



**Box: 7 of 12 - Depth: 13.50m to 15.70m of 25.93m**  
 Date Drilled 27/01/2022 to 28/01/2022 - Date Photographed: 27/01/2022



**Box: 8 of 12 - Depth: 15.70m to 18.00m of 25.93m**  
 Date Drilled 27/01/2022 to 28/01/2022 - Date Photographed: 27/01/2022



**Box: 9 of 12 - Depth: 18.00m to 20.30m of 25.93m**  
 Date Drilled 27/01/2022 to 28/01/2022 - Date Photographed: 27/01/2022



**Box: 10 of 12 - Depth: 20.30m to 22.50m of 25.93m**  
 Date Drilled 27/01/2022 to 28/01/2022 - Date Photographed: 28/01/2022



**Box: 11 of 12 - Depth: 22.50m to 25.40m of 25.93m**  
 Date Drilled 27/01/2022 to 28/01/2022 - Date Photographed: 28/01/2022



**Box: 12 of 12 - Depth: 25.40m to 25.93m of 25.93m**  
 Date Drilled 27/01/2022 to 28/01/2022 - Date Photographed: 28/01/2022

Client Auckland Transport  
 Project Eastern Busway  
 Project number 60644113

Co-ordinates 411928.48mE 794998.65mN  
 Orientation -90° Elevation 11.91m  
 Location 28 Dulwich Place  
 Feature Burswood Station

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 S W V 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
										DEFECT DESCRIPTION <small>(Joints, Bedding Seams, Shatter, Shear and Crush Zones, Foliation, Schistosity, Attitude, Spacing, continuity, roughness, infilling, etc.)</small>	
Vacuum Extraction		VAC EX				1		0		0.0m: Excavation not witnessed.	
1.5m: Alluvium comprising clay, silt, and organic soil	SS 0,1,1, 1,1,2 N=5	HQ3				2		100		1.5m: Silty CLAY, light grey. Stiff, moist, high plasticity 1.75m: shear vane push back 2.25 to 2.5m: Mottled orange. Soft 2.5 to 2.7m: Firm	2.30
3.75m: Slightly weathered, dark grey BASALT; moderately strong, highly vesicular. Vesicles 2-20mm in diameter. 4.5 to 6.0m: Slightly vesicular. Vesicles 1-5mm in diameter.	SS 0,2,4, 2,1,1 N=8	SPT				3		100		2.7m: Organic Silty CLAY, blackish brown. Firm, moist, high plasticity 3.0 to 3.2m: Thin Silty CLAY bed; light grey. Firm, moist, high plasticity 3.3 to 3.4m: Basalt fragments 3.45 to 3.75m: Core Loss:	
		HQ3				4		100 [80]		3.0m: shear vane push back 3.75 to 3.8m: J, 60°, Ud, Ro, Cl 4.15m: DB 4.45m: DB	
		HQ3				5		100 [87]		5.15m: J, 0°, Ud, Ro, N, Cl 5.25m: J, 20°, Ud, Ro, N, Cl	
6.0m: Alluvium comprising clay, silt, sand, and organic soil		HQ3				6				6.0m: 6 to 7.05: Core Loss - Likely blown out at base of basalt 6.03 to 6.1m: J, 90°, Ud, Ro, N	6.36
	203/65	PT				7		30		7.05m: Silty CLAY, light grey. Stiff, moist, high plasticity	
	SS 0,0,1, 1,1,1 N=4	HQ3				8		100		7.25m: Organic Silty CLAY with some sand, blackish brown. Very stiff, moist, low plasticity 7.75m: Organic Silty CLAY, blackish brown. Soft, moist, high plasticity	
	SS 14/3 0,0,0 0,0,0 N=0 SUOW	SPT				9		100		8.3m: Silty CLAY, light grey. Soft, moist, high plasticity 8.65 to 9.55m: traces of organics	
										9.55m: Organic Silty CLAY, blackish brown. Soft, moist, high plasticity	
For explanation of symbols and observations, see key sheet				RELATIVE STRENGTH		WEATHERING		Date logged 25/03/2021		Driller McMillan	
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		Started 23/01/2023	
Date Time Drilled Depth Casing Depth Fluid Depth								Checked GP		Finished 24/01/2023	
24/01/2023 08:00 15.45 2.9 2.30										Drill Rig N119	
24/01/2023 15:00 27.00 2.9 6.36										Core Boxes 9	
Hand Held Shear Vane				Remarks						Page 1 of 8	
GEOVANE1712: 19mm blade: Calibrated 08/22: Correction factor: 1.450				Hole backfilled with grout. Shear vane readings are from the end of the barrel. Shear vane results displayed in photos are uncorrected; the corrected values are shown on the log.						Horizontal / Vertical Survey Datums: NZGD2000 - Mount Eden 2000 / New Zealand Vertical Datum 2016	
vane shear strength per NZGS guideline											

2021 EB DRILLHOLE LOG 2023-05-15 MASTER.GPJ BASE.GDT 18/05/23

Client Auckland Transport  
 Project Eastern Busway  
 Project number 60644113

Co-ordinates 411928.48mE 794998.65mN  
 Orientation -90° Elevation 11.91m  
 Location 28 Dulwich Place  
 Feature Burswood Station

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	
TAURANGA GROUP	ss 2,1,3, 4,6,8 N=21		HQ3						100		9.85 to 10.5m: Grades to high plasticity with some Sand. Exhibits slow dilatancy.	
			SPT						100		9.55m: Organic Silty CLAY, blackish brown. Soft, moist, high plasticity (continued)	
			HQ3						100		10.5m: Silty fine to medium SAND with trace organics; dark brown. Homogeneous, medium dense, dry, uniformly graded	
			SPT						100		11.15m: Organic Silty CLAY with some sand, dark brown. Soft, moist, low plasticity	
			HQ3						100		11.2 to 11.35m: Slow dilatancy	
			SPT						100		11.35m: Organic Silty CLAY, blackish brown. Soft, moist, high plasticity	
			HQ3						100		12.0m: Silty CLAY, light grey. Stiff, moist, high plasticity.	
			SPT						100		12.0 to 12.45m: Soft	
			HQ3						100		15.0m: Silty CLAY, light grey. Soft, moist, high plasticity	
			SPT						100		15.0m: shear vane push back	
		HQ3						100		15.45 to 17.05m: Contains some sand		
		SPT						100		17.05m: Silty CLAY, light grey. Firm, moist, high plasticity		
		HQ3						100		17.4m: Organic Silty Clay, dark brown. Firm, moist, high plasticity		
		SPT						100		17.8m: Silty CLAY with some sand, light grey. Stiff, moist, high plasticity		
		HQ3						100		18.0m: shear vane push back		
		SPT						100		18.45m: Strength grades to firm. Sand ceases		
		HQ3						100		19.45m: Organic Silty CLAY, blackish brown. Firm, moist, high plasticity		
		SPT						100		19.3m: shear vane push back		

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 25/03/2021  
 Logged SK  
 Checked GP

Driller McMillan  
 Started 23/01/2023  
 Finished 24/01/2023  
 Drill Rig N119  
 Core Boxes 9

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

Remarks  
 Hole backfilled with grout.  
 Shear vane readings are from the end of the barrel. Shear vane results displayed in photos are uncorrected; the corrected values are shown on the log.

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

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

Co-ordinates **411928.48mE 794998.65mN**  
 Orientation **-90°** Elevation **11.91m**  
 Location **28 Dulwich Place**  
 Feature **Burswood Station**

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 S 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>	
<b>TAURANGA GROUP</b>										19.85m: Silty CLAY, light grey. Soft, moist, high plasticity ( <i>continued</i> )	
	ss 0.0,1, 1,1,2 N=5					21		100		21.0m: shear vane push back	
		SPT				21		100		21.0m: Silty CLAY with some sand, light grey. Soft, moist, low plasticity	
						22		71 [24]		21.2m: Organic Silty CLAY with some sand, blackish brown. Firm, moist, low plasticity	
21.65m: Slightly weathered, light grey SILTSTONE; very weak.						22					
22.0m: Slightly weathered, light grey, massive, fine to coarse VOLCANICLASTIC SANDSTONE; moderately strong (PARNELL GRIT)						23		100 [60]		22.6 to 22.9m: DB, 4 drill breaks	
						23				22.9 to 23m: J, 80°, Ud, Ro, N	
						23				23.1 to 23.25m: J, 70°, Ud, Ro, T	
						24				23.45 to 23.6m: J, 60°, Ud, Ro	
24.3m: Moderately weathered, light grey, fine SANDSTONE; very weak. Carbonaceous laminations near base of unit.						24		80 [33]		23.8 to 24m: J, 50°, Ud, Ro, N, 2 joints. Closely spaced	
						25				24.0 to 24.3m: Core Loss:	
						25				24.4 to 24.65m: DB, 4 drilling breaks	
26.2 to 26.6m: Highly weathered. Extremely weak	ss 4.9,12, 15,22 for 3mm N>50					26		80 [20]		25.15 to 27m: DB, 3 drilling breaks	
						26				25.9 to 26.2m: Core Loss: Assumed highly weathered material	
						26				26.2 to 26.6m: Non-intact	
26.8m: Slightly weathered, light grey, fine SANDSTONE; weak	sc 2,11,40, 10 for 35mm N>50					27				DH314 terminated at 27m Depth Criteria Achieved	
						28					
						29					
<i>For explanation of symbols and observations, see key sheet</i>		RELATIVE STRENGTH			WEATHERING			Date logged 25/03/2021		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 SK Checked GP		Started 23/01/2023	
Hand Held Shear Vane GEOVANE1712: 19mm blade: Calibrated 08/22: Correction factor: 1.450 vane shear strength per NZGS guideline		Remarks Hole backfilled with grout. Shear vane readings are from the end of the barrel. Shear vane results displayed in photos are uncorrected; the corrected values are shown on the log.								Finished 24/01/2023	
		Horizontal / Vertical Survey Datums: NZGD2000 - Mount Eden 2000 / New Zealand Vertical Datum 2016								Drill Rig N119 Core Boxes 9	
										Page 3 of 8	

2021 EB DRILLHOLE LOG 2023-05-15 MASTER.GPJ BASE.GDT 18/05/23



**Box: 1 of 9 - Depth: 00.00m - 04.50m of 27.00m**

Date Drilled 23/01/2023 to 24/01/2023 - Date Photographed: 24/01/2023



**Box: 2 of 9 - Depth: 04.50m to 08.45m of 27.00m**

Date Drilled 23/01/2023 to 24/01/2023 - Date Photographed: 24/01/2023



**Box: 3 of 9 - Depth: 08.45m to 10.95m of 27.00m**

Date Drilled 23/01/2023 to 24/01/2023 - Date Photographed: 24/01/2023



**Box: 4 of 9 - Depth: 10.95m to 13.50m of 27.00m**

Date Drilled 23/01/2023 to 24/01/2023 - Date Photographed: 24/01/2023





**Box: 5 of 9 - Depth: 13.50m to 16.05m of 27.00m**

Date Drilled 23/01/2023 to 24/01/2023 - Date Photographed: 24/01/2023



**Box: 6 of 9 - Depth: 16.05m to 18.75m of 27.00m**

Date Drilled 23/01/2023 to 24/01/2023 - Date Photographed: 24/01/2023



**Box: 7 of 9 - Depth: 18.75m to 21.45m of 27.00m**

Date Drilled 23/01/2023 to 24/01/2023 - Date Photographed: 24/01/2023



**Box: 8 of 9 - Depth: 21.45m to 24.85m of 27.00m**

Date Drilled 23/01/2023 to 24/01/2023 - Date Photographed: 24/01/2023

Project Eastern Busway  
Location 28 Dulwich Place

HOLE IDENTIFICATION **DH314**



**Box: 9 of 9 - Depth: 24.85m to 27.00m of 27.00m**

Date Drilled 23/01/2023 to 24/01/2023 - Date Photographed: 25/01/2023

Client Auckland Transport  
 Project Eastern Busway  
 Project number 60644113

Co-ordinates 411927.08mE 794997.17mN  
 Orientation -90° Elevation 11.9m  
 Location 28 Dulwich Place  
 Feature Burswood alignment, miscellaneous structures

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 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, additional information, etc</small>	DEFECT DESCRIPTION <small>(Joints, Bedding Seams, Shatter, Shear and Crush Zones, Foliation, Schistosity, Attitude, Spacing, continuity, roughness, infilling, etc.)</small>	Instrumentation
0.0m: Vacuum excavated				VAC EX				1				0.0m: Vacuum excavated, not logged.		
1.5m: ALLUVIUM comprising silty clay.				HQ3				2		100 [0]		1.5m: Silty CLAY; light grey. Stiff, moist, high plasticity.		
3.0m: Slightly weathered, dark grey, BASALT. Moderately strong; highly vesicular.				HQ3				3		100 [35]		3.5m: J, 45°, Pl, Ro 3.55 to 4.2m: J, Ud, Ro		
4.0m: Slightly weathered, dark grey, BASALT. Strong; slightly vesicular.				HQ3				4		100 [60]				
5.9m: Highly weathered, dark grey, BASALT. Very weak.				HQ3				5		100 [85]				
								6				DH-sCPT314 terminated at 6m Depth Criteria Achieved		
								7						
								8						
								9						
<p><i>For explanation of symbols and observations, see key sheet</i></p> <p>FLUID DEPTHS AND DRILLING PROGRESS (m)                  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 25/01/2023</p> <p>Logged FK</p> <p>Checked MC</p>		<p>Driller McMillan</p> <p>Started 25/01/2023</p> <p>Finished 25/01/2023</p> <p>Drill Rig N119</p> <p>Core Boxes 3</p>				
<p>Hand Held Shear Vane</p> <p><i>vane shear strength per NZGS guideline</i></p>				<p>Remarks</p> <p>No Groundwater Level recorded.</p>		<p>Horizontal / Vertical Survey Datums: NZGD2000 - Mount Eden 2000 / New Zealand Vertical Datum 2016</p>		<p>Page 1 of 3</p>						

2021 EB DRILLHOLE LOG 2023-06-09 MASTER.GPJ BASE.GDT 15/09/23



**Box: 1 of 3 - Depth: 00.00m to 03.50m of 6.00m**

Date Drilled 25/01/2023 to 25/01/2023 - Date Photographed: 25/01/2023



**Box: 2 of 3 - Depth: 03.50m to 05.30m of 6.00m**

Date Drilled 25/01/2023 to 25/01/2023 - Date Photographed: 25/01/2023



**Box: 3 of 3 - Depth: 05.30m to 06.00m of 6.00m**

Date Drilled 25/01/2023 to 25/01/2023 - Date Photographed: 25/01/2023

Client Auckland Transport  
 Project Eastern Busway  
 Project number 60644113

Co-ordinates  
 Orientation -90° Elevation  
 Location 30 Heathridge Place  
 Feature Burswood Station

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 VV</small>	Rock Weathering <small>SW MW HW</small>	Depth	Graphic Log	TCR [RQD] (%)	Spacing of Natural Defects <small>400 300 200 100 0</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, 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 0.7m: ALLUVIUM comprising clay and silt.	129/54		HQ3				1		53		0.0 to 0.7m: Core Loss: Washed out.	
	146/71						2		40		0.7m: Silty CLAY; light grey mottled orange brown. Stiff, moist, high plasticity.	
	141/23		PT				3		100		2.37 to 2.6m: J, 60°, Ud, Ro, VN, Fe 2.6m: J, Ud, Ro, VN, Fe	
AUCKLAND VOLCANIC FIELD 2.37m: Moderately weathered, dark grey, BASALT. Moderately strong. Highly vesicular. Vesicles up to 30mm. 3.25m: Slightly weathered, dark grey speckled grey, BASALT. Strong. Moderately vesicular. Vesicles up to 40mm. 3.45 to 3.8m: Slightly vesicular.	90/15		SPT				4		100		3.5m: DB, Ud, Ro	
	1,1,1,3,3 N=3		HQ3				5		100 [79]		4.04 to 4.17m: J, 70°, Pl, Sm, VN, NF	
TAURANGA GROUP 4.5m: ALLUVIUM comprising clay, silt, fine sand and organics.	12/4		HQ3				6		100		4.5m: Silty CLAY; grey. Firm, moist, high plasticity. 4.8m: Becomes brown. 5.25m: Becomes light grey. 5.55m: Becomes soft.	4.79 5.45 6.2
	0,0,0,0,0 N=0 SUOW		PT				7		80		6.25m: Organic silty CLAY; blackish brown. Soft, moist, high plasticity.	
	0,0,0,0,0 N=0 SUOW		SPT				8		100		6.8m: Silty CLAY with trace indistinct organics; light grey. Soft, moist, high plasticity.	
	0,0,0,0,0 N=0 SUOW		HQ3				9		100		7.5m: Silty CLAY; light grey. Soft, moist, high plasticity. 7.5m: Shear vane pushed back. 7.75m: Trace indistinct organics.	
	0,0,0,0,0 N=0 SUOW		SPT				10		100		7.95m: Organic silty CLAY; blackish brown. Soft, moist, high plasticity. 8.1 to 8.6m: Brownish gery.	
	0,0,0,0,0 N=0 SUOW		HQ3				11		100		8.9 to 9.0m: Slow dilatancy.	
	0,0,0,0,0 N=0 SUOW		SPT				12		100		9.0m: Silty CLAY; brownish light grey. Soft, moist, high plasticity.	
	0,0,0,0,0 N=0 SUOW		HQ3				13		100		9.45m: Silty fine to medium SAND; brown. Homogeneous, dense, dry, gap graded.	
	7/1 0,0,0,0,0 N=0 SUOW		SPT				14		100			
For explanation of symbols and observations, see key sheet			RELATIVE STRENGTH		WEATHERING		Date logged 19/10/2022		Driller McMillan			
FLUID DEPTHS AND DRILLING PROGRESS (m)			VS - Very strong		UW - Unweathered		Logged FK		Started			
Date Time Drilled Depth Casing Depth Fluid Depth			S - Strong		SW - Slightly weathered		Checked GP		18/10/2022			
18/10/2022 16:52 25.50 1.4 4.79			MS - Moderately strong		MW - Moderately weathered				Finished			
19/10/2022 08:10 25.50 1.4 5.45			W - Weak		HW - Highly weathered				19/10/2022			
19/10/2022 11:51 31.50 1.4 6.2			VV - Very weak		CW - Completely weathered				Drill Rig N119			
Hand Held Shear Vane			EW - Extremely weak						Core Boxes 11			
DR1980: 19mm (A). Calibrated Jun 2022: Correction Factor: 1.876			Remarks						Page 1 of 10			
vane shear strength per NZGS guideline			50 mm standpipe piezometer installed on completion.									
			As built coordinates to come.									
			Horizontal / Vertical Survey Datums: NZGD2000 - Mount Eden									
			2000 / New Zealand Vertical Datum 2016									

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

Client Auckland Transport  
 Project Eastern Busway  
 Project number 60644113

Co-ordinates  
 Orientation -90° Elevation  
 Location 30 Heathridge Place  
 Feature Burswood Station

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	
TAURANGA GROUP	UTP	0-50	HQ3						100		9.7m: Organic silty CLAY; blackish brown. Soft, moist, high plasticity. (continued)	
	2,6,9,11,15,15	N=50	SPT						100		10.3m: Silty fine to medium SAND with some clay; light grey. Dense, gap graded.	
			HQ3						100		10.93m: Becomes brown.	
	55/3		SPT						100		11.03m: Organic silty CLAY; dark brown. Soft, moist, high plasticity.	
	0,0,0,0,2,1	N=3	HQ3						100		11.8m: Silty CLAY with trace indistinct organics; light grey. Firm, moist, high plasticity.	
			SPT						100		12.5m: Organics cease.	
	1,1,1,2,2,2	N=7	HQ3						100		13.0 to 15.45m: Blueish	
			SPT						100		13.5m: Shear vane pushed back.	
	65/29		HQ3						100		15.45m: Silty CLAY with traces of fine sand; blueish grey. Firm, moist, high plasticity.	
	0,0,0,0,0,0	N=0	SPT						100		15.75m: Silty CLAY; brownish grey. Soft, moist, high plasticity.	
			HQ3						100		16.15m: Trace indistinct organics.	
	30/4		SPT						100		16.75m: Organic silty CLAY; dark brown. Firm, moist, high plasticity.	
0,0,0,0,0,0	N=0	HQ3						100		17.05m: Silty CLAY with traces of sand; light grey. Firm, moist, high plasticity.		
		SPT						100		18.0m: Silty CLAY; light grey. Stiff, moist, high plasticity.		
0,0,2,1,2,1	N=6	HQ3						100		18.0m: Shear vane pushed back.		
		SPT						100		18.5m: Trace indistinct organics.		
39/7		HQ3						100		18.55m: Organic silty CLAY; dark brown. Firm, moist, high plasticity.		
0,0,0,0,0,0	N=0	SPT						100		18.85m: Silty CLAY; light grey. Firm, moist, high plasticity.		

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	WEATHERING	Date logged 19/10/2022	Driller McMillan Started 18/10/2022 Finished 19/10/2022 Drill Rig N119 Core Boxes 11
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	
Remarks 50 mm standpipe piezometer installed on completion. As built coordinates to come.	Horizontal / Vertical Survey Datums: NZGD2000 - Mount Eden 2000 / New Zealand Vertical Datum 2016		

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



Client Auckland Transport  
 Project Eastern Busway  
 Project number 60644113

Co-ordinates  
 Orientation -90° Elevation  
 Location 30 Heathridge Place  
 Feature Burswood Station

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, 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>	
TAURANGA GROUP	SS 0.0,1, 1,2,2 N=6	HQ3				21		100		20.25m: Silty CLAY with trace fine sand; light grey. Stiff, moist, high plasticity.	
										20.55m: Organic silty CLAY; dark brown. Stiff, moist, high plasticity.	
EAST COAST BAYS FORMATION		SPT				21		100		21.0m: Silty CLAY with trace fine sand; light grey. Stiff, moist, high plasticity. 21.0m: Shear vane pushed back.	
		HQ3				22		100 [48]	21.6m: J, 70°, Pl, Ro, VN, Sit		
		HQ3				23		93 [0]	22.08m: BP, 15°, Ud, Ro 22.4m: BP, 20°, Pl, Sm 22.42m: BP, 15°, Ud, Sm 22.8 to 23.6m: Non-intact; recovered as fine to coarse subangular gravel.		
		HQ3				24			23.7 to 24m: DB, Ud, Ro, N, 3 No.		
		HQ3				25		67 [0]	24.0 to 25.8m: Non-intact; recovered as fine to coarse subangular gravel.		
		HQ3				26		62 [0]	24.75 to 25.25m: Core Loss:		
		HQ3				27		100 [0]	26.25 to 26.7m: Core Loss:		
		HQ3				28		100 [14]	27.3 to 27.45m: DB, Ud, Ro, N, 4 No. 27.7m: J, 20°, Ud, Ro, N, Cc 27.7 to 27.8m: Siltstone		
		HQ3				29		100 [43]	27.9 to 28.7m: Ve, 90°, Cc, 1mm. 27.95 to 28.1m: J, 60°, Ud, Ro, N, Cc 29.35 to 29.45m: J, 60°, Pl, Ro, VN, NF 29.35 to 29.5m: Fine sandstone 29.4 to 29.6m: DB, Ud, Ro, 4 No.		
		For explanation of symbols and observations, see key sheet			RELATIVE STRENGTH		WEATHERING		Date logged 19/10/2022		
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 18/10/2022		
Hand Held Shear Vane DR1980: 19mm (A). Calibrated Jun 2022: Correction Factor: 1.876 vane shear strength per NZGS guideline			Remarks 50 mm standpipe piezometer installed on completion. As built coordinates to come.						Finished 19/10/2022		
			Horizontal / Vertical Survey Datums: NZGD2000 - Mount Eden 2000 / New Zealand Vertical Datum 2016						Drill Rig N119 Core Boxes 11		
									Page 3 of 10		

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

Client Auckland Transport  
 Project Eastern Busway  
 Project number 60644113

Co-ordinates  
 Orientation -90° Elevation  
 Location 30 Heathridge Place  
 Feature Burswood Station

GEOLOGICAL DESCRIPTION <small>Weathering, Colour, Fabric, ROCK NAME. Strength, Discontinuities, Lithological Features (bedding, foliation, mineralogy, cement, etc).</small>	Test Records  Shear Vane/ SPT      SPT N Values 0 - 50	Drilling Method <small>Casing remarks</small>	Core Loss/Lift <small>0 - 100%</small>	Relative Strength <small>VS S Strong MS - Moderately strong W - Weak VW - Very weak EW - Extremely weak</small>	Rock Weathering <small>SW Slightly weathered MW - Moderately weathered HW - Highly weathered CW - Completely weathered</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>	
29.7m: Highly weathered, light grey. Fine to medium SANDSTONE. Very weak. (continued)											
30.6m: Slightly weathered, light grey, SILTSTONE. Very weak. Thickly bedded.						31		93 [93]		30.5 to 30.6m: Core Loss: Washed out.  31.05 to 31.5m: DB, Ud, Ro, N, 2 No.	
31.3m: SW, light grey, fine to medium SANDSTONE. Weak.						32				DH315_P terminated at 31.5m Depth Criteria Achieved	
						33					
						34					
						35					
						36					
						37					
						38					
						39					
<i>For explanation of symbols and observations, see key sheet</i>				RELATIVE STRENGTH		WEATHERING		Date logged 19/10/2022		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 18/10/2022	
Hand Held Shear Vane DR1980: 19mm (A). Calibrated Jun 2022: Correction Factor: 1.876 <i>vane shear strength per NZGS guideline</i>				Remarks 50 mm standpipe piezometer installed on completion.  As built coordinates to come.						Finished 19/10/2022	
				Horizontal / Vertical Survey Datums: NZGD2000 - Mount Eden 2000 / New Zealand Vertical Datum 2016						Drill Rig N119 Core Boxes 11	
										Page 4 of 10	

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



**Box: 1 of 11 - Depth: P\DH315\_P 0.00m to 3.82m of 31.50m**  
 Date Drilled 18/10/2022 to 19/10/2022 - Date Photographed: 18/10/2022



**Box: 2 of 11 - Depth: P\DH315\_P 3.82m to 7.30m of 31.50m**  
 Date Drilled 18/10/2022 to 19/10/2022 - Date Photographed: 18/10/2022



**Box: 3 of 11 - Depth: P\DH315\_P 7.30m to 9.90m of 31.50m**  
 Date Drilled 18/10/2022 to 19/10/2022 - Date Photographed: 18/10/2022



**Box: 4 of 11 - Depth: P\DH315\_P 9.90m to 12.45m of 31.50m**  
 Date Drilled 18/10/2022 to 19/10/2022 - Date Photographed: 18/10/2022



**Box: 5 of 11 - Depth: P\DH315\_P 12.45m to 15.20m of 31.50m**  
 Date Drilled 18/10/2022 to 19/10/2022 - Date Photographed: 18/10/2022



**Box: 6 of 11 - Depth: P\DH315\_P 15.20m to 18.0m of 31.50m**  
 Date Drilled 18/10/2022 to 19/10/2022 - Date Photographed: 18/10/2022



**Box: 7 of 11 - Depth: P\DH315\_P 18.0m to 21.0m of 31.50m**  
 Date Drilled 18/10/2022 to 19/10/2022 - Date Photographed: 18/10/2022



**Box: 8 of 11 - Depth: P\DH315\_P 21.0m to 24.0m of 31.50m**  
 Date Drilled 18/10/2022 to 19/10/2022 - Date Photographed: 18/10/2022



**Box: 9 of 11 - Depth: P\DH315\_P 24.0m to 27.8m of 31.50m**  
 Date Drilled 18/10/2022 to 19/10/2022 - Date Photographed: 18/10/2022



**Box: 10 of 11 - Depth: P\DH315\_P 27.8m to 30.1m of 31.50m**  
 Date Drilled 18/10/2022 to 19/10/2022 - Date Photographed: 18/10/2022

Project Eastern Busway  
Location 30 Heathridge Place

HOLE IDENTIFICATION **DH315\_P**



**Box: 11 of 11 - Depth: P\DH315\_P 30.1m to 31.5m of 31.50m**  
Date Drilled 18/10/2022 to 19/10/2022 - Date Photographed: 18/10/2022