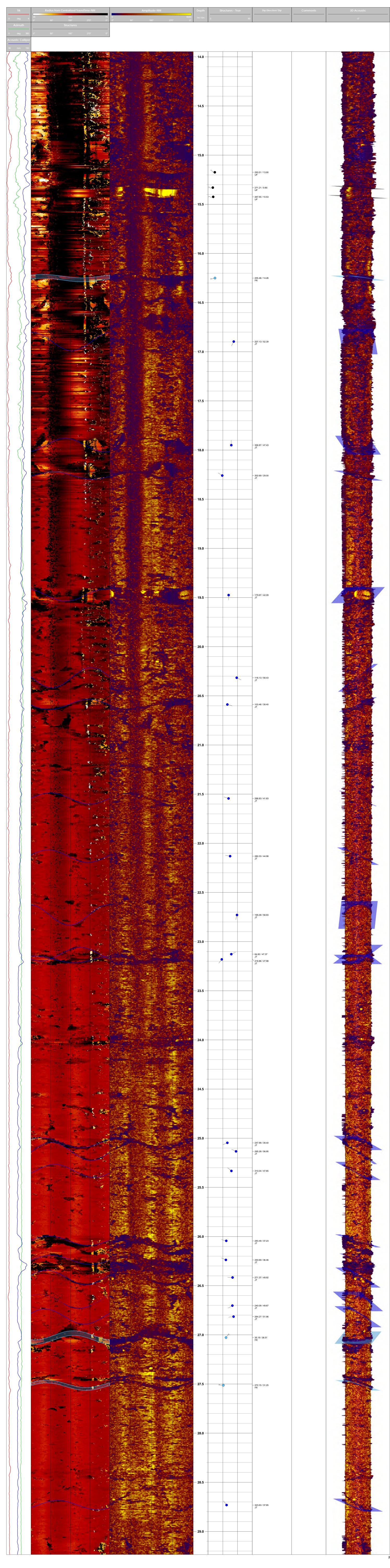


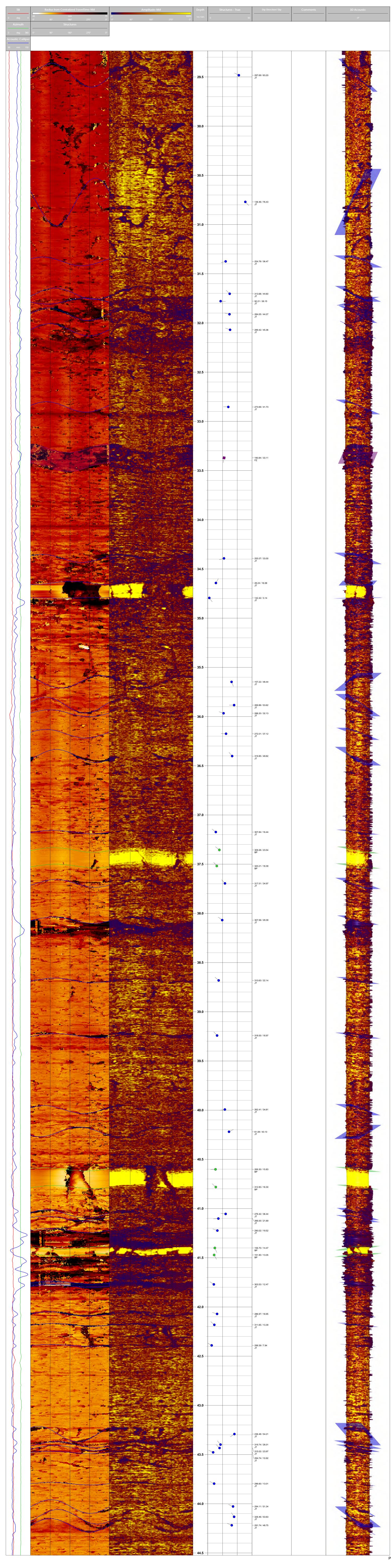


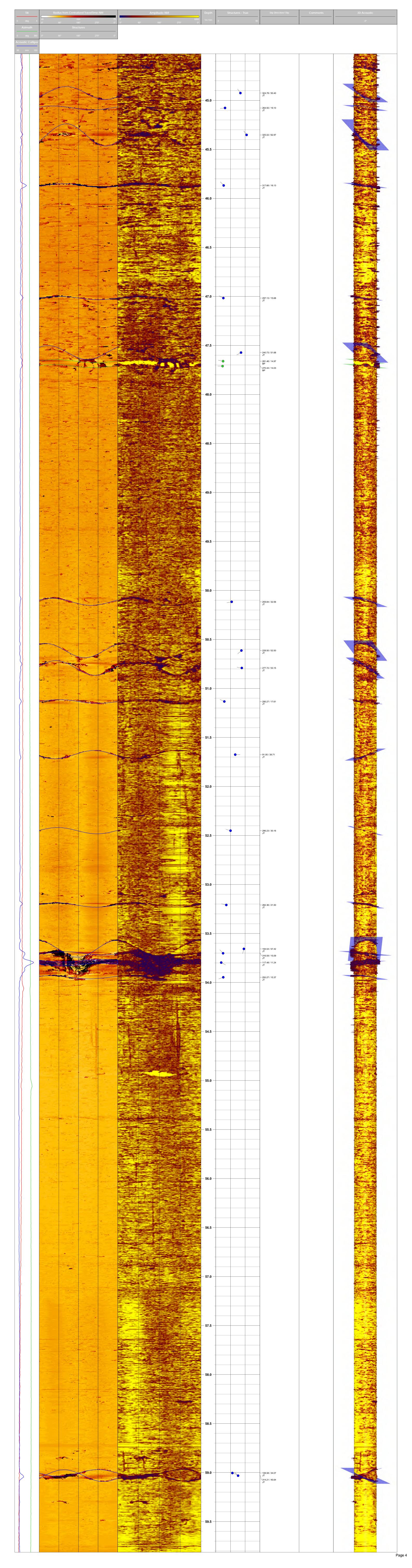


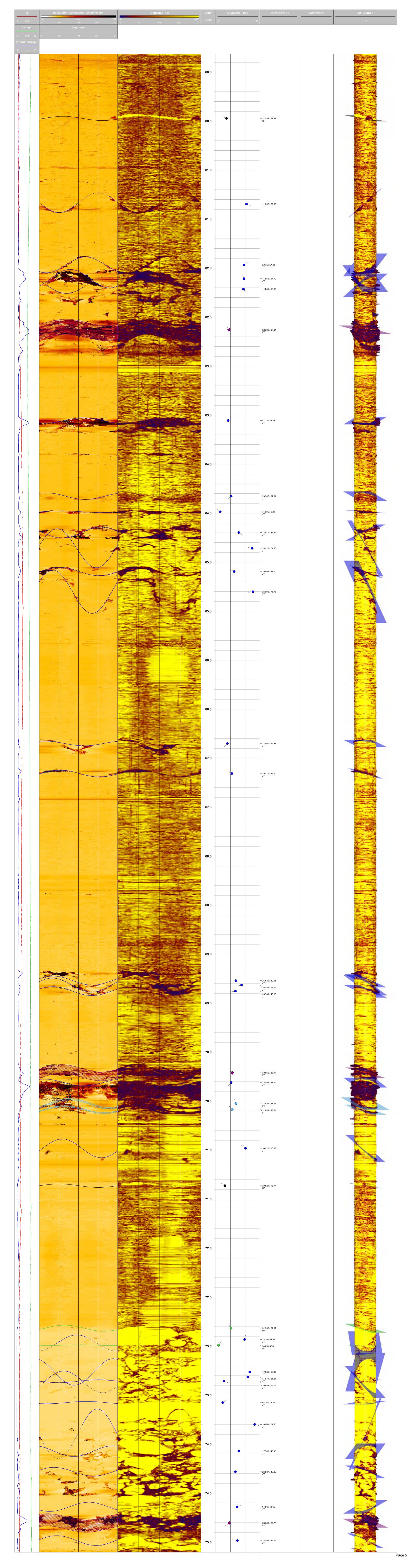
Acoustic Calliper									
O deg 360	0° 90° 180° 270° 0° 40 mm 65	0° 90° 180° 270° 0° 0 1500							
Azimuth	dius from Centralized TravelTime-NM_OG	Amplitude-NM_Norm							_
5 deg 25		0° 90° 180° 270° 0°		0° 1m:10m 0	90				-0°
Tilt	Structures	Image-NM	ImageProc-NM	Depth	Structures - True	Dip Direction/ Dip	Comments	3D Optical	3D Acoustic

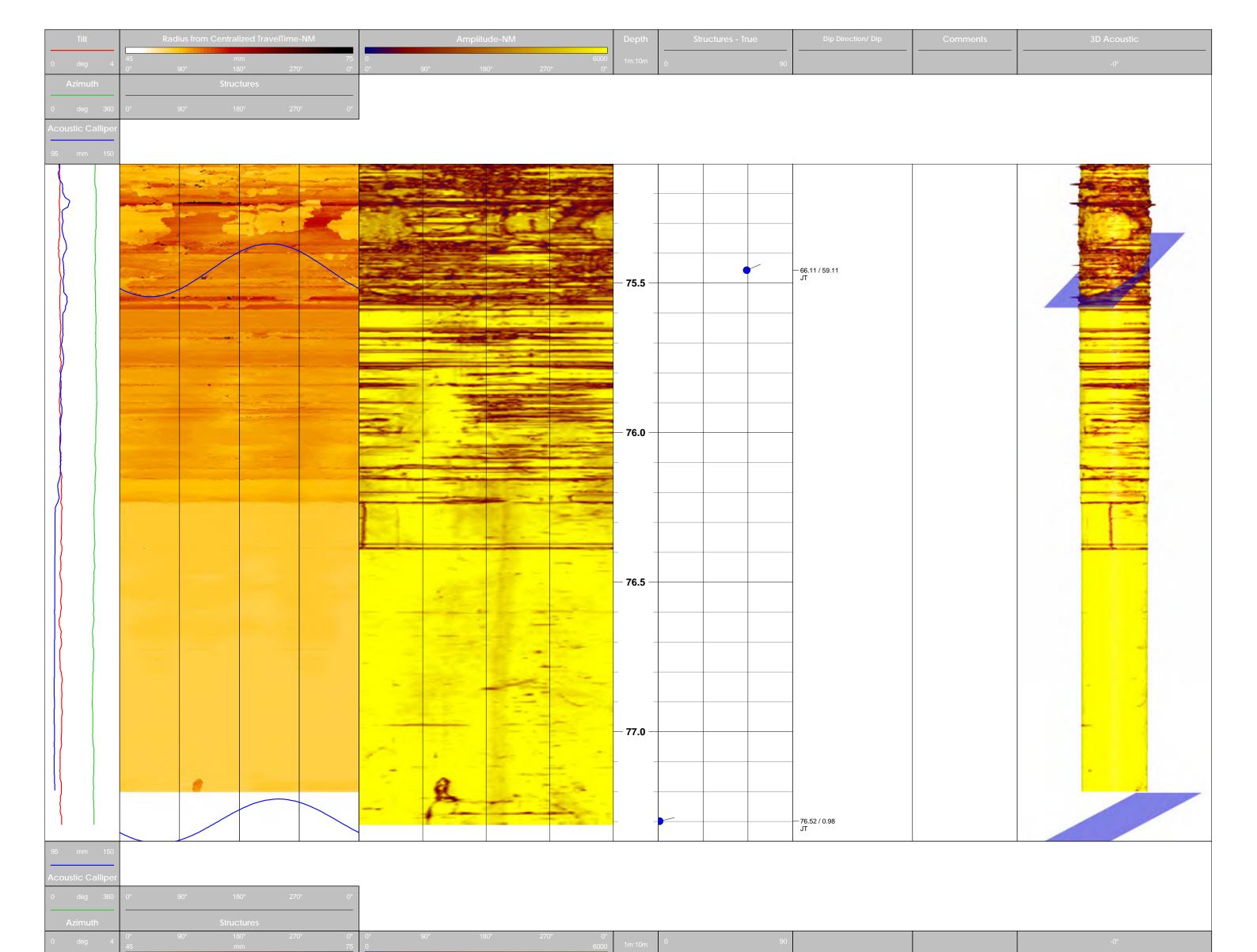


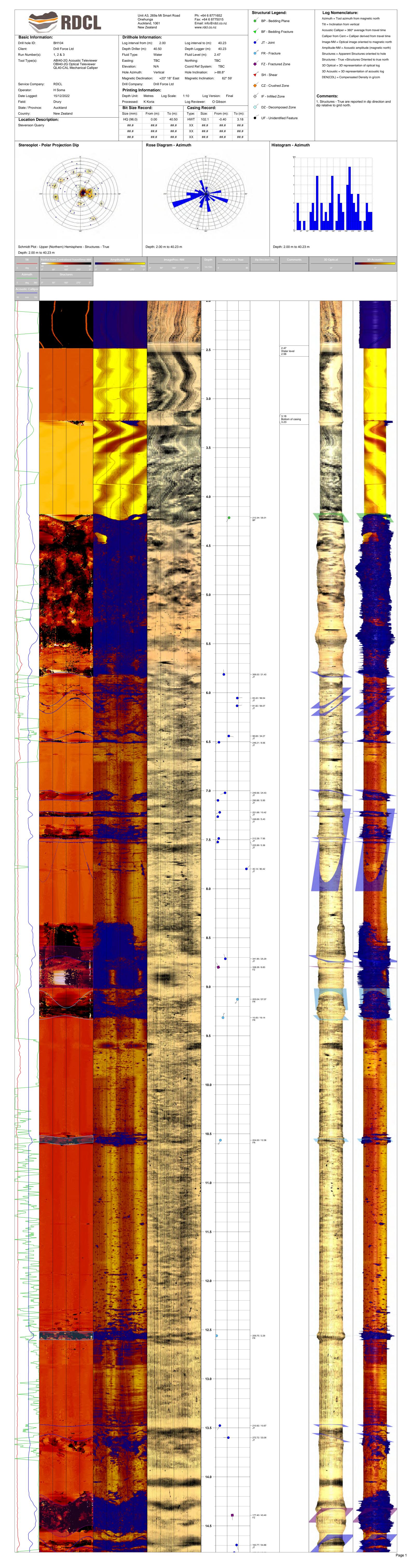


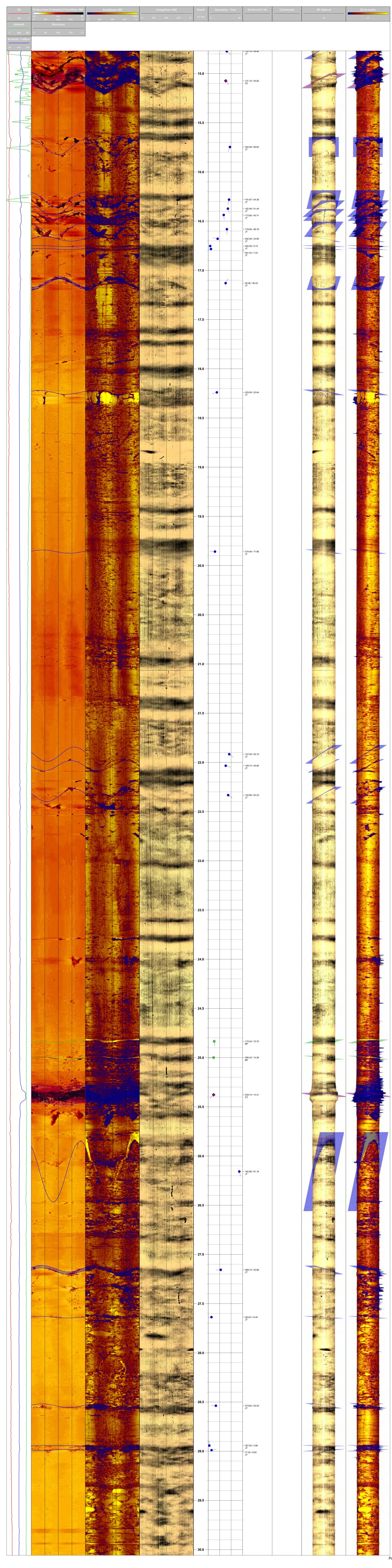


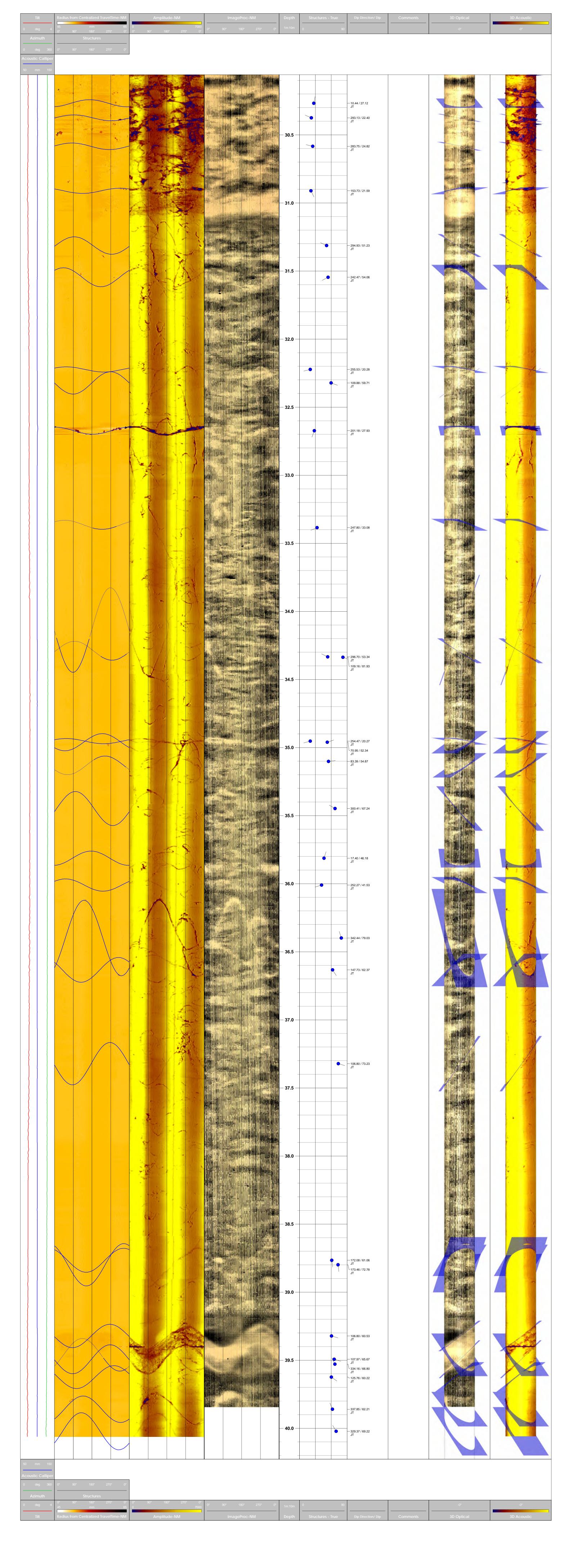


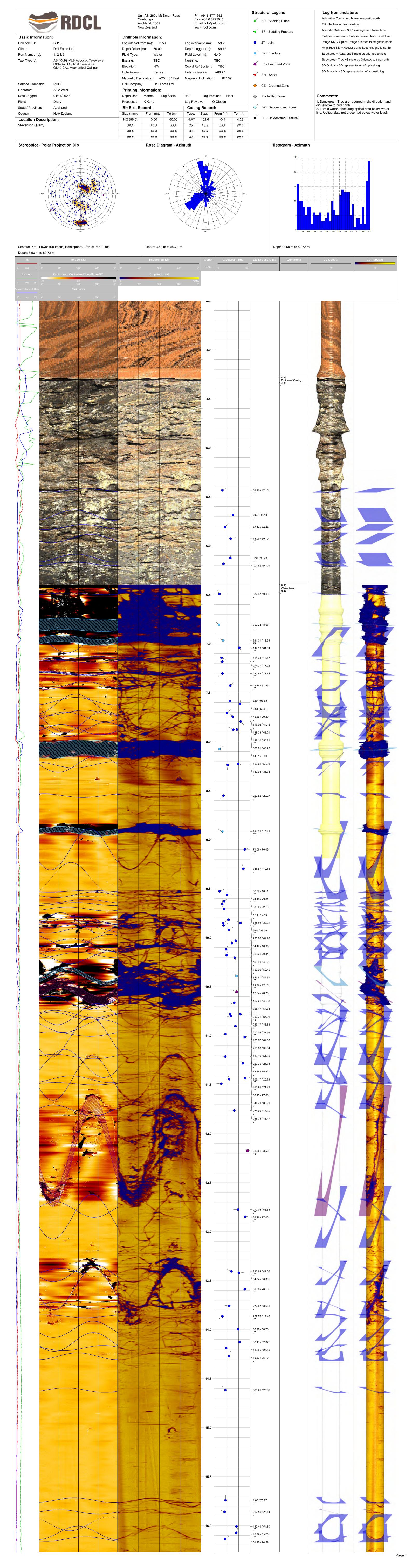


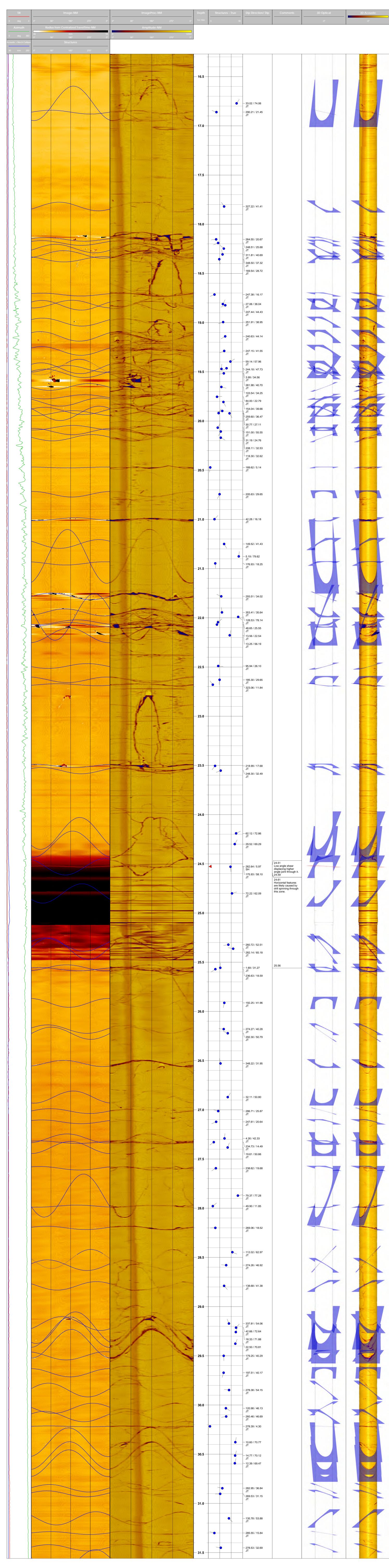


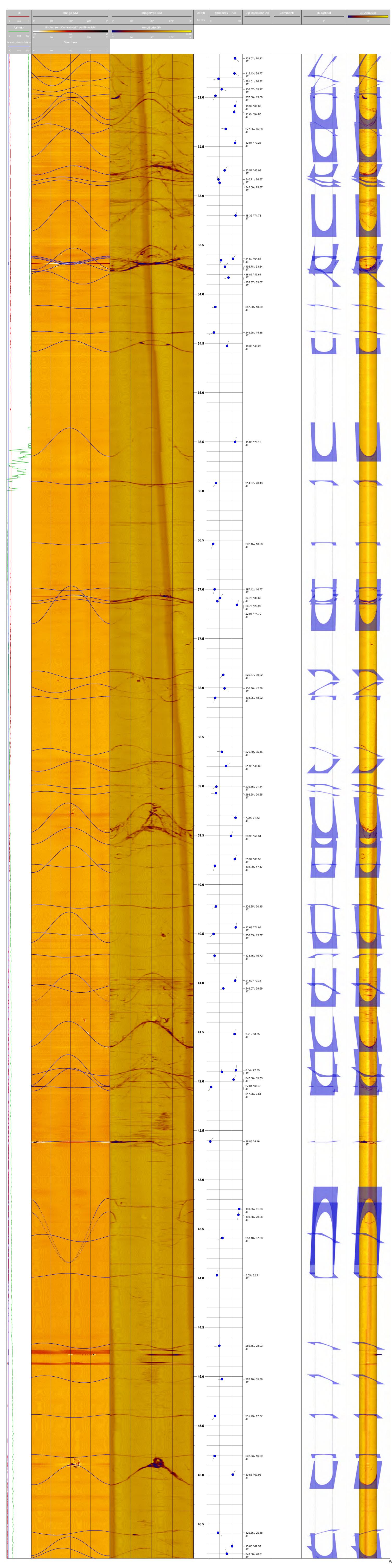


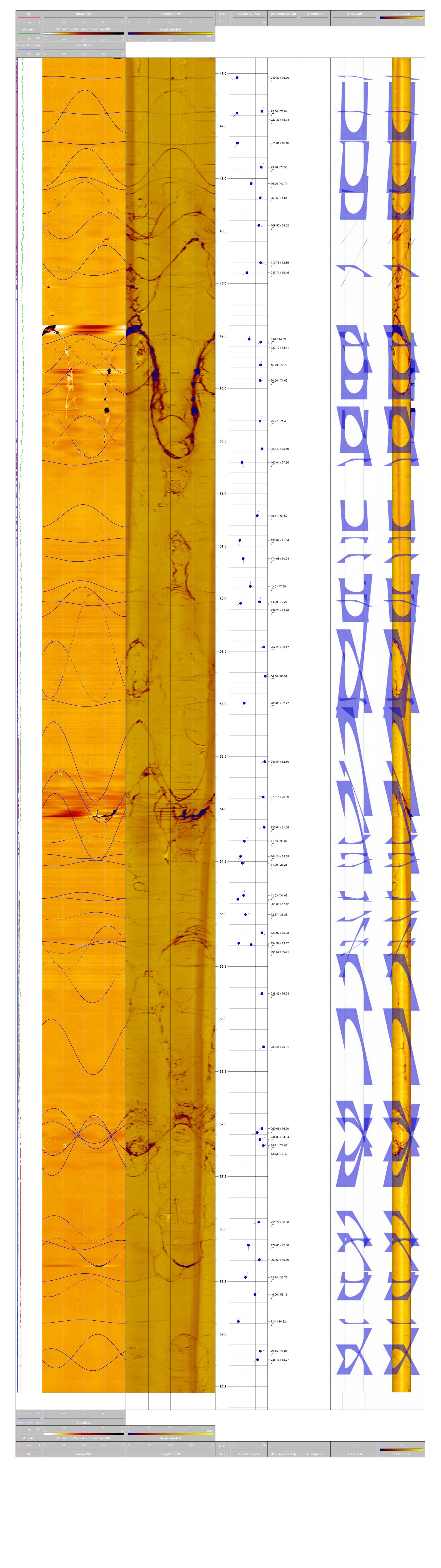












Appendix F Riley Core Photographs







Client / Project:	Stevenson Aggregates Ltd.	Hole ID:	DH101		
	Drury Quarry—Sutton Block	Date: 14		4/11/2022	
Notes:		Box No(s). 1 an Depth from (m):		nd 2 of 23	
				1.5	
		Depth To (m)	:	8.65	
Project No.	220245—Drury Quarry—Sutton Block	Interval (m):		7.15	







Client / Project:	Stevenson Aggregates Ltd.	Hole ID:	DH101	
	Drury Quarry—Sutton Block	Date:	14/11/2022	
Notes:		Box No(s).	(s). 3 and 4 of 23	
		Depth from (m): Depth To (m):		8.65
				14.5
Project No.	220245—Drury Quarry—Sutton Block	Interval (m):		5.75







Client / Project:	Stevenson Aggregates Ltd.	Hole ID:	DH101	
	Drury Quarry—Sutton Block	Date:	e: 14/11/2	
Notes:		Depth from (m):		and 6 of 23
				14.5
				20.5
Project No.	220245—Drury Quarry—Sutton Block	Interval (m):	Interval (m):	







Client / Project:	Stevenson Aggregates Ltd.	Hole ID:	DH101	
	Drury Quarry—Sutton Block	Date:	14/11/2022	
Notes:		Depth from (m):		and 8 of 23
				20.5
				26.35
Project No.	220245—Drury Quarry—Sutton Block	Interval (m):		5.85







Client / Project:	Stevenson Aggregates Ltd.	Hole ID:	DH101	
	Drury Quarry—Sutton Block	Date:	1	4/11/2022
Notes:		Depth from (m):		nd 10 of 23
				26.35
				32.30
Project No.	220245—Drury Quarry—Sutton Block	Interval (m):		5.95







Client / Project:	Stevenson Aggregates Ltd.	Hole ID:	DH101	
	Drury Quarry—Sutton Block	Date: 14/11/2		4/11/2022
Notes:		Box No(s).	o(s). 11 and 12 of 2	
		Depth from (m): Depth To (m):		32.30
				38.20
Project No.	220245—Drury Quarry—Sutton Block	Interval (m):		5.90







Client / Project:	Stevenson Aggregates Ltd.	Hole ID:	DH101	
	Drury Quarry—Sutton Block	Date:	14/11/2022	
Notes:		Box No(s). 13 an Depth from (m): Depth To (m):		and 14 of 23
				38.20
				44.40
Project No.	220245—Drury Quarry—Sutton Block	Interval (m):		6.20







Client / Project:	Stevenson Aggregates Ltd.	Hole ID:	DH101	
	Drury Quarry—Sutton Block	Date:	1	4/11/2022
Notes:		Box No(s).	15 and 16 of 23	
		Depth from (m): Depth To (m):		44.40
				50.10
Project No.	220245—Drury Quarry—Sutton Block	Interval (m):		5.70







Client / Project:	Stevenson Aggregates Ltd.	Hole ID:		DH101	
	Drury Quarry—Sutton Block	Date:	1	4/11/2022	
Notes:		Box No(s).	s). 17 and 18 of 2		
		Depth from (m): Depth To (m):		50.10	
				55.50	
Project No.	220245—Drury Quarry—Sutton Block	Interval (m):		5.60	







Client / Project:	Stevenson Aggregates Ltd.	Hole ID:	DH101	
	Drury Quarry—Sutton Block	Date:	14/11/2022	
Notes:		Box No(s).	Sox No(s). 19 and 20	
			m):	55.50
		Depth To (m):		61.50
Project No.	220245—Drury Quarry—Sutton Block	Interval (m):		6.0







Client / Project:	Stevenson Aggregates Ltd.			DH101	
i roject.	Drury Quarry—Sutton Block	Date:	14/11/2022		
Notes:		Box No(s).	21	and 22 of 23	
		Depth from (m):		61.50	
		Depth To (m)	:	66.94	
Project No.	220245—Drury Quarry—Sutton Block	Interval (m):		5.44	





Client / Project:	Stevenson Aggregates Ltd.	arry Sutton Block	DH101	
i roject.	Drury Quarry—Sutton Block	Date:	1	4/11/2022
Notes:		Box No(s).		23 of 23
		Depth from (m):	66.94
		Depth To (m)	:	69.50
Project No.	220245—Drury Quarry—Sutton Block	Interval (m):		2.56







Client / Project:	Stevenson Aggregates Ltd.	Hole ID:	DH102	
i roject.	Drury Quarry—Sutton Block	Date:	0	7/11/2022
Notes:		Box No(s).	1 a	and 2 of 21
		Depth from (m):	1.5
		Depth To (m)	:	7.5
Project No.	220245—Drury Quarry—Sutton Block	Interval (m):		6







Client / Project:	Stevenson Aggregates Ltd.	Hole ID:	DH	102
5 Drury Quarry—Sutton Block	Drury Quarry—Sutton Block	Date:	0	7/11/2022
Notes:		Box No(s).	3 a	and 4 of 21
		Depth from (m):		7.5
		Depth To (m)	:	13.5
Project No.	220245—Drury Quarry—Sutton Block	Interval (m):		6







Client / Project:	Stevenson Aggregates Ltd.	Ltd. Hole ID:		102
i roject.	Drury Quarry—Sutton Block	Date:	0	7/11/2022
Notes:		Box No(s).	5 a	and 6 of 21
		Depth from (m):		13.5
		Depth To (m)	:	19.50
Project No.	220245—Drury Quarry—Sutton Block	Interval (m):	•	6







Client / Project:	Stevenson Aggregates Ltd.	Hole ID:	DH	102
i roject.	Drury Quarry—Sutton Block	Date:	0	7/11/2022
Notes:		Box No(s).	7 a	and 8 of 21
		Depth from (m):	19.5
		Depth To (m)	:	25.5
Project No.	220245—Drury Quarry—Sutton Block	Interval (m):		6







l .				
Client / Project:	Stevenson Aggregates Ltd.	Hole ID:	DH102	
i roject.	Drury Quarry—Sutton Block	Date:	0	7/11/2022
Notes:		Box No(s).	9 a	nd 10 of 21
		Depth from (m):		25.5
		Depth To (m)	:	31.5
Project No.	220245—Drury Quarry—Sutton Block	Interval (m):		6.0







Client /	Project: Drury Quarry Sutton Block		DH	102
Drury (Drury Quarry—Sutton Block	Date:	07/11/2022	
Notes:		Box No(s).	Box No(s). 11 a	
		Depth from (m):		31.5
		Depth To (m)	:	38.1
Project No.	220245—Drury Quarry—Sutton Block	Interval (m):		6.6







Client / Project:	Stevenson Aggregates Ltd.	Hole ID:		DH102	
Dialy Quarry—Sutton Block	Date:	0	7/11/2022		
Notes:		Box No(s).	13	and 14 of 21	
		Depth from (m):		38.1	
		Depth To (m)	:	43.75	
Project No.	220245—Drury Quarry—Sutton Block	Interval (m):		5.65	







Client / Project:	Stevenson Aggregates Ltd.	Hole ID:		DH102	
l roject.	Drury Quarry—Sutton Block	Date:	0	7/11/2022	
Notes:		Box No(s).	15	and 16 of 21	
		Depth from (m):		43.75	
		Depth To (m)	:	49.10	
Project No.	220245—Drury Quarry—Sutton Block	Interval (m):		5.35	







Client / Project:	Stevenson Aggregates Ltd.		DH102		
i roject.	Drury Quarry—Sutton Block	Date:		07/11/2022	
Notes:		Box No(s).	Box No(s). 17		
		Depth from (m):		49.10	
		Depth To (m)	:	54.35	
Project No.	220245—Drury Quarry—Sutton Block	Interval (m):		5.25	







Client / Project:	Stevenson Aggregates Ltd.		DH102		
i roject.	Drury Quarry—Sutton Block	Date:	07/11/2022		
Notes:		Box No(s). 19 a		19 and 20 of 21	
		Depth from (m):		54.35	
		Depth To (m)	:	59.70	
Project No.	220245—Drury Quarry—Sutton Block	Interval (m):		5.25	





Client / Project:	Stevenson Aggregates Ltd.	Hole ID:	DH102	
Froject.	Drury Quarry—Sutton Block	Date:	0	7/11/2022
Notes:		Box No(s).		21 of 21
		Depth from (n):	59.70
		Depth To (m)	:	60
Project No.	220245—Drury Quarry—Sutton Block	Interval (m):		0.3







Client /	roject: Drury Quarry Sutton Block	Hole ID:	DH	103
Froject.	Drury Quarry—Sutton Block	Date: 24/1		4/11/2022
Notes:		Box No(s).	1 and 2 of 25	
		Depth from (m):		0.00
		Depth To (m)	:	6.45
Project No.	220245—Drury Quarry—Sutton Block	Interval (m):		6.45







Client /	Stevenson Aggregates Ltd.		DH	103
Project.	Drury Quarry—Sutton Block	Date:	24/11/2022	
Notes:		Box No(s).	3 and 4 of 25	
		Depth from (m):		6.45
		Depth To (m)	:	12.70
Project No.	220245—Drury Quarry—Sutton Block	Interval (m):		6.25







Client / Project:	Stevenson Aggregates Ltd.	Hole ID:	DH103	
i roject.	Drury Quarry—Sutton Block	Date:	2	4/11/2022
Notes:		Box No(s).	No(s). 5 and	
		Depth from (m):	12.70
		Depth To (m)	:	18.57
Project No.	220245—Drury Quarry—Sutton Block	Interval (m):		5.87







Client / Project:	Stevenson Aggregates Ltd.	Hole ID:	DH	103
i roject.	Drury Quarry—Sutton Block	Date:	0	1/12/2022
Notes:		Box No(s).	Box No(s). 7 and	
		Depth from (m):	18.57
		Depth To (m)	:	24.9
Project No.	220245—Drury Quarry—Sutton Block	Interval (m):		6.33







Client /	Project: Drury Quarry—Sutton Block Date:	Hole ID:	DH103	
i roject.		Date:	01/12/2022	
Notes:		Box No(s).	9 a	and 10 of 25
		Depth from (m):	24.90
		Depth To (m)	:	31.15
Project No.	220245—Drury Quarry—Sutton Block	Interval (m):		6.25







Client / Project:	Stevenson Aggregates Ltd.	Hole ID:		DH103	
Froject.	Drury Quarry—Sutton Block	Date:	3	0/11/2022	
Notes:		Box No(s).). 11 and 12 of		
		Depth from (m):		31.15	
		Depth To (m)	:	37.25	
Project No.	220245—Drury Quarry—Sutton Block	Interval (m):		6.1	







Client / Project:	Stevenson Aggregates Ltd.		DH103	
rioject.	Drury Quarry—Sutton Block	Date:	01/12/2022	
Notes:		Box No(s).	13	and 14 of 25
		Depth from (m):	37.25
		Depth To (m)	:	43.50
Project No.	220245—Drury Quarry—Sutton Block	Interval (m):		6.25







Client / Project:	Stevenson Aggregates Ltd.	Hole ID:		DH103	
Froject.	Drury Quarry—Sutton Block	Date:	01/12/2022		
Notes:		Box No(s).	ox No(s). 15 and		
		Depth from (m):		43.40	
		Depth To (m)	:	49.50	
Project No.	220245—Drury Quarry—Sutton Block	Interval (m):		6.10	







Client / Project:	Stevenson Aggregates Ltd.	Hole ID:		DH103	
Project.	Drury Quarry—Sutton Block	Date:	0	2/12/2022	
Notes:		Box No(s).	17 and 18 of 2		
		Depth from (m):		49.50	
		Depth To (m)	:	55.50	
Project No.	220245—Drury Quarry—Sutton Block	Interval (m):		6.0	







Client / Project:	Stevenson Aggregates Ltd.	Hole ID:	DH	DH103	
l roject.	Drury Quarry—Sutton Block	Date:	0	2/12/2022	
Notes:		Box No(s). 19 an		nd 20 of 25	
		Depth from (m):		55.50	
		Depth To (m)):	62.05	
Project No.	220245—Drury Quarry—Sutton Block	Interval (m):		6.55	







Client /	roject: Drury Quarry—Sutton Block Date:	Hole ID:	DH103		
Froject.		Date: 03		3/12/2022	
Notes:		Box No(s). 21 an		nd 22 of 25	
		Depth from (m):		62.03	
		Depth To (m)):	68.40	
Project No.	220245—Drury Quarry—Sutton Block	Interval (m):		6.37	







Client / Project:	Stevenson Aggregates Ltd.	Hole ID: DH10		103
	Drury Quarry—Sutton Block	Date:	05/12/2022	
Notes:		Box No(s). 23 au		nd 24 of 25
		Depth from (m):	68.40
		Depth To (m)):	74.50
Project No.	220245—Drury Quarry—Sutton Block	Interval (m):		6.10





Client /	Project: Drury Quarry—Sutton Block Da Da	Hole ID:	DH	103
i roject.		Date:	0	5/12/2022
Notes:		Box No(s).	:	25 of 25
		Depth from (m):		74.5
		Depth To (m)	:	78
Project No.	220245—Drury Quarry—Sutton Block	Interval (m):		3.5







Client / Project:	Stevenson Aggregates Ltd.	Hole ID:	DH104	
Dialy Quarry—Sutton Block D	Date:	12/12/2022		
Notes:		Box No(s).	1 a	and 2 of 14
		Depth from (m):	0.0
		Depth To (m)	:	7.5
Project No.	220245—Drury Quarry—Sutton Block	Interval (m):		7.5







Client / Project:	Stevenson Aggregates Ltd.			104	
	Drury Quarry—Sutton Block			12/12/2022	
Notes:				and 4 of 14	
				7.5	
		Depth To (m)	:	13.35	
Project No.	220245—Drury Quarry—Sutton Block	Interval (m):		5.85	







Client / Stevenson Aggregates Ltd. Project: Drury Quarry—Sutton Block	Hole ID:	DH	104		
	Drury Quarry—Sutton Block	Date: 12/12		2/12/2022	
Notes:		Box No(s). 5 :		and 6 of 14	
				13.35	
		Depth To (m)	:	19.20	
Project No.	220245—Drury Quarry—Sutton Block	Interval (m):		5.85	







Client / Project:	Stevenson Aggregates Ltd. Drury Quarry—Sutton Block	DH104		
Drufy Quarry—Sutton Block	Date:	1	3/12/2022	
Notes:		Box No(s). 7 ar Depth from (m):		and 8 of 14
				19.20
		Depth To (m)	:	25.0
Project No.	220245—Drury Quarry—Sutton Block	Interval (m):		5.80







Client /	ect: Drury Quarry Sutton Block	DH104		
Project:	Drury Quarry—Sutton Block	Date: 13/12/2022	3/12/2022	
Notes:		Box No(s). 9 a Depth from (m):		nd 10 of 14
				25.0
		Depth To (m)	:	30.85
Project No.	220245—Drury Quarry—Sutton Block	Interval (m):		5.85







Client / Project:	Stevenson Aggregates Ltd. Drury Quarry—Sutton Block Date:	DH	104		
Drury Quarry—Sutton Block	Date:		13/12/2022		
Notes:		Box No(s). 11 a Depth from (m):		and 12 of 14	
				30.85	
		Depth To (m)	:	36.0	
Project No.	220245—Drury Quarry—Sutton Block	Interval (m):		5.15	







Client / Project:	Stevenson Aggregates Ltd.	Hole ID:	DH104	
Dialy Quarry—Sutton Block	Date:		3/12/2022	
Notes:		Box No(s).	13 a	and 14 of 14
		Depth from (m):		36.0
		Depth To (m)	:	40.50
Project No.	220245—Drury Quarry—Sutton Block	Interval (m):		4.50







Project: Stevenson Aggregates Ltd. Drury Quarry Sutton Block	Hole ID:	DH	105	
	Drury Quarry—Sutton Block	Date:	0	1/11/2022
Notes:		Box No(s). 1 a Depth from (m):		and 2 of 17
				0.0
		Depth To (m)	:	6.8
Project No.	220245—Drury Quarry—Sutton Block	Interval (m):		6.8







Client / Stevenson Aggregates Lt Drury Quarry—Sutton Blo	Stevenson Aggregates Ltd.	Hole ID: DH105		105	
	Drury Quarry—Sutton Block	Date: 01		1/11/2022	
Notes:		Box No(s). 3 a Depth from (m):		and 4 of 17	
				6.8	
		Depth To (m)	:	12.2	
Project No.	220245—Drury Quarry—Sutton Block	Interval (m):		5.4	







Client /	Project: Drury Quarry Sutton Block	Hole ID:	DH	105
Project.	Drury Quarry—Sutton Block	Date:	0	1/11/2022
Notes:		Box No(s).	5 a	and 6 of 17
		Depth from (m):		12.2
		Depth To (m)	:	17.8
Project No.	220245—Drury Quarry—Sutton Block	Interval (m):		5.6







Client / Project:	Stevenson Aggregates Ltd.	Hole ID:	DH105	
	Drury Quarry—Sutton Block	Date:	Date: 0	
Notes:		Box No(s).	and 8 of 17	
		Depth from (17.8	
		Depth To (m)	:	23.4
Project No.	220245—Drury Quarry—Sutton Block	Interval (m):	5.6	







Client / Project:	Stevenson Aggregates Ltd.	Hole ID:	DH105			
i roject.	Drury Quarry—Sutton Block	Date:	0	01/11/2022		
Notes:		Box No(s).	Box No(s). 9 ar			
		Depth from (23.4			
		Depth To (m)	:	29.1		
Project No.	220245—Drury Quarry—Sutton Block	Interval (m):	5.7			







Client / Project:	Stevenson Aggregates Ltd.	Hole ID:	DH105			
	Drury Quarry—Sutton Block	Date:	0	01/11/2022		
Notes:		Box No(s).	Box No(s). 11 and 12 of 17			
		Depth from (m):	29.1		
		Depth To (m)	:	34.25		
Project No.	220245—Drury Quarry—Sutton Block	Interval (m):	Interval (m): 5.15			







Client / Project:	Stevenson Aggregates Ltd.	Hole ID:	DH105		
i roject.	Drury Quarry—Sutton Block	Date:	01/11/2022		
Notes:		Box No(s).	Box No(s). 13 and 14 Depth from (m): 34.2		
		Depth from (
		Depth To (m)		39.25	
Project No.	220245—Drury Quarry—Sutton Block	Interval (m):	Interval (m):		

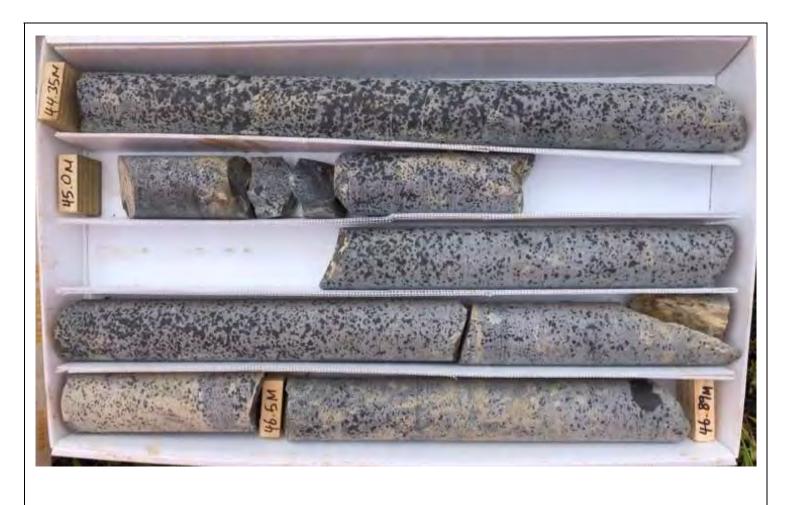






Stevenson Aggregates Ltd.	Hole ID:	DH105		
Drury Quarry—Sutton Block	Date:	01/11/2022		
	Box No(s).	Box No(s). 15 and 16 Depth from (m): 39		
	Depth from (
	Depth To (m)		44.35	
220245—Drury Quarry—Sutton Block	Interval (m): 5.10			
	Drury Quarry—Sutton Block	Drury Quarry—Sutton Block Date: Box No(s). Depth from (in Depth To (m))	Drury Quarry—Sutton Block Date: 0 Box No(s). 15 Depth from (m): Depth To (m):	





Client / Project:	Stevenson Aggregates Ltd.	Hole ID:	DH105		
l roject.	Drury Quarry—Sutton Block	Date:	0	02/11/2022	
Notes:		Box No(s).	17 of 17		
		Depth from (m):	44.35	
		Depth To (m)	:	46.89	
Project No.	220245—Drury Quarry—Sutton Block	Interval (m):	2.54m		



Appendix G

Riley Machine Borehole Logs (DH101 to DH105)





Christchurch:

22 Moorhouse Ave. Addington, Christchurch 8011 PO Box 4355, Christchurch 8140 Tel. 03 379 4402 Email: rileychch@riley.co.nz

Auckland:

Auckland: 4 Fred Thomas Drive, Takapuna, Auckland 0622 PO Box 100253, North Shore, Auckland 0745 Tel. 09 489 7872 Email: riley@riley.co.nz

GEOTECHNICAL AND **GEOLOGICAL INFORMATION**

SOIL TYPES AND SYMBOLS



FILL

TOPSOIL

SILT

SAND

GRAVEL





CLAY

PEAT

GROUNDWATER LEVEL

10,11,10

SCALA PENETROMETER LAST 3 NUMBER OF BLOWS PER 50mm INCREMENT

ROCK TYPES AND SYMBOLS



SANDSTONE

LIMESTONE



BASALT





TUFF



IGNIMBRITE



GREYWACKE

LINICONFINED

SOIL STRENGTH CLASSIFICATION

FINE GRAINED COHESIVE SOILS

TERM	FIELD IDENTIFICATION	UNDRAINED SHEAR STRENGTH (KPa)
Very Soft (Vs)	Exudes between fingers when squeezed.	<12
Soft (S)	Easily indented by fingers.	12 – 25
Firm (F)	Indented only by strong finger pressure.	25 - 50
Stiff (St)	Indented by thumb pressure.	50 - 100
Very Stiff (VSt)	Indented by thumbnail.	100 - 200
Hard (H)	Difficult to indent by thumbnail.	200+

SPT & SCALA PENETROMETER RESULTS

TERM	SPT VALUE No. of BLOWS/300mm	SCALA PENETROMETER No. of BLOWS/100mm
very dense	>50	17+
dense	30 - 50	7 – 17
medium dense	10 - 30	3 - 7
loose	4 - 10	1 - 3
very loose	0 - 4	0 - 2

ROCK STRENGTH CLASSIFICATION

TERM		FIELD IDENTIFICATION	UNIAXIAL COMPRESSIVE STRENGTH (MPa)			
Extremely weak	(EW)	Indented by thumbnail.	< 1			
Very weak	(VW)	Crumbles under firm blows wit point of geological hammer. Can be peeled with pocket kn				
Weak	(W)	Difficult to peel with pocket k	nife. 5 - 20			
Moderately strong	(MS)	Cannot be scraped or peeled with pocket knife.	20 - 50			
Strong	(S)	More than one blow of geolog hammer to fracture.	ical 50 - 100			
Very strong	(VS)	Many blows of geological hammer to break.	100 - 250			
Extremely strong	(ES)	Can only be chipped with geological hammer.	250+			

MOISTURE CONDITION

Dry (D)	Looks and feels dry; powdery and friable.
Moist (M)	Feels cool; darkened in colour; no free water when remoulded.
Wet (W)	Feels cool; darkened in colour; free water forms on hands.
Saturated (S)	Free water is present on sample.

SAMPLE TYPES

UNDISTURBED



MACHINE AUGER DISTURBED

HAND AUGER DISTURBED



STANDARD PENETRATION TEST (solid cone)



STANDARD PENETRATION TEST (hollow cone)

DRILLING METHOD

OB OPEN BARREL TT TRIPLE TUBE WB WASH BORE UNDISTURBED SH SHELBY TUBE

RC ROCK CORE

STANDARD SPT PENETRATION TEST

FIELD TESTS

V SHEAR VANE (corrected to BS:1377) R REMOULDED STRENGTH

Ρ POCKET PENETROMETER

CH CLEGG HAMMER

INFORMATION BASED ON THE NZ GEOTECHNICAL SOCIETY INC. GUIDELINES FOR THE CLASSIFICATION AND DESCRIPTION OF SOIL AND ROCK FOR ENGINEERING PURPOSES

GEOLOGICALINFO.DWG REV. 3



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MACHINE HOLE LOG

	E	N	11		-		Ph: 0	03.379.4402 Ph: 09.489.7872 www.rileychch.co.nz E: www.riley.co.n;	WACHINE HOLE LOG									
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	0245 ent :				Drur	y Qua	rry - S	Sutton Block Start Date: 09 Nov 202			rry Rd, Dru Location					DF	1101	
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Co		linate E 177		5, N 5	8905	41	1	Ground Level (m): Ground	Но	Hole Depth (m): Incli			clination: Azimu		utn: 290°	Sheet: 1 of 16	Status FIN	
Ê	<u> </u>					hit		Geological Description	İ	ing	Field		ing	olic	Defect [Description	In-Situ	T
Elevation (m)	Depth (m)	Method	Box No.	TCR (SCR) RQD (%)	Core Loss (%)	Geological Unit	Legend	In accordance with NZGS Guidelines (200 refer to appended Information sheet an abbreviation explanation	- 1	Weathering	Strength Soil Rock	Samples	Defect Spacing (mm)	Defect Symbolic Log	Guidelines appende sheet and	nce with NZGS (2005); refer to d Information d abbreviation lanation	Testing Data / Results	Backfill / Installation
	- 0.5 - 1.0 - 1.50 - 1.75 - 1.75 - 2.0 - 2.0 - 2.5 - 3.0 - 3.5	Rotary cored	3.00	100	1000	TE KUITI GROUP		CLAY, with minor silt; orange-brown. Sol to firm; medium plasticity to high plasticity. CLAY, with trace silt; brown . Firm; medium plasticity to high plasticity. 3.00m - 3.40m: CORE LOSS 4.10m - 4.30m: Corestone; moderately weathered; brown; MUDSTONE; very weak.									1.0 · · · · · · · · · · · · · · · · · · ·	5
Mo Mo M = W = S =	nitial Level Out flo In flow sture mois wet satura	Water w t ated	\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	Standa (SPT) Filled = No Fill /ane S / = Pea JTP = Pe	rd Pender Solid (Soli	etration cone (C spoon (rength (Residua to pene enetron	Test) S) (kPa) al etrate neter	Cal Information" sheet for further details. Topsoil Clay Peat Silt Silt Sand Ctag Core Loss Gravel	Back Bentor Grout/ Drill ar Filter s	nite concr risings sand	Drillin detail *Sam	s.	ring prep	paration o		e RDCL geophys	ed.	
All	dim	ensi	ons i	in me	etres	Dril	ling C	Contractor:	Dri	lling	Rig ID:		Dr	iller:		Logged By	Checked	I By:



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MACHINE HOLE LOG

Ph: 03.379.4402 Ph: 09.489.7872 Ph: 09.489.7872 Ph: www.riley.co.r									:									
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	- 5.5																5.5 -	0,0
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\triangleleft	Out flo n flow		()	Filled =	Solid c Split s			Peat Silt	Grout/c	oncre	ete *Samp	ple broke dur	ing prep	aration of	test. No cor	e able to be test	ed.	
Moi	sture mois	:	٠,	√ = Pea	hear Str ak, R = F	Residua	ıl	Fill Sand	Drill ari	sings								
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\ \(\frac{1}{2}\) \(\frac{1}{2}\) \(\frac{1}{2}\)	TCF (SCF RQI (%)	0 000	Geological Unit	Legend	In accordance with NZGS Guidelines (200 refer to appended Information sheet and abbreviation explanation		Field Strength	Samples	Defect Spacing (mm)	Defect Symbolic Log	In accordar Guidelines appended sheet and	nce with NZGS (2005); refer to d Information abbreviation anation	In-Situ Testing Data / Results	Backfill / Installation
	100-	9	TE KUITI GROUP		CLAY; grey-brown. Hard; MUDSTONE; extremely weak, slightly to moderately weathered, laminated/fissured.								10.5- 11.5- 12.0- 13.0-	02.850 0 2.850
Explanations: Initial Water Level Out flow In flow Moisture: M = moist W = wet S = saturated All dimensic	Stand (SPT Filled No F Vane V = P UTP : PP =	dard Pene) I = Solid of ill = Split s Shear Str eak, R = I = Unable t Pocket Pe	etration cone (C) spoon (strength (Residua to penetrom	Test) S) kPa) al trate	Cal Information" sheet for further details. Topsoil Clay Peat Silt Silt Sand CILL Core Loss Gravel Contractor:	Backfill: Bentonite Grout/cond Drill arising	Drillii detal *San	ils.	ng prepa			RDCL geophysi e able to be test	ed.	



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MACHINE HOLE LOG

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E 1777245, N	5890541	L	Ground Level (m): Ground		Depth (m): 89.50	70°		290°	4 of 16	FINA	
(E) (C) TC	Unit		Geological Description	ring	Field	S	oolic	Defect [Description	In-Situ	٦
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14.50 14.50 14.50 15.5 Page 17.0 10.0		W W W W W W W W W W	[CONT] CLAY; grey-brown. Hard; MUDSTONE; extremely weak, slightly to moderately weathered, laminated/fissured. Slightly weathered; brown; MUDSTONE; very weak, laminated/fissured.			UCS11*: 16.80 n				14.5- 15.5- 16.5- 17.5-	
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		Rotary cored		100		TE KUITI GROUP		20.50m: Grades to m with minor 50mm hig	oderately weathered								19.0- 19.5- 20.0- 21.5- 22.0-	20 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
Explanations: Refer to "Geological and Geote Level (SPT) Out flow In flow In flow Moisture: V = Peak, R = Residual UTP = Unable to penetra Terms PP = Pocket Penetrometr							Test) S) (kPa) al etrate neter	Topsoil Peat Fill Core Loss	Clay Silt Sand	Backfill: Bentonite Grout/conc Orill arising Filter sand	Drillin details rete *Sam	S.	uring prep	aration o		RDCL geophysi	ed.	
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MACHINE HOLE LOG

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-23.5 -23.5 -24.0 -24.5 -25.0 -25.5 -26.0	Rotary cored	740.	100	P	TE KUITI GROUP		23.40m: Grades to ex moderately weathered highly weathered sect trace of silt.	tremely weak, 3, with some 50mm	MOS SAS							23.0- 23.5- 24.0- 24.5- 25.0- 26.0-	00.0×1.50 0×1.50
-																	,000 '%000
Explana Initial V Level Out flor In flow Moisture: M = moist W = wet S = satura	Vater w ted	\ \\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	Standa (SPT) Filled = No Fill /ane S / = Pea JTP = PP = P	ard Pene Solid c Split s hear Str ak, R = F Unable t ocket Pe	one (C) spoon (S ength (I Residua to pene	Test) S) kPa) il trate	Topsoil Peat Fill Core Loss Ontractor:	Clay E	Backfill: entonite frout/conc rill arising ilter sand	Drillin details rete *Sam	S.	iring prep			RDCL geophysire able to be test	ed.	



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MACHINE HOLE LOG

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Elevation (m) Depth (m) Method	Box No.	TCR (SCR) RQD (%)	Core Loss (%)	Geological Unit	Legend	In accordance with NZGS Guidelines (2 refer to appended Information sheet abbreviation explanation	2005);	Weathering	Field Strength Soil Rock	Samples	Defect Spacing (mm)	Defect Symbolic Log	Guidelines appended sheet and	nce with NZGS (2005); refer to d Information abtreviation anation	In-Situ Testing Data / Results	Backfill / Installation
-27.5 -28.0 -28.5 -28.5 -29.0 -29.5		100		TE KUITI GROUP	M	27.00m: Extremely weak, moderately weathered, with some 50mm highly weathered sections; CLAY, with trace silt.	of								28.5- 28.5- 29.0- 30.0-	7. C. M. C. C. M. C. C. M. C.
Explanatio Initial Wat Level Out flow In flow Moisture: M = moist W = wet S = saturated	er	Standa (SPT) Filled = No Fill /ane S / = Pea JTP = PP = P	ard Pene = Solid c = Split s shear Str ak, R = F Unable t ocket Pe	tration one (C) poon (Sength (Residua o penel	Test (S) (kPa) (trate leter	Cal Information" sheet for further details. Clay Peat Silt Silt Core Loss Gravel Ontractor:	Ber Gro Drill	ackfill: atonite ut/concr arisings er sand	Drilling details ete *Samp	S.	ng prepa			RDCL geophysic eable to be test	ed.	



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MACHINE HOLE LOG

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€ E	۳		TCR	Core	Unit	ъ	Geological D	escription	ering	Field	se	acing	polic		Description nce with NZGS	In-Situ	_ n
Elevation (m) Depth (m)	Method	Box No.	TCR (SCR) RQD (%)	Loss (%)	Geological Unit	Legend	In accordance with NZG refer to appended Info abbreviation e	ormation sheet and	Weathering	Strength Soil Rock WANT ROCK SOIL R	Samples	Defect Spacing (mm)	Defect Symbolic Log	Guidelines appended sheet and	(2005); refer to d Information abbreviation anation	Testing Data / Results	Backfill / Installation
-32.0 -32.5 -33.0 -34.0 -34.5 -35.5	Rotary cored	34.50	0	100	TE KUITI GROUP		32.65m: Grades to high extremely weak (CLAY to hard).	with some silt, firm								32.5- 32.5- 33.5- 34.5- 35.6-	D. 20.475, D. 47.50, D. 47
Explanations: Refer to "Geological and Geotechnical Information" sh Initial Water Level Cy Out flow In flow Moisture: M = moist W = wet S = saturated All dimensions in metres Standard Penetration Test (SPT) Filled = Solid cone (C) No Fill = Split spoon (S) Vane Shear Strength (kPa) V = Peak, R = Residual UTP = Unable to penetrate PP = Pocket Penetrometer All dimensions in metres Drilling Contractor:								Clay E Silt C Sand C	Backfill: Sentonite Grout/conci Orill arising: Filter sand	Drilling details *Samp	S.	ring prepa			RDCL geophysine able to be tested	ed.	



All dimensions in metres NOT TO SCALE

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22 Moorhouse Avenue Addington

4 Fred Thomas Drive Takapuna

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Stevenson Aggreg	ates Ltd		End Date: 14 Nov 2022	Farr	mhouse We	st					
Co-ordinates : E 1777245,	N 5890541	9	Ground Level (m): Ground		Depth (m): 69.50	Inclination: 70°		uth: 290°	Sheet: 9 of 16	Status FIN	
			Geological Description	bu	Fill	Đ.	- ië	Defect D	Description	J. O't.	$\overline{\Box}$
pth (CCR CCR) Loss (%) Coole (%)	Legend	In accordance with NZGS Guidelines (2005) refer to appended Information sheet and abbreviation explanation	Weathering	Field Strength	Samples Defect Spacing	(mm) Defect Symbolic Log	In accordar Guidelines appender sheet and expl	nce with NZGS (2005); refer to d Information I abbreviation lanation	In-Situ Testing Data / Results	Backfill /
-38.5 - 37.5 - 3	MAIPAPA GROUP TE KUITI GROUP		Moderately weathered; bluish grey; MUDSTONE; extremely weak. Iron staining on joint surfaces. Sub-horizontal joints. (CLAY with minor gravels). 37.50m: Grades to block disintegrated rock mass. Highly weathered; bluish grey; MUDSTONE; extremely weak; silty gravelly CLAY [CRUSH ZONE]. Slightly to moderately weathered; light grey; GREYWACKE; very weak. Extremely to very closely spaced fractures at multiple orientations. Clay weathering and infill on defect surfaces. Abundant quartz veins infilling healed fractures.		11	UCS12 - 13MPa: 38.10 - 38.70m		37. 80-39.00		38.5 39.0 40.0	\$\\\^\\\^\\\\\\\\\\\\\\\\\\\\\\\\\\\\\
Initial Water Level Out flow In flow Moisture: M = moist W = wet Initial Water (S (S (Fi Fi F	andard Penetratio PT) led = Solid cone (i p Fill = Split spoon ne Shear Strength Peak, R = Residl P = Unable to per = Pocket Penetro	C) (S) (kPa) ual netrate ometer	Topsoil Clay B Peat Silt G Fill Sand D	entonite rout/conc rill arising	Drilling details rete *Samp	g circulation loss a s. ple broke during pi				ed.	

YDX-3L

Logged By: Checked By:



NOT TO SCALE

Drillforce

22 Moorhouse Avenue Addington CHRISTCHURCH 8011 Ph: 03.379.4402 4 Fred Thomas Drive Takapuna AUCKLAND 0622 Ph: 09.489.7872 F: www riley co pz

MACHINE HOLE LOG

	E	N	11				Ph: 0	3.379.4402	Ph: 09.489.7872 E: www.riley.co.nz			IVIA	JIII		пог	LE LO	G	
	-	t No.	:		Proje)			ect Locati					N	lo.:	
)245 ent:				Drury	Quai	rry - S	Sutton Block Start Date:	09 Nov 2022	_	rry Rd, Dru Location					DH	l101	
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Co		linate E 177		5, N 5	89054	11	1	Ground Level (m): Ground			Depth (m): 69.50	Inclinat 70°		Azimı	utn: 290°	Sheet: 10 of 16	Status:	
Ĉ								Geological D	escription	ng	F:		gu .) Sic	Defect D	Description	1 0"	
Elevation (m)	Depth (m)	Method	Box No.	TCR (SCR) RQD (%)	Core Loss (%)	Geological Unit	Legend	In accordance with NZG refer to appended Info abbreviation e	ormation sheet and		Field Strength Soil Rock	Samples	Defect Spacing (mm)	Defect Symbolic Log	Guidelines appende sheet and	nce with NZGS (2005); refer to d Information I abbreviation lanation	In-Situ Testing Data / Results	Backfill / Installation
		Rotary cored				WAIPAPA GROUP		[CONT] Slightly to mod light grey; GREYWACK Extremely to very close at multiple orientations and infill on defect surf quartz veins infilling he 41.50m - 42.00m: Grac closely spaced fracture undulating, striations o Becomes extremely to	KE; very weak. ely spaced fractures Clay weathering aces. Abundant aled fractures. des to extremely to es, rough to smooth n most surfaces.	S			0				41.0- 41.5- 42.0- 42.5- 43.0- 44.0-	\$ 2 2 5 5 5 6 6 5 5 5 6 6 5 5 5 6 6 5 5 5 6 6 5 5 5 6 6 5 5 5 6 6 5 5 5 6 6 5 5 5 6 6 5 5 5 6 6 5 5 5 6 6 5 5 5 6 5 5 5 6 5 5 5 6 5 5 5 6 5 5 5 6 5 5 5 6 5 5 5 6 5 5 5 6 5 5 5 6 5 5 5 6 5 5 5 6 5 5 5 6 5 5 5 6 5 5 5 6 5 5 5 6 5 5 5 6 5 5 5 6 5 5 6 5 5 6 5 5 6 5 5 6 5 5 6 5 5 6 5 6 5 5 6 5
Explanations: Refer to "Geological and to Level Level — Level — Out flow — In flow — In flow — Moisture: M = moist W = wet S = saturated — Refer to "Geological and to "Standard Penetratic (SPT) — (SPT) — Filled = Solid cone (SPT) — No Fill = Split spoor No Fill = Split spoor UTP = Unable to per S = saturated — PP = Pocket Penetro							Test) S) kPa) il trate	Topsoil Peat Fill Core Loss	Clay E	Backfill: Bentonite Grout/conc Drill arising	Drillin detail rete *Sam	s.				RDCL geophysi		efect
All	dim	ensi	ons	in me	etres	Drill	ing C	ontractor:		Drilling	Rig ID:		Dr	iller:		Logged By:	Checked	By:



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MACHINE HOLE LOG

					Ph: 0	3.379.4402 Ph: 09	.489.7872 w.riley.co.nz			IVIAC	<i>></i>	INL	HOL	L LO	3	
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220245 Client:			Drury	Qua	rry - S	Sutton Block Start Date: 09	Nov 2022	_	rry Rd, Dru Location	-				DH	1101	
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						Geological Descr	ription	ng	F: 11) Si	Defect D	escription		
Elevation (m) Depth (m)	Method	(%)	0 000	Geological Unit	Legend	In accordance with NZGS Guic refer to appended Informatic abbreviation explana	n sheet and	Weathering	Field Strength Soil Rock	Samples	Defect Spacing (mm)	Defect Symbolic Log	Guidelines appended sheet and	nce with NZGS (2005); refer to d Information abbreviation anation	In-Situ Testing Data / Results	Backfill / Installation
-45.5 -46.0 -46.5 -47.0 -47.0 -48.0 -48.5 -48.0 -49.0 -49.0	Rotary cored			WAIPAPA GROUP		45.00m: Slightly to moderatel light grey; GREYWACKE; ext very weak. Extremely to close fractures at multiple orientatic weathering and infill on defect Abundant quartz veins infilling fractures.	remely to elly spaced ins. Clay t surfaces. I surfaces. I healed								45.5- 46.0- 46.5- 47.0- 48.0-	6 - 6 50 6 - 6 50 6 - 6 50 6 - 6 50 6 - 6 50 6 - 6 50 6 - 6 50 6 - 6 50 6 - 6 50 6 - 6 50 6 - 6 50 6 - 6 50 6 6 50 6 - 6 50 6 - 6 50 6 - 6 50 6 - 6 50 6 - 6 50 6 - 6 50 6 6 50 6 6 50 6 6 50 6 6 50 6 6 50 6 6 50 6 6 50 6 6 50 6 6 50 6 6 50 6 6 50 6 6 50 6 50 6 50 6 6 50 6 50 6 6 50 6 6 50 6 6 50 6 6 50 6 6 50 6 6 50 6 6 50 6 6 50 6 6 50 6 6 50 6 6 50 6 6 50 6 6 50 6 6 50 6 6 50 6 6 6 50 6 6 6 50 6 6 6 6
Explanati	ons: F	Refer to "	Geologica	I and Ge	otechnie	cal Information" sheet for further de	tails. E	ackfill:	Rem	narks:	1::::					1~°
Initial W. Level Cout flow In flow Moisture: M = moist W = wet S = saturate All dime	ater v	Stand (SPT Filled No Fi Vane V = Po UTP =	lard Pene) = Solid c II = Split s Shear Str eak, R = I = Unable t Pocket Pe	etration cone (C spoon (rength (Residua to pene enetrom	Test) S) kPa) al trate neter	Topsoil Clay Peat Silt Fill Sand Core Loss Grav Ontractor:	Be Gi	entonite rout/concr ill arisings ter sand	Drillin details *Sam	g circulation los.	ing prepa			RDCL geophysic eable to be tested by Logged By:	ed.	



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MACHINE HOLE LOG

	Ē	N	11				Ph: 0	03.379.4402 Ph: 09.489.7872 ww.rileychch.co.nz E: www.riley.co.n				IAIV	JI 11	IVL	ПОГ		G	
	jec 1	t No.	:		Proje			Sutton Block			Location					N	lo.:	
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CO				5, N 5	89054	1	1	Ground Level (m): Ground	ПО	69.5	th (m): 60	70°			290°	12 of 16	Status:	
ш (ш						Jnit		Geological Description	Ŧ.	gu.	Field		ing	olic	Defect D	escription	In-Situ	
Elevation (m)	Depth (m)	Method	Box No.	TCR (SCR) RQD (%)	Core Loss (%)	Geological Unit	Legend	In accordance with NZGS Guidelines (20 refer to appended Information sheet ar abbreviation explanation		weathe	trength	Samples	Defect Spacing (mm)	Defect Symbolic Log	Guidelines appended sheet and	nce with NZGS (2005); refer to d Information abbreviation anation	Testing Data / Results	Backfill / Installation
	-50.5 -51.5	Rotary cored				WAIPAPA GROUP		49.50m: Slightly to moderately weathere light grey; GREYWACKE; extremely to very weak. Closely spaced fractures at multiple orientations. Clay weathering ainfill on defect surfaces. Abundant quart veins infilling healed fractures. 50.90m: Fractures become extremely to very closely spaced.	ed; nd z			UCS8 - 54MPa: 50.35 - 50.60m	0				50.0- 50.5- 51.0- 51.5-	30 6 6 5 50 6 6 5 50 6 6 5 50 6 6 5 50 6 6 5 50 6 6 5 50 6 6 5 50 6 6 5 50 6 6 5 50 6 6 5 50 6 6 5 50 6 6 5 50
-	•							52.80m: Fractures become closely spac	ed.				0				52.5-	02 100 02 100 0 0 0 0 0 0 0 0 0 0 0 0 0
Explanations: Refer to 'Geological and Geological Level Standard Penetration (SPT) - Out flow Standard Penetration (SPT) - Out flow No Fill = Solid cone (C No Fill = Split spoon (V No Fill = Split spoon (V Peak, R = Residue UTP = Unable to pene PP = Pocket Penetron						etration one (C) spoon (sength (Residua so pene	Test) S) kPa) il trate	Cal Information" sheet for further details. Topsoil Clay Peat Silt Sand Cal Core Loss Gravel	Backt Benton Grout/o	nite concrete isings	Drilling details	5.				RDCL geophysi		efect
All	All dimensions in metres Dr					Drill	ing C	ontractor:	Dri	lling Ri	g ID:		Dr	iller:		Logged By:	Checked	By:



22 Moorhouse Avenue Addington CHRISTCHURCH 8011

4 Fred Thomas Drive Takapuna AUCKLAND 0622

MACHINE HOLE LOG

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)245 ent:				Drury	Qua	rry -	Sutton Block Start Date: 09 Nov 2022			ry Rd, Dru Location:					DF	l101	
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(m)	٦)	ъ		TCR	Core	Unit	0	Geological Description		Bulle	Field	S	icing	polic		escription	In-Situ	_ ह
Elevation (m)	Depth (m)	Method	Run	(SCR) RQD	Loss	Geological Unit	Legend	In accordance with NZGS Guidelines (2005	5);	weatnering	Strength	Samples	Defect Spacing (mm)	Defect Symbolic Log	Guidelines	nce with NZGS (2005); refer to d Information	Testing Data /	Backfill /
Eleva	De	Σ	Box No.	(%)	(%)	Geold	تد	refer to appended Information sheet and abbreviation explanation		- 1	Soil Rock	Sa	Defec)	Defec	sheet and	abbreviation anation	Results	lns B
			140.		:::			[CONT] 52.80m: Fractures become closel	- 11	E \$ 65 S	"5"3" i i i i i i i i i i i i i i i i i i			1	·			000
	-							spaced.					0					30
	-							54.30m: Fractures become extremely to					.					
	-							very closely spaced.										30
	- 54.5																54.5•	
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	- 56.5					>											56.5	8,5
	56.60						, ,	Silty sandy GRAVEL with minor clay.						~~~	56. 60-56.85	m, CZ		:
	56.85						×0	[CRUSH ZONE]]0°,5
	-						×	Slightly to moderately weathered; light										30
	- 57.0							grey; GREYWACKE; very weak. Extremel to very closely spaced fractures at all angles. Clay weathering and infill on defec									57.0-	0,00
								surfaces. Abundant quartz veins infilling healed fractures.										1:5
	-																	
	-							57.40m - 57.70m: Trace pyrite										.°.0 .°.0 .°.0
	- 57.5 57.60							inclusions/staining.									57.5•	
							000	Sandy GRAVEL with some silt. [CRUSH ZONE]							57. 60-57.90	m, CZ		ري
	5 7.90						00	s s										0,0
							o *	Slightly to moderately weathered; light									58.0·	1000
	- 58.0							 grey; GREYWACKE; very weak. Extremel to very closely spaced fractures at all angles. Clay weathering and infill on defect 	:::								58.0*	000 000 000 000
	-							surfaces. Abundant quartz veins infilling healed fractures.										00
	-							58.00m - 62.00m: Circulation loss.										000
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								ical Information" sheet for further details.	Backf	ill:	11	arks:	loss at 5	8.0m and	66.0m. See	RDCL geophysi	cal data for d	lefect
Initial Water Level Standard Penetration (SPT)								Topsoil Clay	Benton	ite	details	S.						
Out flow In flow Filled = Solid cone (C) No Fill = Split spoon (spoon (S)	Peat Silt O	Grout/c	concre	te *Samp	ole broke dui	ring prep	aration o	f test. No cor	e able to be test	ed.	
Moisture: Vane Shear Strength (k V = Peak, R = Residua						Residua	al	1000d	Orill ari	sings								
	wet satura	ated			Unable t ocket Pe			Core Loss Gravel F	Filter sa	and								

Drilling Contractor: Drilling Rig ID: Driller: Logged By: Checked By: All dimensions in metres NOT TO SCALE YDX-3L Drillforce SJA



All dimensions in metres NOT TO SCALE

Drilling Contractor:

Drillforce

22 Moorhouse Avenue Addington CHRISTCHURCH 8011 Ph: 03.379.4402 4 Fred Thomas Drive Takapuna AUCKLAND 0622 Ph: 09.489.7872

MACHINE HOLE LOG

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vation	Depth (m)	Method	Run	RQD (%)	Loss (%)	ologica	Legend	In accordance with NZ refer to appended In	formation sheet an	Neat (5)		E =	ect Sp (mm)	sct Sy Log	appende	(2005); refer to	Data /	Backfill /
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■ Initial Water Level Standard Penetration (SPT)								Topsoil Topsoil	Clay	Bentonite	deta	ils.						2.500
Out flow In flow Filled = Solid cone No Fill = Split spoor						poon (S)	Peat	Silt	Grout/con	crete *Sa	mple broke d	uring prep	aration o	f test. No co	re able to be test	ed.	
Moisture: Vane Shear Strength V = Peak, R = Resid						Residua	al	Fill	Sand	Drill arisin								
								Core Loss	Gravel	Filter sand	d							

Drilling Rig ID:

YDX-3L

Driller:

Logged By: Checked By:



22 Moorhouse Avenue Addington CHRISTCHURCH 8011 Ph: 03.379.4402 4 Fred Thomas Drive Takapuna AUCKLAND 0622 Ph: 09.489.7872 E: www.rilev.co.nz

MACHINE HOLE LOG

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				er to "G	eological	WAIPAPA GROUP	otechnia	Slightly to moderately we grey; GREYWACKE; ver to very closely spaced fix orientations. Clay weathe defect surfaces. Abundar infilling healed fractures.	y weak. Extremely cirting and infiliple in the circumstance		- 11	narks:	Φ.		66 Am Cook	BDCI seesbug	64.5- 64.5- 65.0- 66.0-	100 00 00 00 00 00 00 00 00 00 00 00 00
Explanations: Refer to "Geological and to "Initial Water Level Standard Penetratio"								F #1	00000000	entonite	Drillin details		loss at 5	8.0m and	66.0m. See	RDCL geophys	cal data for d	efect
< -	Out flo		<i>(</i>)		Solid c			mmm		rout/concr	*Com		ring prep	aration of	f test. No cor	e able to be test	ed.	
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M = moist V = Peak, R = Residua W = wet UTP = Unable to penet					ak, R = F Unable t	Residua o pene	al trate	0000 ESEM	(Sec.)	illi ansings								
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RILEY CONSULTANTS LTD, REPORT: RILEY MH-R (rock) - generated with CORE-GS by Geroc

Logged By: Checked By:



All dimensions in metres NOT TO SCALE

Drilling Contractor:

Drillforce

22 Moorhouse Avenue Addington CHRISTCHURCH 8011 Ph: 03.379.4402 4 Fred Thomas Drive Takapuna AUCKLAND 0622 Ph: 09.489.7872

MACHINE HOLE LOG

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Œ	(L	-		TCR		Unit	_	Geological Description	ring	Fie	eld	ø	cing	polic		escription	In-Situ	_ 5
Elevation (m)	Depth (m)	Method	Box No.	(SCR) RQD (%)	Core Loss (%)	Geological Unit	Legend	In accordance with NZGS Guidelines (2005 refer to appended Information sheet and abbreviation explanation	Weathering	Stren	Rock	Samples	Defect Spacing (mm)	Defect Symbolic Log	Guidelines appended sheet and	nce with NZGS (2005); refer to d Information abbreviation anation	Testing Data / Results	Backfill /
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	-																	0,0
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	- 68.0																68.0-	Š,
	-																	
	-							68.20m - 68.30m: Highly fractured zone,					0					0,
	-					OUP		recovered as sand to gravel sized material	I.									.,0
	- 68.5					WAIPAPA GROUP											68.5 -	0,
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	-					/ /		68.70m - 69.00m: Highly fractured zone,										0,
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Fv	nland	ations	· Pof	er to "C	eologica	l and Go	otechni	cal Information" Sheet for further details	Backfill:	1	Rem	narks:						<u> </u>
Explanations: Refer to "Geological and Geotechnical Information" sheet for further detail Initial Water Level Standard Penetration Test (SPT) Topsoil Clay									Backfill: Bentonite			g circulation	loss at 5	8.0m and	66.0m. See	RDCL geophys	ical data for d	efect
Out flow Filled = Solid cone (C)						cone (C)) S)		Frout/con				ring prep	aration o	f test. No co	e able to be test	ed.	
Moisture: Vane Shear Strength (kPa)						rength (kPa)		rill arisin									
M = moist V = Peak, R = Residual UTP = Unable to penetrate					Unable t	to pene	trate	DOOD STORY STORY	ilter sand	·								
						enelion	ietet.	and [2.00] \$2.60										

Drilling Rig ID:

YDX-3L

Driller:



NOT TO SCALE

Drillforce

22 Moorhouse Avenue Addington CHRISTCHURCH 8011 Ph: 03.379.4402 4 Fred Thomas Drive Takapuna AUCKLAND 0622 Ph: 09.489.7872 E: www.rilev.co.nz

MACHINE HOLE LOG

	C		N I					03.379.4402 Ph: 09.489.7872 www.rileychch.co.nz E: www.riley.co.n	ız				•					
	-	t No.	:		Proje					-	ect Location					ı	lo.:	
)245 ent:				Drury	Qua	rry - S	Sutton Block Start Date: 01 Nov 202	2		rry Rd, Dru Location:					DF	1102	
			Aggre	egate	s Ltd			End Date: 04 Nov 202	- 1		nhouse Eas					.	2	
Со		linate		1 N E	.00040	١٥		Ground Level (m): Ground	Н		epth (m): 0.00	Inclinat		Azimı	uth: 270°	Sheet:	Status:	
_		= 1//	1012	+, IN 3	89040				<u> </u>		0.00	70				1 of 14	FINA	
Elevation (m)	(E)	po	ے	TCR (SCR)	Core	Geological Unit	pu	Geological Description		Weathering	Field Strength	es	Defect Spacing (mm)	Defect Symbolic Log	In accordar	Description nce with NZGS	In-Situ Testing	/≡i
vation	Depth (Method	Run	RQD (%)	Loss (%)	ologic	Legend	In accordance with NZGS Guidelines (20 refer to appended Information sheet an		Veatl	Soil Rock	Samples	ect Sp (mm	ect Sy Log	appende	(2005); refer to display the display in the display	Data /	Backfill /
Ele			Box No.	(,	, ,	Gec		abbreviation explanation	8	NWW NWW SWW SWW	2011 Kock	0)	Def	Defe		anation	Results	
			0.00				C/L C/L	CORE LOSS									-	
							:/L :/L	L									-	
ļ							C/L											
	- 0.5						[/L	L									0.5 —	
				0			C/L	L									-	
İ				-	100		C/L	Ц									_	
							C/L	L									-	
	- 1.0						C/L C/L	Ц									1.0 —	
İ							:/L :/L										_	
ŀ							C/L										-	
ŀ	1.50						[/L	L									-	
	- 1.5 -		1.50					CLAY, with minor silt; medium brown. So to very stiff.	tiff								1.5 -	
-	1.75							-									-	
								CLAY, with trace silt; orange and light go mixed. Firm to stiff; medium plasticity to	rey								-	
	1.95							high plasticity. - CLAY, with trace silt; brown-grey with	\dashv								2.0 —	
		red		100	0			 orange mottles. Stiff to very stiff; mediun plasticity to high plasticity. 	n								-	
	2.30	Rotary cored															_	
-		Rota						CLAY; brownish grey. Very stiff to hard; [TE KUITI GROUP].									-	
ŀ	- 2.5 Property of the state of							-									2.5 —	
ļ	2 75							-									_	
			2.75	0			C/L C/L	CORE LOSS									-	
ŀ	3.00			-	100		:/L	<u>'</u>									-	
	-3.0		3.00					CLAY; brownish grey. Very stiff to hard.									3.0 -	
						-N											-	
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İ								-										
-																	-	
_	4.50							-										
		ations		er to "G	eological	and Ge	otechni	ical Information" sheet for further details.	Bac	kfill:	11	narks:	weical de	a for def	net detell-			
[4 (011)								Topsoil Clay	Bent	onite		RDCL geoph ple broke du	•			e able to be test	ed.	
Out flow Filled = Solid cone (C) No Fill = Split spoon (S)							S)	Peat Silt	Grou	ıt/concr	- 11	,	51 F					
Moisture: Vane Shear Strength (k M = moist V = Peak, R = Residua UTP = Unable to penet							al	Fill Sand	Drill a	arisings	;							
W = wet S = saturated W = Wet UTP = Unable to pene PP = Pocket Penetron								Core Loss Gravel	Filter	sand								
All dimensions in metres Dri							ina C	Contractor:		rilling	Ria ID:		Dri	ller:		Logged By	Chacked	Bv



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Drillforce

22 Moorhouse Avenue Addington CHRISTCHURCH 8011 Ph: 03.379.4402 4 Fred Thomas Drive Takapuna AUCKLAND 0622 Ph: 09.489.7872 E: www.rilev.co.nz

MACHINE HOLE LOG

	(N	VI.					3.379.4402 Ph: 09.489.7872 ww.rileychch.co.nz E: www.riley.co.nz			MAGI		1101			
	-	t No.	:		Proje) (B) 1		ject Locati				ı	lo.:	
	0245 ent :				Drury	Qua	rry - S	Sutton Block Start Date: 01 Nov 2022	_	erry Rd, Dru	-			DF	1102	
			Aggre	egate	s Ltd			End Date: 04 Nov 2022		mhouse Eas				-		
Со		linate				_	0	Ground Level (m):		Depth (m):	Inclination:			Sheet:	Status	
_	E	= 177	7674	I, N 5	89040			Ground		60.00	70°		270°	2 of 14	FIN	AL
<u>E</u>	Œ	р		TCR	Core	Geological Unit	9	Geological Description	Weathering	Field	Samples Defect Spacing	(mm) Defect Symbolic Log		Description nce with NZGS	In-Situ	_ n
Elevation (m)	Depth (m)	Method	Run	TCR (SCR) RQD	L033	ogical	Legend	In accordance with NZGS Guidelines (2009) refer to appended Information sheet and	aath (5);	Strength	Samples fect Spacin	(mm) t Syn Log	Guidelines	(2005); refer to	Testing Data /	Backfill / Installation
Elev	De	Σ	Box No.	(%)	(%)	Geold	ٽا	abbreviation explanation	× × × × × × × × × × × × × × × × × × ×	Soil Rock	Sa Defec	Defec	sheet and	d abbreviation lanation	Results	B. Ins
			140.		::::		-7h	Moderately weathered, extremely weak,	#Sfig65	\$"5"\$ f 1.1.1.1			· ·			
								carbonaceous MUDSTONE, greyish- brown. Thinly laminated; CLAY, hard.								
	-						₩	4.60m: Coal seam, lens, up to 2mm thick.								-
	-															1
	- 5.0														5.0 -	1
	-															-
	-															1
	-						<u>w</u>									1
	- 5.5														5.5 -	
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	-	pə.				OUP										+
	-	Rotary cored		100	0	TE KUITI GROUP	₩_									1
	-	Rotaı				E KUI]
	- 7.0					F	₩								7.0 -	1
	-															1
	_							7.15m - 7.50m: Minor coal laminations an organic inclusions up to 1mm thick.	d							1
	-															
	- 7.5														7.5 -	1
	-						₩_								•	1
	-															
	-															+
	- 8.0							8.00m: Becomes very weak.							8.0 -	1
	-						Δ <u>ν</u>									-
	8.45						<u>₩</u>		_						•	1
	-8.5							Moderately weathered, very weak, carbonaceous MUDSTONE, dark brown. Thinly laminated; minor organic inclusions							8.5 -	
								Contains several highly to completely weathered sections; CLAY, firm.	·							1
															,	+
	-															
Explanations: Refer to "Geological and Geotechnical Information" sheet for further Initial Water To Standard Penetration Text								cal Information" sheet for further details.	Backfill:	11	narks: RDCL geophysical	data for def	ent details			
[4 (011)								Topsoil Clay	Bentonite		ple broke during p			re able to be test	ed.	
→ Out flow Filled = Solid cone (C) No Fill = Split spoon (S)								Peat Silt	Grout/cond	- 11	. 31					
Moisture: Vane Shear Strength (kPa) V = Peak, R = Residual							al	0000	Orill arising	s						
W = wet UTP = Unable to penetrate S = saturated PP = Pocket Penetrometer								Core Loss Gravel	ilter sand							
- Saturated					etres	Drill	ing C	ontractor:	Drilling	g Rig ID:		Driller:		Logged By	Checked	l By:



22 Moorhouse Avenue Addington CHRISTCHURCH 8011

4 Fred Thomas Drive Takapuna AUCKLAND 0622

MACHINE HOLE LOG

			N I					03.379.4402 Ph: 09.489.7872 ww.rileychch.co.nz E: www.riley.co.nz										
	-	t No.	:		Proje					_	ect Locati					1	No.:	
)245 ent:				Drury	/ Qua	rry - S	Sutton Block Start Date: 01 Nov 2022	_		rry Rd, Dru Location					DF	1102	
			Aggre	egate	s Ltd			End Date: 04 Nov 2022	- 1		nhouse Eas					.		
Со		linate			00040			Ground Level (m):	Но		epth (m):	Inclin		Azir	nuth:	Sheet:	Status:	
		= 1//	1 1014	i, N 5	89040		ᆣ	Ground	_		0.00	/	0°	10	270°	3 of 14	FINA	\ <u></u>
Œ	(m)	þc	ا ر	TCR	Core	Geological Unit	Þ	Geological Description		Weathering	Field	es	Defect Spacing (mm)	Defect Symbolic	In accorda	Description Ince with NZGS	In-Situ	2 2
Elevation (m)	Depth (m)	Method	Run	(SCR) RQD (%)	Loss (%)	logica	Legend	In accordance with NZGS Guidelines (2005 refer to appended Information sheet and	5);	Veath	Strength	Samples	mm)	ct Sy	Guidelines appende	(2005); refer to	Testing Data /	Backfill
Ele	۵	_	Box No.	(70)	(,	Geo		abbreviation explanation		>	Soil Rock	S	Defe	Defe	sheet an	d abbreviation lanation	Results	2
								[CONT] Moderately weathered, very weak carbonaceous MUDSTONE, dark brown.	:								-	
	-							Thinly laminated; minor organic inclusions Contains several highly to completely weathered sections; CLAY, firm.									-	1
							ΔV	weathered sections, CLAT, IIIII.									-	
	- 9.5																9.5 -	-
	-			100	. 0		<u>w</u>										-	1
				-													-	
	-																-	-
	-10.0																10.0-	}
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	10.30 0 : : 100 10.50						- <u>₩</u> -	00051000	_ !									
	10.30 0 : : 1000						C/L	CORE LOSS									•	$\frac{1}{2}$
	10.50						- Z	Moderately weathered, very weak,									10.5-	
	10.50							Thinly laminated; minor organic inclusions Contains several highly to completely									-	-
	- Industrial wearing and wearing and wearing and a carbonaceous MUDSTONE, dark Thinly laminated; minor organic in															-	\dagger	
	-11 0							<u> </u>									11.0-	
	-	pe				JUP											-	-
	Rotary cored TE KUITI GROUP																-	1
		Rotary				KUI		11.30m - 12.65m: Sandy laminations 2mn	ו								-	
	- 11.5	_				#	ΔV	to 10mm thick.									11.5-	-
	-																-	1
							71V										-	
	-			100														-
	-12.0			-	10												12.0-	1
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	-																-	-
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	- 12.5																12.5-	
							₩_										-	-
	-																	1
	-13.0																13.0-	
	-13.0 -						$=\frac{7}{\pi \kappa}$	13.05m: Becomes moderately weathered.									-	-
	-																	1
							ΔV]
Fv.	13.50	ations	. Pot	er to "C	enlogica	l and Go	otechni	cal Information" sheet for further details.	Ba-'	efill:	Rem	narks:	111111	<u> </u>				<u>_</u>
_		Water	П		ard Pene				Back Bento		See F	RDCL geop			efect details.			
Out flow In flow Out flow Filled = Solid cone (C) No Fill = Split spoon (S)										/concr	- 11	ple broke o	during prep	paration	of test. No co	re able to be test	ed.	
Moisture: Vane Shear Strength (k V = Peak, R = Residual						rength (kPa)			risings								
* 1/ B. d. B. B. d. b. I						to pene	trate	Core Loss Gravel	ilter	sand								
= د																		



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MACHINE HOLE LOG

	C		N I						: 09.489.7872 www.riley.co.nz				• • • • • • • • • • • • • • • • • • • •					
	-	t No.	:		Proje					1 -	ect Locati					1	No.:	
)245 ent:				Drury	Qua	rry - S	Sutton Block Start Date: 0	1 Nov 2022		rry Rd, Dru Location	_				DF	1102	
			Aggre	egate	s Ltd				14 Nov 2022		nhouse Eas					וט	1102	
Со	-ord	linate	es:					Fround Level (m):		Hole D	epth (m):	Inclina		Azimı	uth:	Sheet:	Status:	
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Œ)	(L	-		TCR	0	Unit	_	Geological Des	scription	ring	Field	v	cing	polic	1	Description	In-Situ	_ 5
Elevation (m)	Depth (m)	Method	Run	TCR (SCR) RQD	Core Loss (%)	Geological Unit	Legend	In accordance with NZGS (refer to appended Inform	Guidelines (2005); ation sheet and	Weathering	Strength	Samples	Defect Spacing (mm)	Defect Symbolic Log	Guidelines appended	nce with NZGS (2005); refer to d Information	Testing Data /	Backfill
Ele	Ď	۷	Box No.	(%)	(70)	Geo		abbreviation exp		SW MW M	Soil Rock	Ø	Defe	Defe		abbreviation anation	Results	<u> </u>
	-							Slightly to moderately wea carbonaceous MUDSTON	IE, greyish-								-	Γ
	-							brown. Thinly laminated; of moderately-widely spaced lamination planes.									-	1
	-						<u>w</u>	iamination planes.									-	
	- 14.0																14.0-	-
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	-	cored		100 - -	10	TE KUITI GROUP	Δ <i>ν</i>					UCS26*: 15.65	0				-	-
	-	Rotary				KUT						- 15.85m					-	1
	- -16.0	œ				世											16.0-	
	-																-	-
	-																-	ł
	-						ΔV										-	
	- 16.5							16.45m - 16.65m: Extrem									16.5-	-
	-						<u>w</u>	moderately weathered lay	er.								-	1
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	-						₩_										-	-
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	-																-	
	17.90																-	1
	18.00		17.90	:	100		C/L	CORE LOSS						-			-	
-								cal Information" sheet for furthe	r details. B	ackfill:	11	narks: RDCL geopl	hvsical da	ta for def	ect details			
✓ Initial Water Level Standard Penetration Test (SPT) Topsoil ✓ Out flow Filled = Solid cone (C)								Topsoil C	lay Be	entonite	ll l					e able to be test	ed.	
	out flow		٧	No Fill	= Split s	poon (S)	Peat S	ilt Gr	out/concr			•					
							al	0000	and Dr	ill arisings	s							
W = wet UTP = Unable to penetra S = saturated PP = Pocket Penetromete								Core Loss G	ravel Fil	ter sand								
_																		

Drilling Rig ID: All dimensions in metres **Drilling Contractor:** Driller: Logged By: Checked By: NOT TO SCALE YDX-3L SRO Drillforce SJA



22 Moorhouse Avenue Addington CHRISTCHURCH 8011

4 Fred Thomas Drive Takapuna AUCKLAND 0622

MACHINE HOLE LOG

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	-	No.	:		Proje					-	ect Location					1	No.:	
)245 ent:				Drury	Qua	rry - S	Sutton Block Start Date: 01 Nov 2022	_		ry Rd, Dru	_				DF	1102	
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Со		inate		L N 5	89040	ıs	(Ground Level (m): Ground	Но		epth (m): 0.00	Inclinat		Azimu	uth: 270°	Sheet: 5 of 14	Status:	
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Elevation (m)	Depth (m)	Method	Box No.	TCR (SCR) RQD (%)	Core Loss (%)	Geological Unit	Legend	Geological Description In accordance with NZGS Guidelines (2000 refer to appended Information sheet and abbreviation explanation		Weathering	Field Strength Soil Rock	Samples	Defect Spacing (mm)	Defect Symbolic Log	In accordar Guidelines (appended sheet and	Description nce with NZGS (2005); refer to d Information abbreviation anation	In-Situ Testing Data / Results	Backfill /
		Rotary cored	:: Ref	100 - -	eological	TE KUITI GROUP		Slightly to moderately weathered, weak, carbonaceous MUDSTONE, greyish-brown. Thinly laminated; closely to moderately-widely spaced fractures along lamination planes. 18.90m: Coal lens approximately 2mm thick. 19.30m - 20.20m: Highly weathered, extremely closely spaced fractures, very textremely weak layer.		fill:	11	arks:	Ď				19.5- 19.5- 20.6- 21.6- 22.6-	
Initial Water Level Standard Penetration Test (SPT) Filled = Solid cone (C) No Fill = Split spoon (S) Peat Silt Moisture: Vane Shear Strength (kPa) V = Peak, R = Residual UTP = Unable to penetrate UTP = Unable to penetrate UTP = Pocket Penetrometer Gravel Gr									3entor Grout/o Orill ar	nite concre	See R *Samp	DCL geophy				re able to be test	ed.	



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Drillforce

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MACHINE HOLE LOG

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	-	l No.	:		Proje						ject Locati					1	lo.:	
	0245 ent :				Drury	Qua	rry - S	Sutton Block Start Date:	01 Nov 2022	_	erry Rd, Dru	_				D⊦	1102	
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Со		inate					G	Fround Level (m)			Depth (m):	Inclina		Azimu		Sheet:	Status	
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Œ	Ē	Ð	_	TCR	Core	Geological Unit	р	Geological	Description	Weathering	Field	Se	Defect Spacing (mm)	-lbolic		Description nce with NZGS	In-Situ	/ uo
Elevation (m)	Depth (m)	Method	Run	(SCR) RQD	Loss (%)	ogica	Legend	In accordance with NZ refer to appended In		eath (g	Strength	Samples	ct Sp (mm)	Log	Guidelines	(2005); refer to	Testing Data /	Backfill / Installation
⊟e	۵	2	Box No.	(%)	(70)	Geol			explanation	× × × × × × × × × × × × × × × × × × ×	Soil Rock	, vi	Defe	Defect Symbolic Log		l abbreviation lanation	Results	اع ۳
		Rotary cored		100 -	Θ	TE KUITI GROUP		[CONT] 19.30m - 20.3 weathered, extremely fractures, very to extremely fractures, very to extremely contains a silt and gravel, weathered CRUSH Z some silt and gravel, some sil	relative tremely to closely weak layer. In the second of				Q		23.00-23.30	m, C2	23.5· 24.5· 25.6· 26.6·	-
Explanations: Refer to "Geological and Geotech						l and Ge	otechnic	al Information" sheet for f	further details.	Backfill:	11	narks:	<u> </u>	.1				
¥	nitial ' _evel	Water	П		rd Pene			Topsoil	_	Bentonite		RDCL geoph				re able to be test	ed	
\triangleleft	Out flo n flow		()	Filled =	Solid c			Peat	Silt	Grout/conc	- 11	ые втоке аг	лид ргер	arauon o	i lest. INO COI	re able to be test	eu.	
Мо	sture	:	\/\	/ane S	hear Str	ength (kPa)	Fill	Sand [Orill arising	s							
M = moist V = Peak, R = Residual W = wet UTP = Unable to penetrate						to pene	trate	Core Loss	Gravel [ilter sand								
S = saturated PP = Pocket Penetromet										Drilling	g Rig ID:		D	ller:		Logged P.	Checker	I Bv
All dimensions in metres					ontractor:		לעווווים	y Kiy iD:		Uri	ner.		Logged By:	Linecked	ь Dy.			



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MACHINE HOLE LOG

			03.379.4402 Ph: 09.489.7872 ww.rileychch.co.nz E: www.riley.co.nz								
Project No.: 220245		t Name:	Sutton Block		ject Location				ı	lo.:	
Client:	Diuly	guarry - C	Start Date: 01 Nov 2022		e Location:	•			DH	1102	
Stevenson Aggrega	tes Ltd		End Date: 04 Nov 2022		mhouse Eas			41.			
Co-ordinates : E 1777674, N	5890408		Ground Level (m): Ground		Depth (m): 60.00	Inclination 70°		utn: 270°	Sheet: 7 of 14	Status:	
Elevation (m) Depth (m) Method Meth	R Core Loss	Geological Unit	Geological Description In accordance with NZGS Guidelines (2005 refer to appended Information sheet and abbreviation explanation	We We	Field Strength	Samples	(mm) Defect Symbolic Log	In accordar Guidelines appender sheet and	Description nce with NZGS (2005); refer to d Information d abbreviation lanation	In-Situ Testing Data / Results	Backfill /
-27.5 -28.0 -28.0 -28.5 -29.0 -29.0 -29.5 -30.0 -30.5 -30.5 -30.5 -31.0		TE KUITI GROUP M	[CONT] Slightly to moderately weathered, extremely to very weak carbonaceous MUDSTONE, grey-brown. Closely to very closely spaced fractures, thinly laminated; contains highly to completely weathered and/or extremely closely fractured section: throughout.	S	Rem	narks:				28.5— 28.5— 29.5— 30.5— 31.0— 31.0—	
Initial Water Level Out flow In flow Moisture: M = moist W = wet No F Star (SP' Fille No F Vane V = M UTP	ndard Penetra T) d = Solid con Fill = Split spo e Shear Stren Peak, R = Re = Unable to p	ne (C) poon (S) ngth (kPa) sidual penetrate etrometer	Topsoil Clay E Peat Silt Co	Backfill: Bentonite Brout/cond Orill arising Filter sand	See R *Samp erete	narks: RDCL geophysica ple broke during			re able to be test		Ву



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MACHINE HOLE LOG

	C		N I					03.379.4402 Ph: 09.489.7872 ww.rileychch.co.nz E: www.riley.co.nz				,						
	-	t No.	:		Proje			Sutton Dioak		oject l						N	lo.:	
	0245 ent :				Drury	Quai	iry - S	Sutton Block Start Date: 01 Nov 2022	_	uarry R						DH	1102	
				egate	s Ltd			End Date: 04 Nov 2022		ırmhou								
Со		inate		1 N 5	89040	18	9	Ground Level (m): Ground	Hole	Depth 60.00	٠,	Inclination 70°	on:	Azimu 2	ith: :70°	Sheet: 8 of 14	Status:	
_		- '''	101		1			Geological Description	0							escription	1 114/	
Elevation (m)	(m)	pot	Run	TCR (SCR)	Core	Geological Unit	pue		Weathering	Str	ield ength	səlc	Defect Spacing (mm)	Defect Symbolic Log	In accordar	ce with NZGS	In-Situ Testing	Backfill / Installation
evatic	Depth (Method		RQD (%)	Loss (%)	ologic	Legend	In accordance with NZGS Guidelines (2009) refer to appended Information sheet and abbreviation explanation	Weal	Soil	Rock	Samples	fect S (mr	ect S	appended	2005); refer to I Information abbreviation	Data / Results	Back nstall
Ď	_		Box No.			Ge		·	283₹₹	J 0.8	**************************************		<u> </u>	Def		anation	rtosuits	\Box
	-							[CONT] Slightly to moderately weathered, extremely to very weak carbonaceous MUDSTONE, grey-brown. Closely to very										$\mid \cdot \mid$
	-							closely spaced fractures, thinly laminated; contains highly to completely weathered									•	1
	-						7F 7	and/or extremely closely fractured section throughout.	s									
	- 32.0																32.0-	
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	- 33.5																33.5-	
	-	ored															,	1
	-	Rotary cored					7							<u> </u>	33. 80-34.20r	n FT]
	33.80m - 34.30m: [FAULT GOU gravelly CLAY: Dark grey; very						33.80m - 34.30m: [FAULT GOUGE] Silty gravelly CLAY. Dark grey; very soft.							33.00-04.20	1,11	•		
	-34.0 gravery objects bank grey, very															34.0-	1	
	-																	
	34.40							Slightly weathered, moderately strong,	-				0		34. 30-34.40	n, CZ	,	1
	34.50 34.5		34.40	:	100		C/L	GREYWACKE, medium grey. Extremely closely spaced fractures to disintegrated.					• · · · · · · · · · · · · · · · · · · ·				34.5-	1
	-		34.50					Many fractures infilled with light mineral of brown clay [CRUSH ZONE]							34. 50-35.90r	n, ?	,	
	-							CORE LOSS Slightly to moderately weathered,	_									1
	-							moderately strong, GREYWACKE, medium grey. Extremely closely spaced									,]
	- 35.0					GROUP		fractures to disintegrated. Many fractures infilled with light mineral or brown clay. Fractures rough, undulating [CRUSH									35.0-	
	-			100	0	PA GF		ZONE].										1
	-			-		WAIPAPA											,]
	- WAN					>												1
	-35.5																35.5 -]
	35.90																,	1
36.00 35.90 100 C/L disintegrated section.							35.85m - 36.00m: Completely fractured, disintegrated section.	_/										
Explanations: Refer to "Geological and Geotechnical Information" sheet for further details. Initial Water Standard Penetration Test Standard Penetration								cal Information" sheet for further details.	Backfil	:	1	narks: RDCL geophys	sical dat	a for defe	ect details			
Level (SPT) Topsoil Clay Out flow Filled = Solid cone (C)							Bentonit	•						e able to be test	ed.			
├ In flow V No Fill = Split spoon (S) Peat Silt Woisture: ✓ Vane Shear Strength (kPa) Fill Sand								Grout/co										
M = moist V = Peak, R = Residual W = wet UTP = Unable to penetrate True Core Loss Gravel							Orill arisi	·										
W = wet UTP = Unable to penetrate S = saturated PP = Pocket Penetrometer Core Li									ilter sar	ıd								
All dimensions in metres Drilling Contractor:						ing C	ontractor:	Drilli	ng Rig	ID:		Dri	ller:		Logged By:	Checked	l By:	



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	-		:							1 -	ect Location					N	lo.:	
	0245 ent:	-			Drury	Qua	rry - S	Sutton Block Start Date: 01 N	lov 2022		rry Rd, Dru Location:					DF	l102	
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(m)	(F	ъ		TCR	Core	Unit	0	Geological Descri	ption	Weathering	Field	s	Defect Spacing (mm)	Defect Symbolic Log		Description	In-Situ	_ re
Elevation (m)	Depth (m)	Method	Run	(SCR) RQD	Loss	Geological Unit	Legend	In accordance with NZGS Guid		: eathe	Strength	Samples	t Spa mm)	t Sym Log	Guidelines	nce with NZGS (2005); refer to d Information	Testing Data /	Backfill / Installation
Eleva	Del	Σ	Box No.	(%)	(%)	Geolc	Le	refer to appended Information abbreviation explana		1	Soil Rock	Sa	Defec	Defect	sheet and	abbreviation	Results	Bé
			36.00					CORE LOSS		893388	805882>>5.7		_ 	Н	36. 00-38.10	1	_	\vdash
	-							Slightly to moderately weather moderately strong, GREYWA0	ed, CKF]
	-							medium grey. Extremely close fractures to disintegrated. Mar	ly spaced									
	-							infilled with light mineral or bro Fractures rough, undulating [C	wn clay.									
	- 36.5							ZONE] 36.10m - 36.25m: Completely									36.5-	
								disintegrated section.	iraciureu,								•]
	-																	
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	- 37.0												0				37.0-	1
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	- 38.0	_				٩											38.0-	1
	-	cored		100		WAIPAPA GROUP		38.10m: Closely to moderately spaced open fractures with iro]
	-	Rotary		-	0	APA		and clay weathering along sur Extremely closely spaced hea	faces.								-	
	-	Ro				WAIP		infilled with light mineral and/o										$\mid \cdot \mid$
	-38.5 -																38.5-	1
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	-																•	
	-																-	
	- 39.0																39.0-	1
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	- 39.5											П					39.5-]
	-																	
	-																-	-
	-											UCS21 - 62MPa: 39.55					-	1
	-40.0											- 40.35m					40.0-	
																	-	
	-																	1
Explanations: Refer to "Geological and Geotechnical Information" sheet for further							otechnic	al Information" sheet for further det	ails. E	Backfill:	11	narks: RDCL geophy	sical det	a for def	ect detaile			
▼ Initial Water Level Standard Penetration Test (SPT)								Topsoil Clay	Ве	entonite	ll l					e able to be test	ed.	
	Out flow In flow Out flow No Fill = Split spoon (S)							Peat Silt	G	rout/concr	- 11		J1 -P	2				
Moisture: Vane Shear Strength (kP					ak, R = F	Residua	al	Fill Sand	Di	ill arising	s							
M = moist V = Peak, R = Residual UTP = Unable to penetra PP = Pocket Penetrometra					Unable t	to pene	trate	Core Loss Grave	Fi	ter sand								
- Saturated					etres	Drill	ling C	ontractor:		Drilling	Rig ID:		Dri	ller:		Logged By:	Checked	By:



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MACHINE HOLE LOG

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		t No.	:		Proje				0		-	ect Locati						ı	No.:	
220 Clie					Drury	Qua	ry - S	Sutton Block Start Date:	01 Nov 202	2		ry Rd, Dru Location	_					DΕ	1102	
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	E	177	7674	, N 5	89040	8		Groun	d	<u> </u>	6	0.00	7	0°		27	0°	10 of 14	FINA	₹L
<u>E</u>	ر آ	_		TCR	0	Unit		Geological I	Description		ring	Field	ဖွ	cing	bolic	1		escription	In-Situ	_ 5
Elevation (m)	Depth (m)	Method	Box No.	TCR (SCR) RQD (%)	Core Loss (%)	Geological Unit	Legend	In accordance with NZ0 refer to appended Inf abbreviation	ormation sheet an	d	Weathering	Strength Soil Rock	Samples	Defect Spacing	Defect Symbolic	G G	Guidelines (appended sheet and	nce with NZGS (2005); refer to d Information abbreviation anation	Testing Data / Results	Backfill
	41.0 41.5 42.0 42.5 43.0	Rotary cored	∷ Ref	100	eological	WAIPAPA GROUP	otechnik	[CONT] 38.10m: Closs widely spaced open fr. staining and clay weat surfaces. Extremely cl fractures infilled with li brown clay. 42.35m - 46.20m: Higi areas nearing complet Significant clay weath surfaces. Extremely cl fractures [CRUSH ZO	actures with iron hering along osely spaced heal ght mineral and/or hilly weathered, son lely weathered. ering along joint osely spaced NE].	ne		11	UCS24*43.30*-43.50r	D			42. 35-46.201	m, CZ	41.5- 41.5- 42.5- 43.5- 43.5- 44.5-	
Explanations: Refer to "Geological and Geological Level Standard Penetration To (SPT) Out flow No Fill = Split spoon (S) Moisture: Standard Penetration To (SPT) Filled = Solid cone (C) No Fill = Split spoon (S)						tration one (C) poon (S	Test S)	Topsoil Topsoil Peat	Clay Silt	Bent Grou	onite	See I *Sam	RDCL geop					e able to be test	ed.	
M = r W = v S = s	nois wet	t	١ .	/ = Pea JTP = I	ak, R = F Unable t ocket Pe	Residua o pene	l trate	Fill Core Loss	150		arisings r sand									



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Ph: 03.379.4402 Ph: 09.489.7872 E: www.rileychch.co.nz E: www.rileychch.co.nz										masimie noce coo								
Project No.: Project Name									1	Project Location:						No.:		
220245 Drury Quarry - S								Start Date: 01 Nov 2022		Quarry Rd, Drury Hole Location:					DF	l102		
			Aggre	egate	s Ltd			End Date: 04 Nov 2022		mhouse Ea					D.			
Со		linate					G	Ground Level (m):		Depth (m):	Inclination	on:	Azimu		Sheet:	Status:		
_	E	177	7674	1, N 5	89040			Ground	<u> </u>	60.00	70°		270°		11 of 14	FINA	۱L	
€ E		р		TCR	Core	Unit	р	Geological Description	ering	Field	8	acing	polic		Description nce with NZGS	In-Situ	~ no	
Elevation (m)	Depth (m)	Method	Run	TCR (SCR) RQD (%)	Loss (%)	Geological Unit	Legend	In accordance with NZGS Guidelines (200 refer to appended Information sheet and	Weathering	Strength	Samples	Defect Spacing (mm)	Defect Symbolic Log	Guidelines appended	(2005); refer to display information	Testing Data /	Backfill / Installation	
Ele	Δ		Box No.	(,0)	()	Gec		abbreviation explanation	8.93.838	Soil Rock	00	Defe	Defe		abbreviation anation	Results	프트	
		Rotary cored	No.	100	0	WAIPAPA GROUP		[CONT] 42.35m - 46.20m: Highly weathered, some areas nearing completely weathered. Significant clay weathering along joint surfaces. Extremel closely spaced fractures [CRUSH ZONE]	у	20 m = 10		Q		expl	anation	45.5- 46.0- 46.5- 47.5- 47.5- 48.0- 48.5-		
	-															-		
	-																	
Exi	olana	tions	: Ref	er to "G	eological	and Ge	otechnic	cal Information" sheet for further details.	Backfill:	Rem	narks:	:::::	l				<u> </u>	
W = W =		Water ow / : t	Standard Penetration Test (SPT) Filled = Solid cone (C) No Fill = Split spoon (S) Vane Shear Strength (kPa) V = Peak, R = Residual UTP = Unable to penetrate PP = Pocket Penetrometer				Test) S) kPa) al trate	Topsoil Clay B		See F *Sam crete	See RDCL geophysical data for defect details. *Sample broke during preparation of test. No core able to be tested.					ed.		
All	dim	ensi	ons	in me	etres	Drill	ing C	ontractor:	Drillin	g Rig ID:		Dril	ler:		Logged By:	Checked	By:	



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MACHINE HOLE LOG

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Project No.: Project Name									1 -	ect Locati		No.:						
220245 Drury Quar							rry - S			Quarry Rd, Drury Hole Location:					DH102			
Stevenson Aggregates Ltd								Start Date: 01 Nov 2022 End Date: 04 Nov 2022			nhouse Ea					וט	1102	
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Œ	(F	- J		TCR	Core	Unit	-	Geological Description		ering	Field	υ	cing	polic		escription	In-Situ	_ {
Elevation (m)	Depth (m)	Method	Run	TCR (SCR) RQD (%)	Loss (%)	Geological Unit	Legend	In accordance with NZGS refer to appended Inform	Guidelines (2005)	Weathering	Strength	Samples	Defect Spacing (mm)	Defect Symbolic Log	Guidelines appended	nce with NZGS (2005); refer to d Information	Testing Data /	Backfill
Ele	Ŏ	_	Box No.	(70)	(70)	Geo		abbreviation ex	planation	888888	Soil Rock	S	Defe	Defe		abbreviation anation	Results	ء سا
	-							[CONT] 48.70m: Become Abundant light clay infill of				UCS27 - 20MPa: 49.50 - 49.65m					-	
	-																-	
	- 50.0											UCS28 - 24MPa: 49.85					50.0-	
	-											- 50.05m					-	
	-																-	
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Exp	olana	itions	: Ref	Refer to "Geological and Geotechnical Information" sheet for further details.					er details.	Backfill:	11	narks:	<u> </u>					<u> </u>
Initial Water Level			Standard Penetration (SPT)			tration	Test Topsoil Clay			entonite		RDCL geoph ple broke du				e able to be test	ed.	
Out flow In flow			Filled = Solid cone (C) No Fill = Split spoon (S)			poon (S)	100			t/concrete							
Moisture: M = moist W = wet		Vane Shear Strength (V = Peak, R = Residua UTP = Unable to penet			Residua o pene	al trate	ato Fig. 1			arisings								
S = saturated				ocket Pe			Core Loss	Gravel Fi	Iter sand									



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	Project No.: 220245 Client: Stevenson Aggreg								Ph: 09.489.7872 E: www.riley.co.nz				O					
	-		:		Proje			=		1 -	ect Locati					N	lo.:	
					Drury	Quai	ry - S	Sutton Block Start Date:	01 Nov 2022	_	rry Rd, Dru Location					DF	l102	
			Aggre	egate	s Ltd			End Date:	04 Nov 2022		nhouse Ea					.		
Co		linate		1 N E	00040	١0	9	Ground Level (m):			epth (m): 0.00	Inclina 70		Azimu		Sheet:	Status:	
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Elevation (m)	(m)	po	⊑	TCR (SCR)	Core	Geological Unit	pu	Geological D	escription	Weathering	Field Strength	seles	Defect Spacing (mm)	Defect Symbolic Log	In accordar	Description nce with NZGS	In-Situ Testing	ill /
evatio	Depth (m)	Method	Run	RQD (%)	Loss (%)	ologic	Legend	In accordance with NZG refer to appended Info abbreviation e	ormation sheet and	Weat	Soil Rock	Samples	fect S (mn	ect Sy Log	appended	(2005); refer to d Information abbreviation	Data / Results	Backfill / Installation
ш			Box No.			Ge	101010101			893783	FMD FMD FMD FMD FMD FMD FMD FMD FMD FMD		<u> </u>	Def		anation	rtocano	
	-							[CONT] 48.70m: Becor Abundant light clay infi	mes strong. Il of healed joints.									1
	-																	1
	-																	
	- 54.5																54.5-	1
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Ex	Explanations: Refer to "Geological and G						otechnic	al Information" sheet for ful	rther details.	Backfill:	11	narks:	1::::		l			1
¥	Initial ' Level	Water	п		ard Pene			Topsoil		Sentonite		RDCL geoph				re able to be test	ed	
\Diamond	Out flow		()	Filled =	Solid c = Split s			Peat	Silt	Grout/conci	I I	hie pinke di	чинд ргер	ы ан∪П О	, 1001. INU COI	c abie to be testi	ou.	
M =	isture moist		,	V = Pea	hear Str ak, R = F	Residua	ıl	Fill	Sand [rill arising	s							
W=	= wet satura				Unable t ocket Pe			Core Loss	Gravel F	ilter sand								
All	dim	ensi	ons	in me	etres	Drill	ing C	ontractor:		Drilling	⊔		Dri	iller:		Logged By:	Checked	l By:



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	-	t No.	:		Proje					-	ect Location					1	lo.:	
	0245 ient:				Drury	Qua	rry - S	Sutton Block Start Date: 01 Nov 20	22		rry Rd, Dru Location:					DF	1102	
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Œ	(m)	pc	_	TCR (SCR)	Core	Geological Unit	þ	Geological Description		Weathering	Field	es	Defect Spacing (mm)	Defect Symbolic Log	l .	Description nce with NZGS	In-Situ	_ <u>:</u>
Elevation (m)	Depth (m)	Method	Run	(SCR) RQD (%)	Loss (%)	logica	Legend	In accordance with NZGS Guidelines (2 refer to appended Information sheet a		Veath	Strength	Samples	(mm	ct Syr Log	appende	(2005); refer to d Information	Testing Data /	Backfill
<u>e</u>	Ď	_	Box No.	(%)	(,0)	Geo	-	abbreviation explanation		S	Soil Rock	S	Defe	Defe	sheet and exp	l abbreviation lanation	Results	ء اا
								[CONT] 48.70m: Becomes strong. Abundant light clay infill of healed joints	s.									
	-																	-
	-																	1
	- 59.0																59.0 -	
	-					ROUP												-
	-			100	0	PA GF												1
						WAIPAPA GROUP												
	- 59.5					>											59.5 -	1
	-																•	1
	60.00																	$\frac{1}{1}$
	60.00						040404040	END OF HOLE: 60.00m	_								60.0	
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	-																	$\frac{1}{2}$
	-																	1
	- 60.5																60.5 -]
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	-61.0																61.0-]
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]
	- 61.5																61.5-	1
	_																•	
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]
	-																	1
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	-02.5																62.5-]
	-																	1
]
Explanations: Refer to "Geological and Geo Initial Water Standard Penetration T								ical Information" sheet for further details.	Bad	ckfill:	11	n arks: RDCL geoph	ysical dat	a for def	ect details.			
▼ Initial Water Level)	Topsoil Clay		tonite	11	ple broke du	ıring prep	aration o	f test. No co	re able to be test	ed.	
In flow No Fill = Split spoor							S)	Peat Silt	2	ut/concr								
							al etrate	Fill Sand Gravel	_	arisings								
LITE United to account								Core Loss Gravel] Filte	r sand								
Λ!	dim	onci	one	in m	tres	Dril	lina C	Contractor:	П	rilling	Ria ID:		Dri	iller:		Logged By	Checked	Вv



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22 Moorhouse Avenue Addington CHRISTCHURCH 8011 Ph: 03.379.4402 4 Fred Thomas Drive Takapuna AUCKLAND 0622 Ph: 09.489.7872 F: www riley co nz

MACHINE HOLE LOG

	E		11				Ph: 0	03.379.4402 Ph: 09.489.7872 ww.rileychch.co.nz E: www.riley.co.nz				IVIA	SHI	IVL	ПОГ	L LO	G	
	-	t No.	:		Proje				- 1	roject						ı	No.:	
	0245 ent :				Drury	/ Qua	irry - S	Sutton Block Start Date: 23 Nov 2022		Quarry F						DF	1103	
			Aggre	egate	s Ltd			End Date: 05 Dec 2022	- 1	allards						٥.		
Co		linate					(Ground Level (m):	Hol	e Depti		Inclinat		Azimı		Sheet:	Status	
		= 1//	1257	', N 5	8897		ᆜ	Ground	<u> </u>	78.00	,	N/A			N/A	1 of 18	FIN	AL T
Elevation (m)	Depth (m)	Method	Run	TCR (SCR)	Core Loss	Geological Unit	Legend	Geological Description In accordance with NZGS Guidelines (200	05):		ield ength	Samples	Defect Spacing (mm)	t Symbolic Log	In accordar	Description nce with NZGS (2005); refer to	In-Situ Testing	Backfill / Installation
Elevat	Dep	Me	Box No.	RQD (%)	(%)	Geolog	Leç	refer to appended Information sheet and abbreviation explanation			Rock ∰≸≥≅∞98	Sar	Defect (n	Defect	sheet and	d Information abbreviation anation	Data / Results	Bac
	0.10		0.00			TOPSOIL	TS	TOPSOIL, dark brown; soft.										
	-					TOP		CLAY, with trace silt; red-brown with orange-brown laminations. Very stiff to hard; medium plasticity to high plasticity; [SOUTH AUCKLAND VOLCANIC FIELD										-
	0.40 - 0.5							CLAY, with some silt; orange brown. Firn to stiff; medium plasticity to high plasticity	_								0.5	-
	- - 0.80																	1
	-							CLAY, with trace silt; red brown with orange brown laminations. Very stiff to hard; medium plasticity to high plasticity.										1
	- 1.0																1.0	
	-																	
	-1.5																1, 1 / 2, 2 3, 3 Nc=10	,
																	Nc=10	
	- 1.95 - 2.0						×	Silty CLAY; red orange mixed, with minor									2.0	
	-2.0					GROUP	×	grey mottles. Soft to firm; medium plasticity.										
	Rotary cored					OLCANIC												-
	- 2.5					KERIKERI VOLCANIC GROUP	××										2.5	
	-					퓠	×											-
	3.00 -3.0						× ×	. CLAY, with trace silt; red-brown. Very stil	ff								1, 1 / 1, 2	- ,
	-						×	to hard; medium plasticity to high plastici	ty.								1, 1 / 1, 2 2, 2 Nc=7	1
	-						× ×										V	1
	- 3.5						××										3.5	
	-							-										
	- 4.0						×										4.0	-
	4.20						×	Silty CLAY; orange brown. Stiff to very stiff; medium plasticity.	\dashv									-
	-						×											1
Exi	Explanations: Refer to "Geological and					l and Ge	eotechnic	ical Information" sheet for further details.	Backf	ill:		narks:		1	I			
.		Water	П		ard Pene				Bentoni			RDCL geophy				o oble to be to	tad	
\triangleleft	Out flo		<i>(</i>)	Filled =	= Solid o = Split :			Peat Silt	Grout/c	oncrete	^Sam	pie proke du	ring prep	aration o	i lest. No coi	e able to be test	lea.	
Moi M = W =	► In flow Moisture: M = moist W = wet V = Peak, R = R UTP = Unable to					Residua to pene	al etrate	UL Core Loss Gravel	Drill aris	•								
W = wet UTP = Unabl S = saturated PP = Pocket							65 C					Τ_			I			
All	dim	ensi	ons i	in me	etres	Dril	ııng C	Contractor:	Dril	ling Rig	ID:		Dr	iller:		Logged By	i Cnecked	і ва:



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MACHINE HOLE LOG

EKIL		Ph: 0	3.379.4402 Ph: 09.489.7872 ww.rileychch.co.nz E: www.riley.co.nz			WACI	III V L	IIOL		G
Project No.:	Project N) ((B) 1		ject Locati				ı	lo.:
220245 Client:	Drury Qua	arry - S	Sutton Block Start Date: 23 Nov 2022	_	arry Rd, Dru le Location				DF	1103
Stevenson Aggregat	es Ltd		End Date: 05 Dec 2022		lards Cone				–	
Co-ordinates :	5000745	G	Ground Level (m):	1	Depth (m):	Inclination	- I		Sheet:	Status:
E 1777257, N			Ground	<u> </u>	78.00	N/A		N/A	2 of 18	FINAL
(E) po u TCF	Core Loss (%)	рc	Geological Description	Weathering	Field Strength	Samples Defect Spacing	(mm) t Symbolic Log	In accordar	Description nce with NZGS	In-Situ ∖ S Testing 등
Elevation (m) Depth (m) Method Method Sos Assay	Loss 5 (%) 8	Legend	In accordance with NZGS Guidelines (200 refer to appended Information sheet and	5); Keat		Samples sfect Spacir	(mm)	appended	(2005); refer to	Data /
Box No.	gec .		abbreviation explanation	20 MAN 8 8	Soil Rock	S	(n) Defect		l abbreviation lanation	Results E
	NING GROUP		Clayey fine to coarse SAND, with trace gravel; red-brown. Soft to stiff; non-plastic highly weathered basalt scoria. Clayey sandy SILT, with trace gravel; dar red-brown. Soft to firm; non-plastic; highly weathered basalt scoria. Sandy gravelly SILT; orange-brown with volcanic gravels (red, orange, black). Ver stiff to hard; non-plastic; gravels up to 30mm. Slightly weathered, carbonaceous MUDSTONE, medium grey. Extremely weak; CLAY, hard; [TE KUITI GROUP]					ехрі	anauon	1, 1 / 1, 1, 1, 1, 3, Nc=6 5.0 0, 1 / 0, 0, 1, 1, 1, Nc=2 7.5 8.5 8.5 8.5 8.5
										1
					11-					
Initial Water Level → Out flow	dard Penetration) I = Solid cone ((ill = Split spoon Shear Strength leak, R = Residu = Unable to pen Pocket Penetro	n Test C) (S) (kPa) ual etrate meter	Peat Silt Silt Sand Sand	Backfill: Bentonite Grout/cond Drill arising Filter sand	See F *Sam crete	narks: RDCL geophysical ple broke during p				ed. Checked By:



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4 Fred Thomas Drive Takapuna AUCKLAND 0622

MACHINE HOLE LOG

	(VII.					03.379.4402 Ph: 09.489.7872 ww.rileychch.co.nz E: www.riley.co.nz			1017	-				•	
	-	No.	:		Proje			D. II		ject Locati					I	No.:	
	0245 ent:	•			Drury	Qua	rry - S	Sutton Block Start Date: 23 Nov 2022	_	arry Rd, Drue Location	_				DF	1103	
		son A	Aggre	gate	s Ltd			End Date: 05 Dec 2022	- 1	lards Cone					.		
Co		inate						Ground Level (m):		Depth (m):	Inclinat		Azimı		Sheet:	Status	
	E	177	7257	, N 5	88971	15	ᆜ	Ground	_	78.00	N/A			N/A	3 of 18	FIN	AL
Œ	(m)	pc	ر	TCR (SCR)	Core	Geological Unit	٦	Geological Description	Weathering	Field	es	Defect Spacing (mm)	Defect Symbolic Log		Description nce with NZGS	In-Situ	_ ioi
Elevation (m)	Depth (m)	Method	Run	(SCR) RQD (%)	Loss (%)	logica	Legend	In accordance with NZGS Guidelines (2009) refer to appended Information sheet and	Veath	Strength	Samples	ect Sp (mm	ct Syl Log	appended	(2005); refer to Information	Testing Data /	Backfill / Installation
E	Ď	~	Box No.	(70)	(,,,	Geo	-	abbreviation explanation	888888	Soil Rock	S	Defe	Defe		abbreviation anation	Results	=
	_						- <u>~</u> -	[CONT] Slightly weathered, carbonaceous MUDSTONE, medium grey. Extremely								2, 3 / 7, 8 9, 10	3,
	-							weak; CLAY, hard; [TE KUITI GROUP]								Nc=34	1
	-						₩_									9	1
	- 9.5															9.5]
	9.65						- NI/										-
	-							Slightly weathered, carbonaceous MUDSTONE, medium grey. Extremely									1
	_							weak; thinly laminated.									1
	-10.0						₩_									10.0	-
	-																1
							-71V										1
	_																-
	— 10.5															6,5/6,8	5,
	_						<u></u>	4								11, 13 Nc=38	1
	-															8	1
	-						₩_									V	+
	- 11.0	-				4	<u>`</u>	A Company of the Comp								11.0	-
		Rotary cored		100		KUITI GROUP]
	-	otary		-	0	VITIO	; ;	3									+
	-	R				P											1
	- 11.5						<u>₩</u>									11.5]
	-																-
	-						<u>√</u> 1										1
	-12.0							11.85m - 12.00m: Moderately strong, light brown MUDSTONE layer, closely fractured.				0				7 12.0]
	-							naciuleu.								5, 7 / 10, 13, 15, 1 for 60mn	2
	-							4								Nc=50+	<u>'</u>
	_															V	1
	- 12.5						<i>π</i>									12.5	
	-																1
	_																1
	-							S									-
	-13.0															13.0	-
	_						<i>™</i>	13.10m - 13.25m: Moderately strong, light brown MUDSTONE layer, closely				0					1
	-							fractured.				4					-
	-						₩_										1
Ex	olana	tions	: Ref	er to "G	eologica	l and Ge	otechni	cal Information" sheet for further details.	Backfill:	- 11	narks:						<u> </u>
•	Initial Water Level Count flow Standard Penetration Test (SPT) Filled = Solid cone (C) See RDCL geophysical data for defect details. *Sample broke during preparation of test. No core able to be tested.																
	Out flo In flow				Solid o			Peat Silt	Grout/con	- 11	,	2			20 .00		
M =	isture moist		,	/ = Pea	hear Str ak, R = I	Residua	al	10000	Orill arising	gs							
W=	wet satura				Unable tocket Pe			Core Loss Gravel	ilter sand								



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MACHINE HOLE LOG

	(VII.					03.379.4402 Ph: 09.489.7872 www.rileychch.co.nz E: www.riley.co.nz								•	
		t No.	:		Proje			2 11 21 1		ject Locati					I	No.:	
	0245 ent :				Drury	Qua	rry - S	Sutton Block Start Date: 23 Nov 2022		erry Rd, Dru	-				DF	1103	
			Aggre	gate	s Ltd			End Date: 05 Dec 2022		ards Cone					.		
Co		inate						Ground Level (m):		Depth (m):	Inclination	n:	Azimu		Sheet:	Status	
	E	177	7257	, N 5	88971		ᆜ	Ground		78.00	N/A			N/A	4 of 18	FINA	۸L
(E)	Œ.	р	_	TCR (SCR)	Core	Geological Unit	Ð	Geological Description	Weathering	Field	s	Defect Spacing (mm)	Defect Symbolic Log		Description	In-Situ	_ io
Elevation (m)	Depth (m)	Method	Run	RQD	Loss (%)	ogica	Legend	In accordance with NZGS Guidelines (2008 refer to appended Information sheet and	eath	Strength	Samples	ct Sp (mm)	t Syr Log	Guidelines appended	(2005); refer to	Testing Data /	Backfill / Installation
Elev	Ğ	2	Box No.	(%)	(70)	Geol	_	abbreviation explanation	× × × × × × × × × × × × × × × × × × ×	Soil Rock	l ö	Defe	Defec		abbreviation anation	Results	la ş
	_							[CONT] 13.10m - 13.25m: Moderately strong, light brown MUDSTONE layer,								3, 5 / 14, 19, 17 for	
	-							closely fractured.								60mm Nc=50+	
	-						ΔV									۷ .	
	- 14.0							¥ -								14.0-	
	-						-W									-	
	-																
	-																
	- 14.5						\pi \rangle \frac{1}{\pi \rangle \frac{1}{2}}	4								14.5-	
	-																
	-						₩_										
	-							2									-
	- 15.0															3, 10 / 17, 17, 16 for	
	-															65mm Nc=50+	
	-																
	-						₩_										
	- 15.5	р				UP		15.45m - 15.60m: Moderately strong, light brown MUDSTONE layer, closely fractured.				0				15.5=	
	-	Rotary cored		100	. 0	KUITI GROUP	ΔIV	mactureu.									-
	-	totary		-		KUIT		9									
	- -16.0	Œ				Ë										16.0 -	
	-							2									-
	-																
	-						Δr _										
	- 16.5															7 10, 17 ^{16.5} -	
	-						W.									20, 24, 6 - for 20mm	
	-															Nc=50+	
	-																1
	- 17.0															17.0-	
	-																
	-						₩_	17.30m - 17.40m: Moderately weathered									1
	-							layer.									
	- 17.5						-W-									17.5-	
	-							4									-
	-																
							<u>π</u> _										<u> </u>
		tions Water						ical Information" sheet for further details.	Backfill:	11	narks: RDCL geophysi	ical dat	a for defe	ect details.			
X 1	niliai v ₋evel Out flo		М	(SPT)	ard Pene Solid c			Topsoil Clay	Sentonite	ll l					e able to be tes	ted.	
Ò	n flow	1	V	No Fill	= Split s	poon (S)		Grout/cond	ll l							
M =	sture moist wet		٠,	/ = Pe	hear Str ak, R = F Unable t	Residua	al	DOCUMENT OF THE PARTY OF THE PA	rill arising	s							
	satura	ated			ocket Pe			Core Loss Gravel	ilter sand								



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	roject No.: 20245 Elient: stevenson Aggreg								: 09.489.7872 www.riley.co.nz				0 111					
	-		:		Proje					1 -	ect Locati					N	lo.:	
					Drury	/ Qua	rry - S	Sutton Block Start Date: 2	23 Nov 2022	_	rry Rd, Dru Location					DF	l103	
			Aggre	egate	s Ltd				05 Dec 2022		ards Cone I						1100	
Со		linate					1	Fround Level (m):			epth (m):	Inclina		Azimu		Sheet:	Status:	
	E	E 177	7257	7, N 5	88971	15	ᆜ	Ground			78.00	N//			N/A	5 of 18	FINA	٩L
(m)	m)	ъ		TCR	Core	Chit	٥	Geological Des	scription	Weathering	Field	S	acing	polic		Description nce with NZGS	In-Situ	_ no
Elevation (m)	Depth (m)	Method	Run	TCR (SCR) RQD	Loss	Geological Unit	Legend	In accordance with NZGS refer to appended Inform		eath	Strength	Samples	ct Spa (mm)	t Syn Log	Guidelines	(2005); refer to	Testing Data /	Backfill / Installation
Elev	De	2	Box No.	(%)	(%)	Geol	7	abbreviation exp	lanation	× × × × × × × × × × × × × × × × × × ×	Soil Rock	ő	Defect Spacing (mm)	Defect Symbolic Log	sheet and	abbreviation anation	Results	B SE
	_							[CONT] 17.30m - 17.40m weathered layer.	: Moderately		1							
	-							weathered layer.										
	-						₩_					T UC\$16*:						1
	- 18.5											UCS16*: 18.35 - 18.50m					18.5-	1
	-						₩_	18.57m - 19.00m: Extrem	ely closely									
	-							fractured layer.					h				•	1
]
	- 19.0						7F.										19.0-	-
	-																	1
							₩_]
																		-
	-19.5 -						-4r										19.5-	1
]
	- - - 							19.70m - 19.80m: Modera layer.	ately weathered									$\mid \cdot \mid$
	-20.0	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1															20.0-	1
						JUP											20.0-	
	Rotary cored				0	I GRC	₩_											$\mid \cdot \mid$
	Rotary conf					KUIT											•	1
	- 20.5	_					<u>u</u>										20.5	
	-																•	1
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	- 21.0																21.0-	1
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	-						<u>w</u>											1
	- 21.5																21.5=	1
	-																	
																	•	1
	-22.0															22.0-]	
	-22.0					$\overline{\pi}$											-	
					22.25m . 22.20m . Mar. 1	atoly to binth:												
							_71\ 	22.25m - 22.60m: Modera weathered layer.	ately to highly									
	Evolunations: Pager to "Geological and Geo										Parr	arke:	<u> </u>					
	Explanations: Refer to "Geological and Geotect Initial Water Level Standard Penetration Test (SPT)								00000000	Backfill:	11	n arks: RDCL geoph	ysical dat	ta for defe	ect details.			
\triangleleft	Out flo	w	0	(SPT) Filled :	= Solid c	one (C)			Sentonite Grout/conci	- 11	ple broke du	ıring prep	aration o	f test. No co	re able to be test	ed.	
	In flow No Fill = Split spoon (No Fill = Split spoon (Vane Shear Strength						kPa)	FOX 5000		rout/conci								
M = W =	M = moist V = Peak, R = Residua W = wet UTP = Unable to pene					Residua to pene	al trate	ESSE ESSE		ilter sand								
S =	satura	ated		rr = P	ocket Pe			24.52	61.64								•	
ΑII	dim	ensi	ons	in me	etres	Drill	ling C	ontractor:		Drilling	Rig ID:		Dri	iller:		Logged By:	Checked	I By:



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	Project No.: 220245 Client: Stevenson Aggre							3.379.4402 vw.rileychch.co.nz	Ph: 09.489.7872 E: www.riley.co.nz			WAC	/	•				
	-		:		Proje						ect Location					N	lo.:	
					Drury	Qua	rry - S	Sutton Block Start Date:	23 Nov 2022		rry Rd, Dru Location:					DF	l103	
			Aggre	egate	s Ltd			End Date:	05 Dec 2022		ards Cone I					וט	1103	
		linate					1	Fround Level (m):			epth (m):	Inclinati	on: A	zimu	th:	Sheet:	Status:	
	E	177	7257	7, N 5	88971	15	\perp	Groun	d	<u> </u>	78.00	N/A			I/A	6 of 18	FINA	٩L
Œ	٦ آ	-		TCR	0	Unit		Geological I	Description	Weathering	Field	တ္	cing	Defect Symbolic Log		escription	In-Situ	_ r
Elevation (m)	Depth (m)	Method	Run	TCR (SCR) RQD	L033	Geological Unit	Legend	In accordance with NZ0		sathe	Strength	Samples	Defect Spacing (mm)	Sym	Guidelines	nce with NZGS (2005); refer to d Information	Testing Data /	Backfill / Installation
Eleva	Dep	Š	Box No.	(%)	(%)	Seolo	Le	refer to appended Inf abbreviation		800 M	Soil Rock	Sa))	efect	sheet and	abbreviation	Results	Ba
	_						70	[CONT] 22.25m - 22.6 highly weathered laye	0m: Moderately to	201200	111111			_				
	-																	-
	-						₩_											1
	-23.0																23.0-	
	-						<u>w</u>											-
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				JUP											24.5-			
					0	I GRC	₩_											-
						KUIT											•	
	- 25.0	_				H	-W										25.0-	
	-																•	
	-																	1
	-																	
	- 25.5							25.50m - 25.63m: Extr	emely closely				T 0				25.5-	-
	-						\overline{n}	fractured layer.					1					1
	-																	1
	-						<u>w</u>											1
	- 26.0																26.0-	
	-																	-
	-																•	1
	- 26.5																26.5	
	-						<u>w</u>											1
					26.70m - 27.00m: Mod	derately to highly									1			
							Δν	weathered layer.										
Fv	Explanations: Refer to "Geological and G						otechnic	al Information" sheet for fo	urther details	Backfill:	Rem	narks:	<u>:::::1</u>					
	Explanations: Refer to "Geological and Geo Initial Water Level Standard Penetration" (SPT)							Topsoil		Backfill: Bentonite	See R	RDCL geophys						
\Diamond	├ Out flow							Peat		Grout/conc	- 11	ple broke duri	ing prepara	ation of	test. No cor	e able to be test	ed.	
Мо	- In flow oisture: V= Peak R = Resi						kPa)	Fill	· ·	Drill arising								
W=	W = moist						trate	Core Loss	Gravel	Filter sand								
					etres			ontractor:	<u></u>	Drilling	Rig ID:		Drille	er:		Logged By:	Checked	By:
\sim II	uiiii	G1191	J113		- LI C2		ອ ⊃				, .					,y.	,u	



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MACHINE HOLE LOG

Dunings No.														
Project No.:	•		Proje					ject Location				ı	lo.:	
220245 Client:			Drury	Qua	rry - S	Sutton Block Start Date: 23 Nov 2022	_	arry Rd, Dru e Location:	-			DF	1103	
Stevenson A	Aggre	gates	s Ltd			End Date: 05 Dec 2022		ards Cone I				D i	1100	
Co-ordinate				_	G	Ground Level (m):	1	Depth (m):	Inclination:	Azimı		Sheet:	Status:	
E 177	7257	, N 5	88971		\perp	Ground		78.00	N/A		N/A	7 of 18	FINA	۱L
(E) pg	_	TCR	Core	Geological Unit	þ	Geological Description	Weathering	Field	Samples Defect Spacing	nbolic		Description Ince with NZGS	In-Situ	/ I
Elevation (m) Depth (m) Method	Run	(SCR) RQD	Loss (%)	logica	Legend	In accordance with NZGS Guidelines (200 refer to appended Information sheet and	5); eath	Strength	Samples sfect Spacin	ct Syr Log	Guidelines appended	(2005); refer to Information	Testing Data /	Backfill / Installation
Ele De la la la la la la la la la la la la la	Box No.	(%)	(70)	Geo		abbreviation explanation	89138	Soil Rock	S	Defect Symbolic Log		abbreviation anation	Results	<u>ة</u> ۳
-27.528.528.529.029.030.030.531.0 -	NO.	100		TE KUITI GROUP		[CONT] 26.70m - 27.00m: Moderately to highly weathered layer. Slightly weathered, carbonaceous MUDSTONE, brown-grey. Very weak; thinly laminated. Extremely closely to closely spaced fractures, planar to stepped, rough. 28.40m - 28.50m: Broken layer. 28.50m - 28.60m: Light brown, weak MUDSTONE, blocky, subangular. 28.80m - 28.90m: Highly weathered layer soft. 29.50m - 29.70m: Highly weathered layer soft.							27.5- - - - - - - - - - - - - - - - - - -	
[-	
	<u> </u>				- <u>w</u> -			71-						
Explanations: Refer to "Geological and Geote Initial Water Level Out flow In flow Moisture: M = moist W = wet S = saturated Standard Penetration Te (SPT) Filled = Solid cone (C) No Fill = Split spoon (S) Vane Shear Strength (kF V = Peak, R = Residual UTP = Unable to penetra					Test) S) (kPa) al etrate neter	Topsoil Clay Peat Silt Fill Sand	Backfill: Bentonite Grout/cond Drill arising Filter sand	See R *Samperete	narks: RDCL geophysical of ple broke during properties of the pro			e able to be test		Rva



22 Moorhouse Avenue Addington CHRISTCHURCH 8011

4 Fred Thomas Drive Takapuna AUCKLAND 0622

MACHINE HOLE LOG

			VII.					03.379.4402 Ph: 09.489.7872 www.rileychch.co.nz E: www.riley.co.nz										
	oject No.: Proje							,		oject L						1	No.:	
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			Aggre	gate	s Ltd			End Date: 05 Dec 2022		allards (וט	1103	
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Œ	رب (س	-		TCR	Core	Unit	_	Geological Description	Weathering) Fi	ield	တ္	cing	Defect Symbolic Log	Defect D	Description	In-Situ	_ 5
Elevation (m)	Depth (m)	Method	Run	TCR (SCR) RQD	Loss	gical	Legend	In accordance with NZGS Guidelines (200	5); atte	Stre	ength	Samples	t Spa mm)	Sym	Guidelines	nce with NZGS (2005); refer to d Information	Testing Data /	Backfill
Eleva	Del	Σ	Box No.	(%)	(%)	Geological Unit	Le	refer to appended Information sheet and abbreviation explanation		J 0.8:	Rock ≩}≥≅∞s≅	Sa	Defect Spacing (mm)	Defect	sheet and	l abbreviation lanation	Results	B
	-							[CONT] 29.90m - 30.10m: Highly weathered layer, stiff.									-	
	-						W	04.05									-	
	-32.0							31.85m - 32.55m: Highly weathered layer extremely weak to firm.	,								32.0-	
	-						₩_										-	
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	-						- NII/										-	
	- 32.5																32.5	
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	- 34.5							34.50m - 34.80m: Broken layer.									34.5-	
	-							y.									-	
•	-							34.80m - 36.00m: Moderately weathered									-	
	- 35.0						<u>w</u> _	layer.									35.0-	
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Explanations: Refer to "Geological and Geoton Initial Water Level Standard Penetration Telephone (SPT)									Backfil		1	n arks: RDCL geop	hysical da	ta for det	fect details.			
→ (Out flo		0	(SPT) Filled =	Solid c	one (C))	Bas Peat Silt	Bentonit Grout/co		*Sam	ple broke d	luring prep	aration o	of test. No co	re able to be test	ed.	
Moi	n flow sture	:	\/\	/ane S	= Split s	ength (kPa)		Drill arisi									
W =	mois wet satur		Į	JTP =	ak, R = F Unable t ocket Pe	o penet	trate	E E E E E E E E E E E E E E E E E E E	Filter sar	-								
J -	Julufi																	

Drilling Rig ID: All dimensions in metres **Drilling Contractor:** Driller: Logged By: Checked By: NOT TO SCALE YDX-3L SRO Drillforce SJA



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MACHINE HOLE LOG

	Project No.: 220245 Client: Stevenson Aggre							3.379.4402 vw.rileychch.co.nz	Ph: 09.489.7872 E: www.riley.co.nz			1417	O					
	-		:		Proje						ect Location					ı	lo.:	
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			Aggre	egate	s Ltd			End Date:	05 Dec 2022		ards Cone I						1100	
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(m)	Ē	p	_	TCR (SCR)	Core	Geological Unit	р	Geological	Description	Weathering	Field	S	Defect Spacing (mm)	Jbolic		Description nce with NZGS	In-Situ	_ u
Elevation (m)	Depth (m)	Method	Run	RQD	Loss (%)	ogica	Legend	In accordance with NZ refer to appended Ir		5); eath	Strength	Samples	ct Spi (mm)	t Syn Log	Guidelines	(2005); refer to	Testing Data /	Backfill / Installation
Ele	۵	2	Box No.	(%)	(70)	Geol		abbreviation	n explanation	×	Soil Rock	ι	Defe	Defect Symbolic Log		abbreviation anation	Results	B E
		Rotary cored		100		TE KUITI GROUP		[CONT] 34.80m - 36. weathered layer. 37.25m - 37.80m: Be	comes weak.			UCS15 - 13MPa: 39.30 - 39.55m					36.5- 37.5- 38.0- 39.0- 40.0-	
Exi						and Ge	otechnic	cal Information" sheet for	further details.	Backfill:	Rem	narks:	1:::::	<u> </u>				
	Explanations: Refer to "Geological and Geotechnical Inform Initial Water Level Standard Penetration Test (SPT)							Topsoil	_	Bentonite	See R	RDCL geoph				ro obla to to to	ad	
\triangleleft	Out flo		()	Filled =	Solid c			Peat		Grout/conc	- 11	pie broke di	uring prep	aration o	i lest. No coi	e able to be test	ed.	
Moi	► In flow No Fill = Split spoon (S) No Fill = Split spoon (S) Vane Shear Strength (kf V = Peak, R = Residual						kPa)	Fill	Sand	Drill arising	s							
W =	moist wet		Į	JTP =	ak, R = F Unable t ocket Pe	o pene	trate	CAL Core Loss	Gravel	Filter sand								
	satura									D	Dia ID			:11			Ok	
ΑII	dim	ensi	ons i	in me	etres	Drill	ung C	ontractor:		urilling	Rig ID:		Dr	iller:		Logged By:	Unecked	ьy:



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MACHINE HOLE LOG

					3.379.4402 Ph: 09.489.7872 ww.rileychch.co.nz E: www.riley.co.nz	:		WAO!		1101			
Project No.:		Proje					ect Location				N	lo.:	
220245 Client:		Drury	Qua	rry - S	Sutton Block Start Date: 23 Nov 2022		rry Rd, Dru Location:				DH	l103	
Stevenson Aggre	gates	Ltd			End Date: 05 Dec 2022		ards Cone I				D .	1100	
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(E) PO C	TCR SCR)	Core	I Unit	þ	Geological Description	ering	Field	es	nbolic		Description Ince with NZGS	In-Situ	/ ioi
Elevation (m) Depth (m) Method Run	SCR) RQD (%)	Loss (%)	Geological Unit	Legend	In accordance with NZGS Guidelines (200 refer to appended Information sheet and abbreviation explanation		Strength Soil Rock	Samples Defect Spacing	Defect Symbolic	Guidelines appended sheet and	(2005); refer to d Information abbreviation anation	Testing Data / Results	Backfill / Installation
-41.5 -41.5 -42.0 -43.0 -43.0 -43.5 -44.0	100	δ	TE KUITI GROUP		[CONT] 38.10m - 38.25m: Moderately weathered layer. 41.20m - 41.35m: Extremely weak layer. 42.40m - 42.50m: Moderately to highly weathered layers, extremely weak to firm 43.35m - 43.50m: Disintegrated layer, moderately weathered. 43.50m - 49.50m: Grades to extremely to very closely spaced fractures, MUDSTONE, breaks up when handled.				0			41.0	
•	r to "Ge	eological	and Ge	otechnic	cal Information" sheet for further details.	Backfill:	11	narks:	data 5: : 1 *	and all all all all all all all all all al	<u>'</u>		
Level Out flow In flow Moisture: M = moist W = wet	SPT) illed = lo Fill : ane Sh = Pea TP = U	Solid co Solid co Split s near Strok, R = F Jnable to ocket Pe	one (C) poon (Sength (Residua o pene) S) kPa) al trate neter	Peat Silt Silt Sand Sand	Bentonite Grout/conc Drill arising Filter sand	*Samp	DCL geophysical of the broke during pr			Logged By:		Bv:



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)245 ent:				Drury	/ Qua	rry - S	Sutton Block Start Date: 23	3 Nov 2022		rry Rd, Dru Location:	_			DH	1103	
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Elevation (m)	Depth (m)	Method	Box No.	RQD (%)	Loss (%)	Geological Unit	Legend	In accordance with NZGS G refer to appended Informa abbreviation expla	ation sheet and	Weathering	Strength Soil Rock	Samples	Defect Spacing (mm) Defect Symbolic	Guidelines appended sheet and expl	(2005); refer to d Information abbreviation anation	Testing Data / Results	Backfill / Installation
	_							layer, extremely weak.									
	-							45.20m - 45.30m: Highly w extremely weak.	reathered layer,							- - -	
	- 45.5						₩	45.55m - 45.65m: Highly w extremely weak.	reathered layer,							45.5 - -	
	- - -46.0						 -									- 46.0-	
	-							46.10m - 46.50m: Highly to weathered layer, extremely								- - -	
	- -46.5						₩ W W W W W W W W W									46.5 -	
	-															- -	
	- 47.0	Rotary cored		100	0	GROUP										47.0 -	
	- - -47.5	Rotary		-		TE KUITI GROUP	-#-						9			- - 47.5-	
	-															- - -	
	- -48.0 -															48.0 -	
	-															- - -	
	- 48.5 -															48.5-	
	- - -49.0															49.0-	
	- - -															- - -	
					Liii		<u>~</u> _										
								cal Information" sheet for further	details.	ackfill:	11	narks: RDCL geophys	ical data for	defect details			
		Water	1.4	(SPT)	ard Pene			Topsoil Cla	ay Be	entonite	ll l				e able to be teste	ed.	
✓ Out flow Filled = Solid cone (C) In flow No Fill = Split spoon (S) Peat Silt						t G	out/concr	ete									
Moisture: M = moist W = wet S = saturated Vane Shear Strength (kPa) V = Peak, R = Residual UTP = Unable to penetrate PP = Pocket Penetrometer Fill Sand Core Loss Gravel						N-1	ill arisings ter sand										
All	dim	ensi	ons	in me	etres	Drill	ling C	ontractor:		Drilling	Rig ID:		Driller:		Logged By:	Checked	By:



22 Moorhouse Avenue Addington CHRISTCHURCH 8011

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MACHINE HOLE LOG

	C		VII.					3.379.4402 vw.rileychch.co.nz	Ph: 09.489.787 E: www.riley.co										
	-	t No.	:		Proje						-	ect Location					1	No.:	
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(m)	بر (س	-		TCR	0	Unit		Geological I	Description		Weathering	Field	ű	cing	Defect Symbolic Log	Defect D	Description	In-Situ	_ 5
Elevation (m)	Depth (m)	Method	Run	TCR (SCR) RQD	Core Loss	gical	Legend	In accordance with NZ0	GS Guidelines (2	2005);	athe	Strength	Samples	t Spa mm)	Sym	Guidelines	nce with NZGS (2005); refer to d Information	Testing Data /	Backfill
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	-							[CONT] 46.10m - 46.5 completely weathered weak to firm.		y								-	
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	- -50.0																	50.0-	
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	- -52.0	œ				끧												52.0-	
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	-							52.20m - 52.25m: Ext	remely weak lay	er.								-	
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	-							53.85m - 54.00m: Ext	remely weak to f	firm								-	
							7F	highly weathered laye	r.	,		71-		<u> </u>					<u></u>
_ 1	nitial '	ations Water			eological ard Pene			cal Information" sheet for fu			kfill:	11	n arks: RDCL geop	hysical da	ta for def	ect details.			
< ₽	Level		()		Solid c			Topsoil Peat	Clay Silt	Bento	onite it/concr	11	ple broke o	luring prep	aration o	f test. No co	re able to be test	ed.	
Moi	n flow sture	:	\/\	√ane S	hear Str	ength (kPa)	Fill	Sand	3	arisings								
W =	mois wet satur		Į	JTP =	ak, R = F Unable t ocket Pe	o penet	trate	Core Loss	Gravel	Filter	sand								



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MACHINE HOLE LOG

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	-	t No.	:		Proje						1 -	ect Locat						lo.:	
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tion	Depth (m)	Method	Run	TCR (SCR) RQD	Core Loss	gical	Legend	In accordance with N			athe	Strength	Samples	t Spa mm)	Sym	Guidelines	nce with NZGS (2005); refer to d Information	Testing Data /	Backfill
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	-							[CONT] 53.85m - 54 to firm, highly weath		mely weak								-	Γ
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▼ [evel	Water	14	(SPT)	ard Pene			Topsoil	Clay	В	entonite					fect details. of test. No co	re able to be test	ed.	
	Out flo n flow		٧	No Fill	Solid c = Split s	poon (S)	Peat	Silt	G	rout/concr	- 11	_	3 1 -1					
M =	sture mois		,	√ = Pea	hear Str ak, R = F	Residua	al	Fill	Sand		rill arisings	s							
	wet satura	ated			Unable t ocket Pe			Core Loss	Gravel	∭ Fi	lter sand								



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MACHINE HOLE LOG

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		t No.	:		Proje						ect Locati					ı	lo.:	
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Co-		linate		', N 5	88971	15	9	Ground Level (m): Ground	ŀ		Depth (m): 78.00	Inclina N/		Azimu	uth: N/A	Sheet: 14 of 18	Status: FINA	L
<u></u>								Geological Descrip	tion	ng			D D	oje Oje	Defect D	Description		_
on (n	h (m)	Method	Run	TCR (SCR)	Core Loss	ical U	Legend	In accordance with NZGS Guideli		Weathering	Field Strength	Samples	Spacii m)	Symbo	In accordar Guidelines	nce with NZGS (2005); refer to	In-Situ Testing	KtIII /
Elevation (m)	Depth (Me	Box	RQD (%)	(%)	Geological Unit) 	refer to appended Information s abbreviation explanatio	sheet and		Soil Rock	San	Defect Spacing (mm)	Defect Symbolic Log	appende	d Information abbreviation anation	Data / Results	Backfill
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ŀ								59.20m - 59.50m: Disintegrated	layer,									
								subangular, very weak.]	
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t																		
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1	60.5	_				<u>ط</u>											60.5	
Ī		cored		100		GROU	-W]	
ŀ		Rotary cored		-	0	TE KUITI GROUP	= 7											
Į	61.0	œ				Щ											61.0	
ŀ																		
Į																		
-																		
ŀ	61.5																61.5—	
-							7F.										-	
ŀ																		
Ī	62.0						₩.	00.00									62.0	
-								62.00m - 66.10m: Some very sn undulating fracture surfaces	nootnea,								+	
Ī							₩_	62.20m - 62.30m: Extremely we	ak layer.								1	
-								62.40m - 63.20m: Broken layer.									+	
	62.5						-W-										62.5	
-																		
ŀ																	}	
							- <u>m</u> -	62.90m - 63.00m: Moderately w	eathered		——————————————————————————————————————	<u> </u>	<u> </u>					_
:		itions Water			eologica ard Pene			cal Information" sheet for further detail	00000000	ckfill:	11	n arks: RDCL geoph	ıysical dat	a for defe	ect details.			
▼ <u>"</u>	out flo		0	(SPT) Filled =	Solid c	one (C)	Topsoil Clay Peat Silt		ntonite out/conci	- 11	ple broke dı	uring prep	aration o	f test. No co	re able to be test	ed.	
	ture	:	\/\	/ane S	= Split s	ength (kPa)	Fill Sand	~ ^	l arising								
W =	moisi wet satura		ι	JTP = I	ak, R = I Unable t ocket Pe	to pene	trate	Core Loss Gravel	V-1	er sand								
								contractor:		rilling	ı Rig ID:		Dri	ller:		Logged By	Chackad	Bv.



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22 Moorhouse Avenue Addington CHRISTCHURCH 8011 Ph: 03.379.4402 4 Fred Thomas Drive Takapuna AUCKLAND 0622 Ph: 09.489.7872 F: www riley co nz

MACHINE HOLE LOG

		_												
Project No.:	•		Proje					ject Location				ı	lo.:	
220245 Client:			Drury	Quai	rry - S	Sutton Block Start Date: 23 Nov 2022		erry Rd, Dru	-			D⊦	1103	
Stevenson A	Aggre	gates	s Ltd			End Date: 05 Dec 2022		ards Cone I						
Co-ordinate				_	G	Fround Level (m):		Depth (m):	Inclination:	Azimı		Sheet:	Status:	
E 177	7257	, N 5	88971			Ground	<u> </u>	78.00	N/A		N/A	15 of 18	FINA	\L
(E) pc	_ ا	TCR (SCR)	Core	Geological Unit	٦	Geological Description	Weathering	Field	Samples Defect Spacing	(mm) Defect Symbolic Log		Description nce with NZGS	In-Situ	II /
Elevation (m) Depth (m) Method	Run	(SCR) RQD (%)	Loss (%)	logica	Legend	In accordance with NZGS Guidelines (200 refer to appended Information sheet and	S); Keath	Strength	Samples sfect Spacin	ct Syl	appended	(2005); refer to d Information	Testing Data /	Backfill / Installation
	Box No.	(70)	(,,,)	Geo		abbreviation explanation	888888	Soil Rock	S	Defe		l abbreviation lanation	Results	ᄪ
- -63.5 - - - -64.0					.邢	63.45m - 63.65m: Disintegrated layer, moderately weathered.							63.5=	
- -64.5 - - - 65.0						64.60m - 65.00m: Disintegrated layer, moderately to highly weathered layer.							64.5-	
Rotary cored		100	δ.	TE KUITI GROUP		65.20m - 65.70m: Disintegrated layer, moderately weathered.							65.5- - - - - - - -	
- -66.5 - - - -67.0													66.5- - - 67.0-	
					<u></u>				<u> </u>	<u> </u>			-	
Out flow Filled = Solid cone (C) No Fill = Split spoon (S) Moisture: M = moist W = wet S = saturated Vane Shear Strength (kPa) V = Peak, R = Residual UTP = Unable to penetrate PP = Pocket Penetrometer Sitt Fill Sar Fill Core Loss Gra						Topsoil Clay Peat Silt Fill Sand Core loss Gravel	Backfill: Bentonite Grout/cond Drill arising Filter sand	See R *Samp rete	narks: RDCL geophysical ple broke during pr			re able to be test		Bv:



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MACHINE HOLE LOG

			VII.					03.379.4402 Ph: 09.489.7872 ww.rileychch.co.nz E: www.riley.co.nz										
	-	t No.	:		Proje			,		-	ct Location					1	lo.:	
)245 ent:				Drury	' Quai	rry - S	Sutton Block Start Date: 23 Nov 2022	_		y Rd, Dru Location:					DL	1103	
			Aggre	gate	s Ltd			End Date: 05 Dec 2022	- 1		ds Cone I					וט	1103	
		linate						Ground Level (m):			pth (m):	Inclina	ation:	Azim	uth:	Sheet:	Status:	
	E	177	7257	', N 5	88971	15		Ground		78	.00	N	/A		N/A	16 of 18	FINA	۱L
(E)	́г	-		TCR	0	Unit	_	Geological Description	rin	2	Field	Ś	cing	Defect Symbolic	Defect D	Description	In-Situ	_ 5
Elevation (m)	Depth (m)	Method	Run	TCR (SCR) RQD	Core Loss	gical	Legend	In accordance with NZGS Guidelines (2005)			Strength	Samples	t Spa	Sym	Guidelines	nce with NZGS (2005); refer to d Information	Testing Data /	Backfill
Eleva	Dep	Š	Вох	(%)	(%)	Geological Unit	Le	refer to appended Information sheet and abbreviation explanation		- 1.	Soil Rock	Sa	Defect Spacing (mm)	efect	sheet and	d information I abbreviation Ianation	Results	Ba
			No.		:::		\rightarrow \right	67.45m - 67.50m: Moderately to highly	28	M892 8	0.000		+	-				┢
								weathered layer.									-	
	-						₩										-	-
	-																-	1
	- 68.0																68.0-	
	-																-	-
ŀ	-																-	
	- -68.5						Ψ										68.5 -	
	-							<u> </u>									-	-
	-																-	1
																	-	
ļ	- 69.0																69.0-	
	-						<u>₩</u>										-	1
•	-																-	1
								69.35m - 69.40m: Disintegrated layer,									-	
	- 69.5					_		gravel sized MUDSTONE inclusions in so matrix.	I								69.5-	}
	-	cored		100		TE KUITI GROUP											-	1
		Rotary co		-	0	DITI G											-	
	-	Rot				TE KL											-	-
ŀ	- 70.0						₩_										70.0-	
	-																-	
	-																-	-
	-							70.40m - 70.90m: Moderately to highly									-	
	- 70.5							weathered layer, firm to very weak.									70.5-	
	-						7F -	N.									-	-
	70.90																-	
	- 71.0							Slightly weathered, carbonaceous MUDSTONE, brown grey. Weak; thinly									71.0-	
	-							laminated with distinct organic laminations Very closely to closely spaced, sub-				110630					-	-
	-						₩_	horizontal fractures along lamination planes, rough, planar to undulating.				UCS20 - 24MPa: 71.15					-	
	-											- 71.30m	1				-	
	- 71.5																71.5-	-
	-																-	
																	-	
	71.90 71.95						₩ W	Orașeia OLAV deul besure Firmu biablu	-								-	-
F	ule:-	dia:		n# f= #C	no/'	10570	<u> </u>	Organic CLAY, dark brown. Firm; highly	<u> / : : : :</u>	<u>н:П</u>		arks:	Птіті					<u></u>
_ i		itions Water	П	Standa	<i>eological</i> ird Pene			cal Information" sheet for further details. Topsoil Clay E	Backfi Bentoni		- 11		hysical da	ta for de	fect details.			
→ (Out flo		<i>(</i>)		Solid c			Peat Silt N	entoni Grout/co		- 11	ole broke o	during prep	aration	of test. No co	re able to be test	ed.	
	n flow sture		\/\	/ane S	= Split s	ength (kPa)		Orill aris									
W =	mois wet		Į	JTP =	ak, R = F Unable t	to pene	trate	ESTATE STATE	ilter sa									
S =	satur	ated		r - P	ocket Pe	-neu om	iciel	(200) Wide										



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MACHINE HOLE LOG

		17	VI.					03.379.4402 Ph: 09.489.7872 ww.rileychch.co.nz E: www.riley.co.nz	Z									
	-	t No.	:			ect Na		S. Harr Diagle			ect Locati					ı	lo.:	
)245 ent:				Drury	/ Qua	rry - S	Sutton Block Start Date: 23 Nov 2022	_		rry Rd, Dru Location	_				DH	1103	
				egate	s Ltd			End Date: 05 Dec 2022		Ball	ards Cone							
Со		linate		7 N 5	8897 <i>′</i>	15	9	Ground Level (m): Ground	H		epth (m): '8.00	Inclinat N/A		Azimu	uth: N/A	Sheet: 17 of 18	Status FIN	
	1		1201		1	T		Geological Description	$^{\perp}$		<u> </u>	14//			1	escription	1 114/	<u>. </u>
Elevation (m)	(m)	pot	Run	TCR (SCR) RQD	Core	Geological Unit	pue			Weathering	Field Strength	səlc	Defect Spacing (mm)	Defect Symbolic Log	In accordar	nce with NZGS (2005); refer to	In-Situ Testing	fill / ation
evatic	Depth (m)	Method	l	RQD (%)	Loss (%)	ologic	Legend	In accordance with NZGS Guidelines (200 refer to appended Information sheet and abbreviation explanation		Weat	Soil Rock	Samples	fect S (mr	ect S	appended	d Information abbreviation	Data / Results	Backfill / Installation
Ď	_		Box No.			Ge		·	8	31183	1870 1880 1880 1880 1880 1880 1880 1880		Ď T	Def		anation	rtosuits	
	-							plastic. Slightly weathered, carbonaceous	_									+
	-					<u> </u>		MUDSTONE, brown grey. Weak; thinly laminated with distinct organic lamination	ıs.									1
	-					GROL	77V	Very closely to closely spaced, sub- horizontal fractures along lamination]
	- 72.5					TE KUITI GROUP		planes, rough, planar to undulating.									72.5	+
	-					TE F	7IV											1
	-]
							33333	Moderately to highly weathered	-									1
	- 73.0							GREYWACKE, medium grey. Very weak to moderately strong. Extremely to very									73.0	1
	-							closely spaced fractures, planar to stepped, rough. Some fractured chunks]
	-							are well rounded [WAIPAPA GROUP].										-
	-																	1
	- 73.5																73.5-]
	-																	1
	-																	1
	- -74.0																74.0	1
	-	pə.																-
	-	Rotary cored		100	0													1
	-	Rotar																1
	- 74.5					4		74 50m; Recomes highly weathered									74.5	-
	-					GROUP		74.50m: Becomes highly weathered.										1
	-					WAIPAPA							0					1
	-					WAI												-
	- 75.0																75.0	1
	-							75.15m - 76.50m: Highly to completely										1
	-							weathered layer. Sandy SILT with trace of clay, very soft to firm.	of									1
	-																	1
	- 75.5																75.5•	1
	-																	-
	-																	1
	- -76.0																76.0	1
	-																	-
	-																	1
	-																	
	76.50	<u></u>	<u> </u>	<u></u>	Liii	<u> </u>	Firm:				Do-	narke:						
		ations Water	п	Standa	eologica ard Pene			cal Information" sheet for further details.		kfill:	11	narks: RDCL geophy	ysical da	ta for defe	ect details.			
<+ (Out flo		<i>(</i>)		= Solid o			Topsoil Clay Peat Silt	Bento	onite t/conc	- 11	iple broke dui	ring prep	aration o	f test. No co	e able to be test	ed.	
	n flow sture		\/\ ¹	Vane S	= Split s Shear St	rength (kPa)			arising	ll l							
W =	mois wet			UTP =	ak, R = I Unable ocket Pe	to pene	trate	TOTAL STATE OF THE PARTY OF THE		sand								
	satur									.:111	Die ID		1-			1	l ok · · ·	
Αll	dim	ensi	ons i	ın me	etres	Urill	ııng C	ontractor:	Dr	าแเทยู	Rig ID:		Dr	iller:		Logged By	unecked	ı BY:



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MACHINE HOLE LOG

	C	17	VII.					13.379.4402 Ph: 09.489.7872 ww.rileychch.co.nz E: www.riley.co.nz										
	-	t No.	:		Proje					ject L						N	No.:	
	0245 ient:				Drury	Qua	rry - S	Sutton Block Start Date: 23 Nov 2022		arry Ro le Loc						DF	1103	
		son A	Aggre	egate	s Ltd			End Date: 05 Dec 2022		lards (.		
Co		linate			00074		0	Ground Level (m):	Hole	Depth	(m):	Inclinat	I.	Azimu		Sheet:	Status	
	<u> </u>	= 1//	1251	', N 5	88971		\perp	Ground		78.00		N/A			V/A	18 of 18	FIN	AL
Œ	(m)	рc	_	TCR	Core	Geological Unit	þ.	Geological Description	Weathering		eld ngth	es	Defect Spacing (mm)	Defect Symbolic Log	In accordar	Description nce with NZGS	In-Situ	lion
Elevation (m)	Depth (m)	Method	Run	TCR (SCR) RQD (%)	Loss (%)	logica	Legend	In accordance with NZGS Guidelines (200) refer to appended Information sheet and	Veat		Ü	Samples	ect Sp (mm)	ct Sy Log	appended	(2005); refer to	Testing Data /	Backfill / Installation
Ele	۵	1	Box No.	(,0)	()	oe5		abbreviation explanation	888 888 V		Rock ≱≋≨∞%8		Defe	Defe		abbreviation anation	Results	교교
	_							Slightly weathered GREYWACKE, light bluish-grey. Moderately strong. Closely				UCS13 - 10MPa: 76.50						1
	-							spaced fractures, rough to smooth, planal to stepped, disintegrated layers,				- 76.70m						1
								hydrothermally altered.										
	- 77.0											UCS14 - 9.1MPa:					77.0	
	-			100		WAIPAPA GROUP						76.95 - 77.15m						1
	Ĺ				.0	PA GI							Ď.					1
	-					VAIPA												
	- 77.5					>											77.5	+
								77.60m: Weak, highly weathered,										1
	_							manganese stained joint surface. Dark black-green. Joint is inclined 50°, rough and planar.										1
	78.00																	+
	70.0							END OF HOLE: 78.00m									·····78.0·	<u> </u>
	-																	1
	-																	1
	- 78.5																78.5]
	_																	-
	-																	1
]
	- 79.0																79.0	+
	-																	1
]
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	- 80.0																80.0	
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	- 80.5																80.5	
	-																	+
																		1
	ŀ																	
E~	nlan	ations	. p.	er to "C	enlogia-	l and C	notechn'	ral Information" shoot for further details	Parker	<u>:1::::::</u>	Rem	narks:	l:::::	<u> </u>				
		Water	п	Standa	ard Pene			cal Information" sheet for further details.	Backfill: Bentonite		See F	RDCL geophy						
ᡧ	Out fle		()		Solid c			mmm F***	Grout/con	crete	*Sam	ple broke du	ring prep	aration o	f test. No cor	re able to be test	ed.	
Мо	In flov	:	\/\	√ane S	hear Str	ength ((kPa)		Orill arisin									
W:	= mois = wet : satur		ι	JTP =	ak, R = F Unable t ocket Pe	to pene	trate	Core Loss Gravel	Filter sand	ı								
								ontractor:	Deili:-	g Rig	ID:		n	iller:		Logged By	Chacker	I Dv.
ΑII	uiff	ensi	บบริ	111 1116	ะแษร		y u	ontractor:	ا ا ا ا ا ا ا ا	פויי פי	٠		וטו			i –oggeu by	4 - 1160VG(. –y.



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MACHINE HOLE LOG

	E	N	11				Ph: 0	33.379.4402 Ph: 09.489.7 ww.rileychch.co.nz E: www.riley	7872			IVIA	CIII	INL	пог	L LO	G	
	pject No.: Project 0245 Drury Q ent: evenson Aggregates Ltd							Sutton Block			ect Location					1	No.:	
		1			Diuis	/ Qua	iiy - c	Start Date: 09 Dec	2022		Location:					DH	1104	
				egate	s Ltd			End Date: 13 Dec			rds Cone			A =1	.41.	01	04-4	
Co		inate 177		I, N 5	88966	69	1	Ground Level (m): Ground			epth (m): 0.50	Inclinat N/A		Azimı	N/A	Sheet: 1 of 8	Status FIN	
(n	<u></u>					nit		Geological Description	on	ing	Field		D D	olic	Defect D	Description	I Cit	T
Elevation (m)	Depth (m)	Method	Box No.	TCR (SCR) RQD (%)	Core Loss (%)	Geological Unit	Legend	In accordance with NZGS Guidelines refer to appended Information she abbreviation explanation		Weathering	Field Strength Soil Rock	Samples	Defect Spacing (mm)	Defect Symbolic Log	Guidelines appende sheet and	nce with NZGS (2005); refer to d Information I abbreviation lanation	In-Situ Testing Data / Results	Backfill / Installation
	0.20		0.00	100		TOPSOIL	TS TS	TOPSOIL; brown; firm.										
	0.40			:	0	, p		Silty gravelly CLAY; orange brown v grey clasts. Stiff to hard; non-plastic	0;									1 4 ck
	- 0.5		0.40				C/L	gravel, fine to coarse; Gravel clasts 50mm diameter [RECENT ALLUVIU CORE LOSS									0.5	
	-						[/L	CORE LOSS										
	-			0			C/L C/L											
	- 1.0 -			-	100		C/L										1.0 -	
	-					5	C/L C/L											
	- 15					INNO-	C/L										15	100
	- 1.5 1.59		1.59			RECENT ALLUVIUM	×0,	GRAVEL, medium grey. Hard to ext									0, 0 / 0, 0 0, 1 Nc=1	
	-			100		RECE	×	diameter.										0/10
	- 2.0			-	0		0 0	Silty gravelly CLAY; brown-grey. Ve to soft; non-plastic; gravel, fine to co Gravel clasts up to 35mm.									2.0	
	2.20		2.20				[/L	·										
	-		2.20				[/L	CORE LOSS										
	2.5	þe		0 -	100		C/L										2.5	
	-	Rotary cored		-			C/L C/L C/L	•										
	3.00	Rota					C/L	•										
	- 3.0 - -		3.00					Unweathered to slightly weathered, grained BASALT, medium grey. Str.									Nc=0	
	-							very strong [SOUTH AUCKLAND VOLCANIC FIELD].										
	- 3.5																∀ 3.5 •	
	-																	
	-					JU.												舭
	- 4.0 4.10					IC GRC			_								4.0 -	
	-			100 - -	0	KERIKERI VOLCANIC GROUP	× × ×	Clayey SILT, with some gravel; red- to orange-brown. Firm to stiff; non-p to low plasticity; gravel, fine to coars	olastic									
	-					ERI VC	× × ×	Gravel clasts up to 10mm diameter.										∦
	- 4.5					KERIK	× × ×										1, 2 / 2, 2 2, 4 Nc=10	
	-						× × ×										J NC-10	
	- 5.0						× × ×										5.0	
	-						× × ×											
	-						× × ×											
Fv	olana	tions	: Ref	er to "G	eologica	l and G	eotechnie	cal Information" sheet for further details.	D.	ckfill:	Rem	narks:	L					<u>n</u>
, i		Water	п		ard Pene			Topsoil Clay		tonite		RDCL geophy	ysical da	ta for def	ect details.			
<+ (Out flo n flow		()	Filled =	= Solid o = Split :			Peat Silt	Gro	ut/concre	ete							
Moi M =	sture mois	:	٠,	√ = Pea	hear St	Residu	al	Fill Sand	Drill	arisings								
	wet satura	ated			Unable ocket P			Core Loss Gravel	Filte	er sand								
All	dim	ensi	ons i	in me	etres	Dril	ling C	ontractor:	D	rilling	Rig ID:		Dr	iller:		Logged By	: Checked	I By:



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4 Fred Thomas Drive Takapuna

	E	Ph: 03.379.4402 Ph E: www.rileychch.co.nz E:			03.379.4402 Ph: 09.489.7872			WAC	,ПІ	INC	пОГ	E LU	G				
	- 1				•				ject Locati					I	No.:		
		1			Dru	ry Qu	arry - S	Sutton Block Start Date: 09 Dec 2022	_	arry Rd, Dru le Location	-				וח	1104	
		son A	Aggre	egate	s Ltc	l		End Date: 13 Dec 2022		lards Cone					וט	1104	
Co		inate					- (Ground Level (m):		Depth (m):	Inclination	- 1	Azimı		Sheet:	Status:	
		: 177	6824	I, N 5	8896	569	\perp	Ground		40.50	N/A			N/A	2 of 8	FINA	\L
Elevation (m)	Depth (m)	Method	Box Box	TCR (SCR) RQD (%)	Core Los: (%)	s ဒြိ	Legend	Geological Description In accordance with NZGS Guidelines (2005 refer to appended Information sheet and abbreviation explanation	We	Field Strength	Samples	Defect Spacing (mm)	Defect Symbolic Log	In accordar Guidelines appended sheet and	Description nce with NZGS (2005); refer to d Information abbreviation anation	In-Situ Testing Data / Results	Backfill / Installation
	5.80		No.	100		KERIKERI VOLCANIC GROUP	× × : × × × × × × × × × × × × × × × × ×	[CONT] Clayey SILT, with some gravel; red-brown to orange-brown. Firm to stiff; non-plastic to low plasticity; gravel, fine to coarse; Gravel clasts up to 10mm diameter. CLAY, with some silt; brown. Soft; low plasticity to medium plasticity; [TE KUITI GROUP]. CLAY; dark brown. Stiff to very stiff.	\(\text{\tex}\xi}\\ \text{\tex}\xi}\xi}\text{\te}\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\te}\xi}}\xi\text{\te}\xi}}}}}}}}}}}}}}}}}}}}}}}}}}}}}}}}}}}							1, 3 / 5, 6, 7, 10 Nc=28 .	7
	- 6.5 7.0 - 7.35			-		0		7.00m: Becomes soft to firm.								7.0 -	
	7.50 - 7.5		7.35	0	10	00	C/L C/	CORE LOSS								7.5	
	- 8.0 - 8.0 8.5 	Rotary cored	7.50			KUITI GROUP		CLAY; dark brown. Firm to stiff; broken up 8.60m: Becomes firm to stiff, broken up.).							8, 15 / 27, 29 Nc=50 -	
	- 9.0 9.5 			100		≝		9.00m: Becomes very stiff to hard.								4, 11 / 15, 35 Nc=50 -	
	-10.0 - - - - -10.5 - -						- W - W - W - W - W - W - W - W - W - W	Slightly weathered, organic MUDSTONE. Extremely weak to very weak, thinly laminated. Sub-horizontal, very closely to moderately-widely spaced, fractures. Stepped, smooth to rough.				Þ				12, 38 for 70mm Nc=50+	%. C 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
Ex	olana	tions	: Ref	er to "G	eologi	cal and C	eotechn	ical Information" sheet for further details.	Backfill:	11	narks:						
₩ Mo Mo M = W = S =	nitial ' Level Out flow In flow sture moisi wet satura	Water	\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	Standa (SPT) Filled : No Fill Vane S V = Pe UTP = PP = P	ard Pe = Solic = Spli hear S ak, R : Unabl ocket	netratio I cone (i t spoon Strength = Residi e to per Penetro	n Test C) (S) (kPa) ual etrate meter	Topsoil Clay E Peat Silt C Fill Sand C Care Loss Gravel F	Bentonite Grout/cond Drill arising	crete gs	RDCL geophys		a for def	ect details.	Logged By	Chacks	- Pro-
All	aım	ensi	ons i	in me	etres	וזטן	ınıng C	Contractor:	חוווווט	y Kiy iD:		וזט	ner.		Luggea By	1 CHECKED	Þy:



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4 Fred Thomas Drive Takapuna

				Ph: 0	ISTCHURCH 8011 AUCKLAND 0622 93.379.4402 Ph: 09.489.7872 ww.rileychch.co.nz E: www.riley.co.nz			WAV	СΠΙ		пОГ	E LU	G	
Project No.: 220245		Proje			Sutton Block		ject Locati					N	lo.:	
Client:		Drury	Quar	ту - S	Sutton Block Start Date: 09 Dec 2022		arry Rd, Drue Location	_				DH	l104	
Stevenson A	ggregate	s Ltd			End Date: 13 Dec 2022		ards Cone							
Co-ordinate	s : 6824, N :	588966	:0	9	Ground Level (m): Ground		Depth (m): 40.50	Inclinat N/A		Azimı	uth: N/A	Sheet: 3 of 8	Status:	
	1				Geological Description	_		1 11/7		_	1	Description	1	
Elevation (m) Depth (m) Method	TCR (SCR RQD (%)	Core Loss (%)	Geological Unit	Legend	In accordance with NZGS Guidelines (2009) refer to appended Information sheet and abbreviation explanation	Weathering	Field Strength Soil Rock	Samples	Defect Spacing (mm)	Defect Symbolic Log	In accordar Guidelines appended sheet and	nce with NZGS (2005); refer to d Information abbreviation anation	In-Situ Testing Data / Results	Backfill / Installation
-11.5 -12.0 -12.10 -12.5 -13.0 -13.5 -14.0 -14.5 -15.5 -16.0 -16.0	100	δ	ТЕ КИП GROUP	100 100	[CONT] Slightly weathered, organic MUDSTONE. Extremely weak to very weak, thinly laminated. Sub-horizontal, very closely to moderately-widely spaced, fractures. Stepped, smooth to rough. Slightly weathered, organic SANDY MUDSTONE, dark brown. Very weak, thinly laminated.			UCS3 - 11MPa: 12.35 - 12.50m	Φ.				12.5- 12.5- 13.0- 14.0- 15.5- 16.0-	
Explanations: Initial Water Level Out flow In flow Moisture: M = moist W = wet S = saturated All dimension	Stand (SPT) Filled No Fill Vane 3 V = Pe UTP = PP = F	ard Pene = Solid c I = Split s Shear Str eak, R = F Unable t Pocket Pe	etration one (C) spoon (Sength (Increased and penetrometrometrometrometrometrometrometrom	Test S) kPa) Il trate eter	Peat Silt Silt Fill Sand 2 1	Backfill: Bentonite Grout/cond Drill arising Filter sand	See Forete	narks: RDCL geoph		ta for def	ect details.	Logged By:	Checked	By:



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MACHINE HOLE LOG

EKIL	Ph: (03.379.4402 Ph: 09.489.7872 www.rileychch.co.nz E: www.riley.co.nz		WACII		L LO	3
Project No.: 220245	Project Name: Drury Quarry - S	Sutton Block	Project Loc			N	lo.:
Client:	Druly Quality - 3	Start Date: 09 Dec 2022	Quarry Rd, l	-		DH	1104
Stevenson Aggregate		End Date: 13 Dec 2022			A =:		
Co-ordinates : E 1776824, N		Ground Level (m): Ground	Hole Depth (n 40.50	n): Inclination: N/A	Azimuth: N/A	Sheet: 4 of 8	Status: FINAL
Ê C	i i i	Geological Description	gri Eirli	D _D	≗ Defect D	Description	In City
Elevation (m) Depth (m) Method Meth		In accordance with NZGS Guidelines (200: refer to appended Information sheet and abbreviation explanation	5); Field Streng	Sample H	Defect L In accordant Guidelines appender sheet and expi	nce with NZGS (2005); refer to d Information I abbreviation anation	In-Situ / Testing Data / Results
-17.0 -17.5 -18.0 -18.0 -18.5	2000 2000 2000 2000 2000 2000 2000 200	17.70m - 17.75m: Highly weathered layer CLAY with some silt, firm. 17.70m - 17.75m: Highly weathered layer silty sandy CLAY, soft. 18.25m - 18.40m: Moderately strong, moderately weathered, grey, MUDSTONE highly fractured, blocky					17.5—10 O S C C O O S C C O O O S C C O O O S C C O O O O
Initial Water Level ☐ Out flow ☐ In flow Moisture: M = moist W = wet Vane V = P V = V	dard Penetration Test) 1 = Solid cone (C) ill = Split spoon (S) Shear Strength (kPa) eak, R = Residual = Unable to penetrate Pocket Penetrometer	Peat Silt Silt Sand I		Remarks: ee RDCL geophysical di	ata for defect details.	Logaed Bv:	Checked By:



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September of the service of the serv		E	K	11	L			Ph: 0	3.379.4402 Ph: 09	LAND 0622 .489.7872 w.riley.co.nz			WAW	JПI	INE	пОГ	E LU	G	
Emplanations: Chem. Valuepara and General Color Model and State (Color School) and Color School (Color School) and Color Schoo		-		:		•			Sutton Dinak		1 -						N	lo.:	
Selection Aggregates Los						Drury	Qua	rry - S		Dec 2022		_	_				DH	1104	
Example Procedure Proced				Aggre	egate	s Ltd					1								
Geological Description The property of the pr	Co				1 N 5	00066	:0	G		!			l .					1	
Explanations: Note to "County and and determination" shared for further assure. CONDITION CONDITI	_		_ 1//	0024	F, IN 3	00300				intion	_	0.50	19/7		_			1 1147	
Septembrons: Note: to Strategied and Commission Information: And Strategied and Commission Commissi	Elevation (m)	Depth (m)	Method	Вох	RQD	Loss	Geological Uni	Legend	In accordance with NZGS Guic refer to appended Informatio	delines (2005); on sheet and	1	Strength Soil Rock	Samples	Defect Spacing (mm)	Defect Symboli Log	In accordar Guidelines appended sheet and	nce with NZGS (2005); refer to d Information abbreviation	Testing Data /	Backfill / Installation
Initial Water Level ☐ Out flow ☐ In flow ☐ Out flow ☐ In flow ☐ Out flow ☐ In flow ☐ Out flow ☐ In flow ☐ In flow ☐ Out flow ☐ In flow ☐ Out flow ☐ In flow ☐ In flow ☐ In flow ☐ In flow ☐ Out flow ☐ In fl		-23.0	Rotary cored		100	9	TE KUITI GROUP		Moderately weathered, CONC with sandy-muddy matrix and coarse (up to 90mm) sandsto mudstone clasts. Light brown Iron stained and organic layer Moderately-widely spaced, su and low angle (<30) fractures undulating to stepped. Clasts moderately-strong to strong. If to very weak. Contains some with no clasts throughout [CONGLOMERATE].	GLOMERATE fine to ne and sandy and grey. rs. ib-horizontal , rough, are Matrix is stiff sandy layers			23.30 - 23.55m	О.				24.0- 24.5- 25.0- 26.0-	
THE COMPANY OF THE PROPERTY OF	Initial Water Level Standard Penetration Test (SPT) Filled = Solid cone (C) No Fill = Split spoon (S) Moisture: W = wet S = saturated V = Peak, R = Residual UTP = Unable to penetrate PP = Pocket Penetrometer Standard Penetration Test (SPT) Filled = Solid cone (C) No Fill = Split spoon (S) Fill Sand Drill arisings Fill Filter sand See RDCL geophysical data for defect details. See RDCL geophysical data for defect details.												Logged Por	Checked	I Bur				



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Project 22024		:		Proje			Sutton Block			ect Location					١	No.:	
Client				Drury	/ Qua	iry - a	Sutton Block Start Date: 09 D	ec 2022		rry Rd, Dru Location	-				DH	1104	
Steve			egate	s Ltd				ec 2022		ards Cone		T	Azimı	.4la .			
Co-or			I, N 5	88966	59		Ground Level (m): Ground			epth (m): 0.50	Inclinat N/A			N/A	Sheet: 6 of 8	Status:	
Î Ĉ					hit		Geological Descri	ption	ring	Field		gui	ollic	Defect D	escription	In-Situ	ے
Elevation (m) Depth (m)	Method	Box No.	TCR (SCR) RQD (%)	Core Loss (%)	Geological Unit	Legend	In accordance with NZGS Guide refer to appended Information abbreviation explanati	sheet and	Weathering	Strength Soil Rock	Samples	Defect Spacing (mm)	Defect Symbolic Log	Guidelines appended sheet and	nce with NZGS (2005); refer to d Information abbreviation anation	Testing Data / Results	Backfill / Installation
-28.0 -28.0 -28.0 -28.5 -29.0 -29.5 -30.0 -30.5 -31.0 -31.10		i: Ref	100	0 0 0	WAIPAPA GROUP TE KUITI GROUP	otechnia	Slightly weathered GREYWAC grey. Moderately strong to stro on defect surfaces, some quart Very-closely to closely spaced planar to stepped, rough.	KE, medium ng, limonite Iz veins. fractures,	ıckfili:	Rem	UCS2 - 5MPa: 28.20 - 28.50m UCS6 - 8.2MPa: 29.10 - 29.30m	0				28.5- 29.0- 29.5- 30.5- 31.5- 32.0-	
■ Initia Leve Out i In flo Moistur M = moi W = wet S = satu	I Water I Iow w e: st	\(\frac{1}{2}\)	Standa (SPT) Filled = No Fill Vane S V = Pea UTP = PP = P	Solid of a Solid of a	etration cone (C spoon (rength (Residua to pene enetron	Test) S) (kPa) al trate neter	Topsoil Clay Peat Silt Fill Sand Core Loss Gravel Contractor:	Ber Gro	ut/concr arisings er sand	See F	RDCL geophy		ta for defe	ect details.	Logged By	Chacked	I Bv
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Project No.: 220245		Proje			Sutton Block		ject Locat irry Rd, Dri					N	lo.:	
Client:			Quai	ту - С	Start Date: 09 Dec 2022	Hol	e Location	1:				DH	l104	
Stevenson Ago Co-ordinates		s Ltd		T 6	End Date: 13 Dec 2022 Ground Level (m):		ards Cone Depth (m):		on:	Azimı	uth:	Sheet:	Status:	
E 17768	324, N 5	88966	9	L	Ground		10.50	N/A			N/A	7 of 8	FINA	٩L
Elevation (m) Depth (m) Method	(%)	Core Loss (%)	Geological Unit	Legend	Geological Description In accordance with NZGS Guidelines (2005 refer to appended Information sheet and abbreviation explanation	.: (c)	Field Strength	Samples	Defect Spacing (mm)	Defect Symbolic Log	In accordar Guidelines appended sheet and	Description nce with NZGS (2005); refer to d Information l abbreviation anation	In-Situ Testing Data / Results	Backfill / Installation
-33.5 -33.5 -33.5 -33.5 -33.5 -33.0 -33.5 -33.0 -33.0 -33.0 -33.0 -33.0 -33.0 -33.0 -33.0 -33.0 -33.0 -33.0 -33.0 -33.0 -33.0	100	9	WAIPAPA GROUP		[CONT] Slightly weathered GREYWACKE, medium grey. Moderately strong to strong, limonite on defect surfaces, some quart veins. Very-closely to closely spaced fractures, planar to stepped, rough. 33.40m: Grades to extremely closely to closely spaced fractures.		Dox	UCS5 - 23MPa: 33.70 - 33.85m					34.5- 34.5- 35.5- 36.0- 37.5-	12.00 (17) CO
Explanations: Initial Water Level Out flow In flow Moisture: M = moist W = wet S = saturated All dimension	Standa (SPT) Filled = No Fill Vane S V = Pea UTP = Pe	ard Pene = Solid co = Split s shear Strak, R = F Unable t ocket Pe	tration cone (C) poon (Sength (Residua o penet netrom	Test S) kPa) I trate eter	Topsoil Clay B Peat Silt G Fill Sand D	Backfill: entonite frout/conc rill arising ilter sand	See	narks: RDCL geophys		a for defe	ect details.	Logged By:	Checked	Ву:



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MACHINE HOLE LOG

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		t No.	:		Proje				1 .	ject Locati				1	lo.:	
	0245 ent:				Drury	Qua	rry - S	Sutton Block Start Date: 09 Dec 2022		erry Rd, Dru				DF	1104	
		son A	Aggre	egate	s Ltd			End Date: 13 Dec 2022		ards Cone				D ,	1104	
Co		linate					(Ground Level (m):		Depth (m):	Inclination	n: Azi	muth:	Sheet:	Status	
	-	= 1//	6824	i, N 5	88966			Ground		10.50	N/A	_	N/A	8 of 8	FIN	<u>\</u>
Œ	(m)	þc	ر	TCR	Core	Geological Unit	٦	Geological Description	Weathering	Field	<u>89</u>	Defect Symbolic	In accordar	escription	In-Situ	lion /
Elevation (m)	Depth (m)	Method	Run	(SCR) RQD (%)	Loss (%)	logica	Legend	In accordance with NZGS Guidelines (2005 refer to appended Information sheet and); Veath	Strength	Samples	(mm)	Guidelines appended	(2005); refer to I Information	Testing Data /	Backfill / Installation
Ele	۵		Box No.	(,0)	()	oe9		abbreviation explanation	8988	Soil Rock		Defe	sheet and expl	abbreviation anation	Results	프르
	-							[CONT] 33.40m: Grades to extremely closely to closely spaced fractures.			- 38.50m					000
	-															್ಯೇ
	-															0000
	- 39.0														39.0-	0,50°,0
	-					٩										000
	-			100		GRO		39.30m - 39.55m: Highly weathered, extremely weak thin layer of gravel, silt								
	- 39.5			-	0	WAIPAPA GROUP		and sand sized material.				0 : :			39.5-	000
	-					WAI										0,00°0
	-															000
	- 40.0														40.0-	0000
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	40.5							END OF HOLE: 40.50m							40.5	-
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Ex	olana	ations	: Ref	er to "G	eologica	l and Ge	otechnic	cal Information" sheet for further details.	Backfill:	Rem	narks:	::::1				
¥	nitial _evel	Water	\mathbf{z}		ard Pene				entonite	See F	RDCL geophysic	al data for	defect details.			
\triangleleft	Out flo	ow	<i>(</i>)	Filled =	= Solid c = Split s			Peat Silt O	irout/conc	rete						
Мо	sture mois):			hear Str ak, R = F			Fill Sand	rill arising	s						
W = wet UTP = Unable to penetral S = saturated PP = Pocket Penetromet								Core Loss Gravel F	ilter sand							
All	dim	nensi	ons i	in me	etres	Drill	ling C	ontractor:	Drilling	g Rig ID:		Driller:		Logged By	Checked	By:



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EKIL	Ph: (03.379.4402 Ph: 09.489.7872 ww.riley.chch.co.nz E: www.riley.co.nz		WACIII			3
Project No.: 220245	Project Name: Drury Quarry - S	Sutton Block	Project Locati Quarry Rd, Dru			N	lo.:
Client:	Druly Quality - 3	Start Date: 27 Oct 2022	Hole Location	,		DH	1105
Stevenson Aggregat		End Date: 03 Nov 2022	Paddock West		A =!4b	211	1000
Co-ordinates : E 1776856, N	•	Ground Level (m): Ground	Hole Depth (m): 46.89	Inclination: -90°	Azimuth: N/A	Sheet: 1 of 11	Status: FINAL
Ê C	i i i	Geological Description	B Field	Du Du	⊖ Defect D	Description	In City
Elevation (m) Depth (m) Method Meth	Coological (%) Coological Coologi	In accordance with NZGS Guidelines (2005) refer to appended Information sheet and abbreviation explanation	Field Strength	Samples Defect Spacing (mm)	Defect I In accordan Guidelines appender sheet and expl	nce with NZGS (2005); refer to d Information d abbreviation lanation	In-Situ Testing Data / Results Results
0.10 0.10 0.00 0.00 0.00 0.00 0.00 0.00	W. TEKUTI GROUP TOPSOIL TOPSO	TOPSOIL. Organic silty CLAY, dark brown with minor orange streaks. CLAY, with minor silt; orange and light brown mixed. Very stiff; medium plasticity; [RECENT ALLUVIUM]. CLAY, with trace silt; orange. Firm; medium plasticity to high plasticity. CLAY, with minor silt, with trace gravel; light brown with orange and dark brown mottles. Soft; medium plasticity to high plasticity; gravel, fine. CLAY, with minor silt, with trace gravel; light brown with orange and dark brown mottles. Soft; medium plasticity to high plasticity; gravel, fine. CLAY, with trace silt; dark brown. Very stiff to hard; [TE KUITI GROUP]. Slightly weathered organic MUDSTONE, dark brown. Extremely weak; thinly laminated. 3.66m - 4.40m: Highly weathered CLAY with minor silt and gravel, stiff; [CRUSH ZONE].		0	3.86-4.40m,	CZ	
Initial Water Level CP Out flow In flow Moisture: M = moist W = wet Initial Water (SPT Fillet No F Vane V = W UTP	"Geological and Geotechnidard Penetration Test")	ical Information" sheet for further details. Clay Be		narks: RDCL geophysical da	ata for defect details.	Logged By:	Checked By:



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	jec 1	t No.	:		Proje			Sutton Block			ect Locati rry Rd, Dru					N	lo.:	
	ent:				Diuly	Quai	ту - с		7 Oct 2022	_	Location					DH	l105	
		son <i>l</i> linate		egate	s Ltd		10	End Date: 03 Ground Level (m):	3 Nov 2022		dock West epth (m):	Inclinat	ion.	Azimı	ıth:	Sheet:	Status:	
				6, N 5	89025	6		Ground			6.89	-90			N/A	2 of 11	FINA	
(m)	(h	-		TCR	Core	Unit		Geological Desc	cription	ering	Field	S.	cing	bolic		Description	In-Situ	_ r
Elevation (m)	Depth (m)	Method	Box No.	TCR (SCR) RQD (%)	Loss (%)	Geological Unit	Legend	In accordance with NZGS Government of the refer to appended Informate abbreviation expla	tion sheet and	Weathering	Strength Soil Rock	Samples	Defect Spacing (mm)	Defect Symbolic Log	Guidelines appende sheet and	nce with NZGS (2005); refer to d Information I abbreviation lanation	Testing Data / Results	Backfill / Installation
		Rotary cored		100		WAIPAPA GROUP		moderately strong, GREYW medium grey. Extremely clc fractures to disintegrated; jc are smooth to rough, undult light mineral veins present; GROUP].	osely spaced of insurfaces in the surfaces in the surfaces in the surface in the				D D				5.5	
Moi Moi W =	Initial Water Level Out flow In flow Moisture: M = moist W = wet S = saturated Standard Penetration (SPT) Filled = Solid cone (t) No Fill = Split spoon Vane Shear Strength V = Peak, R = Residd UTP = Unable to pen							ral Information" sheet for further to the function of the func	Be Gn Gn Gravel Fill	ackfill: ntonite out/concr Il arisings er sand	See F	narks: RDCL geophy	ysical da	ta for def	ect details.			
All	dim	ensi	ons i	in me	etres	Drill	ing C	ontractor:		Drilling	Rig ID:		Dr	iller:		Logged By:	Checked	Ву:



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	-	t No.	:		Proje			Bl. 1		1 -	ect Locati					N	lo.:	
)245 ent:				Drury	Qua	rry - S	Sutton Block Start Date: 27	Oct 2022		rry Rd, Dru Location	_				DH	1105	
			Aggre	egate	s Ltd				Nov 2022		dock West					D.		
Co		linate					1	Ground Level (m):			epth (m):	Inclina		Azimu		Sheet:	Status:	
		= 177	6856	5, N 5	89025		\perp	Ground			6.89	-90			N/A	3 of 11	FINA	\L_
(m)	Œ	р	_	TCR (SCR)	Core	I Unit	p p	Geological Desc	ription	ering	Field	es	acing	nbolic		Description nce with NZGS	In-Situ	/ noi
Elevation (m)	Depth (m)	Method	Box No.	(SCR) RQD (%)	Loss (%)	Geological Unit	Legend	In accordance with NZGS Gui refer to appended Informati abbreviation explan	on sheet and	Weathering	Strength Soil Rock	Samples	Defect Spacing (mm)	Defect Symbolic Log	Guidelines appended sheet and	(2005); refer to d Information abbreviation anation	Testing Data / Results	Backfill / Installation
		Rotary cored		100	φ	WAIPAPA GROUP		[CONT] 6.80m: Grades to exclosely to closely spaced fractions of the control of t	ctures.				6				10.5- 11.5- 12.5- 13.0-	
Moi Moi M = W = S =	nitial Level Out flow n flow sture mois wet satura	Water w t t ated	V	Standa (SPT) Filled : No Fill Vane S V = Pe UTP = PP = P	ard Pene = Solid c = Split s Shear Str ak, R = F Unable t ocket Pe	etration one (C spoon (ength (Residua to pene enetron	Test) S) (kPa) al trate neter	Topsoil Clay Peat Silt Fill Sand Core Loss Grav	B G	Backfill: entonite frout/concr rill arisings	See F	narks: RDCL geoph			ect details.	Laws 2	Charles	B
Αll	aım	ıensi	ons	ın me	etres	ווזע	ınıg C	ontractor:		מוווווום	Rig ID:		Uri	ller:		Logged By:	Linecked	By:∣



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Project No.	:		Proje			Nutters Diselle		ject Lo						N	lo.:	
220245 Client:			Drury	Quar	ту - S	Sutton Block Start Date: 27 Oct 2022		arry Rd, e Locat		•				DH	l105	
Stevenson A		egate	s Ltd			End Date: 03 Nov 2022	Pac	ldock W	/est							
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Elevation (m) Depth (m) Method	Box No.	TCR (SCR) RQD (%)	Core Loss (%)	Geological Unit	Legend	In accordance with NZGS Guidelines (2000) refer to appended Information sheet and abbreviation explanation		Field Streng	gth Rock	Samples	Defect Spacing (mm)	Defect Symbolic Log	In accordar Guidelines appended sheet and	nce with NZGS (2005); refer to d Information abbreviation anation	In-Situ Testing Data / Results	Backfill / Installation
-14.0 -14.0 -14.5 -15.5 -15.5 -16.0 -16.0 -17.5 -17.5		100		WAIPAPA GROUP		Slightly weathered, moderately strong, GREYWACKE, medium grey. Very closel to moderately widely spaced fractures; planar to undulating, rough. Light mineral veins present.					0				14.0- 14.5- 15.0- 16.0- 17.0-	00,00,00,00,00,00,00,00,00,00,00,00,00,
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Project No.: 220245	Project N		Sutton Block		ject Locatio				N	lo.:	
Client:	Drury Qua	arry - s	Sutton Block Start Date: 27 Oct 2022		erry Rd, Dru Location:	-			DH	1105	
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ê C	ii.	T	Geological Description	ing	Field	. Bu	olic	Defect D	escription	In City	_
# # # #	Core Loss (%)	Legend	In accordance with NZGS Guidelines (2005) refer to appended Information sheet and abbreviation explanation	Weathering	Field Strength	Samples Defect Spacing	Defect Symbolic Log	Guidelines (appended sheet and	(2005); refer to d Information abbreviation anation	In-Situ Testing Data / Results	Backfill / Installation
-23.5 -23.5 -24.0 -24.5 -25.5 -26.5	1001 WAIPAPA GROUP		[CONT] 22.15m - 22.60m: Disintegrated layer. 23.10m: Light coloured mineral vein infill up to 10mm thick. 24.30m - 25.80m: Disintegrated layer, subrounded to subangular blocks.			D				23.0- 23.5- 24.0- 24.5- 25.0- 26.5-	20 0 2 3 30 0 2 3 30 0 2 3 30 0 0 3 30 0 2 3 30 0 3 30 0 3 3 30 0 3 3 30 0 3 3 30 0 3 3 30 0 3 3 30 0 3 3 30 0 3 3 30 0 3 3 30 0 3
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	-27.527.528.029.5	Rotary cored		100 -	6	WAIPAPA GROUP		27.00m: Slightly weathered, moderately strong, GREYWACKE, medium grey. Ve closely to moderately widely spaced fractures; planar to undulating, rough. Ligmineral veins present.	ry			UCS29 - 87MPa: 29.00 - 29.30m	þ				28.5- 28.5- 29.5- 30.5-	26.50 cz 1850
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		Rotary cored		100	9	WAIPAPA GROUP		[CONT] 30.40m: Grades to include veins infilled with light coloured mines and the second state of the seco	e many ineral.				Ō				32.5- 33.5- 34.5- 35.5-	2 × 6 × 6 × 6 × 6 × 6 × 6 × 6 × 6 × 6 ×
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	jec 245	t No.	:		Proje			Sutton Block		-	Locatio Rd, Dru					N	lo.:	
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MACHINE HOLE LOG

	K	Ш			Ph: 03.379.4402 Ph: 09.489.7872 E: www.rileychch.co.nz E: www.riley.co.nz						WACHINE HOLE LOG										
Project No.: Project Na							Suttan Black		Project Location: No.: Quarry Rd, Drury												
220245 Client:				Drury	Quarry - Sutton Block Start Date: 27 Oct 2022						Location	_		DH105							
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Elevation (m) Depth (m)	Method	Box No.	TCR (SCR) RQD (%)	Core Loss (%)	Geological Unit	Legend	In accordance with NZ refer to appended Ir abbreviation	GS Guidelines (2 formation sheet a explanation		Weathering	Field Strength Soil Rock	Samples	Defect Spacing (mm)	Defect Symbolic Log	Guidelines appende sheet and	nce with NZGS (2005); refer to d Information I abbreviation lanation	In-Situ Testing Data / Results	Backfill / Installation			
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MACHINE HOLE LOG

Ph: 03.379.4402 E: www.riley.ch.co.nz E: www.rileychch.co.nz								3.379.4402 Ph: 09.489.7872		WACHINE HOLE EOG									
Project No.: Project Name 220245 Drury Quarry								Northern District		Project Location: No.: Quarry Rd, Drury									
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- - - - - - - - -	45.5 46.0 46.5			100		WAIPAPA GROUP		[CONT] 37.60m - 37.61m: Light coloured mineral vein 3mm thick.	# 10 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		UC\$30 - 135MPa: 45.40 - 45.75m	P				45.5- 46.0- 46.5-	2.150 0.5.150		
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Appendix H Riley Geology Map and Cross Sections



