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BOREHOLE No	<u>_BH103_</u> _
SHEET	_ <u>1_</u> of _ <u>5</u> _
REFERENCE No	<u>11462</u>

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

	DJECT	Townsville Ring Road Section 4       COORDINATES         Kalynda Parade Overpass       COORDINATES								 DINATES	
JOE					HEIGHT DATUM <u>AHD</u> BEARING						
DEPTH (m)	R.L. (m) 14.31	AUGER VASH BORING SORE DRILLING	RQD ()% CORE REC%	SAMPLE	MATERIAL DESCRIPTION	ГІТНОГОСУ	JSC	INTACT STRENGTH ロントターン	DEFECT SPACING (mm)	GRAPHIC LOG	ADDITIONAL DATA AND SU TEST RESULTS SU
0	14.31				Silty SAND (TOPSOIL) Brown, moist, loose. Fine to medium grained. Some tree roots.	<u> </u>				0	
- - - - - - 1 - -				A	Silty SAND Pale brown, minor orange, slightly moist, dense. Fine to coarse grained sand.						2,13,27 N=40
13 11:45 1 1 1 1 1 1 1 1				В							15,19,18 N=37
ool gINt Add-In 17/10/20		1		С	Becoming very dense. Fine to medium grained, partially cemented sand.						23,30/110 N>50
ngFile>> Datgel CPT Tc				D							30/135 N>50
PARADE.GPJ < <drawi< td=""><td></td><td></td><td></td><td>E</td><td></td><td></td><td>(SM)</td><td></td><td></td><td></td><td>30/140 N&gt;50</td></drawi<>				E			(SM)				30/140 N>50
WNSVILLE RING ROAD 4 KALYNDA 				F	Colour change to pale brown, dark brown. Becoming medium to coarse grained sand.						26,30/70 N>50
3 ВОКЕНОLЕ LOG WLITHOLOGY ТС 				G	Some fine to medium gravel. Colour change to brown.						14,19,20 N=39 SPT
oLD_DMR_LIB_01A.GLB_LOg_A_ENGINEERNG BOREHOLE LOG WLITHOLOGY TOWNSVILLE RING ROAD 4 KALYNDA PARADE GPJ <	5.31			н	Sandy Silty CLAY Pale brown, moist, hard. Mainly low to medium plasticity.		(CI)				
	REMARKS	3 					1 	:::::::::: 		 	LOGGED BY VP



### ENGINEERING BOREHOLE LOG

BOREHOLE No	<u>_BH103</u>
SHEET	_2_ of _5_
REFERENCE No	<u>11462</u>

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

PROJECT	<u>Townsville</u> Ri	ing I	Road Section 4							
LOCATION	Kalynda Para	Parade Overpass COORDIN							COORDINATES 467735.9 E; 7866467.1 N	
PROJECT No			SURFACE R.L. <u>14.31m</u> PLUNGE _		DATE STARTED _26/			26/3/	3/ <u>13</u>	
JOB No	<u>268/10M/5</u>		HEIGHT DATUM <u>AHD</u> BEARING _			DATE COM	IPLETED _	27/3/	B/13DRILLER <u>Cairns Drilling</u>	
(iii)         R.L.           (iii)         (m)           HLdgg         10           10         4.31	DDEER MASH BRRING MASH BRILLING CORE DRILLING CORE CORE CORE CORE	SAMPLE	MATERIAL DESCRIPTION	ГІТНОГОGY	ISC VEATHERING	INTACT STRENGTH ₩→±∞→±	DEFECT SPACING (mm)	GRAPHIC LOG	ADDITIONAL DATA AND TEST RESULTS	TESTS
10 4.31	₹≶Ŭ REC%	S	Sandy Silty CLAY		⊃ ≤ 1			0		<u> </u>
		J	Cont <sup>r</sup> d						12,21,28 N=49 SI	SPT
12 12		к			(CI)				MC = 26.1% LL=41.8% PI=16.2% LS=11.6% 10,16,22 N=38	SPT
		L	Trace angular gravel.						10,15,23 N=38	
→ CO.19 		Μ	<b>Gravelly clayey SAND</b> Brown, orange, dark grey, moist, mainly dense to very dense. Coarse grained sand, fine gravel.						14,19,33 N>50	- SPT -
		Ν	Becoming pale brown, medium to coarse grained sand.		(SW)				12,16,16 N=32 SI	- SPT -
11		Р							10,16,25 N=41	SPT
		Q	Occasional medium angular gravel.						N=43	SPT
REMARKS	S								LOGGED BY VP	



BOREHOLE No	<u>_BH103</u>
SHEET	<u>3</u> of <u>5</u>
REFERENCE No	<u>11462</u>

VP

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

PROJECT       Townsville Ring Road Section 4                 COORDINAT            Kalynda Parade Overpass									ORDINATES <u>467735.9 E; 7866467.1 N</u>		
PROJECT	ROJECT No <u>FG6020</u> SURFACE R.L. <u>14.31m</u> PLUNGE DATE STARTED <u>26/3/13</u>										
JOB No					HEIGHT DATUM <u>AHD</u> BEARING _						
DEPTH (m)	69 AUGER WASH BORING	CORE DRILLING	RQD ()%	SAMPLE	MATERIAL	ГІТНОГОСУ	JSC VEATHERING	INTACT DEF STRENGTH SPA (m エチェュノゴー R 88	FECT ACING nm)	GRAPHIC LOG	ADDITIONAL DATA AND TEST RESULTS
<u>20 -5</u> -	5. <u>69</u> ⋖>		REC %	0	Gravelly clayey SAND		_ >			0	0
- - - - - - - - - - - - - - - -					Cont'd Medium to coarse grained sand.						
				R	Trace clay mixed with sand.				·         ·         ·           ·         ·         ·           ·         ·         ·           ·         ·         ·           ·         ·         ·           ·         ·         ·           ·         ·         ·           ·         ·         ·           ·         ·         ·           ·         ·         ·           ·         ·         ·           ·         ·         ·           ·         ·         ·           ·         ·         ·           ·         ·         ·           ·         ·         ·           ·         ·         ·           ·         ·         ·           ·         ·         ·           ·         ·         ·           ·         ·         ·           ·         ·         ·           ·         ·         ·           ·         ·         ·           ·         ·         ·           ·         ·         ·           ·         ·         ·		11,13,18 N=31
-23				S			(SW)		·         ·         ·           ·         ·         ·           ·         ·         ·           ·         ·         ·           ·         ·         ·           ·         ·         ·           ·         ·         ·           ·         ·         ·           ·         ·         ·           ·         ·         ·           ·         ·         ·           ·         ·         ·           ·         ·         ·           ·         ·         ·           ·         ·         ·           ·         ·         ·           ·         ·         ·           ·         ·         ·           ·         ·         ·           ·         ·         ·           ·         ·         ·           ·         ·         ·           ·         ·         ·           ·         ·         ·           ·         ·         ·           ·         ·         ·		16,25,26 N>50 SP
-22 -23 -23 -24 -24 -24	) <u>.29</u>			т	From 24.40 to 24.60m - Cemented, fine to coarse grained sand layer.						14,15,24 N=39
				U	Clayey SAND Pale brown, minor grey brown, slightly moist, very dense. Fine to medium grained sand. Minor clay layer at 25.50m. Pale brown, slightly moist, hard, low plasticity.						15,25,28 N>50 SP
- 27				V			(SC)		N         N           N         N           N         N           N         N           N         N           N         N           N         N           N         N           N         N           N         N           N         N           N         N           N         N           N         N           N         N           N         N           N         N           N         N           N         N           N         N           N         N           N         N           N         N           N         N           N         N           N         N           N         N           N         N           N         N           N         N           N         N           N         N           N         N           N         N           N         N           N         N		22,30/140 N>50 SP
- 28 				W	Becoming fine grained sand.				·         ·         ·         ·         ·         ·         ·         ·         ·         ·         ·         ·         ·         ·         ·         ·         ·         ·         ·         ·         ·         ·         ·         ·         ·         ·         ·         ·         ·         ·         ·         ·         ·         ·         ·         ·         ·         ·         ·         ·         ·         ·         ·         ·         ·         ·         ·         ·         ·         ·         ·         ·         ·         ·         ·         ·         ·         ·         ·         ·         ·         ·         ·         ·         ·         ·         ·         ·         ·         ·         ·         ·         ·         ·         ·         ·         ·         ·         ·         ·         ·         ·         ·         ·         ·         ·         ·         ·         ·         ·         ·         ·         ·         ·         ·         ·         ·         ·         ·         ·         ·         ·         ·         ·         ·         ·         ·		21,30/100 N>50
 30 REMA	RKS _										LOGGED BY



BOREHOLE No	<u>_BH103</u>
SHEET	_ <u>4_</u> of _ <u>5</u> _
REFERENCE No	<u>11462</u>

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

PROJECT LOCATION	<u>Townsville Ring</u> <u>Kalynda Parade</u>	Road Section 4		DINATES <u>467735.9 E; 7866467.1 N</u>
	GRID DATUM <u>GDA 94</u>			
JOB No		HEIGHT DATUM <u>AHD</u> BEARING		
(m) R.L. (m)	AUGER WASH BORING ( ) % ( ) % ( ) % ( ) %) ( ) % ( ) % ( ) % ( ) %) ( ) % ( ) %) ( ) % ( ) % ( ) % ( ) %) ( ) % ( ) % ( ) % ( ) % ( ) %) ( )	MATERIAL DESCRIPTION	INTACT DEFECT STRENGTH SPACING (mm) 102C 1020 000 000 000 000 000 000 000 000 00	ADDITIONAL DATA AND TEST RESULTS
30 -15.69		Clayey SAND		22 20/150
- - - 16.4§	X	Cont'd Occasional orange / dark grey brown layers.	(SC)	N>50 SPT
		Silty SAND Pale brown, slightly moist, mainly very dense. Fine grained.		
	Y	High silt content. Occasional dark grey brown layers.		15,25,30/125 N>50 SPT
- - 33 - - - - - - -	Z			14,23,30/125 N>50 SPT
- 34	АА		(SM)	<sup>12,18,29</sup> N=47 SPT
	АВ	Becoming pale yellow brown.		14,21,31 N>50 SPT
	AC	Clayey SAND Pale yellow, slightly moist, dense to very dense. Medium to coarse grained sand.	(SC)	10,16,25 N=41 SPT
-39 25.15	AD	GRANITE		19,30/130 N>50
40		Medium to coarse grained, intrusive igneous rock of felsic composition.	+ XW	
REMAR	s			LOGGED BY
				VP



BOREHOLE No	<u>_BH103</u>
SHEET	_ <u>5_</u> of _ <u>5</u> _
REFERENCE No	<u>11462</u>

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

LIGATION Kabada Barde Overgas. COORNATES 429202 EXPLOSING LIGATION Kabada Barde Overgas. COORNATES 429202 COORNATES												
JOB NO       268/10M/5												
RL bit bit bit bit bit bit bit bit bit bit												
-28.28       -28.29       -28.29       -28.29       -28.29       -28.29       -28.29       -28.29       -28.29       -28.29       -28.29       -28.29       -28.29       -28.29       -28.29       -28.29       -28.29       -28.29       -28.29       -28.29       -28.29       -28.29       -28.29       -28.29       -28.29       -28.29       -28.29       -28.29       -28.29       -28.29       -28.29       -28.29       -28.29       -28.29       -28.29       -28.29       -28.29       -28.29       -28.19       -28.19       -28.19       -28.19       -28.19       -28.19       -28.19       -28.19       -28.19       -28.19       -28.19       -28.19       -28.19       -28.19       -28.19       -28.19       -28.19       -28.19       -28.19       -28.19       -28.19       -28.19       -28.19       -28.19       -28.19       -28.19       -28.19       -28.19       -28.19       -28.19       -28.19       -28.19       -28.19       -28.19       -28.19       -28.19       -28.19       -28.19       -28.19       -28.19       -28.19       -28.19       -28.19       -28.19       -28.19       -28.19       -28.19       -28.19       -28.19       -28.19       -28.19       -28.19       -28.19       -28.19	(m) (m)	1	1		MATERIAL			INTACT	DEFECT		ADDITIONAL DATA AND	S
-26.29     -26.29     -26.29     -26.29     -26.29     -26.29     -26.29     -26.29     -26.29     -26.29     -26.29     -26.29     -26.29     -26.29     -26.29     -26.29     -26.29     -26.29     -26.29     -26.29     -26.29     -26.29     -26.29     -26.29     -26.29     -26.29     -26.29     -26.29     -26.29     -26.29     -26.29     -26.29     -26.29     -26.29     -26.29     -26.29     -26.29     -26.29     -26.29     -26.29     -26.29     -26.29     -26.29     -26.29     -26.29     -26.29     -26.29     -26.29     -26.29     -26.29     -26.29     -26.29     -26.29     -26.29     -26.29     -26.29     -26.29     -26.29     -26.29     -26.29     -26.29     -26.29     -26.29     -26.29     -26.29     -26.29     -26.29     -26.29     -26.29     -26.29     -26.29     -26.29     -26.29     -26.29     -26.29     -26.29     -26.29     -26.29     -26.29     -26.29     -26.29     -26.29     -26.29     -26.29     -26.29     -26.29     -26.29     -26.29     -26.29     -26.29     -26.29     -26.29     -26.29     -26.29     -26.29     -26.29     -26.29     -26.29     -26.29     -26.29     -26.29     -26.29 <td>ā 40 -25.69</td> <td></td> <td>CORE REC %</td> <td>SAM</td> <td></td> <td></td> <td>USC</td> <td>₩¥±≥⊐≯¤</td> <td>388888 11111</td> <td>GRAI</td> <td>TEST RESULTS</td> <td>SAMPLI</td>	ā 40 -25.69		CORE REC %	SAM			USC	₩¥±≥⊐≯¤	388888 11111	GRAI	TEST RESULTS	SAMPLI
41       100       a grained, generally medium to high strength with some low strength bands.       +       +       +       +       +       +       +       +       +       +       +       +       +       +       +       +       +       +       +       +       +       +       +       +       +       +       +       +       +       +       +       +       +       +       +       +       +       +       +       +       +       +       +       +       +       +       +       +       +       +       +       +       +       +       +       +       +       +       +       +       +       +       +       +       +       +       +       +       +       +       +       +       +       +       +       +       +       +       +       +       +       +       +       +       +       +       +       +       +       +       +       +       +       +       +       +       +       +       +       +       +       +       +       +       +       +       +       +       +       +       +       +	-			AE	properties of a pink, brown, orange, moist, very dense to extremely low strength clayey sand. Medium to coarse grained sand.	+	xw					SPT
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	- - - 41				grained, generally medium to high strength	[+]	1				ls(50) = 1.45MPa	o
-42 -42 -42 -42 -43 -44 -4 -44 -44 -44 -46 -46 -46 -46 -46	-					[+]						0
	- - - - - 42		N		- Joint at 35° (2/m) - Joint at 35° (1/m)	[+  +  +						o
-43 -29.19 10 Borehole terminated at 43.5m -44 -45 -46 -46 -46 -46 -46 -46 -46 -46 -46 -46			(8)		irregular, rough, open and altered or	+	-				ls(50) = 1.93MPa	o
-29.19       100       Image: state of the stat	-43					+	-					
			100		Develople to main atop at 10 pm							
	- - - - - - - - - - - - - - - - - - -											
50     Image: Solution of the second se		(S										

#### CORE PHOTO LOG

DEPARTMENT OF TRANSPORT & MAIN ROADS Geotechnical Branch 35 Butterfield Street, HERSTON Qld 4006 Phone 07 3066 3336



Department of Transport and Main Roads

Project Name	Townsville Ring Road Stage 4		
Project No	FG 6020	Date	27/03/13
Borehole No	BH 103	TMR H No	11462
Location	Kalynda Parade Overpass	Start Depth (m)	40.60
Detail	Pier 1 (Right)	Finish Depth (m)	43.50
Chainage		Submitted By	MS
Remarks			
te Care A			10/6/3
ET CAR		A DATA AND A DATA	
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C. Martine			8
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0 100		500 000	700
	SCALE 1:5		