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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 BH045

SHEET 1 of 3

REFERENCE No H10605

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

LOCATION Cut 14

COORDINATES 484156.0 E; 7081290.2 N

PROJECT No FG5825

SURFACE R.L. 145.04m

PLUNGE _____

DATE STARTED 18/8/09

GRID DATUM MGA94

JOB No 128/10A/901

HEIGHT DATUM AHD

BEARING _____

DATE COMPLETED 19/8/09

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	145.04					Gravelly SILT (Colluvium) Brown, moist, stiff.							
1					A	Low plasticity; angular rock and quartz fragments throughout.	(ML)					5,6,6 N=12	SPT
2	143.09				B							3,5,9 N=14	SPT
3					C	PHYLLITE (XW) Generally exhibits the engineering properties of purple to red, moist, hard, gravelly clay.						8,16,24 N=40	SPT
4					D	Intermediate plasticity; occasional quartz gravels. Rock fabric visible throughout.	XW					9,16,27 N=43	SPT
5	140.04				E							16,27,30 N>50	SPT
6			(0)			PHYLLITE (XW/HW) Orange-brown, fine grained.							
7						Phyllite appears faintly foliated at ~25° in more competent bands.							
8						Prominent sub-vertical joint set with thick clay infilling; relic quartz veins throughout.							
9			84 (0)										
10			100 (23)			6.7-7.0m: Competent band (MW).						Jt. sub-vertical	
11						7.4-7.8m: Competent band (MW).	XW-HW					Jt. sub-vertical	
12			100 (0)			Detailed defect descriptions are shown on Form GEOT533/8 attached.							
13			90 (39)			8.65-8.90m: Competent band (MW).							
14			100 (0)										

REMARKS Detailed defect descriptions are shown on Form GEOT533/8 attached.

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ENGINEERING BOREHOLE LOG

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

BOREHOLE No BH045
SHEET 2 of 3
REFERENCE No H10605

PROJECT BRUCE HIGHWAY (COOROY - CURRA) SECTION A GEOTECHNICAL INVESTIGATION
LOCATION Cut 14 COORDINATES 484156.0 E; 7081290.2 N
PROJECT No FG5825 SURFACE R.L. 145.04m PLUNGE _____ DATE STARTED 18/8/09 GRID DATUM MGA94
JOB No 128/10A/901 HEIGHT DATUM AHD BEARING _____ DATE COMPLETED 19/8/09 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	135.04					PHYLLITE (XW/HW) (Cont'd)	XW-HW						
11	134.52		49 (96) (66)			PHYLLITE (MW/SW) Pale grey, fine grained, foliated. Foliation varies in dip from 45-90°. Defects are generally close to medium spaced. Defect sets vary from low to high angle. Defect surfaces are typically clay infilled (some thick) or iron stained.						Quartz vein (45°) Is(50) = 1.22MPa	x
12			100 (27)									Highly fractured quartz veins	
13			100 (0) (70)										
14			100 (69)			Detailed defect descriptions are shown on Form GEOT533/8 attached.						Is(50) = 1.09MPa Is(50) = 0.17MPa	x o
15			100 (30)			14.6-16.6m: Zone of prominent steeply dipping quartz veins.						Is(50) = 1.30MPa	x
16			100 (47)			15.8m: Foliation becoming more distinct.	MW-SW						
17			100 (81)									Is(50) = 1.68MPa Is(50) = 1.85MPa Is(50) = 0.35MPa	x x o
18			100 (100)			18.0m: Defect spacing becoming medium to wide; foliation becoming steep angled.							
19												Is(50) = 2.52MPa	x
20													

REMARKS Detailed defect descriptions are shown on Form GEOT533/8 attached.

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ENGINEERING BOREHOLE LOG

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

BOREHOLE No BH045
SHEET 3 of 3
REFERENCE No H10605

PROJECT BRUCE HIGHWAY (COOROY - CURRA) SECTION A GEOTECHNICAL INVESTIGATION
LOCATION Cut 14 COORDINATES 484156.0 E; 7081290.2 N
PROJECT No FG5825 SURFACE R.L. 145.04m PLUNGE _____ DATE STARTED 18/8/09 GRID DATUM MGA94
JOB No 128/10A/901 HEIGHT DATUM AHD BEARING _____ DATE COMPLETED 19/8/09 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
								EH	VH	I	M	J	VL				
20	125.04				PHYLLITE (MW/SW) (Cont'd)		MW-SW										
	124.69		100		Borehole terminated at 20.35m												
21																	
22																	
23																	
24																	
25																	
26																	
27																	
28																	
29																	
30																	

REMARKS Detailed defect descriptions are shown on Form GEOT533/8 attached.

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Project: **Bruce Highway Upgrade (Cooroy – Curra) Section A**
Borehole No: **BH45**
Start Depth: 5.00m
Finish Depth: 20.35m
Project No: FG5825
H No: 10605



0 100 200 300 400 500 600mm

SCALE 1:5

F:GEOT043/1

Project: **Bruce Highway Upgrade (Cooroy – Curra) Section A**
Borehole No: **BH45**
Start Depth: 5.00m
Finish Depth: 20.35m
Project No: FG5825
H No: 10605



SCALE 1:5

F:GEOT043/1

DEFECT DESCRIPTIONS OF ENGINEERING BORELOGS

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

BOREHOLE NO.:	BH45
SHEET:	1 of 2
REFERENCE NO.:	H10605

PROJECT:	Bruce Highway (Cooroy – Curra) Section A Geotechnical Investigation					
LOCATION:	Cut 14					
PROJECT NO.:	FG5825	SURFACE R.L.:	145.39	DRILLER:	R & D Drilling	
JOB NO.:	128/10A/901	DATUM:	MGA94	DATE DRILLED:	18/08/09	

DEPTH	DEFECT TYPE	DIP°	PLANARITY	ROUGHNESS	APERTURE	WALL ALTERATION	OTHER
5.03-5.09	CZ	25	PI	S	O		Cl, 1mm
5.16	J	30	PI	S	O	FeSt	Cl, 1mm
6.16	J	45	PI		C		
6.56	J	25	St		C		
6.77	J	80	St		C		
6.89	J	25	St		C		
6.96	J	85	Un	R	O		
7.00-7.46	BZ-CZ						Qz Vn, 40mm wide vertical
7.56	J	35	PI		C		
7.68	J	0	PI		C		Cl, 3mm
7.80	J	78	PI		O		Broken rock infill
7.85-8.58	CZ						Cobbles of Qz
8.68	J	35	Un-St	R	O		
9.30-9.61	Brecciated Zone						
10.70	J	60	Un	SR	O	FeSt,MuSt	
10.85	QZ	50	Un		C		40mm Wide
10.93	CZ	55	St	SR	O		
11.00	J	65	PI-Un	SR	C	FeSt	

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	MnSt	Manganese Stained	LP	Lamination Parting	SI	Sand Infill
PLANARITY		APERTURE		CLV	Cleavage	QZ	Quartz
PI	Planar	C	Closed	Fr	Fracture	CA	Calcite
St	Stepped	O	Open	SZ	Sheared Zone	Chl	Chlorite
Un	Undulating	F	Filled	CZ	Crushed Zone	In	Incipient
Cu	Curved	T	Tight	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.

BOREHOLE NO.:	BH 45
SHEET:	2 of 2
REFERENCE NO.:	H10605

DEPTH	DEFECT TYPE	DIP°	PLANARITY	ROUGHNESS	APERTURE	WALL ALTERATION	OTHER
11.07	J	25	St	R	C		
11.08	J	80	Pl	S	C	MnSt	
11.24	J	0	St	R	C	FeSt,MnSt	
11.30	QZ	80-85	Pl		C		40mm Wide
11.41-11.80	J-Qz	65	Un-St	R	C		
11.60	J	55	St	S	C		
11.79	J	80	Un		C		
11.88-11.96	CZ				C		QZ Gravel & clay gravel infill
12.16	QZ	70	Un		C		
12.19	J	70	Pl		C		Cl, 4mm
12.21	J	55	Un		C		Cl, 3mm
12.66	J	80	Un	S	C	FeSt	
13.24	J	35	Pl		C		
13.38	J	20	Un	VR	C		
13.48-13.51	J	35	Un	VR	C		
13.63	J	45	Un	S	C	W	
13.70	J	70	Un	S	C	W	
13.93	J/QZ	45-50	Un		C		
14.14-14.17	Brecciated/ altered zone	45			C		
14.30	J	35	Pl	S	C	FeSt,W	Cl, 1mm
14.36	QZ	40	Un		C		Qz vein 2mm-50mm
14.51	J	0	St	R	C	W	
14.52	J	65	Pl		C		Cl, 1-2mm
14.58	J	30	Un	SR	C	W	
14.95	QZ	35-85	Un-St		C		QZ Vn 40-10mm
15.21	ST	30	Pl	SR	O	W	Cl, 2mm
15.52	J	80-85	Un	SR	C	FeSt	Cl, 1mm
15.77	J	55	Un	SR	C	FeSt,MnSt	
15.93	FP	45	Pl	S	C	FeSt	
16.22	J	65	Un	S-PO	C	W	
16.38	J	50	Pl	SR	C		Clay Veneer
16.51	J	80	Un	R	C	FeSt,W	
16.72-16.76	BZ	0				W	Cl, 1mm
16.83	J	85	Pl	S	C	FeSt	Cl, 1mm
16.85	J	35	St		C		
16.99	J	35	St	S	C	Cn	
17.48	J	40	Un	S	C	Cn	
17.67	CZ	0	Pl		C	W	
17.59-17.90	J/FP??	85-90	Pl	SR	C	W,FeSt	
17.82	J	55-60	St	SR	C		
17.90	J	35	Pl	S	C		
18.21-18.22	CZ	20	Un	R	O		
18.34	QZ	15	Pl		C		3mm wide
18.52	J	75	Pl		C		Cl, 10mm crushed rock in defect
18.85	J	75	Un	SR	C	FeSt	
19.16	J	25	Pl	SR	C	MnSt	
19.39	J	10	Un-St	S	C	W	
19.80	J	70	St	S	C		
20.24	VN	15	Pl		C		Qz, 2mm