Queensland Government
Department of Main Roads

ENGINEERING BOREHOLE

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

BOREHOLE No BH112
SHEET 1 of 4
REFERENCE No H9421

PROJECT GATEWAY UPGRADE PROJECT GEOTECHNICAL INVESTIGATION - NORTHERN SECTION
LOCATION CONTROL LINE: MCAO - Ch. 20523 - OFFSET 18.8 R
COORDINATES 8844.7 E; 170976.8 N
PROJECT No FM2055
SURFACE R.L. 4.06
DATE STARTED 27/7/04
DATUM SETP
JOB No
DATUM AHD
DATE COMPLETED 28/7/04
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 (EH VH H M L VL EL)	DEFECT SPACING (mm) (20 60 200 600 2000)	GRAPHIC LOG	ADDITIONAL DATA AND TEST RESULTS	SAMPLES / TESTS
0	4.06				**SANDY SILTY CLAY - FILL** Dark grey, wet, very soft. High content of partly decomposed shell fragments; minor organic fraction.		OL-CL					Possible hydraulically placed deposit. 1,-,- N<1	SPT
1.56					**ESTUARINE WEATHERED OC CRUST** Dark grey to mottled brown, moist, soft to mainly firm. High organic content.		OL					1,2,2 N=4	SPT
0.56					**ESTUARINE SILTY CLAY** Dark grey, moist, very soft to soft, sensitive.		OH					HW,-,1 N<1	SPT
													U50
												Peak Su=35.2kPa, Res Su=8.0kPa	FSV
													U50
-5.94													

BOREHOLE WITH LITHOLOGY GATEWAY NORTHERN UPGRADE.GPJ ENG BOREHOLE FINAL.GDT 28/4/05

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

LOGGED BY
B.Woodgate & A.Dissanayake

Queensland Government
Department of Main Roads

ENGINEERING BOREHOLE

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

BOREHOLE No BH112
SHEET 2 of 4
REFERENCE No H9421

PROJECT GATEWAY UPGRADE PROJECT GEOTECHNICAL INVESTIGATION - NORTHERN SECTION
LOCATION CONTROL LINE: MCAO - Ch. 20523 - OFFSET 18.8 R
COORDINATES 8844.7 E; 170976.8 N
PROJECT No FM2055
SURFACE R.L. 4.06
DATE STARTED 27/7/04
DATUM SETP
JOB No
DATUM AHD
DATE COMPLETED 28/7/04
DRILLER R & D Drilling Pty Ltd

DEPTH (m)	R L (m)	MATERIAL DESCRIPTION	USC	WEATHERING	ADDITIONAL DATA AND TEST RESULTS	SAMPLES TESTS
10	-5.94	**SANDY SILTY CLAY - ALLUVIUM** Pale grey to orange brown, moist, very stiff. Medium plasticity, fine grained sand.			4,7,11 N=18	SPT
11					6,9,13 N=22	SPT
12						
13			CI		6,8,12 N=20	SPT
14						
15					5,7,11 N=18	SPT
16					7,9,13 N=22	SPT
17	-12.94	**SILTY CLAY - ALLUVIUM** Pale green grey to mottled orange, moist, very stiff.	CI		6,10,13 N=23	SPT
18	-14.14	**GRAVELLY CLAY - ALLUVIUM** Pale grey to orange, moist, very stiff to hard. Subangular to subrounded quartzitic and lithic fragments sizing up to 30mm.	CL		8,17,13 N=30	SPT
20	-15.94					

AUGER / CASING / WASH BORING / CORE DRILLING
RQD ( ) % CORE REC %
INTACT STRENGTH: EH VH H M L VL EL
DEFECT SPACING (mm): 20 60 200 600 2000
GRAPHIC LOG

BOREHOLE WITH LITHOLOGY GATEWAY NORTHERN UPGRADE.GPJ ENG BOREHOLE FINAL.GDT 28/4/05

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

LOGGED BY
B.Woodgate & A.Dissanayake

Queensland Government
Department of Main Roads

ENGINEERING BOREHOLE

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

BOREHOLE No BH112
SHEET 3 of 4
REFERENCE No H9421

PROJECT GATEWAY UPGRADE PROJECT GEOTECHNICAL INVESTIGATION - NORTHERN SECTION
LOCATION CONTROL LINE: MCAO - Ch. 20523 - OFFSET 18.8 R
COORDINATES 8844.7 E; 170976.8 N
PROJECT No FM2055
SURFACE R.L. 4.06
DATE STARTED 27/7/04
DATUM SETP
JOB No
DATUM AHD
DATE COMPLETED 28/7/04
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 (EH VH H M L VL EL)	DEFECT SPACING (mm) (20 60 200 600 2000)	GRAPHIC LOG	ADDITIONAL DATA AND TEST RESULTS	SAMPLES / TESTS
20	-15.94				**GRAVELLY CLAY - ALLUVIUM** (As above) Gravel size increases with depth.		CL					10,13,12 N=25	SPT
21													
22												25,23,30/100 N>50	SPT
23	-18.94				**ASH TUFF** FINE GRAINED, MASSIVE WELDED, INTERMEDIATE PYROCLASTIC IGNEOUS ROCK. HW : Generally exhibits engineering properties of dark brown, moist, hard sandy clay comprising very low strength corestones and rock kernels.		HW					30/110,-,- N>50	SPT
24													
25	-20.94		(38)		**MW :** Pale grey to green grey, massive, mainly medium to high strength. Defects - Generally rare with drilling induced fractures.		MW					Is(50)=0.79 MPa Is(50)=0.22 MPa Is(50)=1.54 MPa Is(50)=1.39 MPa	x o x o
26	-21.69		100		**BASALT** FINE TO MEDIUM GRAINED, GENERALLY MASSIVE, INTERMEDIATE TO BASIC EXTRUSIVE IGNEOUS ROCK. MW : Dark green brown to blue, generally massive, mainly low to medium strength.		MW					Highly fractured zone	
27	-22.94		(80)		**SW :** Dark grey to blue grey, mainly massive to slightly laminated, mainly medium to high strength. Frequent subhorizontal calcite and zeolitic veinlets (<10mm).		SW					Is(50)=0.13 MPa Is(50)=0.38 MPa Highly fractured and healed zone	o x
28			100									Is(50)=0.20 MPa	o
29			(90)									Is(50)=5.13 MPa Is(50)=2.58 MPa	o x
30	-25.94		100										

BOREHOLE WITH LITHOLOGY GATEWAY NORTHERN UPGRADE GPJ ENG BOREHOLE FINAL.GDT 28/4/05

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

LOGGED BY
B.Woodgate & A.Dissanayake

Queensland Government
Department of Main Roads

ENGINEERING BOREHOLE

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

BOREHOLE No BH112
SHEET 4 of 4
REFERENCE No H9421

PROJECT GATEWAY UPGRADE PROJECT GEOTECHNICAL INVESTIGATION - NORTHERN SECTION
LOCATION CONTROL LINE: MCAO - Ch. 20523 - OFFSET 18.8 R
COORDINATES 8844.7 E; 170976.8 N
PROJECT No FM2055
SURFACE R.L. 4.06
DATE STARTED 27/7/04
DATUM SETP
JOB No
DATUM AHD
DATE COMPLETED 28/7/04
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 (EH VH H M L VL EL)	DEFECT SPACING (mm) (20 60 200 600 2000)	GRAPHIC LOG	ADDITIONAL DATA AND TEST RESULTS	SAMPLES	TESTS
30	-25.94		(68)		**SW :** (As above) Defects : - Subhorizontal joints <30deg (2-6/m). - Joints @ 45deg (1/m). - Fractured zone (<850mm).							Is(50)=0.59 MPa Is(50)=0.35 MPa		o o
31							SW							
32	-28.04		100		Borehole terminated at 32.1m							Is(50)=2.15 MPa Is(50)=2.25 MPa		x o
33														
34														
35														
36														
37														
38														
39														
40														

BOREHOLE WITH LITHOLOGY GATEWAY NORTHERN UPGRADE.GPJ ENG BOREHOLE FINAL.GDT 28/4/05

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

LOGGED BY
B.Woodgate & A.Dissanayake

Project: **Gateway Upgrade Project Geotechnical Investigation**

Borehole No: **BH 112**

Start Depth: 25.00m
Finish Depth: 32.10m
Project No: FM2055
H No: 9421