

Box: 7 of 9 - Depth: P\DH309_P 21.00m to 24.45m of 30.00m
 Date Drilled 27/09/2022 to 29/09/2022 - Date Photographed: 29/09/2022



Box: 8 of 9 - Depth: P\DH309_P 24.45m to 27.55m of 30.00m
 Date Drilled 27/09/2022 to 29/09/2022 - Date Photographed: 29/09/2022



Box: 9 of 9 - Depth: P\DH309_P 27.55m to 30.00m of 30.00m
Date Drilled 27/09/2022 to 29/09/2022 - Date Photographed: 29/09/2022

Client Auckland Transport
 Project Eastern Busway
 Project number 60644113

Co-ordinates 411618.47mE 795052.84mN
 Orientation -90° Elevation 8.498m
 Location 211 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 VS W VW EW</small>	Rock Weathering <small>SW MW HW CW</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, 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>	
FILL 0.0m: FILL comprising silt, clay and fine to medium gravel.	195/79		VAC EX						0		0.0m: Silty CLAY with some fine to medium gravel; brown. Very stiff, moist, high plasticity. Gravel comprises slightly weathered, angular, BASALT. (Noted during hydro-excavation) 0.6m: Missed SV. Hydro-Vac over excavated.	
	161/68						1					
TAURANGA GROUP 1.1m: ALLUVIUM comprising clay, silt, fine sand and organics.	146/45		SPT				2		100		1.1m: Silty CLAY, brownish white. Stiff, moist, high plasticity.	
	203/86	0,1,1,1,1,2 N=5	HQ3				3		100		2.3m: Clayey SILT, light brown. Firm, moist, moderate plasticity. 2.7 to 3.0m: Becomes brownish grey. Moderate plasticity.	2.4 2.98
	36/7	0,0,0,0,0,0 N=0 SUOW	SPT				4		100		3.0m: Organic CLAY with some silt, greyish black. Soft, moist, high plasticity.	
	114		HQ3				5		71		3.45m: Silty Clay, grey. Soft, moist, high plasticity. 4.3 to 4.5m: Core Loss: Washed out.	4.05
	20*	0,0,0,0,0,0 N=0 SUOW	SPT				6		100		4.5m: Clayey SILT, brownish grey. Soft, moist, low plasticity. 4.95m: Silty CLAY, grey. Soft, moist, high plasticity.	
	17/4	1,0,1,1,3,4 N=9	HQ3				7		100		5.15m: Grades to organic CLAY, dark grey. Soft, wet, high plasticity.	
	17/4	1,0,1,1,3,4 N=9	SPT				8		100		5.87m: Amorphous PEAT, black. Soft, moist, low plasticity. 6.25m: Orange brown pumiceous sand pocket.	
	SS	2,2,3,4,4,4 N=15	HQ3				9		100		6.3m: Clayey SILT, with some fine sand, brownish grey. Stiff, moist, moderate plasticity. 6.65m: Organic CLAY with some silt and organics, darkish grey. Stiff, moist, high plasticity. Organics consists decomposed wood fragments.	
	39/29	0,0,0,0,0,0 N=0 SUOW	SPT				10		100		7.2m: Silty CLAY with trace organics, greyish brown. Stiff, moist, low plasticity. Organics consists decomposed wooden fragments. 7.75 to 7.95m: Some fine sand.	
			PT								7.95m: Silty CLAY, blueish grey. Very soft, moist, high plasticity.	
		SPT								8.9 to 9.96m: Soft.		

For explanation of symbols and observations, see key sheet

FLUID DEPTHS AND DRILLING PROGRESS (m)			
Date Time	Drilled Depth	Casing Depth	Fluid Depth
30/09/2022 14:18	13.30	5.7	2.98
03/10/2022 08:35	13.30	5.7	2.48
03/10/2022 12:25	25.00	5.7	4.05

RELATIVE STRENGTH	WEATHERING	Date logged	Driller
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	10/03/2022	McMillan
		Logged FK	Started
		Checked GP	30/09/2022
			Finished
			10/03/2022

Remarks	Drill Rig	Core Boxes
Hole backfilled with bentonite grout upon completion.	N119	8
Horizontal / Vertical Survey Datums: NZGD2000 - Mount Eden 2000 / New Zealand Vertical Datum 2016		

Hand Held Shear Vane
 GEOVANE1712: 19mm blade: Calibrated 08/22: Correction factor: 1.450
 vane shear strength per NZGS guideline

Client Auckland Transport
 Project Eastern Busway
 Project number 60644113

Co-ordinates 411618.47mE 795052.84mN
 Orientation -90° Elevation 8.498m
 Location 211 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, 1-100%</small>	Relative Strength <small>MS MS W VW EW</small>	Rock Weathering <small>SW MW HW CW</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, subordinate information, etc</small>	Instrumentation
	Shear Vane/ SPT	SPT N Values <small>0 - 50</small>									DEFECT DESCRIPTION <small>(Joints, Bedding Seams, Shatter, Shear and Crush Zones, Foliation, Schistosity, Attitude, Spacing, continuity, roughness, infilling, etc.)</small>	
TAURANGA GROUP			HQ3						100		9.95m: Silty fine SAND, blueish grey. Loose, moist, poorly graded. (continued)	
			PT						100		10.3m: Silty CLAY, blueish grey. Soft, moist, high plasticity.	
		ss 0,0,0 0,0,0 N=0 SUOW	SPT						100		11.35 to 11.45m: Trace indistinct organics.	
			HQ3						100		11.45m: Organic CLAY with some silt, greyish brown. Firm, moist, high plasticity. Organics consist of decomposed wood fragments.	
		102/12	SPT						100		11.9m: Silty CLAY, blueish grey. Stiff, moist, high plasticity.	
			HQ3						100		12.95m: Clayey SILT with some fine sand, blueish grey. Stiff, moist, low plasticity. Non-dilatant.	
			SPT						100		13.3m: Silty CLAY, blueish grey. Stiff, moist, high plasticity.	
		78/4 ss 1,1,18, 10,11,14 N=53	SPT						100		13.95 to 15m: DB, 7 No.	
			HQ3						100 [100]		15.63 to 16.5m: DB, 2 No.	
		ss 8,10,12, 13,15,10 for 50mm N>50	SPT						100		17.45 to 18m: DB, 3 No.	
EAST COAST BAYS FORMATION			HQ3						100 [100]		17.55 to 18.0m: Core Loss: Accidentally thrown out.	
	13.3m: CW, blueish grey, SILTSTONE. Extremely weak. [Residual soil]		SPT						100		19.5 to 21m: DB, 8 No.	
	13.65m: Highly weathered, grey, fine to medium SANDSTONE. Extremely weak. Thickly bedded.		HQ3						0			
	15.2m: Moderately weathered, light grey, SILTSTONE. Very weak.	sc 13,24,26, 24 for 55mm N>50	SPT						0			
	16.12m: Moderately weathered, light grey, fine to medium SANDSTONE. Very weak. Very thickly bedded.		HQ3						75 [75]			
		sc 15,29,35, 15 for 25mm N>50	SPT						0			
			HQ3						100 [100]			
		sc 9,12,22, 18 for 70mm	SPT						0			

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 10/03/2022 Logged FK Checked GP	Driller McMillan Started 30/09/2022 Finished 10/03/2022 Drill Rig N119 Core Boxes 8
Remarks Hole backfilled with bentonite grout upon completion.			
Horizontal / Vertical Survey Datums: NZGD2000 - Mount Eden 2000 / New Zealand Vertical Datum 2016			
Hand Held Shear Vane GEOVANE1712: 19mm blade: Calibrated 08/22: Correction factor: 1.450 vane shear strength per NZGS guideline		Page 2 of 7	

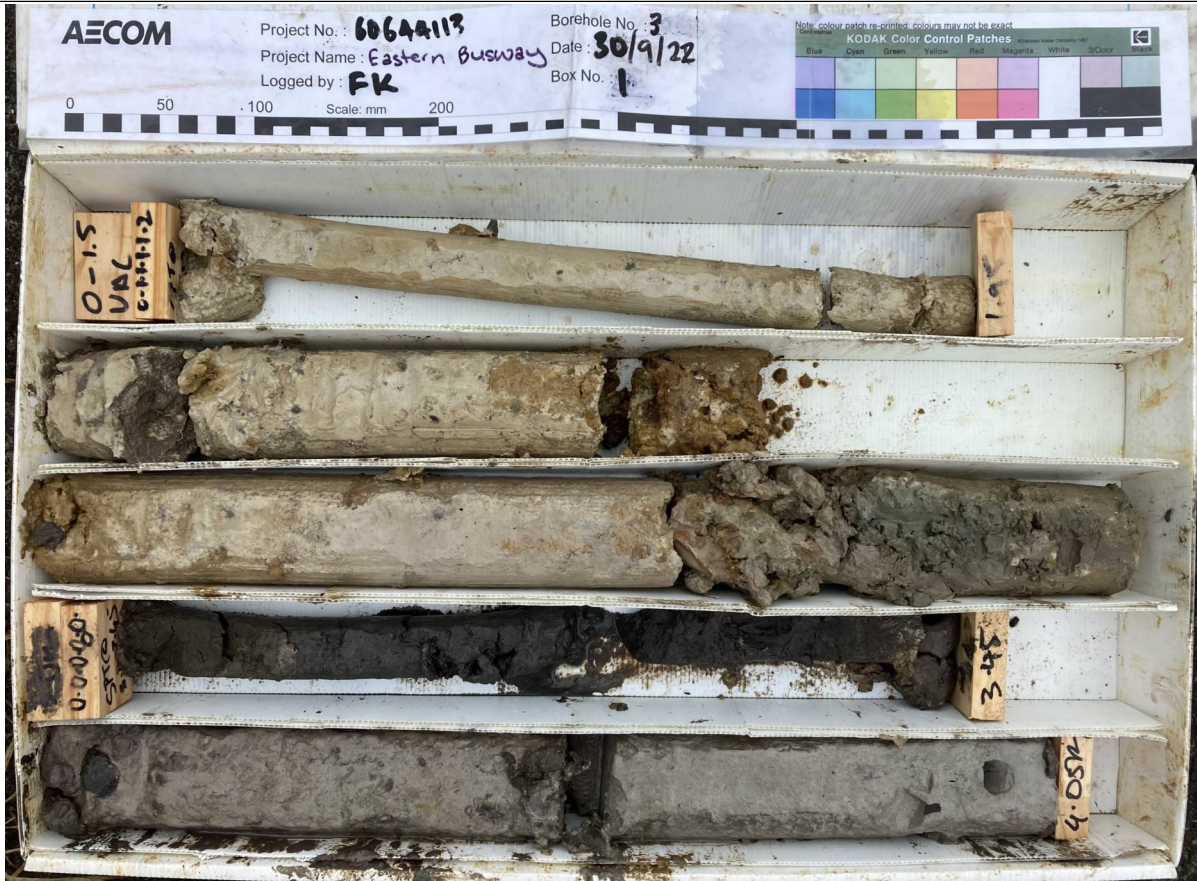
2021 EB DRILLHOLE LOG 2022-06-27 IR FIELD FILE (DH'S, HA'S), GPJ BASE.GDT 02/12/22

Client Auckland Transport
 Project Eastern Busway
 Project number 60644113

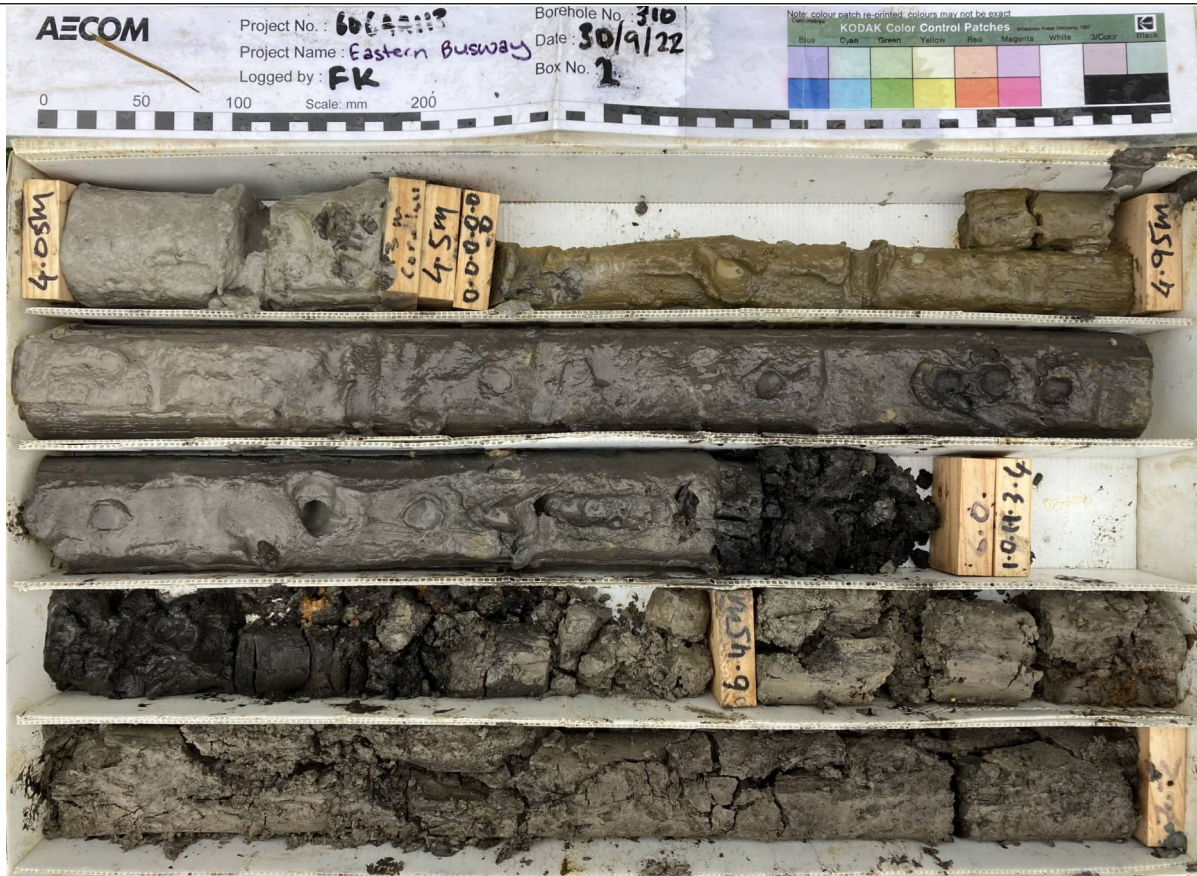
Co-ordinates 411618.47mE 795052.84mN
 Orientation -90° Elevation 8.498m
 Location 211 Burswood Dr, Pakuranga
 Feature Bridge/Embankment Design

GEOLOGICAL DESCRIPTION <small>Weathering, Colour, Fabric, ROCK NAME. Strength, Discontinuities, Lithological Features (bedding, foliation, mineralogy, cement, etc).</small>	Test Records <small>Shear Vane/ SPT N Values</small>	Drilling Method <small>Casing remarks</small>	Core Loss/Lift <small>0 - 100%</small>	Relative Strength <small>MS VS W VW EW</small>	Rock Weathering <small>SW MW HW CW</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
										DEFECT DESCRIPTION <small>(Joints, Bedding Seams, Shatter, Shear and Crush Zones, Foliation, Schistosity, Attitude, Spacing, continuity, roughness, infilling, etc.)</small>	
EAST COAST BAYS FORMATION 16.12m: Moderately weathered, light grey, fine to medium SANDSTONE. Very weak. Very thickly bedded. (continued) 21.27m: Slightly weathered, light grey, SILTSTONE. Weak. Thickly bedded.	N>50			MS	SW	21	[100]	100 [100]		21.0 to 22.5m: DB, 7 No.	
						22	[100]	100 [100]	21.4 to 21.45m: Thin laminations. 22.5 to 25m: DB, 11 No.		
						23	[100]	100 [100]			
						24	[100]	100 [100]	23.9 to 23.93m: J, 70°, Sm, VN 23.95 to 24m: J, 80°, Sm, N		
						25				DH310 terminated at 25m Depth Criteria Achieved	
For explanation of symbols and observations, see key sheet				RELATIVE STRENGTH		WEATHERING		Date logged 10/03/2022		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 FK Checked GP		Started 30/09/2022	
Hand Held Shear Vane GEOVANE1712: 19mm blade: Calibrated 08/22: Correction factor: 1.450 vane shear strength per NZGS guideline				Remarks Hole backfilled with bentonite grout upon completion.						Finished 10/03/2022	
				Horizontal / Vertical Survey Datums: NZGD2000 - Mount Eden 2000 / New Zealand Vertical Datum 2016						Drill Rig N119 Core Boxes 8	
										Page 3 of 7	

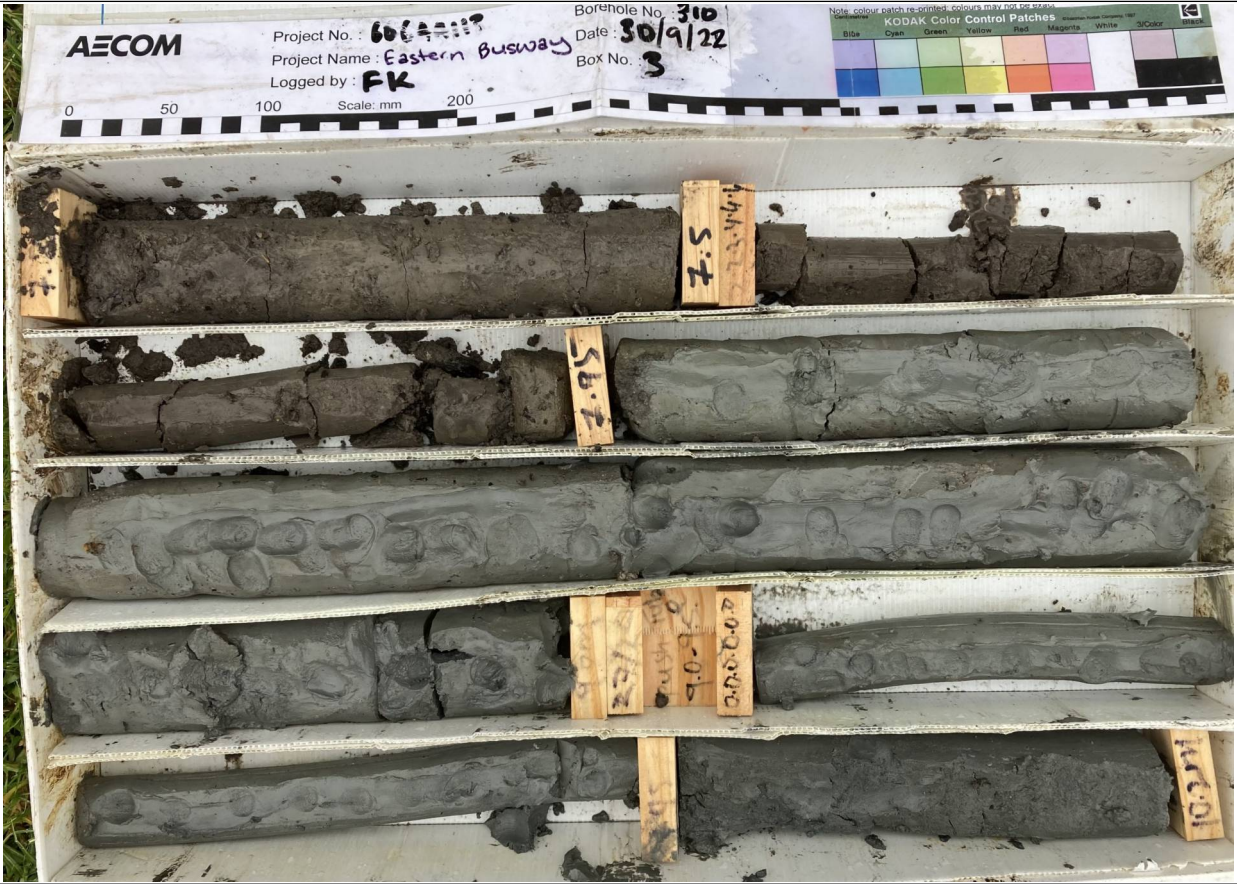
2021 EB DRILLHOLE LOG 2022-06-27 IR FIELD FILE (DH'S, HA'S), GPJ BASE.GDT 02/12/22



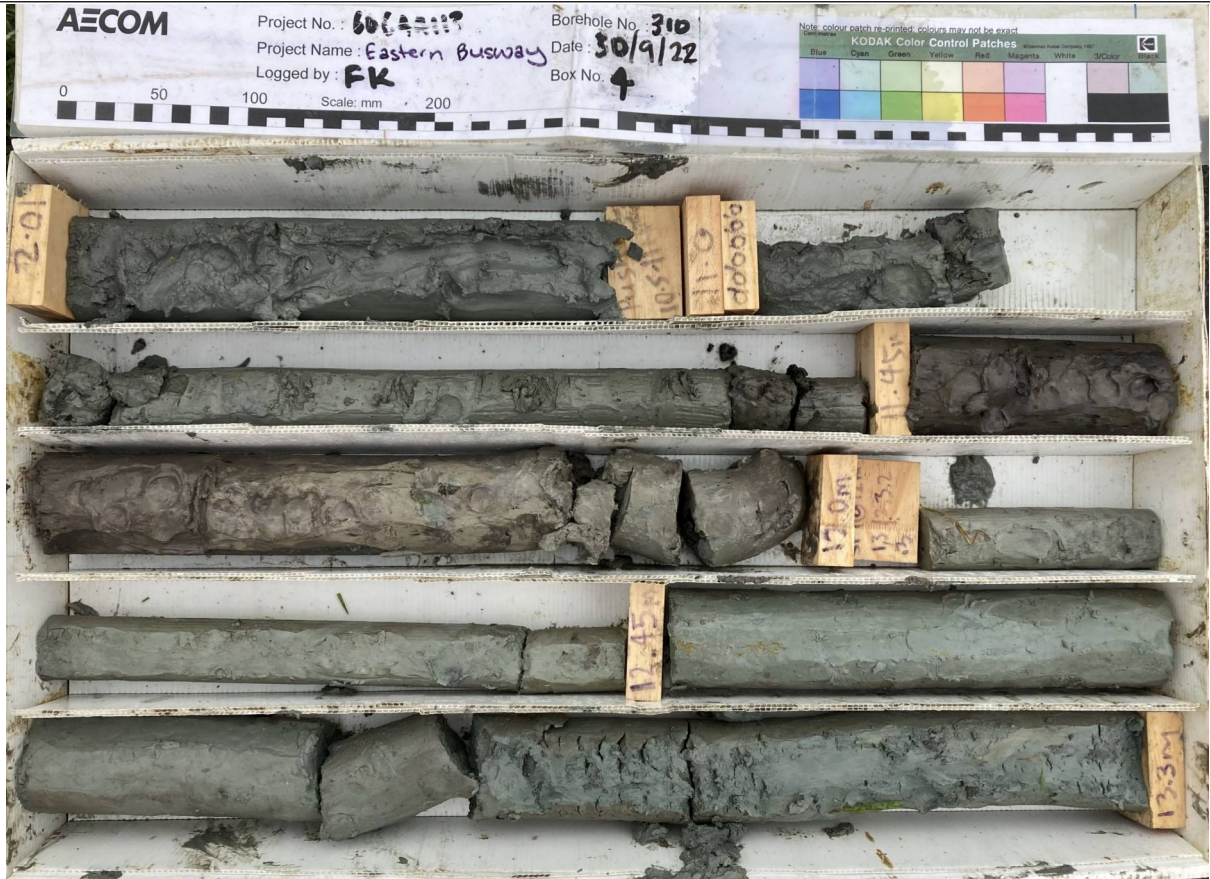
Box: 1 of 8 - Depth: DH310 00.00m to 04.05m of 25.00m
 Date Drilled 30/09/2022 to 10/03/2022 - Date Photographed: 30/09/2022



Box: 2 of 8 - Depth: DH310 04.05m to 07.20m of 25.00m
 Date Drilled 30/09/2022 to 10/03/2022 - Date Photographed: 30/09/2022



Box: 3 of 8 - Depth: DH310 07.20m to 10.20m of 25.00m
 Date Drilled 30/09/2022 to 10/03/2022 - Date Photographed: 30/09/2022



Box: 4 of 8 - Depth: DH310 10.20m to 13.30m of 25.00m
 Date Drilled 30/09/2022 to 10/03/2022 - Date Photographed: 30/09/2022

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



Box: 5 of 8 - Depth: DH310 13.30m - 16.12m of 25.00m
 Date Drilled 30/09/2022 to 10/03/2022 - Date Photographed: 3/10/2022



Box: 6 of 8 - Depth: DH310 16.12m - 19.814m of 25.00m
 Date Drilled 30/09/2022 to 10/03/2022 - Date Photographed: 3/10/2022

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



Box: 7 of 8 - Depth: DH310 19.814m - 22.5m of 25.00m
 Date Drilled 30/09/2022 to 10/03/2022 - Date Photographed: 3/10/2022



Box: 8 of 8 - Depth: DH310 22.5m - 25.0m of 25.00m
 Date Drilled 30/09/2022 to 10/03/2022 - Date Photographed: 3/10/2022

Client Auckland Transport
 Project Eastern Busway
 Project number 60644113

Co-ordinates 411671.96mE 795021.63mN
 Orientation -90° Elevation 9.169m
 Location 200 Burswood Drive
 Feature Ground Conditions / Noise Wall

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>	
AUCKLAND VOLCANIC FIELD 0.0m: FILL 0.15m: MW, dark grey, BASALT. Moderately strong. Highly vesicular. Vesicles up to 5mm. 1.06m: SW, dark grey, BASALT. Moderately strong. Moderately vesicular. Vesicles up to 15mm. 2.0m: SW, white speckled light grey, BASALT. Strong. Slightly vesicular. Vesicles up to 2mm. 3.0m: Vesicles becoming more abundant and up to 20mm.			HA						0		0.0m: No recovery form HA clearance	
			HQ3				1		100 [35]		0.3 to 0.4m: J, 90°, Ro, MN, C, Cl 0.4m: J, 0°, Ro, VN, C, Cl 0.5 to 0.7m: J, 80°, Ro, MN, C, Cl 0.75 to 0.9m: J, 80°, Ro, N, P, Cl	
			HQ3				2		100 [70]		1.25 to 1.75m: Complete water loss. 1.35m: J, 20°, St, N, Cg, Cl 1.4 to 1.78m: J, 80°, Ro, Sn, Fe	
			HQ3				3		100		2.1 to 3.27m: DB, 0°, 2 DB (Drill Breaks) 2.2m: J, 45°, Pl, Sm, VN, Sn, Fe, Conjugate	
TAURANGA GROUP 3.27m: ALLUVIUM comprising clay, silt, fine sand and organics. Baked zone from 3.27m - 4.2m.			HQ3				4		100		3.27m: Silty CLAY, dark grey. Very soft, moist, high plasticity. [Baked Zone] 3.4m: Becomes silty CLAY; greyish brown. Stiff. 3.26m: J, 10°, Ro, N 3.9m: Becomes soft.	
		46/9 ss 0,0,1, 0,1,0 N=2	114 MW Casing SPT				5		100		4.2m: Silty CLAY with trace indistinct organics, light greyish brown. Firm, moist, high plasticity.	4.59
			HQ3				6		100			
			PT				7		100			
			SPT				8		100			
		197* ss 1,2,2, 2,3,3 N=10	SPT				9		100			
			HQ3				10		100			
			PT				11		100			
		26/9 ss 2,2,2, 2,3,3 N=10	SPT				12		100			
For explanation of symbols and observations, see key sheet			RELATIVE STRENGTH			WEATHERING			Date logged 5/10/2022			Driller McMillan Started 4/10/2022 Finished 5/10/2022 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 FK Checked GP			
04/10/2022 16:45 19.50 4.4 4.59			Remarks 50 mm flush standpipe piezometer installed on completion. 197 kPa is the shear vane limit Horizontal / Vertical Survey Datums: NZGD2000 - Mount Eden 2000 / New Zealand Vertical Datum 2016									
Hand Held Shear Vane GEOVANE1712: 19mm blade: Calibrated 08/22: Correction factor: 1.450 vane shear strength per NZGS guideline												Page 1 of 9

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

Client Auckland Transport
 Project Eastern Busway
 Project number 60644113

Co-ordinates 411671.96mE 795021.63mN
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 Location 200 Burswood Drive
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	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	
TAURANGA GROUP	ss 0,0,0 0,0,0 N=0 SUOW	0-50	HQ3						100		9.95m: Silty CLAY with some fine sand, light grey. Firm, moist, high plasticity. (continued)	
			SPT						100			
			HQ3						100			
			SPT						100			
			HQ3						100			
EAST COAST BAYS FORMATION	29/6 ss 0,0,0 0,0,0 N=0 SUOW	0-50	HQ3						100		12.45m: Organic CLAY, dark brown. Firm, moist, high plasticity.	
			SPT						100			
			HQ3						100			
			SPT						100			
			HQ3						100			
	186/20 ss 1,2,2 2,3,4 N=11	0-50	SPT						100		13.28m: Grades to silty CLAY with trace indistinct organics, light grey. Stiff, moist, high plasticity. 13.5m: Organics cease.	
			HQ3						100			
			SPT						100			
			HQ3						100			
			SPT						100			
	113/12 ss 1,1,1 2,1,2 N=6	0-50	SPT						100		15.0 to 15.75m: With some fine sand.	
			HQ3						100			
			SPT						100			
			HQ3						100			
			SPT						100			
	3,4,4 7,7,6 N=24	0-50	HQ3						100		15.75m: SILT with some fine sand; light grey. Very stiff, moist, non-dilatant.	
			SPT						100			
			HQ3						100			
			SPT						100			
			HQ3						100			
	7,14,18 25,7 for 25mm N>50	0-50	SPT						100		18.33 to 19.5m: DB, 0°, 5 DB 18.33 to 18.7m: J, 80°, Sm	
			HQ3						100			
			SPT						100			
			HQ3						100			
			SPT						100			
	sc 12,38 for 70mm N>50	0-50	HQ3						100 [11]		18.83 to 18.98m: J, 80°, Ro, T 19.17 to 19.43m: J, 80°, Ro, VN 19.5 to 21m: DB, 14 DB	
			SPT						0 [0]			
			HQ3						100			
			SPT						0			
			HQ3						100			

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

For explanation of symbols and observations, see key sheet		RELATIVE STRENGTH	WEATHERING	Date logged 5/10/2022	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 FK Checked GP	Started 4/10/2022
Hand Held Shear Vane GEOVANE1712: 19mm blade: Calibrated 08/22: Correction factor: 1.450 vane shear strength per NZGS guideline		Remarks 50 mm flush standpipe piezometer installed on completion. 197 kPa is the shear vane limit Horizontal / Vertical Survey Datums: NZGD2000 - Mount Eden 2000 / New Zealand Vertical Datum 2016		Finished 5/10/2022	Drill Rig N119
				Core Boxes 10	Page 2 of 9

Client Auckland Transport
 Project Eastern Busway
 Project number 60644113

Co-ordinates 411671.96mE 795021.63mN
 Orientation -90° Elevation 9.169m
 Location 200 Burswood Drive
 Feature Ground Conditions / Noise Wall

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										DEFECT DESCRIPTION <small>(Joints, Bedding Seams, Shatter, Shear and Crush Zones, Foliation, Schistosity, Attitude, Spacing, continuity, roughness, infilling, etc.)</small>		
EAST COAST BAYS FORMATION 18.9m: Slightly weathered, light grey, fine SANDSTONE. Weak. Very thickly bedded. (continued) 22.16m: Slightly weathered, light grey, SILTSTONE. Weak. Moderately thickly bedded. 22.25m: Slightly weathered, Fine to coarse volcaniclastic SANDSTONE. Moderately strong. [Parnell Grit] 22.5m: Slightly weathered, light grey, SILTSTONE. Weak. Moderately thickly bedded. 25.05 to 35.3m: Banding, very thickly bedded.	sc 5,45 for 55mm N>50					21		100 [100]		21.0 to 22.5m: DB, 10 DB		
						22		100 [100]		22.25m: Dark grey, subangular fine gravel fragments (2-10mm) 22.5 to 24m: DB, 0°, 5 DB 22.63 to 22.67m: Dark grey, subangular fine gravel fragments (2-4mm).		
	sc 40,10 for 15mm N>50					23		100 [86]		23.8 to 24.43m: J, 80°, Pl, Sm, VN, Cl 24.0 to 25.5m: DB, 0°, 6 DB		
						24						
						25		100 [67]		25.3m: J, 15°, Pl, Sm, VN		
						26				DH311_P terminated at 25.5m Depth Criteria Achieved		
						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 5/10/2022 Logged FK Checked GP	Driller McMillan Started 4/10/2022 Finished 5/10/2022 Drill Rig N119 Core Boxes 10
Remarks 50 mm flush standpipe piezometer installed on completion. 197 kPa is the shear vane limit Horizontal / Vertical Survey Datums: NZGD2000 - Mount Eden 2000 / New Zealand Vertical Datum 2016			

Hand Held Shear Vane
 GEOVANE1712: 19mm blade: Calibrated 08/22: Correction factor: 1.450
 vane shear strength per NZGS guideline

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

Co-ordinates **411671.96mE 795021.63mN**
 Orientation **-90°** Elevation **9.169m**
 Location **200 Burswood Drive**
 Feature **Ground Conditions / Noise Wall**

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			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			MS	VW	SW					MW	
25.05 to 35.3m: Banding, very thickly bedded. (continued)		0 - 50											
<i>For explanation of symbols and observations, see key sheet</i>					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 5/10/2022 Logged FK Checked GP	Driller McMillan Started 4/10/2022 Finished 5/10/2022 Drill Rig N119 Core Boxes 10	
FLUID DEPTHS AND DRILLING PROGRESS (m) Date Time Drilled Depth Casing Depth Fluid Depth					Remarks 50 mm flush standpipe piezometer installed on completion. 197 kPa is the shear vane limit Horizontal / Vertical Survey Datums: NZGD2000 - Mount Eden 2000 / New Zealand Vertical Datum 2016								
Hand Held Shear Vane GEOVANE1712: 19mm blade: Calibrated 08/22: Correction factor: 1.450 <i>vane shear strength per NZGS guideline</i>													
											Page 4 of 9		

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



Box: 1 of 10 - Depth: P\DH311 00.00m - 02.60m of 25.50m
 Date Drilled 4/10/2022 to 5/10/2022 - Date Photographed: 4/10/2022



Box: 2 of 10 - Depth: P\DH311 02.60m - 05.02m of 25.50m
 Date Drilled 4/10/2022 to 5/10/2022 - Date Photographed: 4/10/2022

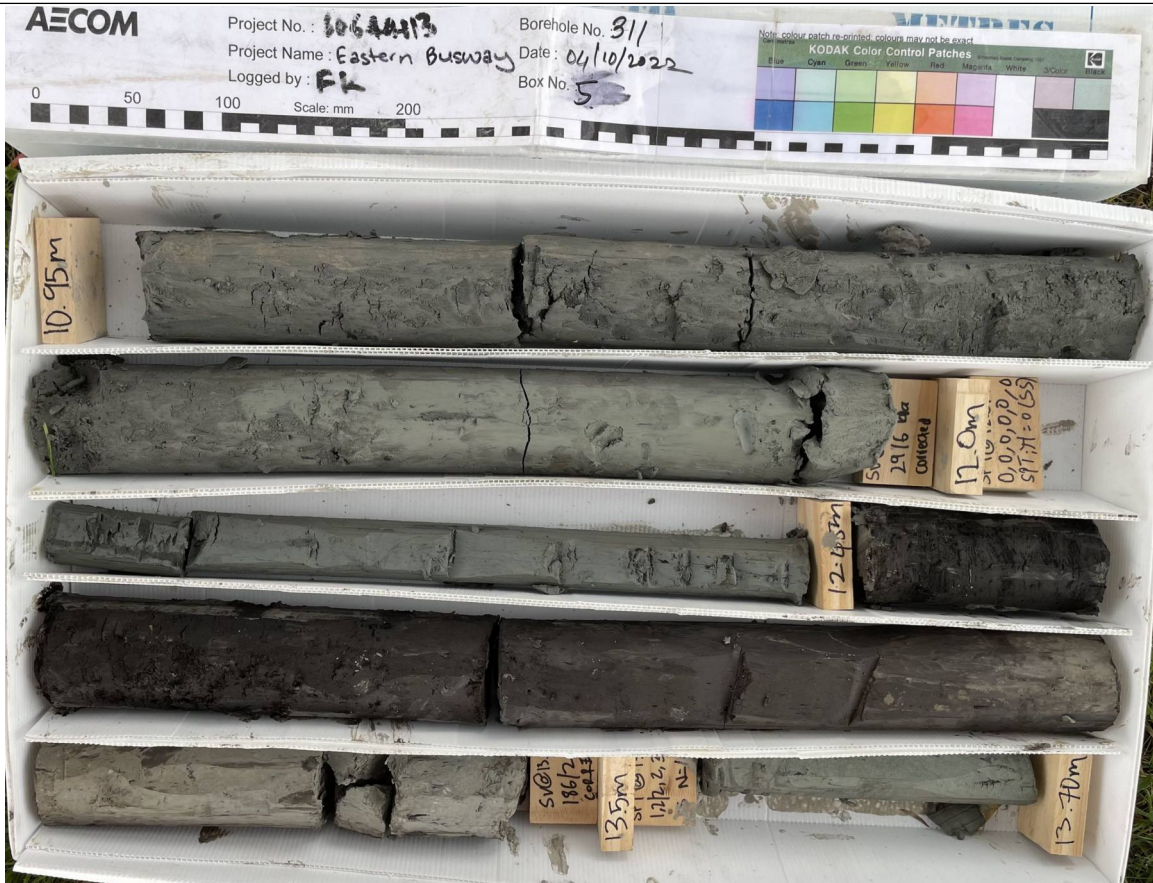


Box: 3 of 10 - Depth: P\DH311 05.02m - 07.95m of 25.50m
 Date Drilled 4/10/2022 to 5/10/2022 - Date Photographed: 4/10/2022



Box: 4 of 10 - Depth: P\DH311 07.95m - 10.950m of 25.50m
 Date Drilled 4/10/2022 to 5/10/2022 - Date Photographed: 4/10/2022

2021 EB DRILLHOLE LOG 2022-06-27 IR FIELD FILE (DHS, HAS), GPJ BASE_GDT 02/12/22



Box: 5 of 10 - Depth: P\DH311 10.95m - 13.70m of 25.50m
 Date Drilled 4/10/2022 to 5/10/2022 - Date Photographed: 4/10/2022



Box: 6 of 10 - Depth: P\DH311 13.70m - 16.50m of 25.50m
 Date Drilled 4/10/2022 to 5/10/2022 - Date Photographed: 5/10/2022



Box: 7 of 10 - Depth: P\DH311 16.50m - 18.90m of 25.50m
 Date Drilled 4/10/2022 to 5/10/2022 - Date Photographed: 5/10/2022



Box: 8 of 10 - Depth: P\DH311 18.90m - 21.86m of 25.50m
 Date Drilled 4/10/2022 to 5/10/2022 - Date Photographed: 5/10/2022



Box: 9 of 10 - Depth: P\DH311 21.86m - 24.43m of 25.50m
 Date Drilled 4/10/2022 to 5/10/2022 - Date Photographed: 5/10/2022



Box: 10 of 10 - Depth: P\DH311 24.43m - 25.50m of 25.50m
 Date Drilled 4/10/2022 to 5/10/2022 - Date Photographed: 5/10/2022

Client Auckland Transport
 Project Eastern Busway
 Project number 60644113

Co-ordinates 412241.58mE 794690.24mN
 Orientation -90° Elevation 12.74m
 Location Reserve: 1R Burswood Drive
 Feature Retaining wall/slope design

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 VS W VW EW	SW MW HW				(mm)	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	
			0-50									DEFECT DESCRIPTION	
												(Joints, Bedding Seams, Shatter, Shear and Crush Zones, Foliation, Schistosity, Attitude, Spacing, continuity, roughness, infilling, etc.)	
FILL				HA						0		0.0m: Fine sandy SILT with some clay and minor fine basalt gravel; dark brown. Soft, dry, low plasticity.	
AUCKLAND VOLCANIC FIELD				HQ3				1		100 [88]		0.7 to 2.8m: 10-20% vesicles, typically 1-5mm, max. 30mm. 1.1m: J, 30°, Ud, Ro, Fe 1.14 to 1.25m: J, 60°, Ud, Ro, Fe	
				HQ3				2		100 [100]		2.49 to 2.64m: J, 65°, Ud, Ro	
				HQ3				3				2.8 to 4.0m: Vesicles reducing in size and frequency. 3.0m: 114mm diameter HWT casing to 3.0m.	2.95
				HQ3				4		100 [99]		3.8 to 4m: J, 70°, Ud, Ro, Fe 4.0 to 5.3m: Slightly vesicular, <5%, <2mm. 4.1 to 4.22m: J, 60°, Ud, Ro, Fe	3.67
				HQ3				5		100 [63]		5.3 to 5.45m: Vesicular, <10%, <20mm.	4.47
5.45m: ALLUVIUM comprising clay, sand and peat.		SS 0,0,0, 0,1,1 N=2		SPT				6		100		5.45m: Silty CLAY with trace fine basalt gravel; dark grey. Soft, moist, high plasticity. 5.45 to 5.55m: Very stiff to hard (baked?). 5.55m: Becomes light grey lightly speckled with dark grey.	
		30/0 0,0,0, 0,0,0 N=0 SUOW		HQ3				7		100		6.65m: Some fine to coarse sand. 6.9m: Silty fine to coarse SAND; grey. Dense, wet, well graded. 7.55 to 7.95m: Brownish grey, very loose.	
		SS 0,0,0, 0,0,1 N=1		HQ3				8		100		7.9m: Organic CLAY; dark brown. Very soft, moist, high plasticity. 8.1m: Large chunk of decomposed wood.	
				SPT				9		100		8.55m: Silty CLAY with some fine sand and trace organics; bluish grey. Firm, moist, high plasticity. 9.0m: Large wood chunks. 9.4m: Silty fine to coarse SAND with trace organics; brownish grey. Dense, moist, well graded. 9.8m: Fine sandy PEAT; black. Wet, spongy.	
For explanation of symbols and observations, see key sheet				RELATIVE STRENGTH		WEATHERING		Date logged 28/01/2022		Driller			
FLUID DEPTHS AND DRILLING PROGRESS (m)				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 SK		McMillan			
Date Time Drilled Depth Casing Depth Fluid Depth								Checked GP		Started			
27/01/2022 16:15 21.00 3.0 2.95										27/01/2022			
28/01/2022 08:00 21.00 3.0 4.47										Finished			
28/01/2022 10:45 25.93 3.0 3.67										28/01/2022			
Hand Held Shear Vane				Remarks		Horizontal / Vertical Survey Datums: NZGD2000 - Mount Eden 2000 / New Zealand Vertical Datum 2016				Drill Rig			
DR1980: 19mm (A). Calibrated 28/06/21. CF's: A = 1.781, B = -11.22				Hole backfilled with grout upon completion.						N119			
vane shear strength per NZGS guideline										Core Boxes		12	
										Page 1 of 9			

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

Client Auckland Transport
 Project Eastern Busway
 Project number 60644113

Co-ordinates 412241.58mE 794690.24mN
 Orientation -90° Elevation 12.74m
 Location Reserve: 1R Burswood Drive
 Feature Retaining wall/slope design

GEOLOGICAL DESCRIPTION <small>Weathering, Colour, Fabric, ROCK NAME. Strength, Discontinuities, Lithological Features (bedding, foliation, mineralogy, cement, etc).</small>	Test Records <small>Shear Vane/ SPT N Values</small>	Drilling Method <small>Casing remarks</small>	Core Loss/Lift <small>0 - 100%</small>	Relative Strength <small>MS VS S W VW EW</small>	Rock Weathering <small>SW MW HW CW</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
										DEFECT DESCRIPTION <small>(Joints, Bedding Seams, Shatter, Shear and Crush Zones, Foliation, Schistosity, Attitude, Spacing, continuity, roughness, infilling, etc.)</small>	
	SS 0,0,0 0,0,0 N=0 SUOW	HQ3				11		100		10.05m: Plastic PEAT; black, soft, moist, high plasticity, amorphous.	
		SPT						100		11.05m: Silty fine to coarse SAND with trace organics as root relicts; light grey. Very dense, dry, well graded. (Pumice sand).	
		HQ3				12		100		11.7m: Grades to brown.	
	SS 0,0,0 0,0,0 N=0 SUOW	SPT						100		11.95m: Organic CLAY; dark grey to black. Firm, moist, high plasticity.	
		HQ3				13		100			
	SS 0,0,0 1,2,2 N=5	SPT						100		13.4m: Silty CLAY with trace organics; bluish grey. Firm, moist, high plasticity.	
		HQ3				14		100		13.8m: Becomes stiff.	
	SS 1,0,0 0,0,1 N=1	SPT						100		14.95 to 15.2m: Contains minor fine micaceous sand.	
		HQ3				15		100		15.2m: Becomes firm.	
	14/0 SS 0,0,0 0,0,0 N=0 SUOW	SPT						100		16.0m: Becomes soft	
		HQ3				16		100			
		SPT						100		16.7m: Organic CLAY with minor decomposed wood; dark brown. Firm, moist, high plasticity.	
		HQ3				17		100			
	46/5 SS 0,0,0 0,0,2 N=2	SPT						100		17.8m: Silty CLAY with trace organics; bluish grey. Firm, moist, high plasticity.	
		HQ3				18		100			
	67/8 SS 0,0,0 0,0,0 N=0 SUOW	SPT						100			
		HQ3				19		100			

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 28/01/2022 Logged SK Checked GP	Driller McMillan Started 27/01/2022 Finished 28/01/2022 Drill Rig N119 Core Boxes 12
Remarks Hole backfilled with grout upon completion.			
Horizontal / Vertical Survey Datums: NZGD2000 - Mount Eden 2000 / New Zealand Vertical Datum 2016			
Hand Held Shear Vane DR1980: 19mm (A). Calibrated 28/06/21. CF's: A = 1.781, B = -11.22 vane shear strength per NZGS guideline			

Client Auckland Transport
 Project Eastern Busway
 Project number 60644113

Co-ordinates 412241.58mE 794690.24mN
 Orientation -90° Elevation 12.74m
 Location Reserve: 1R Burswood Drive
 Feature Retaining wall/slope design

GEOLOGICAL DESCRIPTION <small>Weathering, Colour, Fabric, ROCK NAME. Strength, Discontinuities, Lithological Features (bedding, foliation, mineralogy, cement, etc).</small>	Test Records <small>Shear Vane/ SPT SPT N Values 0 - 50</small>	Drilling Method <small>Casing remarks</small>	Core Loss/Lift <small>0 - 100%</small>	Relative Strength <small>MS MS W VW EW</small>	Rock Weathering <small>SW MW HW CW</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
										DEFECT DESCRIPTION <small>(Joints, Bedding Seams, Shatter, Shear and Crush Zones, Foliation, Schistosity, Attitude, Spacing, continuity, roughness, infilling, etc.)</small>	
EAST COAST BAYS FORMATION	69/10 ss 1,1,2,1,2,2 N=7	HQ3				21		100		19.95 to 20.25m: Some fine to coarse micaceous sand. 17.8m: Silty CLAY with trace organics; bluish grey. Firm, moist, high plasticity. (continued)	
		SPT				21		100		20.9m: Spongy PEAT; black. Firm, moist, high plasticity.	
		HQ3				22		100		21.35m: Silty CLAY with minor organics; greyish brown. Firm, moist, high plasticity.	
	22.4m: HW, grey, fine to coarse SANDSTONE. Extremely weak.	5,9,11,12,17,10 for 35mm N>50	SPT				23		100	22.4m: Fine to coarse SAND; grey.	
	22.91m: Moderately weathered, grey, SILTSTONE. Extremely weak.		HQ3				23		100	22.91m: Clayey SILT; grey. Very stiff to hard.	
		6,7,9,10,12,14 N=45	SPT				24		100		
		HQ3				25		100		25.1m: Fine to coarse SAND; grey. Very Dense.	
25.1m: Moderately weathered, grey, fine to coarse SANDSTONE. Extremely weak.	8,9,10,14,18,8 for 50mm N>50	SPT				26		100		25.92 to 25.93m: Clayey SILT; grey.	
						26				DH312 terminated at 25.93m Depth Criteria Achieved	
						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 28/01/2022

Logged SK

Checked GP

Driller McMillan
 Started 27/01/2022
 Finished 28/01/2022
 Drill Rig N119
 Core Boxes 12

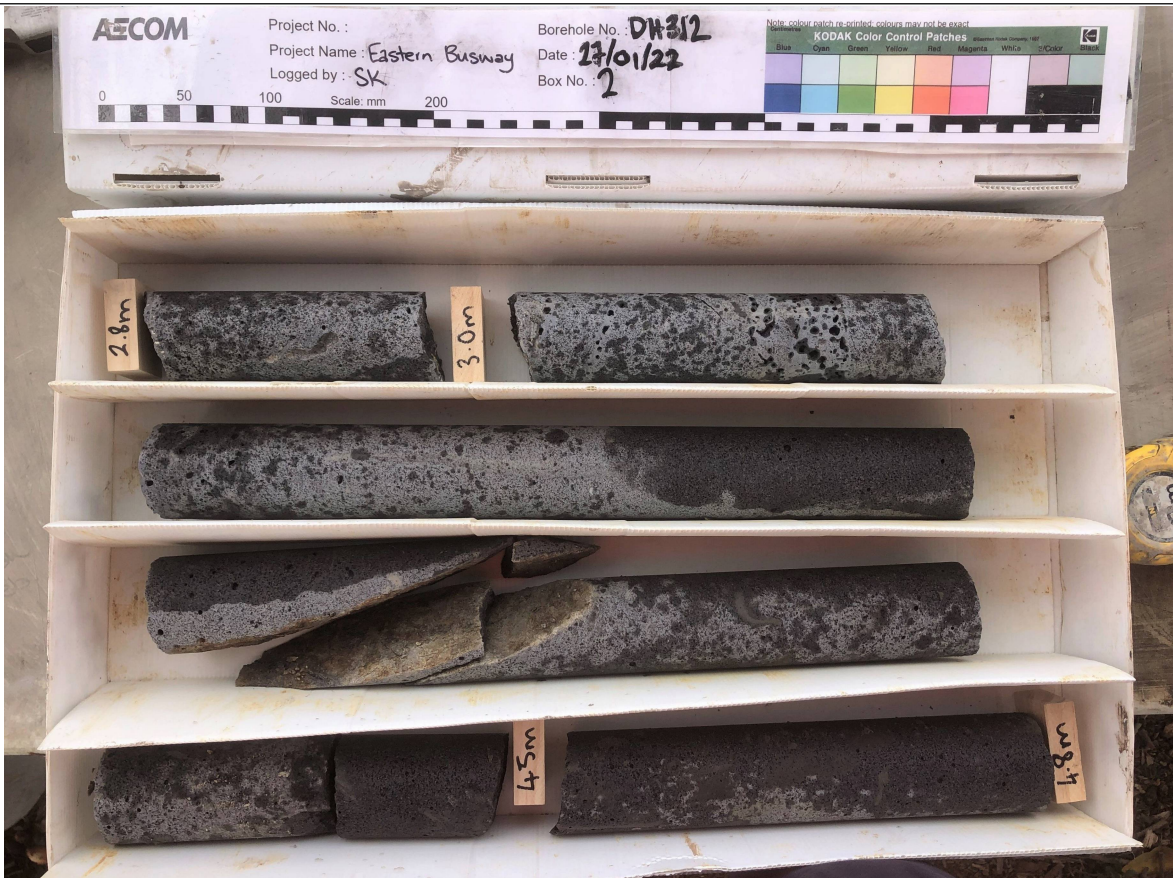
Remarks
 Hole backfilled with grout upon completion.

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

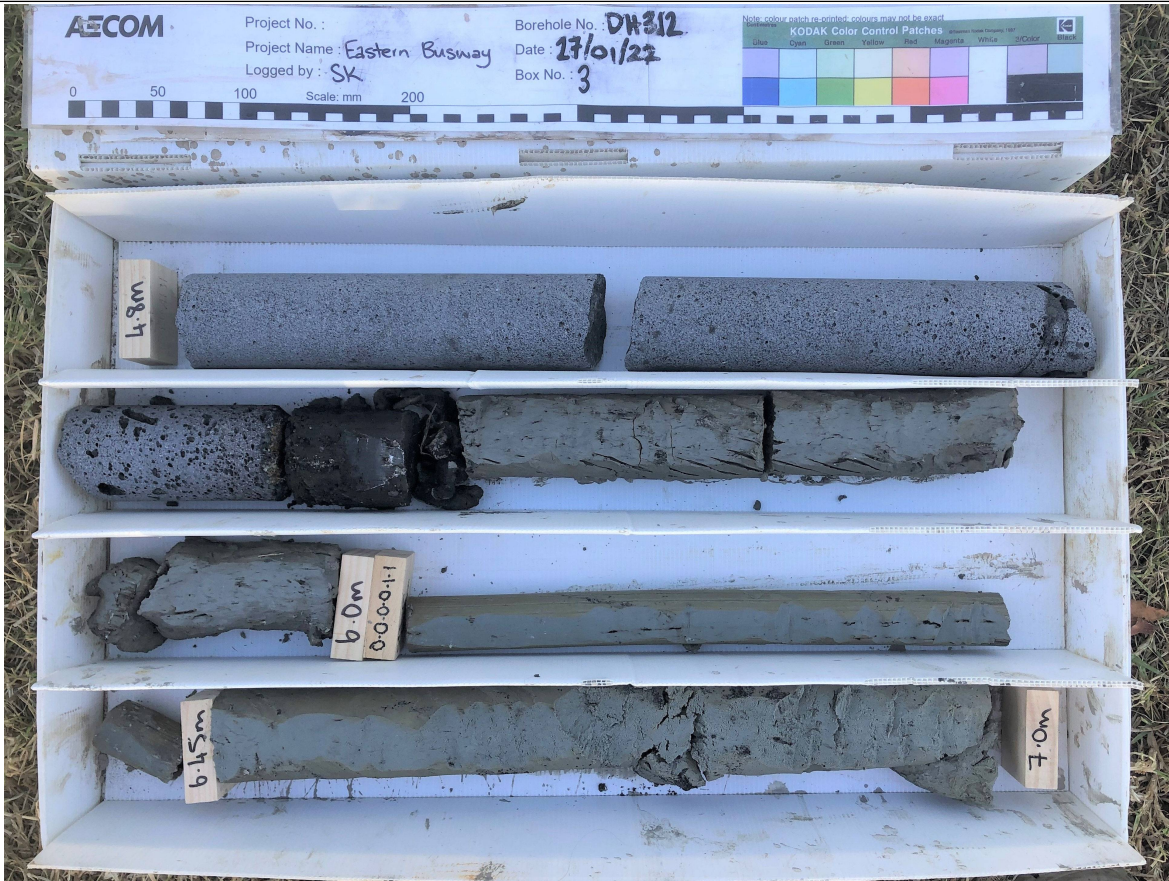
Hand Held Shear Vane
 DR1980: 19mm (A). Calibrated 28/06/21. CF's: A = 1.781, B = -11.22
 vane shear strength per NZGS guideline



Box: 1 of 12 - Depth: 00.70m to 02.80m of 25.93m
 Date Drilled 27/01/2022 to 28/01/2022 - Date Photographed: 27/01/2022



Box: 2 of 12 - Depth: 02.80m to 04.80m of 25.93m
 Date Drilled 27/01/2022 to 28/01/2022 - Date Photographed: 27/01/2022



Box: 3 of 12 - Depth: 04.80m to 07.00m of 25.93m
 Date Drilled 27/01/2022 to 28/01/2022 - Date Photographed: 27/01/2022



Box: 4 of 12 - Depth: 07.00m to 09.20m of 25.93m
 Date Drilled 27/01/2022 to 28/01/2022 - Date Photographed: 27/01/2022



Box: 5 of 12 - Depth: 09.20m to 11.30m of 25.93m
 Date Drilled 27/01/2022 to 28/01/2022 - Date Photographed: 27/01/2022



Box: 6 of 12 - Depth: 11.30m to 13.50m of 25.93m
 Date Drilled 27/01/2022 to 28/01/2022 - Date Photographed: 27/01/2022