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ENGINEERING BOREHOLE

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

			GATEWAY UPGRADE PROJECT GEOTECHNICAL INVESTIGATION - NORTHERN SECTION										
					: MCAO - Ch. 20523 - OFFSET 18.8 R					OORDINATES <u>8844.7 E; 170976.8 N</u>			
PF	PROJECT No		<u> </u>		SURFACE R.L		D	ATE STARTED	27/7/0	<u> </u>	DATUM <u>SETP</u>		
JOB No					DATUM AHD	DATE COMPLETED 28/7/04			28/7/0	<u>4</u>	DRILLER R&D Drilling Pty Ltd		
OFPTH (m)	R L. (m)	AUGER CASING WASH BORING CORE DRILLING	RQD ()% CORE REC %	SAMPLE	MATERIAL DESCRIPTION	LITHOLOGY	JSC MEATHERING		DEFECT SPACING (mm)	GRAPHIC LOG	ADDITIONAL DATA AND TEST RESULTS WASH		
BOREHOLE WITH LITHOLOGY GATEWAY NORTHERN UPGRADE.GPJ ENG BOREHOLE FINAL GDT 28/4/05	0.56		CORE REC %	SAMPLE SAMPLE	SANDY SILTY CLAY - FILL Dark grey, wet, very soft. High content of partly decomposed shell fragments; minor organic fraction. ESTUARINE WEATHERED OC CRUST Dark grey to mottled brown, moist, soft to mainly firm. High organic content. ESTUARINE SILTY CLAY Dark grey, moist, very soft to soft, sensitive.	олоныл <u> </u>	OSU OSC P P P P P P P P P P P P P P P P P P P			GRAPHIC	TEST RESULTS Possible hydraulically placed deposit. 1, N<1 SPT HW,-1 N<1 SPT U50 U50		
BOREHOLE WITH LIT	0 -5.94							+			-		
	REMARKS	SPT	<u>Values</u>	in gr	avelly clay can overestimate consistency due to influ	uence	of co	arser size grav	el particle	es. D	Defect LOGGED BY		
					measured with respect to a horizontal plane.						B.Woodgate & A.Dissanayake		



ENGINEERING BOREHOLE

FOR GEOTECHNICAL TERMS AND SYMBOLS REFER FORM F:GEOT 017/2-2004 BOREHOLE No _____BH112 ____

SHEET ____2 __ of ___4 ___

REFERENCE NO _____H9421 ____

PRO					RADE PROJECT GEOTECHNICAL INVESTI MCAO - Ch. 20523 - OFFSET 18.8 R	<u>GA</u>	<u> ION</u>	- <u>NORTHERN SECT</u>		OORDINATES <u>8844.7 E; 170976.8 N</u>	
PROJECT No FM2055						DATE STARTED _27/7/04					
JOBI					DATUM AHD			E COMPLETED _28/7/0			
DЕРТН (m)	R L (m)	SORING	RQD ()%		MATERIAL			INTACT DEFECT SPACING (mm)	GRAPHIC LOG	ADDITIONAL DATA	
DEP.		ASING ASH E	CORE	SAMPLE	DESCRIPTION	LITHOLOGY	SATH	2000 2000 2000 2000 2000	ЗАРНІ	DIAMPLES SAMPLES SAMPL	
10	-5.94	28§8	REC %	Ś	SANDY SILTY CLAY - ALLUVIUM	5	USC	11111111111	Ö	20750-2000	
		400			Pale grey to orange brown, moist, very stiff.			ļ ‡		4,7,11 N=18 SPT	
-		2.5			Medium plasticity, fine grained sand.			T = 1		and the second	
		ş.						‡			
-11								<u> </u>			
		- 3						‡			
F		ē [3]						T = T		6,9,13 SPT	
-12		250		34				1 1		N=22 SF1	
		100						‡			
- 1		75						1 ‡		-	
		1507.00 -0340						Ī			
-13		and the same		7.50				+			
ŧΙ		800						1 ‡		6,8,12 N=20 SPT	
F		198		Г			CI	 			
		Salahah Salahah						1 1			
-14								l ±			
		20 m						‡]	
F		1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1						<u> </u>		5,7,11 N=18	
15		2.000						1 ±		N=18	
		200						<u> </u>		!]	
-		200						<u> </u>			
		(A) (A)						1 1			
16		3.0		-368				+			
								+		7,9,13 N=22 SPT	
5-		2.5		7 5.				T			
	-12.94	2						‡		1	
5 - 17 5 - 17	-12.54				SILTY CLAY - ALLUVIUM			l	├-		
		ar J			Pale green grey to mottled orange, moist, very stiff.			‡		_:	
				. 557 1888			CI	Ŧ		6,10,13 N=23 SPT	
<u> </u>		7		1				<u> </u>		N=23 SETS	
	-14.14				GRAVELLY CLAY - ALLUVIUM			1		<u></u>	
					Pale grey to orange, moist, very stiff to			<u> </u>		-	
<u> </u>					hard.			‡			
19					Subangular to subrounded quartzitic and lithic fragments sizing up to 30mm.		CL	1 +			
				`	J			-		8,17,13 N=30 SPT]	
<u> </u>								+			
20	-15.94	:						1 ‡			
		SPT	N values	in gr	avelly clay can overestimate consistency due to infl	uenc	e of c	oarser size gravel particl	es. D	Defect LOGGED BY	
					neasured with respect to a horizontal plane.					B.Woodgate & A.Dissanayake	



GOT

g

NORTHERN UPGRADE

LITHOLOGY

ENGINEERING BOREHOLE

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

BOREHOLE No	BH112
SHEET	_3_ of _4_
REFERENCE No	H9421

GATEWAY UPGRADE PROJECT GEOTECHNICAL INVESTIGATION - NORTHERN SECTION PROJECT CONTROL LINE: MCAO - Ch. 20523 - OFFSET 18.8 R COORDINATES 8844.7 E; 170976.8 N PROJECT No <u>FM2055</u> _____ SURFACE R.L. _4.06 __ DATE STARTED 27/7/04 DATUM <u>SETP</u> ____ JOB No DATUM _AHD __ DATE COMPLETED _28/7/04___ DRILLER R&D Drilling Pty Ltd RQD RL INTACT DEFECT NG H BORING DRILLING ADDITIONAL DATA (m) ()% STRENGTH SPACING S_O Ê MATERIAL DEPTH AND SAMPLES DESCRIPTION AUGER CASING WASH I 88888 민수 T 로 독류 CORE TEST RESULTS REC % 20 -1<u>5.94</u> **GRAVELLY CLAY - ALLUVIUM** (As above) Gravel size increases with depth. 10,13,12 SPT CL 25,23,30/100 SPT -18.94 **ASH TUFF** FINE GRAINED, MASSIVE WELDED, INTERMEDIATE PYROCLASTIC 30/110,-,-IGNEOUS ROCK. SP1 N>50 HW: Generally exhibits engineering properties of dark brown, moist, hard sandy HW clay comprising very low strength corestones and rock kernels. 28/4/05 -20.94 (38)MW: Is(50)=0.79 MPa Pale grey to green grey, massive, mainly ENG BOREHOLE FINAL Is(50)=0.22 MPa 0 MW medium to high strength. Is(50)=1.54 MPa Defects - Generally rare with drilling Is(50)=1.39 MPa induced fractures. **-21.69** BASALT FINE TO MEDIUM GRAINED - 26 GENERALLY MASSIVE, INTERMEDIATE TO BASIC EXTRUSIVE IGNEOUS ROCK. MW MW: Dark green brown to blue, generally Highly fractured zone 100 massive, mainly low to medium strength. ls(50)=0.13 MPa .ls(50)=0.38 MPa (80)-22.94 - 27 SW: Dark grey to blue grey, mainly massive to slightly laminated, mainly medium to high Highly fractured and healed zone strenath. Frequent subhorizontal calcite and zeolitic GATEWAY veinlets (<10mm). 100 (90)Is(50)=0.20 MPa SW - 29 BOREHOLE WITH Is(50)=5.13 MPa ls(50)=2.58 MPa REMARKS SPT N values in gravelly clay can overestimate consistency due to influence of coarser size gravel particles. Defect LOGGED BY B.Woodgate & A.Dissanayake angles have been measured with respect to a horizontal plane.



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

ENGINEERING BOREHOLE

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

BOREHOLE No	BH112
SHEET	_4_ of _4_
REFERENCE No	H9421

B.Woodgate & A.Dissanayake

PROJECT	DJECT GATEWAY UPGRADE PROJECT GEOTECHNICAL INVESTIGATION - NORTHERN SECTION									
LOCATION	CON	ITROL L	INE:	: MCAO - Ch. 20523 - OFFSET 18.8 R					OORDINATES 8844.7 E; 170976.8 N	
				SURFACE R.L. 4.06				04	DATUM SETP	··· — — _
JOB No				DATUM <u>AHD</u> .		DAT	E COMPLETED _28/7/	04	DRILLER R&D Drilling	Pty Ltd_
R.L (m) H1430 30 -25.94	AÜGER CASING WASH BORING CORE DRILLING	RQD ()% CORE REC%	SAMPLE	MATERIAL DESCRIPTION	LITHOLOGY	USC WEATHERING	INTACT DEFECT SPACING (mm)	GRAPHIC LOG	ADDITIONAL DATA AND TEST RESULTS	SAMPLES TESTS
30 -25.94		(68)	. Mer	SW:		-1>				o ⊨
-31 -31 -32 -38 04	A SECTION AND AND AND AND AND AND AND AND AND AN	400		(As above) Defects: - Subhorizontal joints <30deg (2-6/m) Joints @ 45deg (1/m) Fractured zone (<850mm).		sw			Is(50)=0.59 MPa Is(50)=0.35 MPa	0 0
-32 <u>-28,04</u> -		100	V2, -	Borehole terminated at 32.1m	٠٠.٠.		3.87.2		ls(50)=2.15 MPa ls(50)=2.25 MPa	x -
-34 -35 -36 -37 -38										
40				avelly clay can oversetimate consistency due to influ			† † † † †		ofact LOCCED BY	-

angles have been measured with respect to a horizontal plane.

Project: Gateway Upgrade Project Geotechnical Investigation

Borehole No: BH 112
Start Depth: 25.00m
Finish Depth: 32.10m
Project No: FM2055
H No: 9421

