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FOR GEOTECHNICAL TERMS AND SYMBOLS REFER FORM F:GEOT 017/6-2010

BOREHOLE No	BH121
SHEET	_1_ of _4_
REFERENCE No	H10884

PRO		WALKERSTON BYPASS PROJECT GEOTECHNICAL INVESTIGATION - COWLEYS ROAD OVERPASS BRIDGE													
		PIER 1 - (Ch. 84514.6 22.0m LHS) COORDINATES 721511.3 E; 7654843.2 N											<u> </u>		
		TNo FG5635 SURFACE R.L. 9.29m PLUNGE DATE STARTED 31/10/10 GRID DATUM MGA 94 242/33B/6 HEIGHT DATUM AHD BEARING DATE COMPLETED 31/10/10 DRILLER Drillsure Pty Ltd													
JOB I	No	<u>242</u>	/ <u>3</u> 3	3 <u>B/6</u> _		HEIGHT DATUM _AHD _ BEARING _		_	-	DATE COM	IPLETED _	31/10	0/10 DRILLER <u>Drillsure</u>	Pty Lt	<u>id</u>
	R.L. (m)	<u>ي</u>	5	RQD () %					(0)	INTACT STRENGTH	DEFECT SPACING	()	ADDITIONAL DATA		
DEPTH (m)	(,	BORING	7	, ,		MATERIAL	λSG		RINC	STRENGTH	(mm)	GRAPHIC LOG	AND		S
DEPT		SING	KE D	CORE REC %	SAMPLE	DESCRIPTION	LITHOLOGY	O	ATH	LE	00000	APHI	TEST RESULTS		SAMPLES
0	9.29	Ş Š Š Š	3	REC %	SAI		_=	Sn	3		11111	R.		_	SA
-						Sandy SILT (ALLUVIAL) Brown, moist, firm to stiff.									
ĖΙ						High plasticity; occasional large cobbles					-				-
						<250mm.									
-1								(N	ИH)	e iiu			8	2,5,3	
Εl					Α									N=8	SPT
-										:				Ī	-
E	7.29					85									
-2	7.20					Silty CLAY (ALLUVIAL)	1	Г							
F						Pale brown, moist, stiff.									
F					В	High plasticity; minor sand and gravel fraction.							Water table	3,5,7 N=12	SPT
-3								(0	CH)				,	N-12	
															-
	5.39														
-4						Silty SAND / Sandy SILT (ALLUVIAL) Pale orange and brown, moist, medium							T	,8,11	
Ė					С	dense to very stiff.							1	N=19	SPT
F															-
F															
_5 _							(\$M	1/MI	1)					
E					D									,7,10 N=17	SPT
-6					1831								8		
E	2.89														
F	2.00					SAND (ALLUVIAL) Pale grey, wet, loose to medium dense,	1								_
E						mostly fine to medium grained.									
-7						Some coarse sand to fine gravel bands								6,8,8	OPT
F					E	with minor silt fraction.								N=16	SPT
F															
- 8										<u> </u>					
F								(5	SP)						
-7								773	0.00						
ŧ l					F	Becoming gravelly and coarse sand with depth.					<u> </u>		7	,9,11 N=20	SPT
-9															
Εl															
F													Increased gravel; minor water loss		-
10															
	EMADE	s Note	e:	*Failure	appe	ars to have occured along a pre-existing defect p	ane.	_					LOGGED	BY	
	P IAIL II VIV		_						_				ME		
															< V. 100c



FOR GEOTECHNICAL TERMS AND SYMBOLS REFER FORM F:GEOT 017/6-2010

PROJECT LOCATION	WALKERSTON BYPASS PROJECT GEOTECHNICAL INVESTIGATION - COWLEYS ROAD OVERPASS BRIDGE PIER 1 - (Ch. 84514.6 22.0m LHS) COORDINATES 721511.3 E; 7654843.2 N									
	10 <u>FG5635</u> SURFACE R.L. <u>9.29m</u> PLUNGE DATE STARTED <u>31/10/10</u> GRID DATUM <u>MGA 94</u>									
JOB No			HEIGHT DATUM AHD BEARING			DATE COM				
R.L. (m)	CASING WASH BORING CORE DRILLING CORE DRILLING ()	% %	MATERIAL DESCRIPTION			INTACT STRENGTH ボチェミュラゴ	DEFECT SPACING (mm)	GRAPHIC LOG	ADDITIONAL DATA AND TEST RESULTS	SAMPLES TESTS
10 -0.71	දිරී≷ර REC	% &	SAND (ALLUVIAL)	=	ĭĭ∣≶	-		5	0.00	10X 304 15
-11		G	(Cont'd)		(SP)			00.00	8,8,8 N=16	SPT
12		н	Silty Gravelly SAND (ALLUVIAL) Pale grey, moist, dense, medium to coarse grained.		(SM)				13,20,20 N=40	SPT
-13 		J					<u></u>		12,16,19 N=35	SPT
- 14 		к	Clayey Sitty SAND (ALLUVIAL) Pale grey, moist, medium dense, medium to coarse grained sand.		(SC)				8,11,13 N=24	SPT
- - - - - 16		L	Silty CLAY (RESIDUAL) Mottled pale grey, orange and black, moist, very stiff to mainly hard. High plasticity; Fe/Mn oxide nodules; some minor sandy layers.						11,16,22 N=38	SPT
- 18 - 18 - 19		М	Becoming slightly gravelly with coarse		(CH)				10,18,22 N=40	SPT
19		N	sand.				+		8,12,16 N=28	SPT
	S Note: *Fai	lure app	ears to have occured along a pre-existing defect pla	ine.				·	LOGGED BY ME	



FOR GEOTECHNICAL TERMS AND SYMBOLS REFER FORM F:GEOT 017/6-2010

COCATION	PROJECT WALKERSTON BYPASS PROJECT GEOTECHNICAL INVESTIGATION - COWLEYS ROAD OVERPASS BRIDGE											
Control Cont												
Red												
## ADDITIONAL DATA AND		-			TIEIGHT DATON _ALB BEANING				01/19	DIVIDENCE IN THE SAFET IN CO.	<u>~</u>	
Second S	(m)	000	RQD ()%				0		l o	ADDITIONAL DATA		
Second S	五 日 日	SOR!!			MATERIAL	OGY	ERIN	(mm)	200	AND	S	
Sity CLAY (RESIDUAL) (Cortd) P R R Sity CLAY (RESIDUAL) (Cortd) P (Cortd) R SITy CLAY (RESIDUAL) (Cortd) SITy Clay (RESIDUAL) (Cortd) (CH) SITy Clay (RESIDUAL) (Cortd) (CH) SITy Clay (RESIDUAL) (CH) (CH) SITy Clay (RESIDUAL) (CH) (CH) (CH) (CH) (CH) (CH) (CH) (CH	DEP	ASH BASH	CORE	MPLE	DESCRIPTION	THOL	EATH		RAPH	TEST RESULTS	AMPL!	
Cont d) Cont d) Cont	20 -10.	71 ₹338	REC %	ß	Silby CLAY (PESIDIAL)	=	3 3		5		- S = -	
CRANODIORITE Intrusive, medium to coarse grained, massive, crystalline, porphyritic, acidic, properties of pale gray, orange and black, molet, hard, slily clay. R R 17.30/100mm N>50 R 17.30/100mm N>50 SET A A Becoming extremely low to very low strength rock with depth. Becoming extremely low to very low strength rock with depth. CRANODIORITE Intrusive, medium to coarse grained, massive, crystalline, porphyritic, acidic, properties of pale gray, orange and black, molet, hard, slily clay. REMARKS Note: "Failure appears to heve occurred along a pre-existing defect plane. LOGGED BY								+				
CRANODIORITE Intrusive, medium to coarse grained, massive, crystalline, porphyritic, acidic, properties of pale gray, orange and black, molet, hard, slily clay. R R 17.30/100mm N>50 R 17.30/100mm N>50 SET A A Becoming extremely low to very low strength rock with depth. Becoming extremely low to very low strength rock with depth. CRANODIORITE Intrusive, medium to coarse grained, massive, crystalline, porphyritic, acidic, properties of pale gray, orange and black, molet, hard, slily clay. REMARKS Note: "Failure appears to heve occurred along a pre-existing defect plane. LOGGED BY	<u> </u>							+		40.40.00		
GRANODORITE Grandwa, medium to coarse grained, massive, crystalline, porphyritic, acidic, hw: Generally exhibits the enjineering properties of pale moist, hard, sitly clay. R 17,30/100mm NP-50 R 30/100mm NP-50 SET 30/100mm	-			P			(CH)	1			SPT	
GRANDOIDRTE Intrusive, medium to coarse grained, massive, crystalline, portpyritic, acidic, portpyritic, port	-21							+			-	
GRANDOIDRTE Intrusive, medium to coarse grained, massive, crystalline, portpyritic, acidic, portpyritic, port	-	24						1				
massive, crystalline, porphyritic, acidic, ingression of the ingre	- 12.	21										
Targeting and the control of the con	-				Intrusive, medium to coarse grained, massive, crystalline, porphyritic, acidic,			Ī		30/50mm		
properties of pale grey, orange and black, moist, hard, silty clay. R 17.30/100mm N>50 SPT 30/100mm N>50 SPT 48 30/100mm N>50 SPT 49 28 30/100mm N>50 SPT 49 30/100mm N>50 SPT 49 30/100mm N>50 SPT 49 30/100mm N>50 SPT 40 SPT 40 Becoming extremely low to very low strongth rook with depth. SPT 40 SPT	- 22			Q	igneous rock			Ī			SPT	
25 17.30/100mm SPT 17.30/100mm SPT 30/100mm N>50 SPT 26 30/100mm N>50 SPT 27 30/100mm N>50 SPT N>50	-				properties of pale grey, orange and black,							
REMARKS Note: "Failure appears to have occured along a pre-existing defect plane. 17.30/100mm N>50 SPT 17.30/100mm N>50 SPT 30/100mm N>50 SPT 18(50) = 0.011MPa.* x	E	7			moist, nard, silty clay.			Ŧ			-	
REMARKS Note: "Failure appears to have occured along a pre-existing defect plane. 17.30/100mm N>50 SPT 17.30/100mm N>50 SPT 30/100mm N>50 SPT 18(50) = 0.011MPa.* x	- 22							l ±				
25 SPI 28 30/100mm N>50 SPI 29 30/100mm N>50 SPI 29 Spi Becoming extremely low to very low strength rock with depth. 30/90mm N>50 SPI 30/100mm N>50 SPI 30/100mm N>50 SPI 30/100mm N>50 SPI 30/100mm N>50 SPI 10 Spi	F ²³							Ŧ			-	
25 SPI 28 30/100mm N>50 SPI 29 30/100mm N>50 SPI 29 Spi Becoming extremely low to very low strength rock with depth. 30/90mm N>50 SPI 30/100mm N>50 SPI 30/100mm N>50 SPI 30/100mm N>50 SPI 30/100mm N>50 SPI 10 Spi	Εl							1 ±				
25 SPI 28 30/100mm N>50 SPI 29 30/100mm N>50 SPI 29 Spi Becoming extremely low to very low strength rock with depth. 30/90mm N>50 SPI 30/100mm N>50 SPI 30/100mm N>50 SPI 30/100mm N>50 SPI 30/100mm N>50 SPI 10 Spi	,			R				‡			SPT	
30/100mm N>50 SPI 48 Becoming extremely low to very low strength rock with depth. N>50 Is(50) = 0.01MPa.* x x								1			-	
Becoming extremely low to very low strength rock with depth. SPT 30/80mm N>50 SPT 30/90mm N>50 SPT 30/90mm N>50 Is(50) = 0.01MPa. x X REMARKS Note: "Failure appears to have occured along a pre-existing defect plane. LOGGED BY	,=											
Becoming extremely low to very low strength rock with depth. SPT 30/80mm N>50 SPT 30/90mm N>50 SPT 30/90mm N>50 Is(50) = 0.01MPa. x X REMARKS Note: "Failure appears to have occured along a pre-existing defect plane. LOGGED BY	El							1			_	
Becoming extremely low to very low strength rock with depth. SPT 30/80mm N>50 SPT 30/90mm N>50 SPT 30/90mm N>50 Is(50) = 0.01MPa. x X REMARKS Note: "Failure appears to have occured along a pre-existing defect plane. LOGGED BY	E							l ±				
Becoming extremely low to very low strength rock with depth. SPI SPI SPI SPI SPI SPI SPI SP	- 25			-				1 1			CDT	
30/100mm N>50 Becoming extremely low to very low strength rock with depth. (0) REMARKS Note: "Failure appears to have occurred along a pre-existing defect plane. LOGGED BY	E			3				Ī .		N>50 F	_ GI I	
30/100mm N>50 Becoming extremely low to very low strength rock with depth. (0) REMARKS Note: "Failure appears to have occurred along a pre-existing defect plane. LOGGED BY	-							+			-	
Becoming extremely low to very low strength rock with depth. SPT 30/80mm N>50 SPT 30/90mm N>50 Is(50) = 0.01MPa; * x REMARKS Note: *Failure appears to have occured along a pre-existing defect plane. LOGGED BY	El						HW	Ī				
Becoming extremely low to very low strength rock with depth. SPI O(0) REMARKS Note: *Failure appears to have occured along a pre-existing defect plane. LOGGED BY	-26							1				
Becoming extremely low to very low strength rock with depth. SPI O(0) REMARKS Note: *Failure appears to have occured along a pre-existing defect plane. LOGGED BY	[I				
Becoming extremely low to very low strength rock with depth. 30/100mm N>50 SPT. 30/90mm N>50 Is(50) = 0.01MPa; * x								l		30/80mm	SPI	
Becoming extremely low to very low strength rock with depth. O								‡		14250		
Becoming extremely low to very low strength rock with depth. O	-27							l +			-	
Becoming extremely low to very low strength rock with depth. O	-										85	
Becoming extremely low to very low strength rock with depth. O	F										-	
Becoming extremely low to very low strength rock with depth. O								1 ‡				
Becoming extremely low to very low strength rock with depth. 30/90mm N>50 Is(50) = 0.01MPa; * x REMARKS Note: *Failure appears to have occured along a pre-existing defect plane.				U							SPT	
Becoming extremely low to very low strength rock with depth. 30/90mm N>50 Is(50) = 0.01MPa; * x REMARKS Note: *Failure appears to have occured along a pre-existing defect plane.	E							Ī				
strength rock with depth. 30/90mm N>50 Is(50) = 0.01MPa; * x REMARKS Note: *Failure appears to have occured along a pre-existing defect plane. LOGGED BY	F										-	
strength rock with depth. 30/90mm N>50 Is(50) = 0.01MPa; * x REMARKS Note: *Failure appears to have occured along a pre-existing defect plane. LOGGED BY								1 ‡				
strength rock with depth. 30/90mm N>50 Is(50) = 0.01MPa; * x REMARKS Note: *Failure appears to have occured along a pre-existing defect plane. LOGGED BY	-29				Becoming extremely low to very low						-	
N>50 Is(50) = 0.01MPa; * x REMARKS Note: *Failure appears to have occured along a pre-existing defect plane. LOGGED BY					strength rock with depth.			Į.			9	
REMARKS Note: *Failure appears to have occured along a pre-existing defect plane. LOGGED BY			(0)	V				<u> </u>		N>50		
REMARKS Note: *Failure appears to have occured along a pre-existing defect plane. LOGGED BY	30		(3)							Is(50) = 0.01MPa; *	× .	
										LOGGED BY		
										ME		



FOR GEOTECHNICAL TERMS AND SYMBOLS REFER FORM F:GEOT 017/6-2010

PROJ	ECT	WAI	KERST	ON I	BYPASS PROJECT GEOTECHNICAL INVE	STIC	ATIO	ON - COWLEYS ROA	D 0	/ERPASS BRIDGE	
LOCA	OCATION PIER 1 - (Ch. 84514.6 22.0m LHS) COORDINATES 721511.3 E; 7654843.2 N										
PROJ	ECT No				SURFACE R.L. 9.29m PLUNGE _						
JOB N	No	242/3	33B/6		HEIGHT DATUM <u>AHD</u> BEARING _			DATE COMPLETED	31/10	D/10 DRILLER <u>Drillsure Pty L</u>	td
	R.L.	0	RQD				П	INTACT DEFECT STRENGTH SPACING	(0	ADDITIONAL DATA	
(E)	(m)	SORING	()%		MATERIAL	ζ	CINIC	STRENGTH SPACING (mm) UNITED NO.000000000000000000000000000000000000	GRAPHIC LOG	AND	S.
DEPTH (m)		도충ニ	1	SAMPLE	DESCRIPTION	LITHOLOGY	0 5		APHIC	TEST RESULTS	SAMPLES
30	-20.71		REC %	SAN		=======================================	SO	NONE WELL	R9		S TE
	24 44		100		GRANODIORITE HW: (Cont'd)		HV				
	-21.11		(32)		MW: Grey brown to pink and speckled	1			1		-
-					light grey, generally low to medium strength.					Is(50) = 0.21MPa; *	×
-31					Defects:					Is(50) = 0.32MPa; *	0 -
					- Joints @ 10-30° (7/m)					Is(50) = 0.20MPa; *	X
El			100		Defects are generally planar, rough and open.		MV				
- 32			(35)								-
- 32										Is(50) = 0.04MPa; * Is(50) = 0.06MPa; *	X O
E										, ,	-
E			400								
-33	-23.66		100		Borehole terminated at 32.95m		1	+			
E								Ī			
								I			
F								1 ±			
34								1 ‡			
								1			
								Ī			
- -35								1 +			
t								1 ‡			
-								1 ±			
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36								Ŧ			
E								1 1			
E								1 ‡			
37								1 +			
F								±			
E											
E											
38											
E								1 ±			
F								1 ‡			
39								1 +)
-											
Œ I								‡			
-38				100				‡			
	EMADE	s Note	: *Failur	e apr	ears to have occured along a pre-existing defect p	lane.				_ LOGGED BY	
	VE INITARY.									ME_	14-1-1-1-1

Project: Walkerston Bypass Geotechnical Investigation

Borehole No: BH121 (Cowleys Rd Bridge Ch. 84514.6 22.0m left)

Start Depth: 29.60m Finish Depth: 32.95 m Project No: FG5635 H No: 10890



