

HOLE IDENTIFICATION

DH307

Client Auckland Transport

Project Eastern Busway

Project number 60644113

Co-ordinates 411494.80mE 795054.36mN

Orientation -90° Elevation 8.86m

Location 262 Ti Rakau Drive - Chinatown

DE We	EOLOGICAL SCRIPTION athering, Colour, Fabric, ROCK NAME. ength, Discontinuities, Lithological Features dding, foliation, mineralogy, cement, etc).	Test Records Shear SPT Vane/ N Values SPT 0-50	Drilling Method	0 - 100%	Relative Strength	SW HW LW	Depth	Graphic Log	TCR [RQD] (%)	500 Spacing of Natural Defects	SOIL PROPERTIES Subordinate MAJOR minor; colour, structure. Stre grading, bedding, plasticity, sensitivity, major fract fraction description, minor fraction description, ad information, etc DEFECT DESCRIPTION (Joints, Bedding Seams, Shatter, Shear a Schistosity, Attitude, Spacing, continuity, r	tion description, subordinate ditional structures, additional structures, additional nd Crush Zones, Foliation,	Instrumentation
EAST COAST BAYS FORMATION	20.0m: Slightly weathered, grey, fine to coarse SANDSTONE. Very weak.		HQ3	 			- - - - - - - - - 21		100 [100]		20.0m: DB, 0° 20.9m: DB, 0° 21.0 to 22.5m: Recovered as silty fine to Flush very silty with core stuck to the sp		
EAST COAST B			HQ3	 			- - - - - - 22 - - -		100 [100]				
				 	 						DH307 terminated at 22.5m Depth Criteria Achieved		ļ
					 		- 24 - 24 						
				 			- - - - - - - - - 26						
					 		- - - - - - - 27 - - - -						
				 	 		- 28 						
				 			- - 29 - - - - - - - - -						ļ
FL	r explanation of symbols and obs UID DEPTHS AND DRILLIN te Time Drilled Depth		S (m)		VS-V S-S MS-I W-V	Very stror Strong Moderatel Weak Very weal Extremely	ng Iy strong k	UW - SW - MW - HW -	WEATHE Unweather Slightly we Moderately Highly wea Completel	red eathered y weather athered	Chacked GP	Driller McMillan Started 23/06/2022 Finished	
H	and Held Shear Vane				Hol Hor	izonta	kfilled al / Ve	_	urvey [Datum	npletion. s: NZGD2000 - Mount Eden n 2016	23/06/2022 Drill Rig N119	7
DR	R1980: 19mm blade: Calibrated Jun 2022: Correction Factor: 1.876 ane shear strength per NZGS guideline							Page 3 of	7 7 08/2022				

Project Eastern Busway

262 Ti Rakau Drive - Chinatown

HOLE IDENTIFICATION **DH307**



Box: 1 of 7 - Depth: 01.50m to 04.50m of 22.50m

Date Drilled 23/06/2022 to 23/06/2022 - Date Photographed: 23/06/2022



Box: 2 of 7 - Depth: 04.50m to 07.60m of 22.50m

Project Eastern Busway

262 Ti Rakau Drive - Chinatown

HOLE IDENTIFICATION **DH307**



Box: 3 of 7 - Depth: 07.60m to 10.75m of 22.50m

Date Drilled 23/06/2022 to 23/06/2022 - Date Photographed: 23/06/2022



Box: 4 of 7 - Depth: 10.75m to 13.85m of 22.50m

Project Eastern Busway

262 Ti Rakau Drive - Chinatown

HOLE IDENTIFICATION **DH307**



Box: 5 of 7 - Depth: 13.85m to 16.80m of 22.50m

Date Drilled 23/06/2022 to 23/06/2022 - Date Photographed: 23/06/2022



Box: 6 of 7 - Depth: 16.80m to 19.50m of 22.50m

Project Eastern Busway

262 Ti Rakau Drive - Chinatown

HOLE IDENTIFICATION **DH307**



Box: 7 of 7 - Depth: 19.50m to 22.50m of 22.50m



HOLE IDENTIFICATION

DH308

Client Auckland Transport

Project Eastern Busway

Project number 60644113

Co-ordinates 411510.79mE 795065.64mN

Orientation -90° Elevation 8.88m

Location 262 Ti Rakau Drive - China Town

D	SEOLOGICAL JESCRIPTION Weathering, Colour, Fabric, ROCK NAME. Strength, Discontinuities, Lithological Features bedding, foliation, mineralogy, cement, etc).	Test Records Shear SPT Vane/ N Values SPT 0-50	Drilling Method Casing remarks	Core Loss/LIII	s Relative W Strength	SW Rock	Depth	Graphic Log	TCR [RQD] (%)	Spacing of 100 a Natural Defects	SOIL PROPERTIES Subordinate MAJOR minor; colour, structure. Stre grading, bedding, plasticity, sensitivity, major fractraction description, minor fraction description, ac information, etc DEFECT DESCRIPTION (Joints, Bedding Seams, Shatter, Shear a Schistosity, Attitude, Spacing, continuity,	tion description, subordina Iditional structures, additional structures, additional structures, additional structures, additional structures, Foliation and Crush Zones, Foliation	ıstrume
FILL	0.0m: FILL comprising silty gravel, cobbles and boulders.		VAC EX				- - - -		0	1111 1111 1111 1111	O.0m: Vacuum excavation O.0 to 0.15m: Concrete (car park). O.15 to 0.75m: Silty fine to coarse GRA cobbles and boulders. Densely packed cobbles and boulders are subangular by	, moist. Gravel,	
AUCKLAND VOLCANIC FIELD	O.75m: SW, dark grey, BASALT. Moderately strong. Highly vesicular (<20%), vesicles typically 5-10mm and up to 60mm. Some iron staining in vesicles. 1.7m: Slightly weathered, vesicular, dark grey, BASALT. Strong. Slightly vesicular (<2%). Vesicles up to 5mm.		114 HWT HQ3 				2		100 [100]		1.5 to 2.22m: J, 80°, Ud, Ro, Sn, Fe 1.95m: 114mm diameter HWT casing 2.1 to 2.16m: J, 45°, Ud, Ro, Sn, Fe 2.14 to 2.2m: J, 45°, Ud, Ro, Sn, Fe 2.14 to 2.17m: DB, 60°, Ud, Ro, Sn, Fe 2.16 to 2.46m: J, 85°, Ud, Ro, Sn, Fe 2.46 to 2.49m: J, 20°, Ud, Ro, MN, Fe 2.46 to 2.78m: J, 70°, Ud, Ro, Sn, Fe	Fe e P, Cl, Stn, Fe.	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
AUCK	4.45 to 4.75m: Slightly vesicular (<5%).						- - - - - - - - - - -				4.23 to 4.35m: J, 60°, Ud, Ro, Sn, F, 4.24 to 4.36m: J, 60°, Ud, Ro, Sn, F, 4.5 to 4.58m: J, 60°, Ud, Ro, Sn, Fe 4.58 to 4.66m: J, 55°, Ud, Ro, VN, S	e	4.59 <u>V</u>
	(<5%). 3.75m: ALLUVIUM comprising clay, silt, peat and claim in the comprising clay in the				 		- - - - - - - -	*	100 [18]	 	4.75m: Silty CLAY with trace organic mottled orange. Very stiff, moist, high 5.3 to 5.6m: Pinkish grey mottled orang	h plasticity.	^{55.4 <u>7</u>∑}
۵		128/41	SPT				- - - - - - - - - - -	%	100	 			I
TAURANGA GROUP		188/35	HQ3				- 7 - - - - - - -	* _ * _ x * _ * _ x * _ * _ x * _ * _ x * _ * _ x	100		7.3m: CLAY; bluish grey with some or mottling. Stiff, moist, high plasticity.	orange	I
			HQ3 I				- 8 - - - - - - - -	*	100		↑ 8.1 to 8.15m: Clayey fine SAND. 8.15m: Silty CLAY with some fine sa Firm, moist, high plasticity.	nd; bluish grey.	I
F					— 9 - - - - - - - -	*	100	 	9.5 to 9.8m: Micaceous fine sandy SILT	「lenses.			
F Da 17 20 20	LUID DEPTHS AND DRILLIN ate Time Drilled Depth 1/06/2022 16:30 07.95 1/06/2022 07:00 07.95 1/06/2022 15:45 27.00	/2022 16:30 07.95 2.0 2.56 /2022 07:00 07.95 2.0 4.59 /2022 15:45 27.00 2.0 5.45					RENGTH ng ly strong k / weak	UW - 1 SW - 5 MW - 1 HW - 1	lighly wea	ERING red eathered y weathere	Chackad GP	Driller McMillan Started 17/06/2022 Finished 20/06/2022	
F	Hand Held Shear Vane DR2272: 19mm blade: Calibrated 02/22: vane shear strength per NZGS guid		DR ² 1.87 Hor	1980: 76 use izonta	19mm ed for al / Ver	n blade: hand sl	: Calib near va urvey [rated J ane me Datums	r installed on completion. Jun 2022: Correction Factor: easurments 9.0m and deeper. s: NZGD2000 - Mount Eden n 2016	Drill Rig N119 Core Boxes Page 1 o	10 f 8 7/08/2022		



HOLE IDENTIFICATION

DH308

Client Auckland Transport

Project Eastern Busway

Project number 60644113

Co-ordinates 411510.79mE 795065.64mN

Orientation -90° Elevation 8.88m

Location 262 Ti Rakau Drive - China Town

GEOLOGICAL DESCRIPTION Weathering, Colour, Fabric, ROCK NAME. Strength, Discontinuities, Lithological Features (bedding, foliation, mineralogy, cement, etc).	Test Records Shear SPT Vane/ N Values SPT 0-50	Relative W Strength Sw Rock WW Weathering Depth	Graphic Log (%) (202) (SOIL PROPERTIES Subordinate MAJOR minor; colour, structure. Strength, moisture condition, grading, bedding, plasticity, sensitivity, major fraction description, subordina fraction description, minor fraction description, additional structures, additional information, etc DEFECT DESCRIPTION (Joints, Bedding Seams, Shatter, Shear and Crush Zones, Foliation Schistosity, Attitude, Spacing, continuity, roughness, infilling, etc.)	ıstrume
<u>a</u>	38/11 HQ3		100	8.15m: Silty CLAY with some fine sand; bluish grey. Firm, moist, high plasticity. (continued) 10.5m: Water return in basalt. No return in alluvium.	
SA GROI	ss 1,0,1, 1,2,3 N=7		<u>2 坐 型</u>	10.75m: Fibrous PEAT; black. Firm, moist, moderately decomposed wood fragments. 11.0m: Organic CLAY; brown. Firm, moist, high plasticity.	
TAURANGA GROUP			100	11.2m: CLAY with trace indistinct organics; light bluish grey. Very stiff, moist, high plasticity.	
			100	12.4m: With some fine sand.	
12.6m: HW, grey, fine to medium SANDSTONE. EW. / 12.8m: MW, grey, fine to medium SANDSTONE. VW.		- 13		12.6m: Fine to medium SAND; grey.	
13.35m: HW, grey, SILTSTONE. EW. 13.6m: MW, grey, fine	225/*		100	13.35m: Clayey SILT with trace fine siltstone gravel; grey	
SANDSTONE. Very weak. 13.9m: Slightly weathered, grey, SILTSTONE. Very weak. 14.53m: Slightly weathered,	25mm N>50	- 14	**** **** **** 100	13.9m: Gently inclined very thinly to moderately thinly bedded. 13.9 to 15m: DB, 5°, 6 No.	
grey, fine SĂNĎSTONE. Very weak.	ss 9,14,18,		100	15.35 to 16.5m: DB, 0°, 3 No. 15.4 to 15.5m: Fine sandy SILTSTONE.	
15.3m: Slightly weathered, grey, SILTSTONE. Very weak. Gently inclined, very to moderately thinly bedded.	N>50		**** **** 100 	16.02m: BP, 5°, VN, C, Slt 16.15 to 16.35m: Very thin silt beds.	
grey, thickly bedded, fine to medium SANDSTONE. Very weak.	sc		0	10.13 to 10.33iii. Very tiiii siit beds.	
EAST		- 17 - - - - - 18	100	17.4 to 17.55m: Recovered as silty fine to medium SAND.	0 0 0
18.2 to 18.93m: Extremely weak.	16,34 for 45mm N>50		75	18.2 to 18.93m: Recovered as fine SAND. 19.25 to 19.5m: DB, 5°, 4 No.	
	HQ3 HQ3 HQ3 HQ3 HQ3 HQ3 HQ3 HQ4 HQ4		100	18.93 to 19.06m: SILTSTONE bed. 19.2m: Very thin carbonaceous bed.	
For explanation of symbols and ob-	servations, see key sheet	RELATIVE STRENGTH	WEATHERING	Date logged 20/06/2022 Driller	SANSANSA SANSANSA
FLUID DEPTHS AND DRILLII Date Time Drilled Depth	NG PROGRESS (m) Casing Depth Fluid Depth	VS - Very strong S - Strong MS - Moderately strong W - Weak VW - Very weak EW - Extremely weak	UW - Unweathered SW - Slightly weathered MW - Moderately weathered HW - Highly weathered CW - Completely weathered	Logged IR/GS McMillan Started	
		DR1980: 19mm b	olade: Calibrated Ju	installed on completion. In 2022: Correction Factor: asurments 9.0m and deeper. 20/06/2022 Drill Rig N119	
Hand Held Shear Vane DR2272: 19mm blade: Calibrated 02/22: vane shear strength per NZGS gui		Horizontal / Vertic		NZGD2000 - Mount Eden Core Boxes	10 f 8



HOLE IDENTIFICATION

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Project number 60644113

Co-ordinates 411510.79mE 795065.64mN

Orientation -90° Elevation 8.88m

Location 262 Ti Rakau Drive - China Town

DI w	EOLOGICAL ESCRIPTION leathering, Colour, Fabric, ROCK NAME. trength, Discontinuities, Lithological Features edding, foliation, mineralogy, cement, etc).	Test Records but	Casing remarks	S Relative W Strength	WW H	Depth	Graphic Log	TCR [RQD] (%)	500 Spacing of Natural Defects	SOIL PROPERTIES Subordinate MAJOR minor; colour, structure. Stre grading, bedding, plasticity, sensitivity, major fract fraction description, minor fraction description, ad information, etc DEFECT DESCRIPTION (Joints, Bedding Seams, Shatter, Shear a Schistosity, Attitude, Spacing, continuity, t	nd Crush Zones, Foliation,	Instrumentation
	16.1m: Slightly weathered, grey, thickly bedded, fine to medium SANDSTONE. Very weak. (continued) 20.68m: SW, grey, SILTSTONE. Very weak. 20.94m: Slightly weathered,		3 			- 21	****** *******	100 [90]		21.0 to 22.5m: DB, 0°, 2 No. 21.05 to 21.15m: Recovered as subanç	nular SII TSTONE	
	grey, fine SANDSTONE. Very weak.	 	 3			- - - - - - - 22		100 [93]	 	gravel. 21.2m: SILTSTONE clast, 50mm long.	yuai SILTSTONE	
FORMATION	22.3m: Slightly weathered, grey, SILTSTONE. Very					- - - -	****** ****** ****** ******			22.3 to 22.4m: Thinly laminated. 22.5m: Subrounded SILTSTONE clast,	20mm.	
EAST COAST BAYS FORN	22.67m: Slightly weathered, grey, thickly bedded, fine SANDSTONE. Very weak.		3			- 23 - 23 		100 [67]		23.5 to 25.5m: Subhorizontal, thinly thinly bedded with thin laminations or mudstone. Drilling breaks infilled with	partings of	
EAST CO						- 2-7 25		100 [25]				
						- - - - - 26 - -		100 [100]		25.5 to 27m: DB, 0°, 4 No.		
	26.7 to 27.0m: Siltstone		- - -			- - - 27	× × × × × × × × × × × × × × × × × × ×			26.7 to 27.0m: Thinly laminated.		
			111			- 28				DH308 terminated at 27.0m Depth Criteria Achieved		
F	or explanation of symbols and obs	ervations, see key she	et	$+$ μ μ	IVE STR	RENGTI	H \	NEATH!	RING	Date logged 20/06/2022	Driller	
	LUID DEPTHS AND DRILLIN ate Time Drilled Depth	NG PROGRESS (m Casing Depth Fluid		MS-I W-I VW-I	Very strong Strong Moderatel Weak Very weak Extremely	y strong	SW - I MW - I HW - I	Highly we	eathered y weather	Logged IR/GS	McMillan Started 17/06/2022 Finished	
					Remarks Flush 50 mm standpipe piezometer installed on completion. DR1980: 19mm blade: Calibrated Jun 2022: Correction Factor: 1.876 used for hand shear vane measurments 9.0m and deeper.						20/06/2022 Drill Rig N119	
	land Held Shear Vane R2272: 19mm blade: Calibrated 02/22: Correction Factor = 1.595				Horizontal / Vertical Survey Datums: NZGD2000 - Mount Eden 2000 / New Zealand Vertical Datum 2016					10		
Vá	ane shear strength per NZGS guid	shear strength per NZGS guideline					aidild V	or troat	Datai		Page 3 of	8



Project Eastern Busway

Location 262 Ti Rakau Drive - China Town

HOLE IDENTIFICATION DH308



Box: 1 of 10 - Depth: 00.75m to 03.10m of 27.00mDate Drilled 17/06/2022 to 20/06/2022 - Date Photographed: 17/06/2022



Box: 2 of 10 - Depth: 03.10m to 05.90m of 27.00m

Project Eastern Busway

262 Ti Rakau Drive - China Town

HOLE IDENTIFICATION **DH308**



Box: 3 of 10 - Depth: 05.90m to 08.75m of 27.00m Date Drilled 17/06/2022 to 20/06/2022 - Date Photographed: 20/06/2022



Box: 4 of 10 - Depth: 08.75m to 12.25m of 27.00m

Project Eastern Busway

262 Ti Rakau Drive - China Town

HOLE IDENTIFICATION **DH308**



Box: 5 of 10 - Depth: 12.25m to 15.00m of 27.00m Date Drilled 17/06/2022 to 20/06/2022 - Date Photographed: 20/06/2022



Box: 6 of 10 - Depth: 15.00m to 18.00m of 27.00m

Project Eastern Busway

262 Ti Rakau Drive - China Town

HOLE IDENTIFICATION **DH308**



Box: 7 of 10 - Depth: 18.00m to 21.00m of 27.00m Date Drilled 17/06/2022 to 20/06/2022 - Date Photographed: 20/06/2022



Box: 8 of 10 - Depth: 21.00m to 23.65m of 27.00m

Project Eastern Busway

262 Ti Rakau Drive - China Town

HOLE IDENTIFICATION **DH308**



Box: 9 of 10 - Depth: 23.65m to 26.35m of 27.00m Date Drilled 17/06/2022 to 20/06/2022 - Date Photographed: 20/06/2022



Box: 10 of 10 - Depth: 26.35m to 27.00m of 27.00m



HOLE IDENTIFICATION

DH-CPT308

Client Auckland Transport

Project Eastern Busway

Project number 60644113

Co-ordinates 411510.88mE 795064.0mN

Orientation -90° Elevation 8.81m

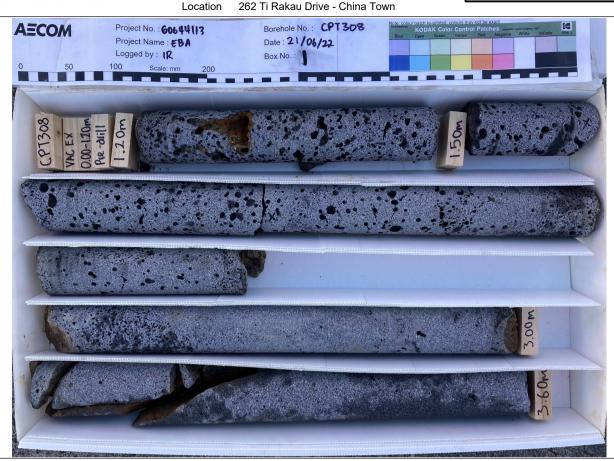
Location 262 Ti Rakau Drive - China Town

D	BEOLOGICAL BESCRIPTION Weathering, Colour, Fabric, ROCK NAME. Strength, Discontinuities, Lithological Features bedding, foliation, mineralogy, cement, etc).	Test Shear Vane/ SPT	Records SPT N Values 0 - 50	Drilling Method Casing remarks	Core Loss/Lift	s Relative W Strength	>	Depth	Graphic Log	TCR [RQD] (%)	500 Spacing of Natural Defects	SOIL PROPERTIES Subordinate MAJOR minor; colour, structure. Str grading, bedding, plasticity, sensitivity, major frac fraction description, minor fraction description, at information, etc DEFECT DESCRIPTION (Joints, Bedding Seams, Shatter, Shear a Schistosity, Attitude, Spacing, continuity,	tion description, subordinate dditional structures, additional	Instrumentation
FILL	0.0m: FILL.			VAC EX				- - - - - - - - - 1		0		0.0m: Vacuum excavation not witne	ssed.	
AUCKLAND VOLCANIC FIELD	1.2m: Slightly weathered, grey speckled light grey, BASALT. Moderately strong. Highly vesicular, vesicles typically 2 to 20mm. Iron staining in some vesicles. 1.35 to 4.4m: Strong. Moderately vesicular with vesicles up to 10mm. 2.14 to 2.72m: Becomes slightly vesicular with vesicles up to 3mm.			HQ3				- - - - - - - 2 - - - - - - - - - - - -		100 [100] 100 [100]		1.26 to 1.33m: Large vesicle, 70mm, lir infill. 1.64m: DB, 20° 1.92m: DB, 0° 2.25m: J, 0°, Ud, Ro, VN, Sn, Fe 2.5m: J, 10°, Ud, Ro, N, Sn, Fe 1.2 to 4.7m: Used 1.5m3 of water	monite and silt	
AUCKLAND				HQ3				- 3 		93 [90]		3.0m: J, 0°, Ud, Ro, VN, Sn, Fe 3.02 to 3.21m: J, 90°, Ud, Ro, N, Sn 3.12 to 3.28m: J, 70°, Ud, Ro, VN, S 4.26m: DB, 0°		
75	4.4m: ALLUVIUM comprising silt, clay and fine gravel.			WASH	 			5 6 7 7 8				4.4m: Silty CLAY with some fine grave very stiff, moist, high plasticity. 4.48m: Fine gravel ceases, becomes described to 4.55 to 4.7m: Light brown. 4.7 to 9.0m: Wash drill for piezometer in the strength of the strength	ark brown.	
			 			-				DH-CPT308 terminated at 9.0m Depth Criteria Achieved				
F	For explanation of symbols and obs EUID DEPTHS AND DRILLIN ate Time Drilled Depth	NG PR	OGRESS	S (m)		RELAT VS-V S-S MS-P W-V VW-V EW-E Rer Drill	Very strong Strong Woderate Weak Very weal Extremely	k y weak nrough	UW - SW - MW - HW - CW -	Highly we Complete	red eathered y weather athered ly weather	checked GP ter hole; investigation	Driller McMillan Started 21/06/2022 Finished 21/06/2022 Drill Rig	
ŀ	land Held Shear Vane			continued with cone penetration test. Hole wash drilled to 9m depth upon completion of CPT and piezometer installed. No groundwater encountered.					N119	2				
١	ane shear strength per NZGS guideline		Horizontal / Vertical Survey Datums: NZGD2000 - Mount Eden 2000 / New Zealand Vertical Datum 2016					Page 1 of	2					

Project Eastern Busway

262 Ti Rakau Drive - China Town

HOLE IDENTIFICATION **DH-CPT308**



Box: 1 of 2 - Depth: 01.20m to 03.60m of 9.00m

Date Drilled 21/06/2022 to 21/06/2022 - Date Photographed: 21/06/2022



Box: 2 of 2 - Depth: 03.60m to 04.70m of 9.00m



Client

LOG OF DRILLHOLE

HOLE IDENTIFICATION

DH-sCPT308

Auckland Transport

Project Eastern Busway

Project number 60644113

Co-ordinates 411512.14mE 795064.65mN

Orientation -90° Elevation 8.81m

Location 262 Ti Rakau Drive - China Town

GEOLOGICAL DESCRIPTION Weathering, Colour, Fabric, ROCK NAME. Strength, Discontinuities, Lithological Features (bedding, foliation, mineralogy, cement, etc).	Test Records Shear SPT Values SPT 0-50	181	o <u>∞</u> ≥≷ §		Graphic Log	TCR [RQD] (%)	500 Spacing of 100 Matural Defects	SOIL PROPERTIES Subordinate MAJOR minor, colour, structure. Str grading, bedding, plasticity, sensitivity, major frac fraction description, minor fraction description, ac information, etc DEFECT DESCRIPTION (Joints, Bedding Seams, Shatter, Shear a Schistosity, Attitude, Spacing, continuity,	tion description, subordinate iditional structures, additional structures, additional ind Crush Zones. Foliation.	Instrum
0.0m: FILL.						0		0.0m: Vacuum excavation not witnes	ssed.	
0.8m: Slightly weathered, grey speckled light grey, BASALT. Moderately strong. Moderately vesicular, up to 50mm. Iron staining in some vesicles.			11			100 [86]		0.8 to 5.1m: Used 2m3 of water. 1.08m: J, 52°, Ud, Ro, N, Sn, Fe & S	Sit	
2.0m: Becomes slightly vesicular. Vesicles up to 10mm. 2.87 to 2.96m: Vesicles up to 50mm. 3.05 to 5.0m: Strong. Vesicles up to 5mm.						100 [100]		2.17m: J, 10°, Ud, Ro, N, Sn, Fe & S 2.1 to 2.2m: J, 60°, Ud, Ro, N, Sn, F 2.3 to 2.4m: J, 80°, Ud, Ro, N, Sn, F	e & Slt	
O 2.87 to 2.96m: Vesicles up to 50mm. 3.05 to 5.0m: Strong. Vesicles up to 5mm.	 					100 [100]		3.1m: J, 45°, Ud, Ro, N, Sn, Fe 3.12 to 3.24m: J, 60°, Ud, Ro, N, Sn 3.23 to 3.36m: J, 80°, Ud, Ro, N, Sn 3.9 to 5m: J, 90°, Ud, Ro, MN, C, Cl washed out.	, Fe	
5.0m: ALLUVIUM comprising silt and clay.		 	 			100 [100]		5.0m: Silty CLAY; greyish brown. Mo plasticity. DH-sCPT308 terminated at 5.1m Depth Criteria Achieved	oist, firm, high	
For explanation of symbols and obs FLUID DEPTHS AND DRILLIN Date Time Drilled Depth			VS - Ve S - Str MS - Mo W - We VW - Ve	YE STRENGTH ery strong rong oderately strong eak	UW - I SW - I MW - I HW - I	WEATHE Unweathe Slightly we Moderatel Highly wes Completel	red eathered y weathere	Chacked GP	Driller McMillan Started 21/06/2022 Finished	•
				nued with lled upon	seismic comple	cone	penet	er hole; investigation ration test. Piezometer	21/06/2022 Drill Rig N119	
Hand Held Shear Vane	land Held Shear Vane ane shear strength per NZGS guideline				No groundwater encountered. Horizontal / Vertical Survey Datums: NZGD2000 - Mount Eden 2000 / New Zealand Vertical Datum 2016 Core Boxes Page 1					2

Project Eastern Busway

262 Ti Rakau Drive - China Town

HOLE IDENTIFICATION DH-sCPT308



Box: 1 of 2 - Depth: 00.80m to 03.00m of 5.10m

Date Drilled 21/06/2022 to 21/06/2022 - Date Photographed: 21/06/2022



Box: 2 of 2 - Depth: 03.00m to 05.10m of 5.10m



HOLE IDENTIFICATION

DH309_P

Client Auckland Transport
Project Eastern Busway

Project number 60644113

2021 EB DRILLHOLE LOG 2022-06-27 IR FIELD FILE (DH'S, HA'S).GPJ BASE.GDT 02/12/22

Co-ordinates 411582.05mE 795072.05mN Orientation -90° Elevation 8.195m

Location 209 Burswood Dr, Pakuranga Feature Bridge/Embankment Design

D	EOLOGICAL ESCRIPTION Veathering, Colour, Fabric, ROCK NAME. ttrength, Discontinuities, Lithological Features oedding, foliation, mineralogy, cement, etc).	Test Records Shear SPT Vane/ N Values SPT 0-50		Core Loss/Lift	s Relative W Strength	>	Depth	Graphic Log	TCR [RQD] (%)	-500 Spacing of -100 Matural Defects	SOIL PROPERTIES Subordinate MAJOR minor; colour, structure. Stre grading, bedding, plasticity, sensitivity, major frac fraction description, minor fraction description, ad information, etc DEFECT DESCRIPTION (Joints, Bedding Seams, Shatter, Shear a Schistosity, Attitude, Spacing, continuity, i	ion description, subordina ditional structures, addition nd Crush Zones, Foliation	ıstrum
FILL	0.0m: FILL comprising clay, silt and fine to coarse gravel.	143/34 1 105/23	VAC EX				- - - - - - - - - - 1	*	0		0.0m: Silty CLAY with some fine to c light brown. Very stiff, moist, high pla comprises slightly weathered, suban BASALT. (Noted during hyro-excava	sticity. Gravel gular,	
	1.1m: ALLUVIUM comprising clay, silt, fine sand and organics.	158/90					- - - - -	*			1.1m: Silty CLAY; blueish grey. Very high plasticity.	stiff, moist,	
		ss 1,1,2, 2,2,3 N=9	SPT				_ _ _ 2	* - X - X - X - X - X - X - X - X - X -	100		1.6 to 1.7m: Minor organic flecks, black		1 Z _{2.2}). ☑
		116/23	HQ3				- - - - - - - -	* - * - × - × - × - × - × - × - × - × -	100	 	2.5 to 3.05m: Some brown mottling.		V
		ss 0,1,1, 1,1,1 N=4	SPT	 	 		- 3 - - -	* * * * * * * * * * * * * * * * * * *	100		3.05 to 4.95m: Greyish brown.		
			HQ3				- - - - - 4	* - * - × - × - × - × - × - × - × - × -	100	 			5.5.28 ▼
OUP		ss 0,0,1, 1,2,1 N=5	SPT	 	i i i i i i i i i i i i i i i i				100		4.95m: Blueish grey.		5.28
TAURANGA GROUP			HQ3				- - - - - - - - - - - - - - - - - - -		100				5.28 \(\sum \)
TA		1,0,0, 0,1,1 N=2	SPT				- - - - - - -	F _ X _ X _ X _ X _ X _ X _ X _ X _ X _	100				
		48/9	HQ3	 			- - - - - - -	×	100		7.2m: Becomes firm.		
		ss			 	111	- - - 8	*_*_* **_	100	1111 1111 1111	8.0m: Silty CLAY; blueish grey. Soft	to yory soft	
		0,0,0, 0,0,0 N=0 SUOW	SPT				- - - -		100		moist, high plasticity.	io very son,	
		9/3		 	 	1::::	_ _ _ 9	*_ * _ × - * _ * * _ * _ ×	100				
		ss 0,0,0, 0,0,0 1 1 1 1	SPT	 	 	111	- - - -		100				
_		N=0 I I I I SUOW I I I I			DELAT	шЦ		*× 					
F Da 27	/09/2022 16:20 15.32	NG PROGRES Casing Depth 5.7	S (m) Fluid De 2.1	pth	VS - V S - S MS - I W - V	/ery stro Strong Moderate Weak /ery wea	ly strong k	UW - I SW - S MW - I HW - I	VEATHE Unweather Slightly we Moderately Highly weat Completel	red eathered y weather athered	Chacked GP	Driller McMillan Started 27/09/2022	
29	/09/2022 09:21 15.32 /09/2022 14:30 30.00 /09/2022 08:12 30.00	5.7 5.7 5.7	3.95 5.28 2.27		Rer	narks		no ni -	om str	r inct-	llad on completion	Finished 29/09/2022	
	Hand Held Shear Vane R1980: 19mm blade: Calibrated Jun 20	022: Correction Factor	or: 1.876		Hor	izonta	al / Ve	· · rtical Sı	ırvey [Datum	lled on completion. s: NZGD2000 - Mount Eden n 2016	Drill Rig N119 Core Boxes	9
	ane shear strength per NZGS guid											Page 1 o	9



HOLE IDENTIFICATION

Location

DH309

Client **Auckland Transport** Project Eastern Busway

Project number 60644113

2021 EB DRILLHOLE LOG 2022-06-27 IR FIELD FILE (DH'S, HA'S).GPJ BASE.GDT 02/12/22

Co-ordinates 411582.05mE 795072.05mN Orientation -90° Elevation 8.195m 209 Burswood Dr, Pakuranga

Feature Bridge/Embankment Design

D	EOLOGICAL ESCRIPTION /eathering, Colour, Fabric, ROCK NAME. trength, Discontinuities, Lithological Features sedding, foliation, mineralogy, cement, etc).	Test Records Shear SPT Vane/ N Values SPT 0-50	Drilling Method Casing remarks	Core Loss/LIII		SW Rock HW Weathering	Depth	Graphic Log	TCR [RQD] (%)	F600 Spacing of Natural Defects	DEFECT DESCRIPTION	ubordinate s, additional
TAURANGA GROUP		33/10	SPT I I I I I I I I I					X X X X X X X X X X X X X X X X X X X	100		8.0m: Silty CLAY; blueish grey. Soft to very soft, moist, high plasticity. (continued) 10.55m: Spongy PEAT; black. Soft, moist, high plasticity. 10.75m: Silty CLAY; brown. Stiff, moist, high plasticity. 10.95m: Becomes blueish grey.	
TAURAI	12.85m: Slightly weathered,	ss 1,0,1, 1,1,2 N=5		ΙĹ			- - - - - - - - - - - - - - - - - - -		100		12.45 to 12.85m: Core Loss:	
	grey, coarse SANDSTONE. Weak. Moderately thickly bedded. 13.4m: Slightly weathered, grey, SILTSTONE. Very weak. 14.3m: Slightly weathered,	9,7,6, 8,7,10 N=31					- 10 14	**************************************	100		13.34 to 13.37m: J, 30°, Ud, Sm, Cg	
RMATION	grey, fine to coarse SANDSTONE. Very weak. Weakly cemented. Very thickly bedded.	ss 18,12,17, 23,10 for 25mm N>50	SPT				 		100 [95]			
EAST COAST BAYS FORMATION		sc 14.36 for 55mm N>50					- 10 17 		[100] 0 22 [22]		16.28 to 16.85m: Recovered as silty fine to medium SAND; grey. Slightly packed. 16.65m: DB, 3 No.	
	18.28m: SW, grey, fine to medium SANDSTONE. EW. Moderately thickly bedded. 18.6m: Slightly weathered, grey, SILTSTONE, Very weak.	9.18,30, 20 for 55mm N>50	HQ3			[7	- - - - - - - - - - - - - - - - - - -	**************************************	0 100 [71]		18.28m: Recovered as silty fine to medium SANI grey. Loosely packed. 18.35 to 18.6m: Becomes very weak.);
-	or explanation of symbols and obs		SPT		RELATI	III -	- - - - - - - RENGT	I XXXXXX	0 VEATHE		19.4 to 19.9m: Thin fine to medium SAND bed. Date logged 29/09/2022 Driller	
	LUID DEPTHS AND DRILLINate Time Drilled Depth	NG PROGRESS		oth	Rem 50 n	rery weak extremely narks nm sta	y strong weak andpi	sw -s ww -n Hw -n cw -c	ırvey [eathered y weathered y weathered y weather r insta	Logged FK Checked GP Alled on completion. McMilla Started 27/09/2 Finished 29/09/2 Drill Rig N119	2022
D	and Held Shear Vane R1980: 19mm blade: Calibrated Jun 2022: Correction Factor: 1.876 ne shear strength per NZGS guideline				2000	0 / Ne	ew Ze	aland V	ertical	Datu	m 2016 Core Box	



HOLE IDENTIFICATION

DH309_P

Client Auckland Transport
Project Eastern Busway

Project number 60644113

2021 EB DRILLHOLE LOG 2022-06-27 IR FIELD FILE (DH'S, HA'S).GPJ BASE.GDT 02/12/22

Co-ordinates 411582.05mE 795072.05mN

Orientation -90° Elevation 8.195m

Location 209 Burswood Dr, Pakuranga

Feature Bridge/Embankment Design

D	SEOLOGICAL SCRIPTION Weathering, Colour, Fabric, ROCK NAME. Strength, Discontinuities, Lithological Features bedding, foliation, mineralogy, cement, etc).	Test Records Shear SPT Vane/ N Values SPT 0-50	Drilling Method Casing remarks	Core Loss/Lift	s Relative	sw Rock hw Weathering Depth	Graphic Log	TCR [RQD] (%)	500 Spacing of Natural Defects	SOIL PROPERTIES Subordinate MAJOR minor; colour, structure. Strength, n grading, bedding, plasticity, sensitivity, major fraction des fraction description, minor fraction description, additional information, etc DEFECT DESCRIPTION (Joints, Bedding Seams, Shatter, Shear and Crus Schistosity, Attitude, Spacing, continuity, roughne		Instrumentation
			HQ3				X X X X X X X X X X X X X X X X X X X	100 [85]		21.03 to 21.2m; DB, 3 No.		
			HQ3			- - - - 	**************************************	100 [67]		21.2 to 21.7m: , Drilling disturbed 21.9 to 22.0m: Thin fine to medium SAND bed	d.	
			HQ3				XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX	100 [100]		22.5 to 24.45m: DB, Broken during handlir	ng	
EAST COAST BAYS FORMATION	24.3m: Slightly weathered, light grey, fine to medium SANDSTONE. Very weak. Weakly cemented. Very thickly bedded.		HQ3			- - 	× × × × × × × × × × × × × × × × × × ×	100 [75]		24.9 to 27.5m: DB, sub-horizontal, 19 No.		
EAST C	26.65m: SW, light grey, fine to medium SANDSTONE. \ \ Moderately strong, Well /		HQ3			-		100 [100]		26.65 to 26.85m: J, 80°, Ud, Sm		
	cemented. 27.0m: Slightly weathered, light grey, fine to medium SANDSTONE. Extremely weak. Very thickly bedded.					- - - - 		77 [67]		27.55 to 27.85m: Core Loss: 27.9 to 29.72m: DB, 10 No.		
	29.0m: SW, light grey, SILTSTONE. VW. 29.25m: SW, light grey, fine to medium SANDSTONE. VW. Well cemented.		HQ3			- - - - - - - 	X X X X X X X X X X X X X X X X X X X	100 [100]				
F	L For explanation of symbols and obs LUID DEPTHS AND DRILLII ate Time Drilled Depth		S (m)	epth	VS - \ S - S MS - M W - V	VE STRENG Very strong Strong Moderately stron Veak Very weak Extremely weak	UW - SW - MW - HW -	Highly we	red eathered v weathere	Logged FK Sta	iller McMillan arted 27/09/2022 nished	<u>o o</u>
	Hand Held Shear Vane DR1980: 19mm blade: Calibrated Jun 20 vane shear strength per NZGS gui		r: 1.876		50 r Hor		ertical S	urvey l	Datum	Illed on completion. Dri s: NZGD2000 - Mount Eden n 2016 Co	29/09/2022 ill Rig N119 ore Boxes 9	



HOLE IDENTIFICATION

DH309_P

Client Auckland Transport
Project Eastern Busway

Project number 60644113

2021 EB DRILLHOLE LOG 2022-06-27 IR FIELD FILE (DH'S, HA'S).GPJ BASE.GDT 02/12/22

Co-ordinates 411582.05mE 795072.05mN

Orientation -90° Elevation 8.195m

Location 209 Burswood Dr, Pakuranga
Feature Bridge/Embankment Design

Paragination of symbols and observations, see key sheer FLUID DEPTHS AND DRILLING PROGRESS (in) Date Time Drilled Depth Classing Depth Fluid Depth Fluid Depth Fluid Depth Classing Depth Fluid Depth Pluid Depth Classing Depth Pluid Depth Pluid Depth Classing Depth Pluid Depth Pluid Depth Classing Depth Pluid Depth Pluid Depth Classing Depth Pluid Depth Pluid D	GEOLOGICAL DESCRIPTION Weathering, Colour, Fabric, ROCK NAME. Strength, Discontinuities, Lithological Features (bedding, foliation, mineralogy, cement, etc).	Test Records Shear SPT Vane/ N Values SPT 0-50	S Relative WW Strength WW Weathering Depth	Graphic Log Graphic Log Graphic Log Graphic Log Matural Defects	SOIL PROPERTIES Subordinate MAJOR minor; colour, structure. Str grading, bedding, plasticity, sensitivity, major frac fraction description, minor fraction description, ac information, etc DEFECT DESCRIPTION (Joints, Bedding Seams, Shatter, Shear a Schistosity, Attitude, Spacing, continuity,	tion description, subordinate ditional structures, additional	Instrumentation
FLUID DEPTHS AND DRILLING PROGRESS (m) Date Time Drilled Depth Casing Depth Fluid Depth VS - Very strong S - Strong MS - Moderately strong W - Silghtly weathered MS - Moderately weathered MS - Mode	light grey, SILTSTONE. Very weak.				DH309_P terminated at 30m Depth Criteria Achieved		
Remarks 50 mm standpipe piezometer installed on completion. Hand Held Shear Vane Remarks 50 mm standpipe piezometer installed on completion. Horizontal / Vertical Survey Datums: NZGD2000 - Mount Eden 2000 / New Zealand Vertical Datum 2016 Core Boxes 9			S - Strong MS - Moderately strong W - Weak VW - Very weak	SW - Slightly weathered MW - Moderately weathered HW - Highly weathered	Logged FK	McMillan Started 27/09/2022	
I DIVIDUO, IDININ DIQUO, CANDIACCU JUII 2022, CONCUIDI I ACIOI, 1.070		022: Correction Factor: 1 876	50 mm standpipe	ical Survey Datums:	: NZGD2000 - Mount Eden	29/09/2022 Drill Rig N119)

Project Eastern Busway

Location 209 Burswood Dr, Pakuranga

HOLE DH309_P



Box: 1 of 9 - Depth: P\DH309_P 00.00m to 04.50m of 30.00m Date Drilled 27/09/2022 to 29/09/2022 - Date Photographed: 27/09/2022



Box: 2 of 9 - Depth: P\DH309_P 04.50m to 07.40 (Please retake)m of 30.00m Date Drilled 27/09/2022 to 29/09/2022 - Date Photographed: 27/09/2022

Project Eastern Busway

Location 209 Burswood Dr, Pakuranga

HOLE IDENTIFICATION DH309_P



Box: 3 of 9 - Depth: P\DH309_P 07.40m to 10.95m of 30.00m Date Drilled 27/09/2022 to 29/09/2022 - Date Photographed: 27/09/2022



Box: 4 of 9 - Depth: P\DH309_P 10.95m to 14.10m of 30.00m
Date Drilled 27/09/2022 to 29/09/2022 - Date Photographed: 27/09/2022

Project Eastern Busway

Location 209 Burswood Dr, Pakuranga

HOLE IDENTIFICATION DH309_P



Box: 5 of 9 - Depth: P\DH309_P 14.10m to 16.65m of 30.00m Date Drilled 27/09/2022 to 29/09/2022 - Date Photographed: 29/09/2022



Box: 6 of 9 - Depth: P\DH309_P 16.65m to 21.00m of 30.00m
Date Drilled 27/09/2022 to 29/09/2022 - Date Photographed: 29/09/2022