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ENGINEERING BOREHOLE

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

BOREHOLE No	BH101
SHEET	_ <u>1</u> _ of _ <u>4</u> _
REFERENCE No	H9410

PRO.		GATEWAY UPGRADE PROJECT GEOTECHNICAL INVESTIGATION - NORTHERN SECTION CONTROL LINE: MCAO - Ch. 18115.5 - OFFSET 38.4 R COORDINATES 9788.3 E; 168773.4 N								
					SURFACE R.L3.30			— — — — — — — DATE STARTED <u>4/8/0</u>		OORDINATES 9788.3 E; 168773.4 N
JOB			200		DATUM AHD			E COMPLETED <u>5/8/</u> 0		
						,	υΛI		-	DRILLER R&DDrilling Pty Lt
DEPTH (m)	R.L. (m)	SER SING SH BORING RE DRILLING	RQD ()%	SAMPLE	MATERIAL DESCRIPTION	LITHOLOGY	XTHERING	INTACT DEFECT SPACING (mm)	GRAPHIC LOG	ADDITIONAL DATA AND TEST RESULTS WWS
0	3.30	AUGER CASING WASH E	REC %	SA		島	NEA USC	[파구도] 111111111111111111111111111111111111	8	TEST RESULTS
;	2.70				SANDY GRAVEL - FILL Dark brown, dry, medium dense, sizing up to 40mm.		GР	-		Drilling record only
- -1					ESTUARINE (??) SILTY CLAY Dark grey, moist, soft to firm.			1		
	1,55				Highly fissured; high organic content; medium plasticity.		OL	+		Organic matter 1,2,2 N=4 SF1
-2					ESTUARINE (??) SILTY SAND Pale brown, moist, medium dense.		014			
	0.55				Fine to medium sand.		SM	<u> </u>		MC=39.6%,WD=1.82t/m3, DD=1.3t/m3
-3 -3	0.10				ESTUARINE (??) SILTY CLAY Grey, moist, soft to mostly firm. Minor organic content. SILTY SAND - ALLUVIUM		OL.	-		PP=25kPa 2
- - -					Pale brown to mottled orange, moist, medium dense.			<u> </u>		
-4				470			SM	+		EMRUISC
30/4/05								‡ ‡		Silty clay layer
VAL.GDT 2	-2.05									Silty clay layer
BOREHOLE WITH LITHOLOGY GATEWAY NORTHERN UPGRADE GPJ ENG BOREHOLE FINAL GDT 30/4/05 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1					SILTY SAND - ALLUVIUM Dark grey to grey, wet, very loose. Fine to medium grained sand; high shell content towards bottom; some clayey silt			1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		100% passing 2.36mm sieve RW,RW,1 N<1
DE.GPJ ENG					interlayers.			† 1 †		
- 7 - 7 - 7 - 7 - 7 - 7 - 7 - 7 - 7 - 7							SM			18% passing 75um sieve RW,1,1 N=2 SP1
EWAY NORTE										
OGY GATE								+++++++++++++++++++++++++++++++++++++++		28/ cassing 2 cm since RW,RW,1
14 LITHOL	-5.95							<u> </u>		2% passing 2um sieve N<1 SPT
SOREHOLE WI	-6.70				SILTY CLAY - ALLUVIUM Grey to green grey, moist, very stiff. Some MnO2 concretions.		CL			Some shell fragments
_	-6.701 EMARKS	_⊯⊯ SPT√	values in	OLSA	elly clayey sand alluvium can overestimate density	dua *	d o infl	anno of coorner size		LOGGED BY
					been measured with respect to a horizontal plane.					D.Dobe & A.Dissanayake



ENGINEERING BOREHOLE

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

	JECT				RADE PROJECT GEOTECHNICAL INVEST				<u> ION</u>	
					MCAO - Ch. 18115.5 - OFFSET 38.4 R					OORDINATES 9788.3 E; 168773.4 N
JOB					SURFACE R.L. 3.30			ATE STARTED 4/8/0		
108					DATUM <u>AHD</u> .		DAT	COMPLETED 5/8/0	<u>4</u>	DRILLER R&D Drilling Pty Ltd
DEРТН (m)	R.L. (m)	SER SING SH BORING RE DRILLING	RQD ()%	SAMPLE	MATERIAL DESCRIPTION	гтногосу	THERING	INTACT DEFECT STRENGTH SPACING (mm)	GRAPHIC LOG	ATA LEST RESULTS ATALOGOUP AND
10	-6.70	2880	REC %	SAN		与	USC	7111111111 888888 888888	GR ₂	SAMPLE STATESTS
-					SILTY CLAY - ALLUVIUM Grey to green grey, moist, very stiff. Some MnO2 concretions.		CL	+ + + + + + + + + + + + + + + + + + + +		5,7,10 N=17
- - -11	-8.00						3 -	‡ + + -		
- - - - - 12					SAND - ALLUVIUM Pale brown to orange brown, wet, medium dense. Fine grained sand, minor silt fraction in the			+		6,8,11 N=19
					upper area.			-		
-13										10,13,15 N=28
- 14 - 14 - 1							SP	† † † †		
E FINAL GDT 30/4/05										4,9,7 N=16 SPT
G BOREHOLE F								+ + + + + + +		5,6,11 N=17
UPGRADE.GPJ EN								† † † † †		N=17
BOREHOLE WITH LITHOLOGY GATEWAY NORTHERN UPGRADE.GPJ ENG BOREHOL	-14.10				SILTY CLAY - ALLUVIUM Pale grey to grey, moist, stiff to very stiff.					6,9,12 N=21
ITHOLOGY GAT					Becoming fine sandy below 19.30m.		CI	1 1 1 1		
REHOLE WITH										4,6,8 N=14 SPT
	-16.70	SC~	unler -					+		
Kt	REMARKS SPT values in gravelly clayey sand alluvium can overestimate density due to influence of coarser size gravel particles. LOGGED BY Defect angles have been measured with respect to a horizontal plane. D.Dobe & A.Dissanayake							·		



30/4/05

ENG BOREHOLE FINAL.GDT

NORTHERN UPGRADE.GPJ

ENGINEERING BOREHOLE

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

BOREHOLE No	BH101
SHEET	_3_ of _4_
REFERENCE No	<u>H9410</u> _

D.Dobe & A.Dissanayake

GATEWAY UPGRADE PROJECT GEOTECHNICAL INVESTIGATION - NORTHERN SECTION **PROJECT** CONTROL LINE: MCAO - Ch. 18115.5 - OFFSET 38.4 R LOCATION COORDINATES 9788.3 E; 168773.4 N PROJECT No FM2055 _ _ _ _ SURFACE R.L. __3.30_ __ DATE STARTED 4/8/04 DATUM SETP ____ JOB No. DATUM _AHD __. DATE COMPLETED 5/8/04 DRILLER R&D Drilling Pty Ltd RQD R.L. INTACT DEFECT ()% (m) STRENGTH SPACING ADDITIONAL DATA 8 Ξ MATERIAL DEPTH (AND SAMPLES DESCRIPTION SAMPL CORE WEAT TEST RESULTS က္က REC % 20 -16.70 111111 SILTY CLAY - ALLUVIUM (As above) СН -16.90 **GRAVELLY CLAYEY SAND - ALLUVIUM** Pale brown to orange brown, moist, dense 30/115, SPI to very dense. N>50 Gravels are mainly subangular to subrounded quartzitic particles sizing up to 40mm. 14,21,20 SPT SP 16,19,30/115 SPT N>50 -21.50 INTERBEDDED SANDSTONE AND 30/100,-, MUDSTONE **≋S₽** N>50 FINE TO MEDIUM GRAINED, POORLY CEMENTED, THINLY LAMINATED / BEDDED SEDIMENTARY ROCK. НΜ HW: Generally exhibits engineering properties of dark grey, moist, hard sandy -22.70 silt grading to very low strength rock. (100) SW Pale grey to dark grey, thinly laminated and ls(50)=0.96 MPa ls(50)=0.55 MPa thinly bedded, mainly medium strength with some low and high strength bands. Mudstone bed Is(50)=0.29 MPa 0 Is(50)=0.16 MPa Defects - Generally rare. - Occasional drilling induced lamination /bedding partings (<30°). - Joints @ 45° (1/3m). Is(50)=0.89 MPa Is(50)=0.20 MPa Defect Index : In sandstone - (1/m) In sandstone - (3-5/m) GATEWAY -28 SW 100 WITH LITHOLOGY (76)Is(50)=0.59 MPa Is(50)=0.44 MPa Sandstone bed - 29 XW mudstone bed ls(50)=0.31 MPa ls(50)=0.71 MPa Sandstone bed REMARKS SPT values in gravelly clayey sand alluvium can overestimate density due to influence of coarser size gravel particles. LOGGED BY

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



ENGINEERING BOREHOLE

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

BOREHOLE No	BH101
SHEET	_4_ of _4_
REFERENCE No	H9410

GATEWAY UPGRADE PROJECT GEOTECHNICAL INVESTIGATION - NORTHERN SECTION PROJECT <u>CONTROL LINE: MCAO - Ch. 18115.5 - OFFSET 38.4 R</u> LOCATION COORDINATES 9788.3 E; 168773.4 N PROJECT No _FM2055 _ _ _ _ SURFACE R.L. __3.30_ __ DATE STARTED 4/8/04 DATUM SETP ____ JOB No DATUM AHD DATE COMPLETED _5/8/04 __ DRILLER R&D Drilling Pty Ltd R.L ROD INTACT DEFECT (m) ()% ADDITIONAL DATA STRENGTH SPACING DEPTH (m) ဗို MATERIAL (mm) LITHOLOGY AND GRAPHIC SAMPLES DESCRIPTION ANGER CASING CAS USC WEATH WEATH WEATH 1 200 2000 TESTS CORE TEST RESULTS REC % 30 sw (As above) Mudstone bed -3 (73)sw Mudstone bed -32 Sandstone bed ls(50)=1.19 MPa D ls(50)=1.87 MPa Is(50)=1.30 MPa 0 ls(50)=0.50 MPa -29.7099 Core lost in the hote Borehole terminated at 33m -34 GATEWAY NORTHERN UPGRADE.GPJ ENG BOREHOLE FINALGDT BOREHOLE WITH LITHOLOGY REMARKS SPT values in gravelly clayey sand alluvium can overestimate density due to influence of coarser size gravel particles. LOGGED BY D.Dobe & A.Dissanayake Defect angles have been measured with respect to a horizontal plane.

Project: Gateway Upgrade Project Geotechnical Investigation

Borehole No: BH 101
Start Depth: 26.00m
Finish Depth: 32.86m

Project No: FM2055 H No: 9410

