

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**
 Feature **Bridge Abutment/Pier**

GEOLOGICAL DESCRIPTION <small>Weathering, Colour, Fabric, ROCK NAME. Strength, Discontinuities, Lithological Features (bedding, foliation, mineralogy, cement, etc).</small>	Test Records		Drilling Method <small>Casing remarks</small>	Core Loss/Lift	Relative Strength	Rock Weathering	Depth	Graphic Log	TCR [RQD] (%)	Spacing of Natural Defects (mm)	SOIL PROPERTIES <small>Subordinate MAJOR minor: colour, structure, Strength, moisture condition, grading, bedding, plasticity, sensitivity, major fraction description, subordinate fraction description, minor fraction description, additional structures, additional information, etc</small>	Instrumentation
	Shear Vane/ SPT	SPT N Values									DEFECT DESCRIPTION <small>(Joints, Bedding Seams, Shatter, Shear and Crush Zones, Foliation, Schistosity, Attitude, Spacing, continuity, roughness, infilling, etc.)</small>	
EAST COAST BAYS FORMATION 20.0m: Slightly weathered, grey, fine to coarse SANDSTONE. Very weak.			HQ3		MS	SW	21		100 [100]		20.0m: DB, 0°	
			HQ3		MS	SW	22		100 [100]		20.9m: DB, 0° 21.0 to 22.5m: Recovered as silty fine to medium SAND. Flush very silty with core stuck to the split.	
							23				DH307 terminated at 22.5m Depth Criteria Achieved	
							24					
							25					
							26					
							27					
							28					
							29					
For explanation of symbols and observations, see key sheet FLUID DEPTHS AND DRILLING PROGRESS (m) Date Time Drilled Depth Casing Depth Fluid Depth			RELATIVE STRENGTH VS - Very strong S - Strong MS - Moderately strong W - Weak VW - Very weak EW - Extremely weak		WEATHERING UW - Unweathered SW - Slightly weathered MW - Moderately weathered HW - Highly weathered CW - Completely weathered		Date logged 23/06/2022 Logged IR Checked GP		Driller McMillan Started 23/06/2022 Finished 23/06/2022 Drill Rig N119 Core Boxes 7		Page 3 of 7	
Hand Held Shear Vane DR1980: 19mm blade: Calibrated Jun 2022: Correction Factor: 1.876 vane shear strength per NZGS guideline			Remarks Hole backfilled with grout upon completion. Horizontal / Vertical Survey Datums: NZGD2000 - Mount Eden 2000 / New Zealand Vertical Datum 2016									

2021 EB DRILLHOLE LOG 2022-08-04 MASTER.GPJ BASE.GDT 04/08/22



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



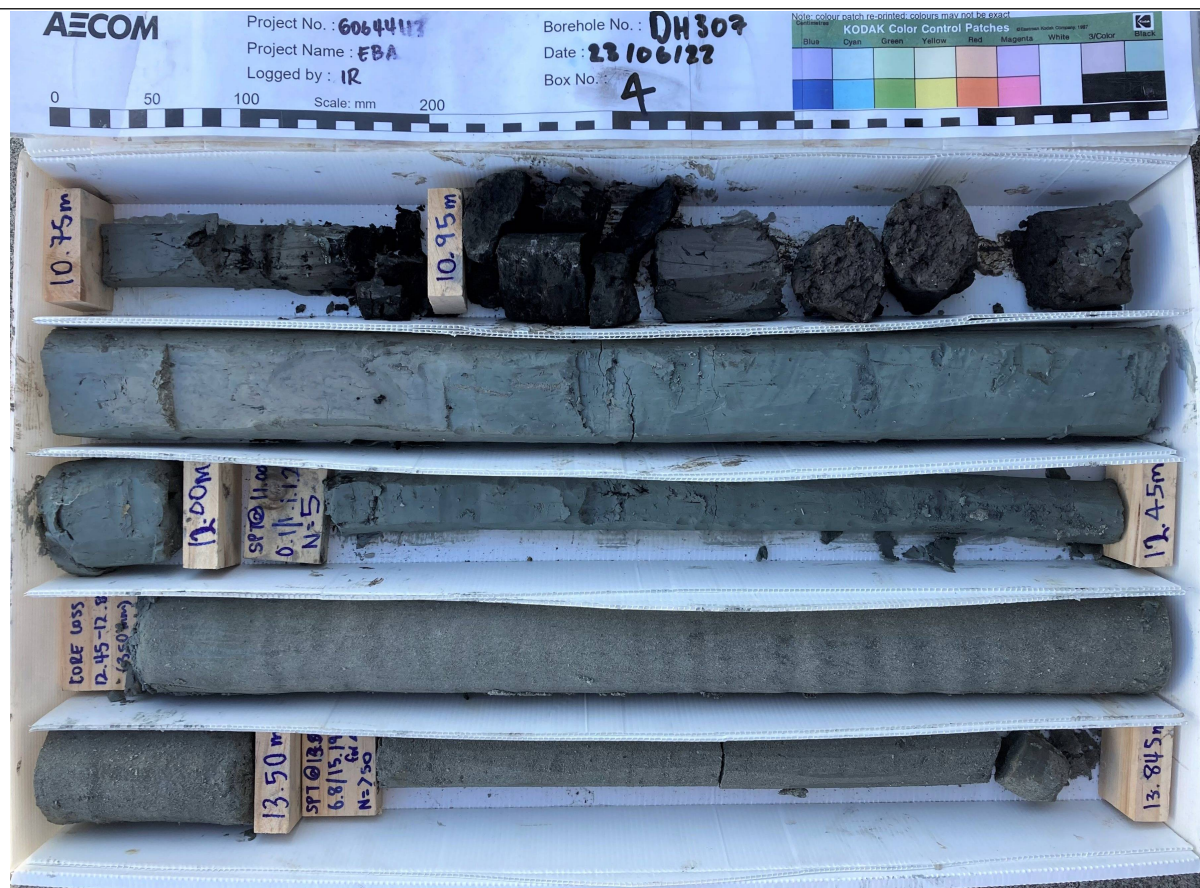
Box: 2 of 7 - Depth: 04.50m to 07.60m of 22.50m

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



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

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



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

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



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

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

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
 Feature Bridge Abutment

GEOLOGICAL DESCRIPTION		Test Records		Drilling Method	Core Loss/Lift	Relative Strength	Rock Weathering	Depth	Graphic Log	TCR [RQD] (%)	Spacing of Natural Defects (mm)	SOIL PROPERTIES		Instrumentation
Weathering, Colour, Fabric, ROCK NAME. Strength, Discontinuities, Lithological Features (bedding, foliation, mineralogy, cement, etc).		Shear Vane/ SPT	SPT N Values	Casing remarks	0-100%	MS, W, V, VW	SW, MW, HW, CW				400, 300, 200, 100, 50	Subordinate MAJOR minor: colour, structure, Strength, moisture condition, grading, bedding, plasticity, sensitivity, major fraction description, subordinate fraction description, minor fraction description, additional structures, additional information, etc		
			0-50									DEFECT DESCRIPTION (Joints, Bedding Seams, Shatter, Shear and Crush Zones, Foliation, Schistosity, Attitude, Spacing, continuity, roughness, infilling, etc.)		
FILL				VAC EX						0		0.0m: Vacuum excavation 0.0 to 0.15m: Concrete (car park). 0.15 to 0.75m: Silty fine to coarse GRAVEL with some cobbles and boulders. Densely packed, moist. Gravel, cobbles and boulders are subangular basalt.		
AUCKLAND VOLCANIC FIELD				HQ3				1		100 [100]		1.5 to 2.22m: J, 80°, Ud, Ro, Sn, Fe		
0.75m: SW, dark grey, BASALT. Moderately strong. Highly vesicular (<20%), vesicles typically 5-10mm and up to 60mm. Some iron staining in vesicles.				HQ3				2		88 [59]		1.95m: 114mm diameter HWT casing to 1.95m. 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 2.27 to 2.46m: J, 85°, Ud, Ro, Sn, Fe 2.46 to 2.49m: J, 20°, Ud, Ro, MN, P, Cl, Stn, Fe. 2.46 to 2.78m: J, 70°, Ud, Ro, Sn, Fe		2.56
1.7m: Slightly weathered, vesicular, dark grey, BASALT. Strong. Slightly vesicular (<2%). Vesicles up to 5mm.				HQ3				3						
4.45 to 4.75m: Slightly vesicular (<5%).				HQ3				4		100 [100]		4.23 to 4.35m: J, 60°, Ud, Ro, Sn, Fe 4.24 to 4.36m: J, 60°, Ud, Ro, Sn, Fe 4.5 to 4.58m: J, 60°, Ud, Ro, Sn, Fe 4.58 to 4.66m: J, 55°, Ud, Ro, VN, Sn, Fe		4.59
TAURANGA GROUP		UTP		HQ3				5		100 [18]		4.75m: Silty CLAY with trace organics; brown mottled orange. Very stiff, moist, high plasticity. 5.3 to 5.6m: Pinkish grey mottled orange.		5.54
4.75m: ALLUVIUM comprising clay, silt, peat and sand.		128/41 ss 1,1,1, 1,2,3 N=7		SPT				6		100		7.3m: CLAY; bluish grey with some orange mottling. Stiff, moist, high plasticity.		
		188/35 ss 1,1,1, 1,2,2 N=6		HQ3				7		100		8.1 to 8.15m: Clayey fine SAND. 8.15m: Silty CLAY with some fine sand; bluish grey. Firm, moist, high plasticity.		
		47/15 ss 0,0,1, 1,0,0 N=2		SPT				8		100		9.5 to 9.8m: Micaceous fine sandy SILT lenses.		
				HQ3				9		100				
				PT										
				SPT										

For explanation of symbols and observations, see key sheet

FLUID DEPTHS AND DRILLING PROGRESS (m)			
Date Time	Drilled Depth	Casing Depth	Fluid Depth
17/06/2022 16:30	07.95	2.0	2.56
20/06/2022 07:00	07.95	2.0	4.59
20/06/2022 15:45	27.00	2.0	5.45
21/06/2022 07:00	27.00	2.0	5.5

RELATIVE STRENGTH	WEATHERING
VS - Very strong	UW - Unweathered
S - Strong	SW - Slightly weathered
MS - Moderately strong	MW - Moderately weathered
W - Weak	HW - Highly weathered
VW - Very weak	CW - Completely weathered
EW - Extremely weak	

Date logged 20/06/2022
 Logged IR/GS
 Checked GP

Driller McMillan
 Started 17/06/2022
 Finished 20/06/2022
 Drill Rig N119
 Core Boxes 10
 Page 1 of 8

Remarks
 Flush 50 mm standpipe piezometer installed on completion.
 DR1980: 19mm blade: Calibrated Jun 2022: Correction Factor: 1.876 used for hand shear vane measurements 9.0m and deeper.
 Horizontal / Vertical Survey Datums: NZGD2000 - Mount Eden 2000 / New Zealand Vertical Datum 2016

Hand Held Shear Vane
 DR2272: 19mm blade: Calibrated 02/22: Correction Factor = 1.595
 vane shear strength per NZGS guideline

2021 EB DRILLHOLE LOG 2022-08-04 MASTER.GPJ BASE.GDT 07/08/22

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
 Feature Bridge Abutment

GEOLOGICAL DESCRIPTION <small>Weathering, Colour, Fabric, ROCK NAME. Strength, Discontinuities, Lithological Features (bedding, foliation, mineralogy, cement, etc).</small>	Test Records		Drilling Method <small>Casing remarks</small>	Core Loss/Lift	Relative Strength	Rock Weathering	Depth	Graphic Log	TCR [RQD] (%)	Spacing of Natural Defects (mm)	SOIL PROPERTIES <small>Subordinate MAJOR minor: colour, structure. Strength, moisture condition, grading, bedding, plasticity, sensitivity, major fraction description, subordinate fraction description, minor fraction description, additional structures, subordinate information, etc</small>	Instrumentation
	Shear Vane/ SPT	SPT N Values 0 - 50									DEFECT DESCRIPTION <small>(Joints, Bedding Seams, Shatter, Shear and Crush Zones, Foliation, Schistosity, Attitude, Spacing, continuity, roughness, infilling, etc.)</small>	
TAURANGA GROUP	38/11		HQ3						100		8.15m: Silty CLAY with some fine sand; bluish grey. Firm, moist, high plasticity. (continued)	[Instrumentation symbols]
			PT						100		10.5m: Water return in basalt. No return in alluvium.	
	ss 1.0,1, 1.2,3 N=7		SPT						100		10.75m: Fibrous PEAT; black. Firm, moist, moderately decomposed wood fragments.	
			HQ3						100		11.0m: Organic CLAY; brown. Firm, moist, high plasticity.	
	131/38 ss 0,1,1, 1,2,1 N=5		SPT						100		11.2m: CLAY with trace indistinct organics; light bluish grey. Very stiff, moist, high plasticity.	
			HQ3						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.		HQ3						100		12.6m: Fine to medium SAND; grey.	
	13.35m: HW, grey, SILTSTONE. EW. 13.6m: MW, grey, fine SANDSTONE. Very weak.	225* ss 3,8,12, 15,16,7 for 25mm N>50	SPT						100		13.35m: Clayey SILT with trace fine siltstone gravel; grey	
	13.9m: Slightly weathered, grey, SILTSTONE. Very weak.		HQ3						100		13.9m: Gently inclined very thinly to moderately thinly bedded. 13.9 to 15m: DB, 5°, 6 No.	
	14.53m: Slightly weathered, grey, fine SANDSTONE. Very weak.		SPT						100		15.35 to 16.5m: DB, 0°, 3 No. 15.4 to 15.5m: Fine sandy SILTSTONE.	
EAST COAST BAYS FORMATION	15.3m: Slightly weathered, grey, SILTSTONE. Very weak. Gently inclined, very to moderately thinly bedded.	9,14,18, 20,12 for 50mm N>50	SPT						100		16.02m: BP, 5°, VN, C, Slt 16.15 to 16.35m: Very thin silt beds.	[Instrumentation symbols]
	16.1m: Slightly weathered, grey, thickly bedded, fine to medium SANDSTONE. Very weak.	sc 15,35 for 70mm N>50	SPT						0		17.4 to 17.55m: Recovered as silty fine to medium SAND.	
			HQ3						100	[73]	18.2 to 18.93m: Recovered as fine SAND. 19.25 to 19.5m: DB, 5°, 4 No.	
	18.2 to 18.93m: Extremely weak.	sc 16,34 for 45mm N>50	SPT						75		18.93 to 19.06m: SILTSTONE bed. 19.2m: Very thin carbonaceous bed.	
			HQ3						100	[12]		
			SPT									
			HQ3									
			SPT									
			HQ3									
For explanation of symbols and observations, see key sheet			RELATIVE STRENGTH		WEATHERING		Date logged 20/06/2022		Driller McMillan			
FLUID DEPTHS AND DRILLING PROGRESS (m) Date Time Drilled Depth 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 Checked GP		Started 17/06/2022			
Hand Held Shear Vane DR2272: 19mm blade: Calibrated 02/22: Correction Factor = 1.595 vane shear strength per NZGS guideline			Remarks Flush 50 mm standpipe piezometer installed on completion. DR1980: 19mm blade: Calibrated Jun 2022: Correction Factor: 1.876 used for hand shear vane measurements 9.0m and deeper.						Finished 20/06/2022			
			Horizontal / Vertical Survey Datums: NZGD2000 - Mount Eden 2000 / New Zealand Vertical Datum 2016						Drill Rig N119 Core Boxes 10			
									Page 2 of 8			

2021 EB DRILLHOLE LOG 2022-08-04 MASTER.GPJ BASE.GDT 07/08/22

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
 Feature Bridge Abutment

GEOLOGICAL DESCRIPTION <small>Weathering, Colour, Fabric, ROCK NAME. Strength, Discontinuities, Lithological Features (bedding, foliation, mineralogy, cement, etc.)</small>	Test Records		Drilling Method <small>Casing remarks</small>	Core Loss/Lift	Relative Strength	Rock Weathering	Depth	Graphic Log	TCR [RQD] (%)	Spacing of Natural Defects (mm)	SOIL PROPERTIES	Instrumentation	
	Shear Vane/ SPT	SPT N Values									Subordinate MAJOR minor: colour, structure. Strength, moisture condition, grading, bedding, plasticity, sensitivity, major fraction description, subordinate fraction description, minor fraction description, additional structures, additional information, etc		
EAST COAST BAYS FORMATION 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, grey, fine SANDSTONE. Very weak. 22.3m: Slightly weathered, grey, SILTSTONE. Very weak. 22.67m: Slightly weathered, grey, thickly bedded, fine SANDSTONE. Very weak. 26.7 to 27.0m: Siltstone			HQ3						100 [90]		21.0 to 22.5m: DB, 0°, 2 No. 21.05 to 21.15m: Recovered as subangular SILTSTONE gravel. 21.2m: SILTSTONE clast, 50mm long. 22.3 to 22.4m: Thinly laminated. 22.5m: Subrounded SILTSTONE clast, 20mm. 23.5 to 25.5m: Subhorizontal, thinly to moderately thinly bedded with thin laminations or partings of mudstone. Drilling breaks infilled with mud. 25.5 to 27m: DB, 0°, 4 No. 26.7 to 27.0m: Thinly laminated.		
			HQ3						100 [93]				
			HQ3							100 [67]			
			HQ3							100 [25]			
			HQ3							100 [100]			
			HQ3										
DH308 terminated at 27.0m Depth Criteria Achieved													
For explanation of symbols and observations, see key sheet					RELATIVE STRENGTH		WEATHERING		Date logged 20/06/2022		Driller McMillan Started 17/06/2022 Finished 20/06/2022 Drill Rig N119 Core Boxes 10		
FLUID DEPTHS AND DRILLING PROGRESS (m) Date Time Drilled Depth 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 Checked GP				
Hand Held Shear Vane DR2272: 19mm blade: Calibrated 02/22: Correction Factor = 1.595 vane shear strength per NZGS guideline					Remarks Flush 50 mm standpipe piezometer installed on completion. DR1980: 19mm blade: Calibrated Jun 2022: Correction Factor: 1.876 used for hand shear vane measurements 9.0m and deeper. Horizontal / Vertical Survey Datums: NZGD2000 - Mount Eden 2000 / New Zealand Vertical Datum 2016								
Page 3 of 8													

2021 EB DRILLHOLE LOG 2022-08-04 MASTER.GPJ BASE.GDT 07/08/22



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



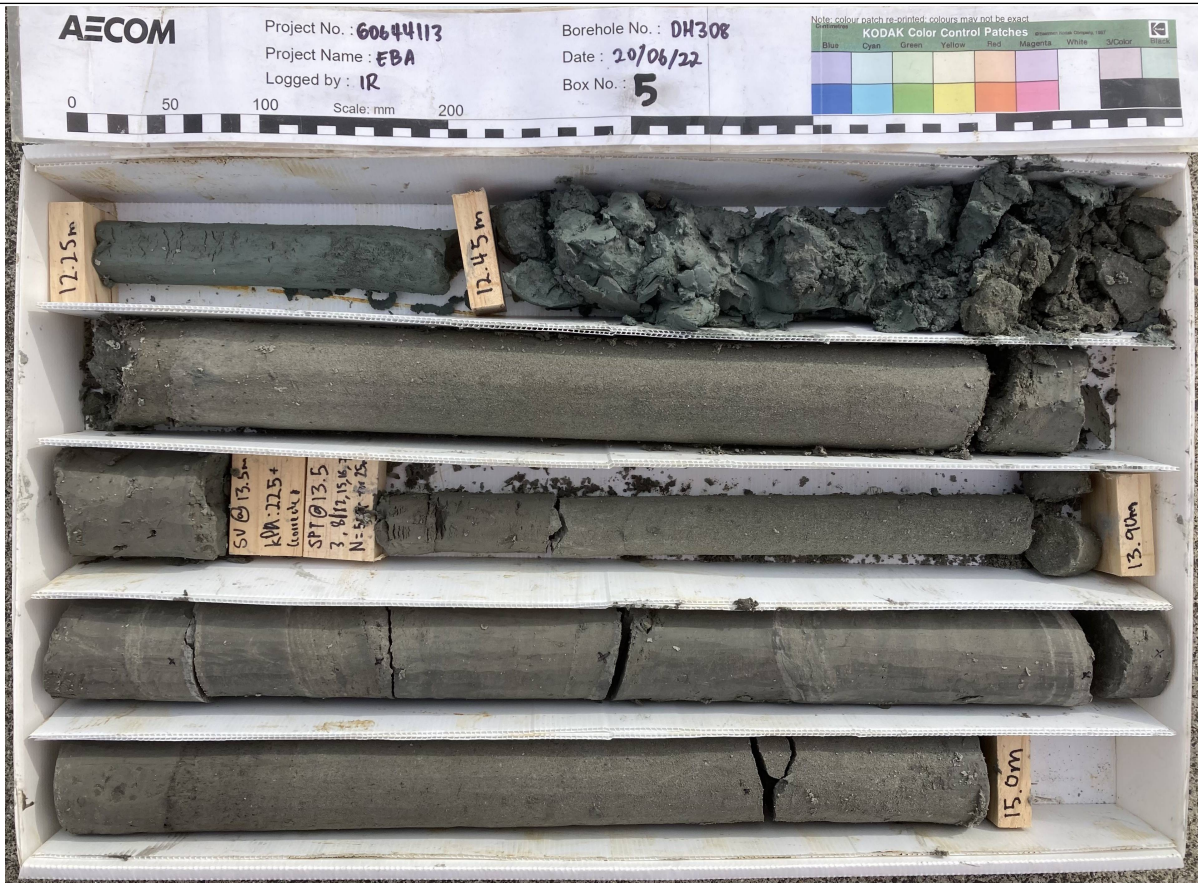
Box: 2 of 10 - Depth: 03.10m to 05.90m of 27.00m
 Date Drilled 17/06/2022 to 20/06/2022 - Date Photographed: 17/06/2022



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



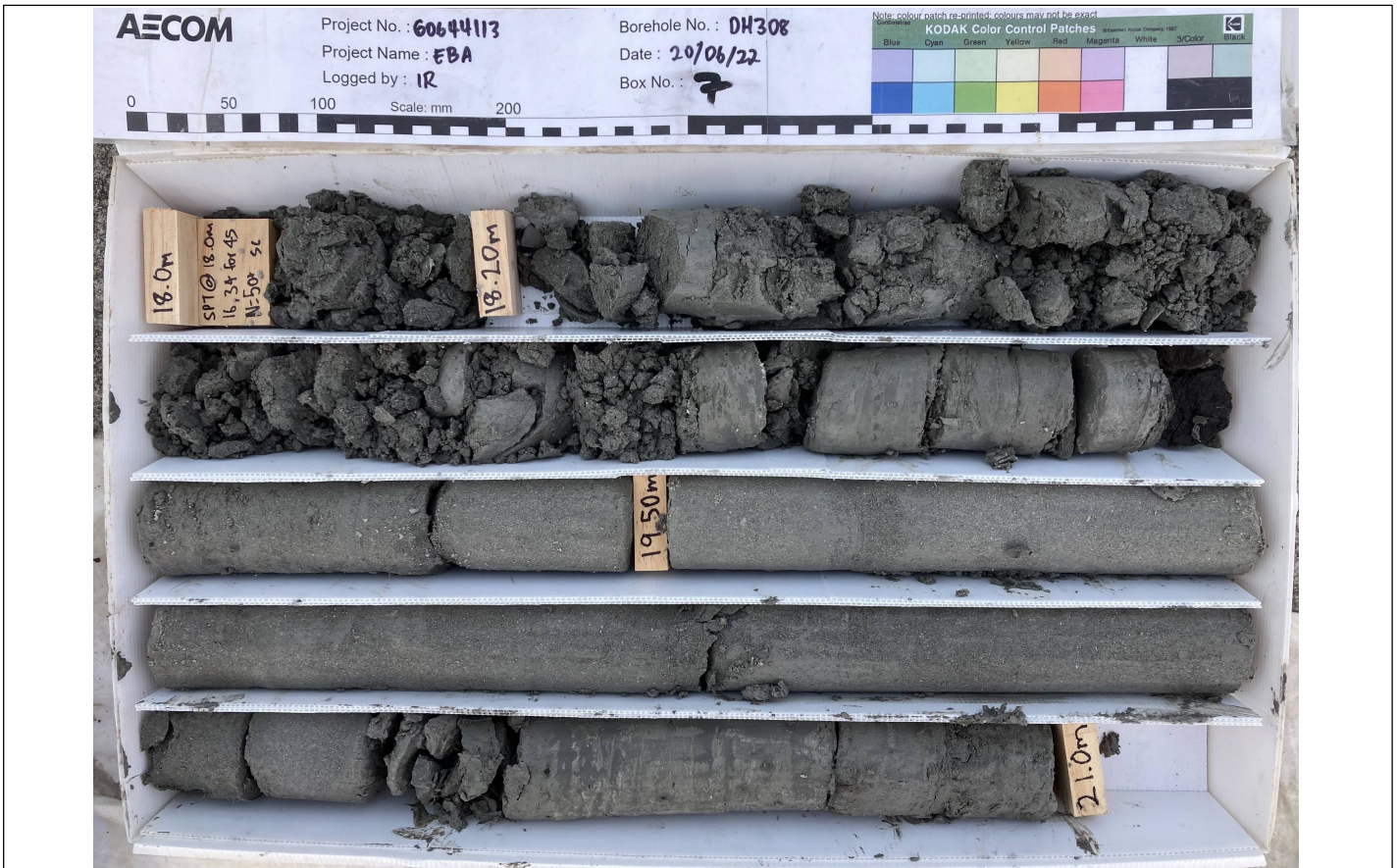
Box: 4 of 10 - Depth: 08.75m to 12.25m of 27.00m
 Date Drilled 17/06/2022 to 20/06/2022 - Date Photographed: 20/06/2022



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
 Date Drilled 17/06/2022 to 20/06/2022 - Date Photographed: 20/06/2022



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

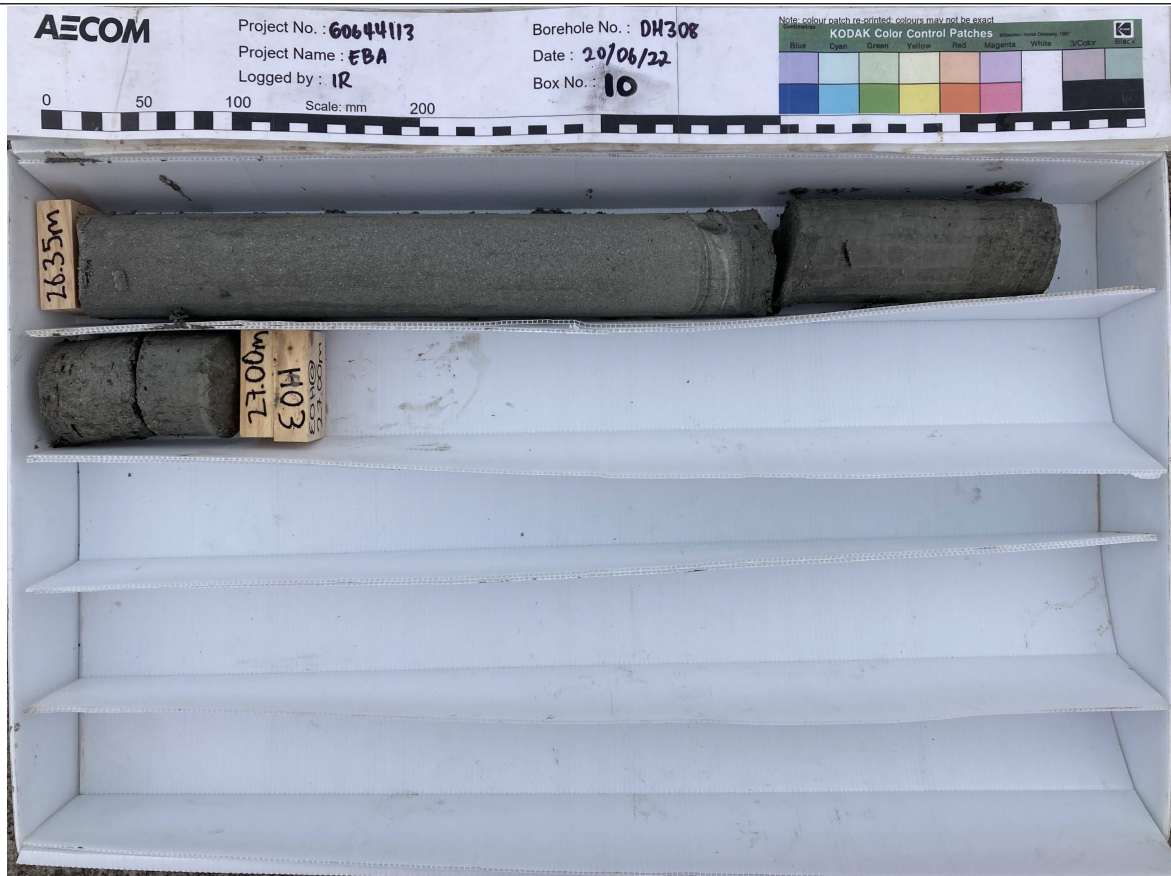


Box: 8 of 10 - Depth: 21.00m to 23.65m of 27.00m
 Date Drilled 17/06/2022 to 20/06/2022 - Date Photographed: 20/06/2022



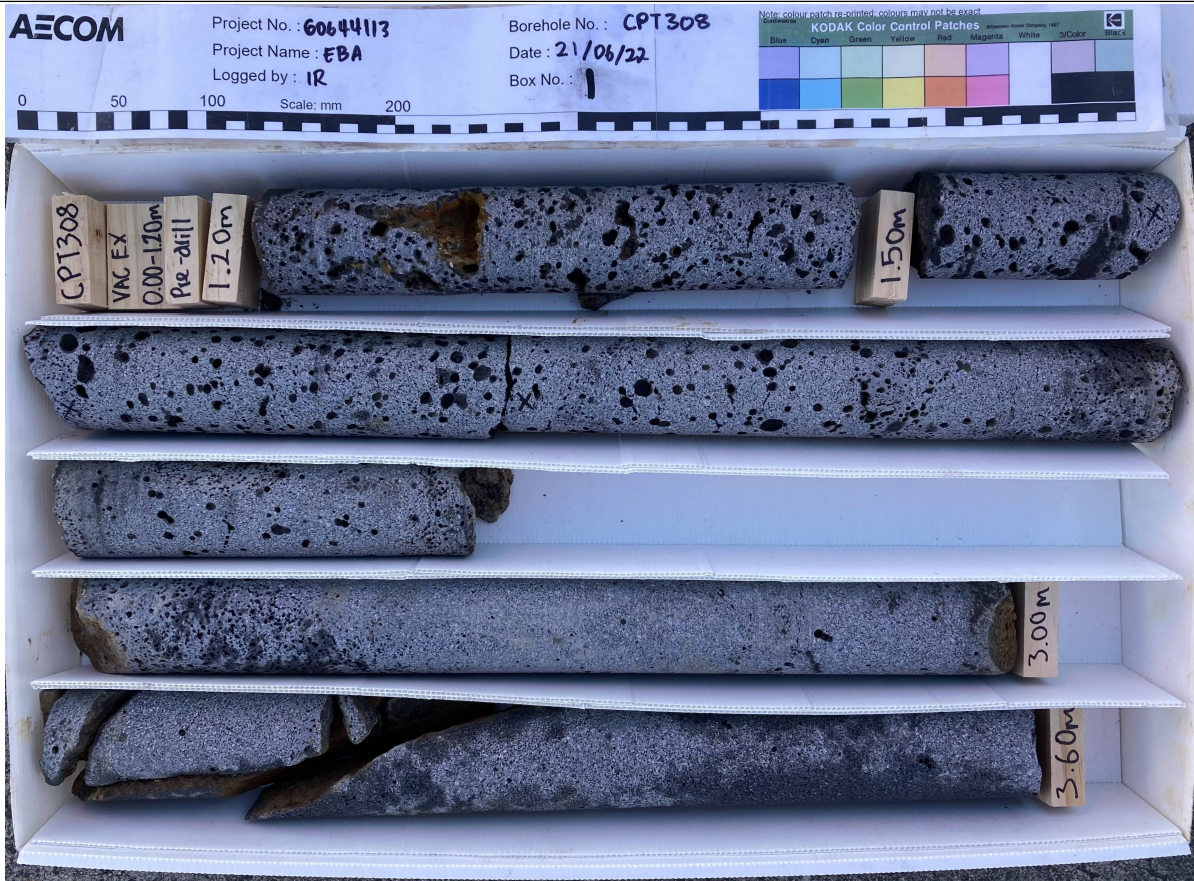
Box: 9 of 10 - Depth: 23.65m to 26.35m of 27.00m

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

Date Drilled 17/06/2022 to 20/06/2022 - Date Photographed: 20/06/2022



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

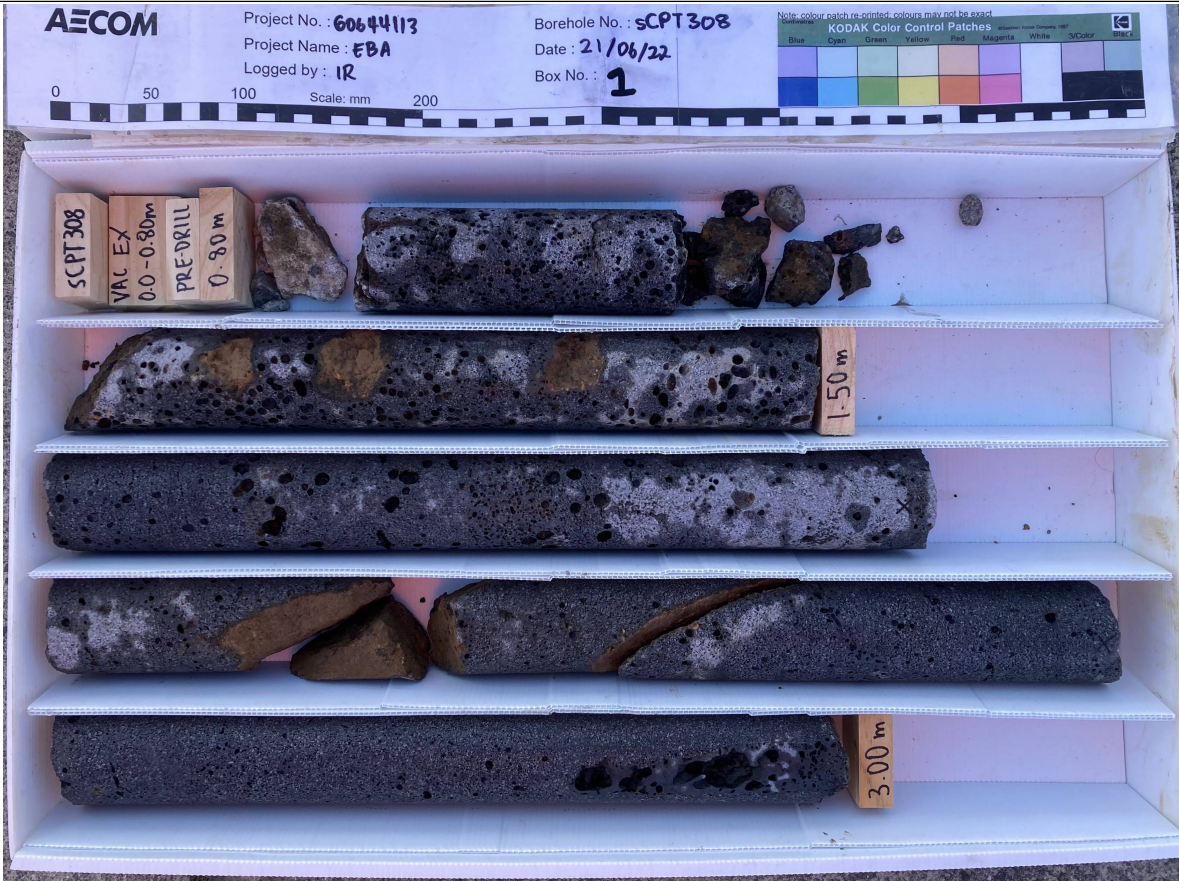
Date Drilled 21/06/2022 to 21/06/2022 - Date Photographed: 21/06/2022

Client 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
 Feature Bridge Abutment

GEOLOGICAL DESCRIPTION		Test Records		Drilling Method		Core Loss/Lift	Relative Strength	Rock Weathering	Depth	Graphic Log	TCR [RQD] (%)	Spacing of Natural Defects (mm)	SOIL PROPERTIES		Instrumentation
Weathering, Colour, Fabric, ROCK NAME. Strength, Discontinuities, Lithological Features (bedding, foliation, mineralogy, cement, etc).		Shear Vane/ SPT	SPT N Values	Casing remarks	0-100%								MS W	VW	
AUCKLAND VOLCANIC FIELD	0.0m: FILL.		0-50	VAC EX							0		0.0m: Vacuum excavation not witnessed.		
	0.8m: Slightly weathered, grey speckled light grey, BASALT. Moderately strong. Moderately vesicular, up to 50mm. Iron staining in some vesicles.			HQ3					1		100 [86]		0.8 to 5.1m: Used 2m3 of water. 1.08m: J, 52°, Ud, Ro, N, Sn, Fe & Slt		
	2.0m: Becomes slightly vesicular. Vesicles up to 10mm.			HQ3					2		100 [100]		2.17m: J, 10°, Ud, Ro, N, Sn, Fe & Slt 2.1 to 2.2m: J, 60°, Ud, Ro, N, Sn, Fe & Slt 2.3 to 2.4m: J, 80°, Ud, Ro, N, Sn, Fe & Slt		
	2.87 to 2.96m: Vesicles up to 50mm. 3.05 to 5.0m: Strong. Vesicles up to 5mm.			HQ3					3		100 [100]		3.1m: J, 45°, Ud, Ro, N, Sn, Fe 3.12 to 3.24m: J, 60°, Ud, Ro, N, Sn, Fe 3.23 to 3.36m: J, 80°, Ud, Ro, N, Sn, Fe		
	5.0m: ALLUVIUM comprising silt and clay.			HQ3					4		100 [100]		3.9 to 5m: J, 90°, Ud, Ro, MN, C, Cl & Fe, some infill washed out.		
									5		100 [100]		5.0m: Silty CLAY; greyish brown. Moist, firm, high plasticity.		
									6				DH-sCPT308 terminated at 5.1m Depth Criteria Achieved		
									7						
									8						
									9						
For explanation of symbols and observations, see key sheet				RELATIVE STRENGTH		WEATHERING		Date logged 21/06/2022		Driller McMillan					
FLUID DEPTHS AND DRILLING PROGRESS (m) Date Time Drilled Depth 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 Checked GP		Started 21/06/2022		Finished 21/06/2022		Drill Rig N119	
Hand Held Shear Vane				Remarks Drilling through basalt to form starter hole; investigation continued with seismic cone penetration test. Piezometer installed upon completion of sCPT. No groundwater encountered.						Core Boxes 2					
vane shear strength per NZGS guideline				Horizontal / Vertical Survey Datums: NZGD2000 - Mount Eden 2000 / New Zealand Vertical Datum 2016										Page 1 of 2	

2021 EB DRILLHOLE LOG 2022-08-04 MASTER.GPJ BASE.GDT 04/08/22



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

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

Client Auckland Transport
 Project Eastern Busway
 Project number 60644113

Co-ordinates 411582.05mE 795072.05mN
 Orientation -90° Elevation 8.195m
 Location 209 Burswood Dr, Pakuranga
 Feature Bridge/Embankment Design

GEOLOGICAL DESCRIPTION <small>Weathering, Colour, Fabric, ROCK NAME. Strength, Discontinuities, Lithological Features (bedding, foliation, mineralogy, cement, etc).</small>	Test Records		Drilling Method <small>Casing remarks</small>	Core Loss/Lift <small>0-100%</small>	Relative Strength <small>MS MS W VW</small>	Rock Weathering <small>SW MW HW</small>	Depth	Graphic Log	TCR [RQD] (%)	Spacing of Natural Defects (mm)	SOIL PROPERTIES <small>Subordinate MAJOR minor: colour, structure, Strength, moisture condition, grading, bedding, plasticity, sensitivity, major fraction description, subordinate fraction description, minor fraction description, additional structures, additional information, etc</small>	Instrumentation
	Shear Vane/ SPT	SPT N Values 0 - 50									DEFECT DESCRIPTION <small>(Joints, Bedding Seams, Shatter, Shear and Crush Zones, Foliation, Schistosity, Attitude, Spacing, continuity, roughness, infilling, etc.)</small>	
FILL 0.0m: FILL comprising clay, silt and fine to coarse gravel.	143/34		VAC EX				1		0		0.0m: Silty CLAY with some fine to coarse gravel; light brown. Very stiff, moist, high plasticity. Gravel comprises slightly weathered, subangular, BASALT. (Noted during hyro-excavation)	
	105/23											
TAURANGA GROUP 1.1m: ALLUVIUM comprising clay, silt, fine sand and organics.	111/17						1				1.1m: Silty CLAY; blueish grey. Very stiff, moist, high plasticity. 1.6 to 1.7m: Minor organic flecks, black. Becomes stiff. 2.5 to 3.05m: Some brown mottling. 3.05 to 4.95m: Greyish brown. 4.95m: Blueish grey. 7.2m: Becomes firm. 8.0m: Silty CLAY; blueish grey. Soft to very soft, moist, high plasticity.	
	158/90						2		100			
	161/21 SS 1, 1, 2 2, 2, 3 N=9		SPT				2		100			
			HQ3				3		100			
	116/23 SS 0, 1, 1, 1, 1, 1 N=4		SPT				3		100			
			HQ3				4		100			
	70/20 SS 0, 0, 1, 1, 2, 1 N=5		SPT				5		100			
			HQ3				6		100			
	120/26 SS 1, 0, 0, 0, 1, 1 N=2		SPT				6		100			
		HQ3				7		100				
		PT				8		100				
		SPT				8		100				
		HQ3				9		100				
		PT				9		100				
		SPT				9		100				

For explanation of symbols and observations, see key sheet

FLUID DEPTHS AND DRILLING PROGRESS (m)			
Date Time	Drilled Depth	Casing Depth	Fluid Depth
27/09/2022 16:20	15.32	5.7	2.1
29/09/2022 09:21	15.32	5.7	3.95
29/09/2022 14:30	30.00	5.7	5.28
30/09/2022 08:12	30.00	5.7	2.27

RELATIVE STRENGTH

- VS - Very strong
- S - Strong
- MS - Moderately strong
- W - Weak
- VW - Very weak
- EW - Extremely weak

WEATHERING

- UW - Unweathered
- SW - Slightly weathered
- MW - Moderately weathered
- HW - Highly weathered
- CW - Completely weathered

Date logged 29/09/2022

Logged FK
 Checked GP

Driller McMillan
 Started 27/09/2022
 Finished 29/09/2022

Drill Rig N119
 Core Boxes 9

Remarks
 50 mm standpipe piezometer installed on completion.

Horizontal / Vertical Survey Datums: NZGD2000 - Mount Eden 2000 / New Zealand Vertical Datum 2016

Hand Held Shear Vane
 DR1980: 19mm blade: Calibrated Jun 2022: Correction Factor: 1.876
 vane shear strength per NZGS guideline

Client Auckland Transport
 Project Eastern Busway
 Project number 60644113

Co-ordinates 411582.05mE 795072.05mN
 Orientation -90° Elevation 8.195m
 Location 209 Burswood Dr, Pakuranga
 Feature Bridge/Embankment Design

GEOLOGICAL DESCRIPTION <small>Weathering, Colour, Fabric, ROCK NAME. Strength, Discontinuities, Lithological Features (bedding, foliation, mineralogy, cement, etc).</small>	Test Records		Drilling Method <small>Casing remarks</small>	Core Loss/Lift	Relative Strength	Rock Weathering	Depth	Graphic Log	TCR [RQD] (%)	Spacing of Natural Defects (mm)	SOIL PROPERTIES <small>Subordinate MAJOR minor: colour, structure, Strength, moisture condition, grading, bedding, plasticity, sensitivity, major fraction description, subordinate fraction description, minor fraction description, additional structures, subordinate information, etc</small>	Instrumentation
	Shear Vane/ SPT	SPT N Values									DEFECT DESCRIPTION <small>(Joints, Bedding Seams, Shatter, Shear and Crush Zones, Foliation, Schistosity, Attitude, Spacing, continuity, roughness, infilling, etc.)</small>	
TAURANGA GROUP 12.85m: Slightly weathered, grey, coarse SANDSTONE. Weak. Moderately thickly bedded. 13.4m: Slightly weathered, grey, SILTSTONE. Very weak. 14.3m: Slightly weathered, grey, fine to coarse SANDSTONE. Very weak. Weakly cemented. Very thickly bedded. EAST COAST BAYS FORMATION 18.28m: SW, grey, fine to medium SANDSTONE. EW. Moderately thickly bedded. 18.6m: Slightly weathered, grey, SILTSTONE, Very weak.	33/10 SS 0,0,0, 1,1,1, N=3 116/14		HQ3				11		100		8.0m: Silty CLAY; blueish grey. Soft to very soft, moist, high plasticity. (continued)	
			SPT					11		100	10.55m: Spongy PEAT; black. Soft, moist, high plasticity. 10.75m: Silty CLAY; brown. Stiff, moist, high plasticity. 10.95m: Becomes blueish grey.	
			HQ3					12		100		
		1,0,1, 1,1,2 N=5		SPT				12		100		
			HQ3					13		62 [62]	12.45 to 12.85m: Core Loss:	
		9,7,6, 8,7,10 N=31		SPT				13		100	13.34 to 13.37m: J, 30°, Ud, Sm, Cg	
			HQ3					14		100 [95]		
		18,12,17, 23,10 for 25mm N>50		SPT				14		100		
			HQ3					15		100 [100]		
			SPT					15		0	16.28 to 16.85m: Recovered as silty fine to medium SAND; grey. Slightly packed. 16.65m: DB, 3 No.	
	14,36 for 55mm N>50		SPT				16		22 [22]			
		HQ3					17		0			
	9,18,30, 20 for 55mm N>50		SPT				17		0	18.28m: Recovered as silty fine to medium SAND; grey. Loosely packed. 18.35 to 18.6m: Becomes very weak.		
		HQ3					18		100 [71]			
	13,37 for 65mm N>50		SPT				18		0	19.4 to 19.9m: Thin fine to medium SAND bed.		
		HQ3					19					

For explanation of symbols and observations, see key sheet

FLUID DEPTHS AND DRILLING PROGRESS (m)
 Date Time Drilled Depth Casing Depth Fluid Depth

RELATIVE STRENGTH
 VS - Very strong
 S - Strong
 MS - Moderately strong
 W - Weak
 VW - Very weak
 EW - Extremely weak

WEATHERING
 UW - Unweathered
 SW - Slightly weathered
 MW - Moderately weathered
 HW - Highly weathered
 CW - Completely weathered

Date logged 29/09/2022
 Logged FK
 Checked GP

Driller McMillan
 Started 27/09/2022
 Finished 29/09/2022
 Drill Rig N119
 Core Boxes 9

Remarks
 50 mm standpipe piezometer installed on completion.

Horizontal / Vertical Survey Datums: NZGD2000 - Mount Eden 2000 / New Zealand Vertical Datum 2016

Hand Held Shear Vane
 DR1980: 19mm blade: Calibrated Jun 2022: Correction Factor: 1.876
 vane shear strength per NZGS guideline

Client **Auckland Transport**
 Project **Eastern Busway**
 Project number **60644113**

Co-ordinates **411582.05mE 795072.05mN**
 Orientation **-90°** Elevation **8.195m**
 Location **209 Burswood Dr, Pakuranga**
 Feature **Bridge/Embankment Design**

GEOLOGICAL DESCRIPTION <small>Weathering, Colour, Fabric, ROCK NAME. Strength, Discontinuities, Lithological Features (bedding, foliation, mineralogy, cement, etc).</small>	Test Records		Drilling Method <small>Casing remarks</small>	Core Loss/Lift <small>0 - 100%</small>	Relative Strength <small>MS MSW VW EW</small>	Rock Weathering <small>SW MW HW</small>	Depth	Graphic Log	TCR [RQD] (%)	Spacing of Natural Defects <small>(mm)</small>	SOIL PROPERTIES <small>Subordinate MAJOR minor: colour, structure, Strength, moisture condition, grading, bedding, plasticity, sensitivity, major fraction description, subordinate fraction description, minor fraction description, additional structures, additional information, etc</small>	Instrumentation
	Shear Vane/ SPT	SPT N Values									DEFECT DESCRIPTION <small>(Joints, Bedding Seams, Shatter, Shear and Crush Zones, Foliation, Schistosity, Attitude, Spacing, continuity, roughness, infilling, etc.)</small>	
29.55m: Slightly weathered, light grey, SILTSTONE. Very weak.		0 - 50					31 32 33 34 35 36 37 38 39				DH309_P terminated at 30m Depth Criteria Achieved	
<p><i>For explanation of symbols and observations, see key sheet</i></p> <p>FLUID DEPTHS AND DRILLING PROGRESS (m)</p> <p>Date Time Drilled Depth Casing Depth Fluid Depth</p>			<p>RELATIVE STRENGTH</p> <p>VS - Very strong S - Strong MS - Moderately strong W - Weak VW - Very weak EW - Extremely weak</p>		<p>WEATHERING</p> <p>UW - Unweathered SW - Slightly weathered MW - Moderately weathered HW - Highly weathered CW - Completely weathered</p>		<p>Date logged 29/09/2022</p> <p>Logged FK</p> <p>Checked GP</p>		<p>Driller McMillan</p> <p>Started 27/09/2022</p> <p>Finished 29/09/2022</p> <p>Drill Rig N119</p> <p>Core Boxes 9</p>			
<p>Hand Held Shear Vane</p> <p>DR1980: 19mm blade: Calibrated Jun 2022: Correction Factor: 1.876</p> <p><i>vane shear strength per NZGS guideline</i></p>			<p>Remarks</p> <p>50 mm standpipe piezometer installed on completion.</p> <p>Horizontal / Vertical Survey Datums: NZGD2000 - Mount Eden 2000 / New Zealand Vertical Datum 2016</p>		<p>Page 4 of 9</p>							

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



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



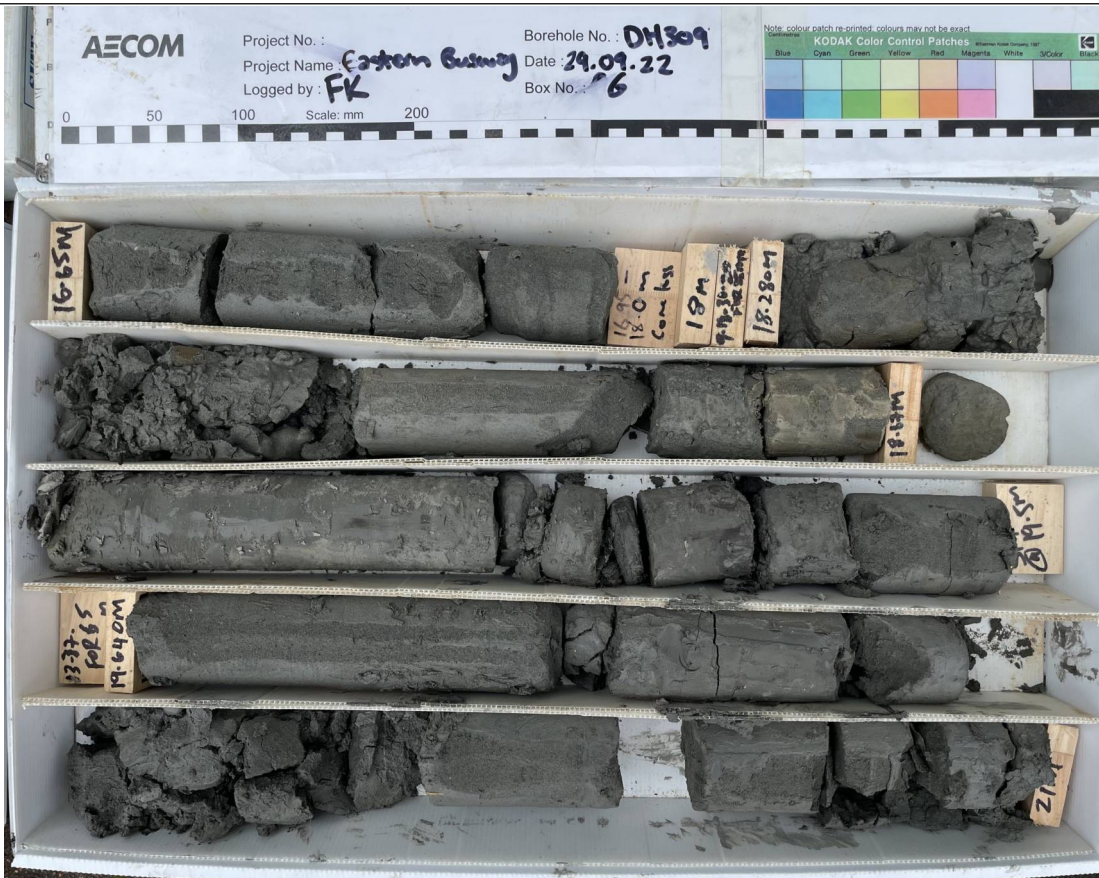
Box: 3 of 9 - Depth: P\DH309_P 07.40m to 10.95m of 30.00m
 Date Drilled 27/09/2022 to 29/09/2022 - Date Photographed: 27/09/2022



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



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