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**Queensland  
Government**

Department of  
Main Roads

# ENGINEERING BOREHOLE

FOR GEOTECHNICAL TERMS AND  
SYMBOLS REFER FORM F:GEOT 01772-2004

BOREHOLE No   BH125    
SHEET   1   of   5    
REFERENCE No   H9434  

PROJECT   GATEWAY UPGRADE PROJECT GEOTECHNICAL INVESTIGATION - NORTHERN SECTION    
LOCATION   CONTROL LINE: MCEO - Ch. 468.5 - OFFSET 41 L   COORDINATES   9731.3 E; 172552.0 N    
PROJECT No   FM2055   SURFACE R.L.   1.55   DATE STARTED   5/7/04   DATUM   SETP    
JOB No            DATUM   AHD   DATE COMPLETED   7/7/04   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
0	1.55					<b>ESTUARINE WEATHERED OC CRUST</b> Dark grey to mottled brown, moist, firm.							
1							OL					MC=52.0%, WD=1.72t/m3, DD=1.14t/m3 pHf=7.38, pHfox=2.42	U100
2	0.05					<b>ESTUARINE SILTY CLAY</b> Dark grey, moist, soft to firm, sensitive. High organic content, high plasticity; partly decomposed shell fragments throughout.						Peak Su=27kPa; Res Su=4kPa Peak Su=29kPa; Res Su=3kPa	FSV FSV
3							CH					MC=59.4%, WD=1.70t/m3, DD=1.06t/m3 pHf=6.97, pHfox=1.68 APD=2.70t/m3 LL=68%, PI=47%, LS=15%	U100
4												Peak Su=20kPa; Res Su=2kPa	FSV
5	-3.05					<b>ESTUARINE SANDY SILTY CLAY</b> Pale grey, wet, very soft.						Peak Su=22kPa; Res Su=3kPa	FSV
6	-3.65					<b>ESTUARINE SILTY CLAY</b> Dark grey, moist, mainly firm, sensitive to extra sensitive. High organic content; high plasticity; partly decomposed shell fragments throughout, discontinuous sand lenses down to 9m.						>30kPa Peak Su=45kPa; Res Su=3kPa	FSV FSV
7							CH					MC=45.0% pHf=8.03, pHfox=4.35	U100
8												Peak Su=38kPa; Res Su=3kPa	FSV
9												MC=44.8%, WD=1.78t/m3, DD=1.24t/m3 pHf=8.04, pHfox=6.24	U100
10	-8.45												

BOREHOLE WITH LITHOLOGY GATEWAY NORTHERN UPGRADE.GPJ ENG BOREHOLE FINAL.GDT 30/04/05

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

LOGGED BY  
**D.Marks & A.Dissanayake**



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# ENGINEERING BOREHOLE

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

BOREHOLE No   BH125  

SHEET   2   of   5  

REFERENCE No   H9434  

PROJECT   GATEWAY UPGRADE PROJECT GEOTECHNICAL INVESTIGATION - NORTHERN SECTION  

LOCATION   CONTROL LINE: MCEO - Ch. 468.5 - OFFSET 41 L   COORDINATES   9731.3 E; 172552.0 N  

PROJECT No   FM2055   SURFACE R.L.   1.55   DATE STARTED   5/7/04   DATUM   SETP  

JOB No                      DATUM   AHD   DATE COMPLETED   7/7/04   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	VT	H	M	L	VL	EL					
10	-8.45					<b>ESTUARINE SILTY CLAY</b> Dark grey, moist, firm to stiff, sensitive to extra sensitive.  Some scattered shell fragments.												Peak Su=38kPa; Res Su=6kPa	FSV	
11																		MC=56.2%, WD=1.64/m3, DD=1.06/m3 pHf=8.36, pHfox=2.30 APD=2.69/m3, LL=70%, PI=47%, LS=18%	U100	
12																		Peak Su=58kPa; Res Su=6kPa	FSV	
13																		MC=65.6%, WD=1.60/m3, DD=0.96/m3 pHf=7.93, pHfox=3.94	U100	
14																		Peak Su=61kPa; Res Su=10kPa	FSV	
15																		Peak Su=61kPa; Res Su=6 kPa	FSV	
16						Incipient mottling and heavily fissured.												MC=56.8%, WD=1.68/m3, DD=1.06/m3, pHf=7.96, pHfox=5.53, APD=2.71/m3, LL=89%, PI=58%, LS=20%	U100	
17																		Peak Su=61kPa; Res Su=13 kPa	FSV	
18																		MC=64.4%, WD=1.60/m3, DD=0.98/m3 pHf=7.64, pHfox=1.41	U100	
19						Becoming very stiff below 19m.												Peak Su =80kPa; Res Su=19kPa	FSV	
20	-18.45																			

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

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# ENGINEERING BOREHOLE

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

BOREHOLE No BH125

SHEET 3 of 5

REFERENCE No H9434

PROJECT GATEWAY UPGRADE PROJECT GEOTECHNICAL INVESTIGATION - NORTHERN SECTION  
 LOCATION CONTROL LINE: MCEO - Ch. 468.5 - OFFSET 41 L COORDINATES 9731.3 E; 172552.0 N  
 PROJECT No FM2055 SURFACE R.L. 1.55 DATE STARTED 5/7/04 DATUM SETP  
 JOB No \_\_\_\_\_ DATUM AHD DATE COMPLETED 7/7/04 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	HM	VL	20	60	200	600			
20	-18.45					<b>ESTUARINE SILTY CLAY</b> (As above)  Becoming sensitive and very stiff with depth; occasional scattered shell fragments; incipient mottling throughout.	CH											pHf=7.60, pHfox=5.70 MC=61.6%, WD=1.64t/m3, DD=1.02t/m3  Peak Su=96kPa; Res Su=22kPa	U100  FSV	
21																				
22																				
23						Becoming fine sandy with depth.														
24	-22.05					<b>SILTY CLAY - ALLUVIUM</b> Pale grey to mottled orange, mainly dry to slightly moist, stiff to mainly very stiff.  Some dessicated and fissured zones; low to medium plasticity; minor sand fraction on the top.	CI													
25																				
26																				
27																				
28	-26.25					<b>SAND AND GRAVEL - ALLUVIUM</b> Pale brown to grey white, wet, loose to mainly medium dense.  Subangular coarse grained sand; subangular quartzitic and lithic fragments up to 25mm.	GP													
29																				
30	-28.45																			

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

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# ENGINEERING BOREHOLE

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BOREHOLE No   BH125    
SHEET   4   of   5    
REFERENCE No   H9434  

PROJECT   GATEWAY UPGRADE PROJECT GEOTECHNICAL INVESTIGATION - NORTHERN SECTION    
LOCATION   CONTROL LINE: MCEO - Ch. 468.5 - OFFSET 41 L   COORDINATES   9731.3 E; 172552.0 N    
PROJECT No   FM2055   SURFACE R.L.   1.55   DATE STARTED   5/7/04   DATUM   SETP    
JOB No            DATUM   AHD   DATE COMPLETED   7/7/04   DRILLER   R&D DRILLING PTY LTD  

DEPTH (m)	R.L. (m)	CORES CUSHING WASH BORING CORE DRILLING	RCD (%) CORE REC %	SAMPLE	MATERIAL DESCRIPTION	LITHOLOGY	USC WEATHERING	INTACT STRENGTH	DEFECT SPACING (mm)	GRAPHIC LOG	ADDITIONAL DATA AND TEST RESULTS	SAMPLES TESTS
30	-28.45				SAND AND GRAVEL - ALLUVIUM (As above)	GP					12,12,31 N=43	SPT
31	-29.45				SANDY SILTY CLAY - ALLUVIUM Pale grey to grey, slightly moist to mainly dry, mainly very stiff to hard.  Medium plasticity.						24,11,17 N=28	SPT
32											16,14,25 N=39	SPT
33						CI					7,8,10 N=18	SPT
34											8,7,21 N=28	SPT
35	-33.80				SANDSTONE FINE TO MEDIUM GRAINED, MAINLY LAMINATED TO MASSIVE, MAINLY POORLY CEMENTED SEDIMENTARY ROCK.  HW : Dark grey, moist, very dense.	HW				Drilling record only	30/120,-,- N>50	SPT
37	-34.95		(100)		SW : Pale grey to grey, mainly laminated, low to mainly medium strength.  Occasional carbonaceous laminations up to 20m; becoming more coarse grained, massive and calcareous with depth.	SW					Is(50)=0.16 MPa Is(50)=0.10 MPa	o x
38											Is(50)=0.28 MPa Is(50)=0.18 MPa	o x
39			100 (100)								Is(50)=0.44 MPa Is(50)=0.78 MPa	o x
40	-38.45										Is(50)=0.18 MPa Is(50)=0.33 MPa Is(50)=0.21 MPa	o x o

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

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BOREHOLE No   BH125  

SHEET   5   of   5  

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PROJECT   GATEWAY UPGRADE PROJECT GEOTECHNICAL INVESTIGATION - NORTHERN SECTION  

LOCATION   CONTROL LINE: MCEO - Ch. 468.5 - OFFSET 41 L   COORDINATES   9731.3 E; 172552.0 N  

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

DEPTH (m)	R.L. (m)	ALUER CASING WASH BORING CORE DRILLING	RCD (%)	CORE REC %	SAMPLE	MATERIAL DESCRIPTION	LITHOLOGY	USC	WEATHERING	INTACT STRENGTH					DEFECT SPACING (mm)	GRAPHIC LOG	ADDITIONAL DATA AND TEST RESULTS	SAMPLES TESTS
										EL	TM	VL	EL	20				
40	-38.45					<b>SW :</b> Defects - Generally rare. - Occasional drilling induced lamination partings <20deg (1/2m)	SW									Is(50)=0.96 MPa	x	
41	-39.95		100			Borehole terminated at 41.5m										Is(50)=0.82 MPa Is(50)=0.33 MPa Is(50)=0.65 MPa Is(60)=0.76 MPa	o x o x	
42																		
43																		
44																		
45																		
46																		
47																		
48																		
49																		
50																		

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

LOGGED BY  
**D.Marks & A.Dissanayake**

Project: **Gateway Upgrade Project Geotechnical Investigation**

Borehole No: **BH 125**

Start Depth: 36.50m

Finish Depth: 41.50m

Project No: FM2055

H No: 9434

