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**Queensland
Government**

Department of
Main Roads

ENGINEERING BOREHOLE LOG

FOR GEOTECHNICAL TERMS AND
SYMBOLS REFER FORM F:GEOT 017/5-2009

BOREHOLE No BH044
SHEET 1 of 2
REFERENCE No H10596

PROJECT BRUCE HIGHWAY (COOROY - CURRA) SECTION A GEOTECHNICAL INVESTIGATION
LOCATION Cut 14 COORDINATES 484265.9 E; 7081335.3 N
PROJECT No FG5825 SURFACE R.L. 139.67m PLUNGE _____ DATE STARTED 3/8/09 GRID DATUM MGA94
JOB No 128/10A/901 HEIGHT DATUM AHD BEARING _____ DATE COMPLETED 4/8/09 DRILLER R & D Drilling

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	139.67												
1	139.07				A	Clayey SILT Brown, dry, minor organics.	(ML)					6,7,11 N=18	SPT
2	137.67				B	Clayey SILT (Colluvium) Mottled brown to red, moist, very stiff. Low plasticity. Rock fragments visible in parts.	(ML)					6,9,13 N=22	SPT
3	136.67				C	PHYLLITE (XW) Generally exhibits the engineering properties of pale grey to mottled red, moist, hard, clayey silt. Occasional clay seams; rock fabric visible throughout.	XW					12,24,30/130 N>50	SPT
4			(77)			PHYLLITE (MW) Red to brown, fine grained, foliated. Foliation is indistinct and dipping variably between 30-70°. Defects are generally closely spaced. Prominent defect set dipping at ~45°. Defect surfaces are clay infilled.	MW						
5	134.97		100 (80)			PHYLLITE (MW/SW) Pale grey with distinct dark grey mottling, fine grained, foliated. Foliation dips at 20 to 30°. Defects are generally medium to widely spaced. Prominent defect set parallel to foliation with other sets at 30 and 50°. Defect surfaces are typically iron stained or slightly clay infilled.						Rehealed hairline fractures Is(50) = 0.24MPa Is(50) = 0.13MPa	x o
6			100 (84)									Is(50) = 0.33MPa Is(50) = 0.37MPa	x o
7			100 (90)									Clayey weathered zone Is(50) = 0.30MPa Is(50) = 0.03MPa	x o
8						Detailed defect descriptions are shown on Form GEOT533/8 attached.							
9			100 (91)									Is(50) = 0.64MPa Is(50) = 0.62MPa	x o
10													

REMARKS Detailed defect descriptions are shown on Form GEOT533/8 attached. Piezometer installed at bottom of hole.

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FOR GEOTECHNICAL TERMS AND
SYMBOLS REFER FORM F:GEOT 017/5-2009

BOREHOLE No BH044

SHEET 2 of 2

REFERENCE No H10596

PROJECT BRUCE HIGHWAY (COOROY - CURRA) SECTION A GEOTECHNICAL INVESTIGATION

LOCATION Cut 14 COORDINATES 484265.9 E; 7081335.3 N

PROJECT No FG5825 SURFACE R.L. 139.67m PLUNGE DATE STARTED 3/8/09 GRID DATUM MGA94

JOB No 128/10A/901 HEIGHT DATUM AHD BEARING DATE COMPLETED 4/8/09 DRILLER R & D Drilling

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
10	129.67					PHYLLITE (MW/SW) (Cont'd)							Is(50) = 1.17MPa Is(50) = 0.89MPa		x
11													Is(50) = 0.85MPa Is(50) = 0.88MPa		x
12			100 (95)			Detailed defect descriptions are shown on Form GEOT533/8 attached.							Crushed zone Clayey weathered zone Is(50) = 0.66MPa Is(50) = 0.63MPa		x
13													Is(50) = 0.47MPa Is(50) = 0.68MPa		x
14			100 (83)										Clayey broken zone		x
15													Is(50) = 0.24MPa Is(50) = 0.43MPa		x
16	123.47		100			15.6-16.2m: Clayey broken zone with quartz veins.							Clayey broken zone Is(50) = 0.23MPa Is(50) = 0.28MPa		x
						Borehole terminated at 16.2m									
17															
18															
19															
20															

REMARKS Detailed defect descriptions are shown on Form GEOT533/8 attached. Piezometer installed at bottom of hole.

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Project: **Bruce Highway Upgrade (Cooroy – Curra) Section A**
 Borehole No: **BH44**
 Start Depth: 3.00m
 Finish Depth: 16.20m
 Project No: FG5825
 H No: 10596

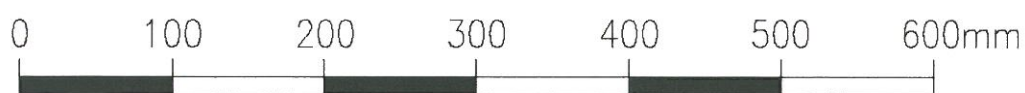


0 100 200 300 400 500 600mm

SCALE 1:5

F:GEOT043/1

Project: **Bruce Highway Upgrade (Cooroy – Curra) Section A**
Borehole No: **BH44**
Start Depth: 3.00m
Finish Depth: 16.20m
Project No: FG5825
H No: 10596



SCALE 1:5

F:GEOT043/1

GEOTECHNICAL BRANCH LABORATORY

Materials Services - Brisbane

35 Butterfield Street, HERSTON Q 4006

Phone: (07) 3115 3000 Fax: (07) 3115 3011

DEFECT DESCRIPTIONS OF ENGINEERING BORELOGS

[CHARACTERISATION OF DEFECTS ARE IN ACCORDANCE WITH
GEOTECHNICAL TERMS AND SYMBOLS – FORM : GEOT 017/5 – 2009]

BOREHOLE NO.: BH 44**SHEET:** 1 of 3**REFERENCE NO.:** H10596**PROJECT:** Bruce Highway (Cooroy – Curra) Section A Geotechnical Investigation**LOCATION:** Cut 14**PROJECT NO.:** FG5825**SURFACE R.L.:** 139.67**DRILLER:** R & D Drilling**JOB NO.:** 128/10A/901**DATUM:** MGA94**DATE DRILLED:** 04/08/2009

DEPTH	DEFECT TYPE	DIP°	PLANARITY	ROUGHNESS	APERTURE	WALL ALTERATION	OTHER
3.00-3.32	DISBURBED FOLIATIONS,				Closely spaced microfractures		
3.32	J	50	PI		C		Cl, 10-20mm
3.39	J	40	PI		C		Cl, 10mm
3.46	J	45	PI		C		Cl, 10mm
3.70	J	35	PI		C		Cl, 10mm
3.80	J	0	PI		C		In, Cl, 6mm
3.93	J	30	PI		C		Cl, 9-12mm
4.05	J	45	PI		C		Cl, 5mm
4.09	J	40	PI		C		Cl, 8mm
4.13	J	25-40	PI		C		Cl, 1-20mm
4.17-4.22	Qz	25-30	PI		C		Cl, 10mm, on either side of quartz
4.26	J	30	PI		C		Cl, 2-10mm
4.27-4.50	Qz	80-90	PI		C		Cl, 10-20MM on either side of quartz
4.52	J	60	PI	S	O	FeSt	
4.68	J	30	St	R	C	W	
4.75	J	45	PI		C		
4.84	J	70	Un	SR		FeSt	
4.86	J	0	PI		C		Cl, 10 & 5mm

Abbreviations (as per F: GEOT 017/5 – 2009)

ROUGHNESS		WALL ALTERATIONS		TYPE		OTHER	
R	Rough	FeSt	Iron Stained	J, Js	Joint, Joints	Cl	Clay Infill
SR	Slightly Rough	W	Weathered	B	Bedding	CLy	Clayey
S	Smooth	Smn	Secondary Mineralisation	BP	Bedding Parting	Co	Coal Seam
SL	Slickensided	Cn	Clean	FP	Foliation Parting	Carb	Carbonaceous
PO	Polished	APERTURE		LP	Lamination Parting	SI	Sand Infill
PLANARITY		C	Closed	CLV	Cleavage	QZ	Quartz
PI	Planar	O	Open	Fr	Fracture	CA	Calcite
St	Stepped	F	Filled	SZ	Sheared Zone	Chl	Chlorite
Un	Undulating	T	Tight	CZ	Crushed Zone	In	Incipient
Cu	Curved			BZ	Broken Zone	Int	Intersecting
Ir	Irregular			HFZ	Highly Fractured Zone	MnSt	Manganese
				WS	Weathered Seam	DI	Drilling Induced
				VN	Vein	H	Horizontal
						V	Vertical

NOTE: This sheet should be read in conjunction with appropriate Engineering Borelog. Defect angles were measured with respect to horizontal plane.

F:GEOT533/8

BOREHOLE NO.:	BH 44
SHEET:	2 of 3
REFERENCE NO.:	H10596

DEPTH	DEFECT TYPE	DIP°	PLANARITY	ROUGHNESS	APERTURE	WALL ALTERATION	OTHER
4.95	J	55	Pl	S	C	FeSt	Cl, 2mm
5.30	J	25	Un		C		In
5.46-5.49	Cz/Bz	30	Un-St		C		Cl, 205mm crushed rock
5.72	J	60	Un-St	SR	C	FeSt	
5.79	J	35	Un		C		Cl, 10mm
6.04	J	25	St	R	C	W	
6.10	J	75	Un	SR	C	FeSt, W	Cl, 2mm
6.26	J	35	Un	R	C	FeSt	
6.30-6.36	J	20	Pl	SR	C	FeSt	Zone of closely spaced joints
6.44	J	25	Un		C		Cl, 3mm
6.47	J	30			C		Cl, 1mm
6.56	J	50	Un		O		Rehealed in places
6.63	Vn	60	Un		C		
6.67	J	45	Pl		C		Cl, 1mm
6.75	J	65	Pl		C		Cl, 10mm
6.86	J	20	Un	R	C	FeSt, W	
6.94	J	45	St	R	C	FeSt, W	
6.97	J	35	St				
7.11	J	55	St		C		
7.17	J	45	St		C		
7.21	J	50-55	St		C		
7.37-7.51	Fz	40	Pl		C		Cl, w/coarse sands and fine gravel,
7.71	J	20	St	R	C	FeSt	
7.74	Vn	25	Un		C		Rehealed
7.77	J	25	St	SR	C	FeSt	
7.88	J	45	Pl	SR	C	W, FeSt, carbon	
7.89	J	30	Un	SR	C	W, FeSt, carbon	
7.92	J	25	Un		C		rehealed
8.00	Vn	30	Pl		C		Cl, 2mm
8.08	J	30	St		C		In
8.11	J	50	St		C		
8.18	J	45	Pl-Un	R	C	W, carbon	
8.37	J	0	St	R	C	MuSt	
8.38	J	40	Un	R	C	W	Cl, 1mm
8.43	J	20	Un		C		Rehealed
8.52	Vn	40	Un	SR	C		rehealed
8.56	J	20	Un	SR	C	FeSt	
8.62-8.63	J	30	Un		C		Cl, 1-15mm
8.73	J	40	Un	SR	C	FeSt	
8.93	J	0	St-Un	R	C		
9.04	J	30	St-Un	R	C	W	
9.32	J	30	Un		C		clay & coarse sand in defect 2-3mm
9.42	J	45	Un	S	C	W	Cl, 1-2mm
9.49	J	65	Un	SR	C	W	
9.53	J	40	Pl	SR	C		Cl, white, 2mm
9.85	Vn	80	Un		C		Rehealed
10.23	J	30	Pl	SR	C	W	
10.67	J	35	St	R	C	W, FeSt	
10.79	J/Vn	35	Pl		C		rehealed
11.06	J	45	Un	R	C	FeSt, W	
11.17	Vn	60	Un		C		Rehealed
11.32	J	50	Un	SR	C	W, FeSt	
11.32-11.39	Cz						
11.81	J	50	Un		C		Rehealed

BOREHOLE NO.:	BH 44
SHEET:	3 of 3
REFERENCE NO.:	H10596

DEPTH	DEFECT TYPE	DIP°	PLANARITY	ROUGHNESS	APERTURE	WALL ALTERATION	OTHER
12.02	J	20	Pl	SR	C		
12.08	J	30	Pl	S-SR	C	FeSt, MnSt	
12.15	J	30	Pl	SR	C		Cl, 1mm
12.29	J	45	Pl	R	C	W	
12.51	J	35	Pl		C		
12.61	J	15	Un	SR	C	FeSt, MnSt	
12.76	J	50	Pl		C		Rehealed
12.92	J	30	Un	R	C	FeSt, MnSt	
13.05	J	50	Pl	S	C		Cl, 1mm
13.08	J	35					Rehealed
13.25-13.38	Qz	55-80	Un				2-20mm wide
13.43	J	55	Pl-Un	S	C	FeSt, MnSt	
13.65	J	45	Un	SR	C	W	
13.73	J	40	Un	SR	C	FeSt	
13.78-13.84	Cz	0					Clay infill 60mm w/crushed rock
13.94	J	15	Pl				
14.03-14.06	Qz	45	Pl		C		
14.17	Qz	55	Pl		C		
14.71	J	35	Pl	SR	C	FeSt	
15.13	J	40	Un	SR	C	FeSt, W	
15.38	J	20	St-Un		C		
15.56-15.75	BRECCIATED						
15.83	J	35	St		C		
15.95	J	30	Pl		C		Cl, 15mm