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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 BH126

SHEET 1 of 4

REFERENCE No H9435

PROJECT GATEWAY UPGRADE PROJECT GEOTECHNICAL INVESTIGATION - NORTHERN SECTION

LOCATION CONTROL LINE: MCAO - Ch. 22588.4 - OFFSET 30.0 R COORDINATES 9537.9 E; 172843.4 N

PROJECT No FM2055 SURFACE R.L. 1.63 DATE STARTED 28/6/04 DATUM SETP

JOB No DATUM AHD DATE COMPLETED 29/6/04 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
0	1.63					GRAVELLY CLAY - FILL Brown, moist, firm to stiff.		GC					
0.88						ESTUARINE WEATHERED OC CRUST Grey to mottled brown, moist, firm. High organic content; partly decomposed plant materials; mottled and hard red concreted zones.		OH				29/6/04 6/7/07/4 7/9/04 pHf=6.14, pHfox=2.00 PP=35kPa LL=40.8%, PI=21.2%, LS=12.0% APD=2.705t/m3, OC=24.65% MC=30.2%, WD=1.92t/m3, DD=1.48t/m3 Peak Su=17.1kPa; Res Su=4kPa	U100
0.23						ESTUARINE SILTY CLAY Dark grey, moist, soft, sensitive. High organic content; high plasticity, partly decomposed plant roots in the upper area, no shell fragments present.		OH					FSV
								OH				pHf=6.70, pHfox=1.09 PP=15kPa LL=67.0%, PI=29.0%, LS=17.2% APD=2.730t/m3, OC=12.35% MC=122.3%; WD=1.46t/m; DD=0.66t/m3 Peak Su=21.6kPa; Res Su=4.5kPa	U100
								SW/SP/SC/SM				pHf=7.31, pHfox=5.35 LL=67.0%, PI=29.0%, LS=17.2% APD=2.730t/m3, OC=12.35% MC=122.3%; WD=1.46t/m; DD=0.66t/m3 Peak Su=21.6kPa; Res Su=4.5kPa	FSV
	-2.97					ESTUARINE SILTY SAND / CLAYEY SAND Pale grey to grey, wet, very loose. High content of partly decomposed to unweathered shells; fine to medium grained sand; normal grading.		SW/SP/SC/SM				pHf=7.31, pHfox=5.35 LL=67.0%, PI=29.0%, LS=17.2% APD=2.730t/m3, OC=12.35% MC=122.3%; WD=1.46t/m; DD=0.66t/m3 Peak Su=21.6kPa; Res Su=4.5kPa	U100
	-3.97					ESTUARINE SILTY CLAY Dark grey, moist, mainly soft to slightly firm, sensitive. High organic content; shell fragments throughout, medium to high plasticity.		OH				Peak Su=19.8kPa; Res Su=4.5kPa	FSV
								OH				pHf=7.90, pHfox=3.24 PP=30.0kPa LL=47.8%, PI=26.4%, LS=14.6% APD=2.713t/m3, OC=7.60% MC=63.0%, WD=1.68t/m3, DD=1.02t/m3 Peak Su=27.0kPa; Res Su=5.4kPa	U100
						High shell content (approx 30%) at 8.4m, and decreasing with depth.		OH				Peak Su=27.0kPa; Res Su=5.4kPa	FSV
								OH				pHf=7.81, pHfox=6.60 PP=40.0kPa LL=65.4%, PI=34.4%, LS=18.6% APD=2.723t/m3, OC=11.45% MC=58.4%	U100
10	-8.37												

REMARKS Defect angles have been measured with respect to a horizontal plane.

LOGGED BY
B.Woodgate & A.Dissanayake



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BOREHOLE No BH126

SHEET 2 of 4

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PROJECT GATEWAY UPGRADE PROJECT GEOTECHNICAL INVESTIGATION - NORTHERN SECTION
 LOCATION CONTROL LINE: MCAO - Ch. 22588.4 - OFFSET 30.0 R COORDINATES 9537.9 E; 172843.4 N
 PROJECT No FM2055 SURFACE R.L. 1.63 DATE STARTED 28/6/04 DATUM SETP
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DEPTH (m)	R.L. (m)	AUGER CASING WASH BORING CORE DRILLING	RQD (%)	MATERIAL DESCRIPTION	LITHOLOGY	USC WEATHERING	INTACT STRENGTH	DEFECT SPACING (mm)	GRAPHIC LOG	ADDITIONAL DATA AND TEST RESULTS	SAMPLES TESTS
10	-8.37			ESTUARINE SILTY CLAY (As above, but medium sensitive). Occasional shell fragments; flightly fissured and cubic structures in some areas.	OH					pHf=8.55, pHfox=5.97 PP=45.0kPa LL=56.0%, PI=31.2%, LS=16.4% APD=2.702t/m3 MC=58.2%, WD=1.64t/m3, DD=1.04t/m3; OC=10.10% Peak Su=48.0kPa; Res Su=16.0kPa	U100 FSV
12	-10.47			ESTUARINE SILTY SAND Pale grey to grey, wet, very loose to loose. Fine grained sand; partly decomposed to unweathered shells.	SM					pHf=8.03, pHfox=1.20 LL=48.8%, PI=26.8%, LS=14.4% MC=49.2%	U100
13	-10.87			ESTUARINE SILTY CLAY Dark grey, moist, firm to stiff, medium sensitive to sensitive. Occasional shell fragments and organic layers; slightly fissured with incipient mottling in some areas.	OH					Peak Su=41.6kPa; Res Su=11.2kPa	FSV
15				Fissuring increases with depth.	OH					pHf=8.29, pHfox=5.76 LL=66.0%, PI=35.0%, LS=19.6% OC=10.35%, MS=32.1kPa MC=72.4%, WD=1.58t/m3, DD=0.92t/m3; APD=2.67t/m3 Peak Su=51.2kPa; Res Su=12.8kPa	U100 FSV
18				Heavily fissured with some organic fragments.	OH					pHf=8.25, pHfox=6.75 LL=67.2%, PI=35.6%, LS=19.6% OC=11.95%, MS=41.4kPa MC=75.8%, WD=1.59t/m3, DD=0.90t/m3; APD=2.65t/m3 Peat Layer pHf=7.97, pHfox=1.10 LL=74.6%, PI=39.4%, LS=20.2% OC=46.25%, MS=40.7kPa MC=84%, WD=1.55t/m3, DD=0.84t/m3; APD=2.62t/m3 Peat Layer Peak Su=70.5kPa; Res Su=19.2kPa	U100 FSV
20	-18.37									pHf=7.72, pHfox=1.27 LL=66.0%, PI=36.4%, LS=18.8% OC=10.65%, MS=41.9kPa; MC=67.4%, WD=1.65t/m3, DD=0.99t/m3; APD=2.66t/m3	U100

REMARKS Defect angles have been measured with respect to a horizontal plane.

LOGGED BY
B.Woodgate & A.Dissanayake



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BOREHOLE No BH126
SHEET 3 of 4
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PROJECT GATEWAY UPGRADE PROJECT GEOTECHNICAL INVESTIGATION - NORTHERN SECTION
LOCATION CONTROL LINE: MCAO - Ch. 22588.4 - OFFSET 30.0 R COORDINATES 9537.9 E; 172843.4 N
PROJECT No FM2055 SURFACE R.L. 1.63 DATE STARTED 28/6/04 DATUM SETP
JOB No _____ DATUM AHD DATE COMPLETED 29/6/04 DRILLER R&D DRILLING PTY LTD

DEPTH (m)	R.L. (m)	ALGER 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	
														OH
20	-18.37					ESTUARINE SILTY CLAY (As above) Occasional shell fragments, fissured and cubic structures towards bottom.		OH				Peak Su=96kPa; Res Su=20.8kPa	FSV	
21	-19.57					ESTUARINE SANDY GRAVEL Grey, moist to mainly wet, medium dense, fine to medium sand.		GM-GC				pHf=7.14, pHfox=0.62 LL=22.4%, PI=1.6%, LS=1.6%	U100	
22	-20.12					ESTUARINE GRAVELLY SAND Pale grey to grey, wet, very loose to loose. High organic and fine content; particles are mainly quartzitic, medium to coarse gravel with some gravel.							4,3,5 N=8	SPT
23								SP/SC/SM					3,2,3 N=5	SPT
24													2,2,2 N=4	SPT
25	-23.07					SAND AND GRAVEL - ALLUVIUM Pale grey brown, wet, medium dense.							4,7,7 N=14	SPT
26												Used roller bit below 26.0m	5,6,6 N=12	SPT
27								GP					7,8,7 N=15	SPT
28												No recovery	10,7,6 N=13	SPT
29	-27.47					RESIDUAL CLAYEY SAND Pale grey brown to orange, moist, medium dense. Fine grained sand.		SC					30,7,20,15,10 N=25	SPT
30	-28.37													

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SHEET 4 of 4

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PROJECT GATEWAY UPGRADE PROJECT GEOTECHNICAL INVESTIGATION - NORTHERN SECTION

LOCATION CONTROL LINE: MCAO - Ch. 22588.4 - OFFSET 30.0 R COORDINATES 9537.9 E; 172843.4 N

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DEPTH (m)	R.L. (m)	AUGER CASING WASH BORING CORE DRILLING	RQD (%)	CORE REC %	SAMPLE	MATERIAL DESCRIPTION	LITHOLOGY	USC	WEATHERING						DEFECT SPACING (mm)	GRAPHIC LOG	ADDITIONAL DATA AND TEST RESULTS	SAMPLES TESTS
									EH	EH	EH	EH	EH	EH				
30	-28.37					RESIDUAL CLAYEY SAND (As above) Minor relic laminations throughout.		SC								8, 10, 14 N=24	SPT	
31	-29.37					SANDSTONE FINE TO MEDIUM GRAINED, THINLY LAMINATED, POORLY CEMENTED, SEDIMENTARY ROCK. HW : Pale grey to orange brown, moist, dense to very dense clayey sand, gradually grading in to very low to low strength rock. SW : Pale grey, thinly laminated, massive, mainly low to medium strength.		HW								30/60, -- N>50	SE4	
32	-30.37		(93)			Defects - Generally rare. - Occasional drilling induced lamination partings 25deg-35deg (1/2-3m). - Joints @ 70deg (1/2m).										Is(50)=0.26 MPa Is(50)=0.12 MPa	o x	
33																Is(50)=0.26 MPa Is(50)=0.47 MPa	o x	
34																Is(50)=0.30 MPa Is(50)=0.38 MPa	o x	
35			(100)			Rock mass tends to break along lamination partings if exposed to the atmosphere extensively; some coarse grained and calcareously cemented bands with medium strength.		SW								Is(50)=0.26 MPa Is(50)=0.12 MPa	o x	
36																Is(50)=0.13 MPa Is(50)=0.12 MPa	o x	
37			(100)			Becoming medium strength below 36.9m.										Is(50)=0.19 MPa Is(50)=0.22 MPa Is(50)=0.37 MPa Is(50)=0.37 MPa	o x x o	
38																Is(50)=0.47 MPa Is(50)=0.74 MPa	o x	
39	-37.37					Borehole terminated at 39m												
40																		

REMARKS Defect angles have been measured with respect to a horizontal plane.

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Project: **Gateway Upgrade Project Geotechnical Investigation**

Borehole No: **BH 126**

Start Depth: 32.00m

Finish Depth: 39.00m

Project No: FM2055

H No: 9435

