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**Queensland
Government**

Department of
Main Roads

ENGINEERING BOREHOLE

FOR GEOTECHNICAL TERMS AND
SYMBOLS REFER FORM F:GEOT 017/2-2004

BOREHOLE No BH122

SHEET 1 of 4

REFERENCE No H9431

PROJECT GATEWAY UPGRADE PROJECT GEOTECHNICAL INVESTIGATION - NORTHERN SECTION

LOCATION CONTROL LINE: MCQO - Ch. 612.4 - OFFSET 5.8 R COORDINATES 9268.3 E; 172498.8 N

PROJECT No FM2055 SURFACE R.L. 0.99 DATE STARTED 9/7/04 DATUM SETP

JOB No DATUM AHD DATE COMPLETED 12/7/04 DRILLER R&D DRILLING PTY LTD

DEPTH (m)	R.L. (m)	Auger Casing Borehole Core Drilling	RQD (%)	CORE REC %	SAMPLE	MATERIAL DESCRIPTION	LITHOLOGY	USC WEATHERING	INTACT STRENGTH	DEFECT SPACING (mm)	GRAPHIC LOG	ADDITIONAL DATA AND TEST RESULTS	SAMPLES TESTS
0	0.99												
1						ESTUARINE WEATHERED OC CRUST Dark grey to mottled brown, moist, mainly firm to stiff, sensitive to extra sensitive. High plasticity; high organic content; some jarosite crystals along cracks; slightly fissured and partly decomposed plant roots.		OL				Peak Su=51.2kPa; Res Su=6.4kPa pHf=3.85, pHfox=2.55 LL=46.4%, PI=22.2%, LS=12.2% OC=6.75% MC=49.2%, WD=1.70t/m3 DD=1.14t/m3	FSV U100
2	-0.51					ESTUARINE SANDY SILTY CLAY Dark grey, moist to slightly wet, soft to mainly firm, sensitive to extra sensitive. Medium organic content; high plasticity; some partly decomposed plant materials; some silty sand interlayers up to 60mm.						Peak Su=31.5kPa; Res Su=5.4	FSV
3												pHf=6.76, pHfox=1.98 LL=33.2%, PI=15.6%, LS=8.4%, MC=47.6%, APD=1.82t/m3, DD=1.22t/m3 OC=6.60%, APD=2.660t/m3	U100
4												Peak Su=29.7kPa; Res Su=3.6kPa	FSV
5								CI				pHf=7.74, pHfox=2.65 LL=38.4%, PI=20.0%, LS=11.2% OC=4.65%, APD=2.663t/m3 MC=40.0%, WD=1.90t/m3, DD=1.36t/m3	U100
6												Peak Su=24.3kPa; Res Su=2.7kPa	FSV
7						Shell fragments (some partly weathered) below 7m, sand becomes medium to coarse with depth.						pHf=7.43, pHfox=1.56 LL=33.4%, PI=19.2%, LS=9.4% OC=3.85% MC=37.8%, WD=1.94t/m3, DD=1.42t/m3	U100
8												Exceeded the maximum gauge reading and therefore terminated	FSV
9	-7.71											Peak Su=54.4kPa; Res Su=6.4kPa	FSV
10	-9.01					ESTUARINE SAND Dark grey to pale grey, mainly moist to slightly wet, mainly very loose to loose. Mainly fine to medium grained sand, some organic particles.		SP				RW,-1 N<1	SPT

REMARKS SPT N values in sand and gravel can overestimate density due to influence of coarser size gravel particles. Defect angles have been measured with respect to a horizontal plane. Defect angles have been measured with respect to a horizontal plane.

LOGGED BY
B.Woodgate & A.Dissanayake



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BOREHOLE No BH122

SHEET 2 of 4

REFERENCE No H9431

PROJECT GATEWAY UPGRADE PROJECT GEOTECHNICAL INVESTIGATION - NORTHERN SECTION

LOCATION CONTROL LINE: MCQO - Ch. 612.4 - OFFSET 5.8 R COORDINATES 9268.3 E, 172498.8 N

PROJECT No FM2055 SURFACE R.L. 0.99 DATE STARTED 9/7/04 DATUM SETP

JOB No DATUM AHD DATE COMPLETED 12/7/04 DRILLER R&D DRILLING PTY LTD

DEPTH (m)	R.L. (m)	AUGER CASING WASH BORING CORE DRILLING	RQD () %	CORE REC %	SAMPLE	MATERIAL DESCRIPTION	LITHOLOGY	USC	WEATHERING	INTACT	DEFECT					GRAPHIC LOG	ADDITIONAL DATA AND TEST RESULTS	SAMPLES TESTS	
										STRENGTH	SPACING (mm)	20	60	200	600				2000
10	-9.01					ESTUARINE SAND (As above)		SP									2,2,2 N=4	SPT	
	-9.51					ESTUARINE - SILTY SAND Pale grey, moist to wet, loose to medium dense, medium to coarse grained sand.		SM											
11																			
	-10.41																Loose sand	2,5,6 N=11	SPT
						CLAYEY / SILTY SAND - ALLUVIUM Brown to orange brown, moist, medium dense.											Loose sand		
12																			
						Fine to medium gravel sand, some red brown lateritic and concreted zones.												4,4,10 N=14	SPT
13								SC- SM											
																		8,11,14 N=25	SPT
14	-13.01					SAND - ALLUVIUM Pale brown to orange brown, wet, loose to mainly medium dense.													
						Mainly fine to medium sand.												5,8,9 N=17	SPT
15																			
16																		4,4,6 N=10	SPT
17								SP											
																		5,6,9 N=15	SPT
18																			
19																			
																		3,6,9 N=15	SPT
20	-19.01																		

REMARKS SPT N values in sand and gravel can overestimate density due to influence of coarser size gravel particles. Defect angles have been measured with respect to a horizontal plane. Defect angles have been measured with respect to a horizontal plane.

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BOREHOLE No **BH122**

SHEET **3** of **4**

REFERENCE No **H9431**

PROJECT **GATEWAY UPGRADE PROJECT GEOTECHNICAL INVESTIGATION - NORTHERN SECTION**

LOCATION **CONTROL LINE: MCQO - Ch. 612.4 - OFFSET 5.8 R** COORDINATES **9288.3 E, 172498.8 N**

PROJECT No **FM2055** SURFACE R.L. **0.99** DATE STARTED **9/7/04** DATUM **SETP**

JOB No DATUM **AHD** DATE COMPLETED **12/7/04** DRILLER **R&D DRILLING PTY LTD**

DEPTH (m)	R.L. (m)	AUGER CASING WASH BORING CORE DRILLING	RQD () %	CORE REC %	SAMPLE	MATERIAL DESCRIPTION	LITHOLOGY	USC	WEATHERING	INTACT STRENGTH	DEFECT SPACING (mm)	GRAPHIC LOG	ADDITIONAL DATA AND TEST RESULTS	SAMPLES TESTS	
															EH VH H M L EL
20	-19.01					SAND - ALLUVIUM (As above)									
						Some clay fraction, some gravel layers.							4,8,9 N=17	SPT	
21															
22													4,5,10 N=15	SPT	
23								SP							
24													4,9,14 N=23	SPT	
												Gravel layer			
25													10,11,19 N=30	SPT	
26	-25.01					SAND AND GRAVEL - ALLUVIUM Brown, wet, very dense.									
						Gravel size increases to cobble with depth.		GP					Hammer bounced. Roller bit damaged.	30/100,HB,- N>50	SPT
27															
	-26.31					INTERBEDDED SANDSTONE AND MUDSTONE FINE TO MEDIUM GRAINED INTERBEDDED, POORLY CEMENTED SEDIMENTARY ROCK.							30/95,-,- N>50	SPT	
28						HW : Pale grey to pale orange, moist, very dense, silty sand, gradually grading into very low to low strength rock.		HW							
	-27.51				(100)	MW : Orange, thinly laminated, very low to low strength.		MW					Is(50)=0.17 MPa Is(50)=0.07 MPa	o x	
29						SW : Dark grey to grey, thinly laminated, interbedded, low to medium strength.		SW					Is(50)=0.08 MPa Is(50)=0.06 MPa	o x	
30	-29.01					Frequent carbonaceous laminations.									

REMARKS SPT N values in sand and gravel can overestimate density due to influence of coarser size gravel particles. Defect angles have been measured with respect to a horizontal plane. Defect angles have been measured with respect to a

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BOREHOLE No BH122

SHEET 4 of 4

REFERENCE No H9431

PROJECT GATEWAY UPGRADE PROJECT GEOTECHNICAL INVESTIGATION - NORTHERN SECTION

LOCATION CONTROL LINE: MCQO - Ch. 612.4 - OFFSET 5.8 R COORDINATES 9268.3 E; 172498.8 N

PROJECT No FM2055 SURFACE R.L. 0.99 DATE STARTED 9/7/04 DATUM SETP

JOB No ----- DATUM AHD DATE COMPLETED 12/7/04 DRILLER R&D DRILLING PTY LTD

DEPTH (m)	R.L. (m)	AUGER CASING WASH BORING CORE DRILLING	ROD () % CORE REC %	SAMPLE	MATERIAL DESCRIPTION	LITHOLOGY	USC WEATHERING	INTACT STRENGTH					DEFECT SPACING (mm)	GRAPHIC LOG	ADDITIONAL DATA AND TEST RESULTS	SAMPLES TESTS
								EH	VH	H	M	J	VL			
30	-29.01				SW : (As above)											
					Defects : - Drilling induced frequent lamination parting <30deg (2-4/m).		SW								Is(50)=0.32 MPa Is(50)=0.16 MPa Is(50)=1.00 MPa Is(50)=0.52 MPa Is(50)=0.21 MPa Is(50)=0.15 MPa	o x x o x o
31	-30.01		100 (90)		SANDSTONE FINE TO MEDIUM GRAINED, GENERALLY MASSIVE, POORLY CEMENTED SEDIMENTARY ROCK.										Is(50)=1.03 MPa Is(50)=0.89 MPa	o x
					SW : Pale grey to grey, laminated, low to mainly medium strength with some high strength bands.		SW								Red brown ironstained, MW sandstone.	
			94 (100)		Frequent carbonaceous laminations.											
					Defects - Generally rare. - Drilling induced lamination partings <20deg (2-3/m). - Joints @ 80deg (1/m).										Is(50)=0.24 MPa Is(50)=0.46 MPa	o x
33	-32.51		100		Borehole terminated at 33.5m											
34																
35																
36																
37																
38																
39																
40																

REMARKS SPT N values in sand and gravel can overestimate density due to influence of coarser size gravel particles. Defect
angles have been measured with respect to a horizontal plane. Defect angles have been measured with respect to a
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Project: **Gateway Upgrade Project Geotechnical Investigation**
Borehole No: **BH 122**
Start Depth: 28.50m
Finish Depth: 33.50m
Project No: FM2055
H No: 9431

