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ENGINEERING BOREHOLE LOG

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

BOREHOLE No BH005
SHEET 1 of 2
REFERENCE No H10639

PROJECT BRUCE HIGHWAY (COOROY - CURRA) SECTION A GEOTECHNICAL INVESTIGATION
LOCATION Cut 12 COORDINATES 484920.3 E; 7081079.6 N
PROJECT No FG5825 SURFACE R.L. 163.23m PLUNGE _____ DATE STARTED 13/10/09 GRID DATUM MGA94
JOB No 128/10A/901 HEIGHT DATUM AHD BEARING _____ DATE COMPLETED 13/10/09 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	163.23					Gravelly SILT (TOPSOIL)						Driller's log only	
1	162.73				A	PHYLLITE (HW): Generally exhibits the engineering properties of light brown, dry, dense to very dense, gravelly silt.	HW					9,15,25 N=40	SPT
2	160.93		(0)		B							30,30/100 N>50	SPT
3	160.03		100 (0)			PHYLLITE (MW): Pale brown to slightly green, fine grained, foliated. Defects are generally medium spaced. Prominent defect set parallel to foliation. Defect surfaces are typically thinly clay infilled and iron stained.	MW					Is(50) = 0.40MPa Is(50) = 0.60MPa	x o
4			100 (31)			PHYLLITE (MW - SW): Pale grey to slightly green, fine grained, foliated. Foliations are distinct and are generally dipping between 10 and 20°. Defect spacing is generally medium to wide. Prominent defect set parallel to foliation with other sets dipping at 45 and 60°.						Is(50) = 0.48MPa Is(50) = 0.24MPa	o x
5			100 (61)									Is(50) = 0.18MPa Is(50) = 0.12MPa	o x
6			100 (67)									Is(50) = 0.79MPa Is(50) = 0.61MPa	o x
7			100 (44)									Is(50) = 0.81MPa Is(50) = 0.84MPa	x o
8												Is(50) = 0.39MPa Is(50) = 1.94MPa	o x
9												Is(50) = 0.37MPa Is(50) = 0.96MPa Is(50) = 0.66MPa Is(50) = 1.17MPa	x o x x
10	153.23					9.0 - 9.3m: Brecciated shear zone with quartz veins.						Is(50) = 0.72MPa	o

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

LOGGED BY
MW



ENGINEERING BOREHOLE LOG

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

BOREHOLE No BH005
SHEET 2 of 2
REFERENCE No H10639

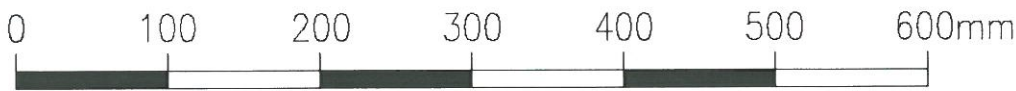
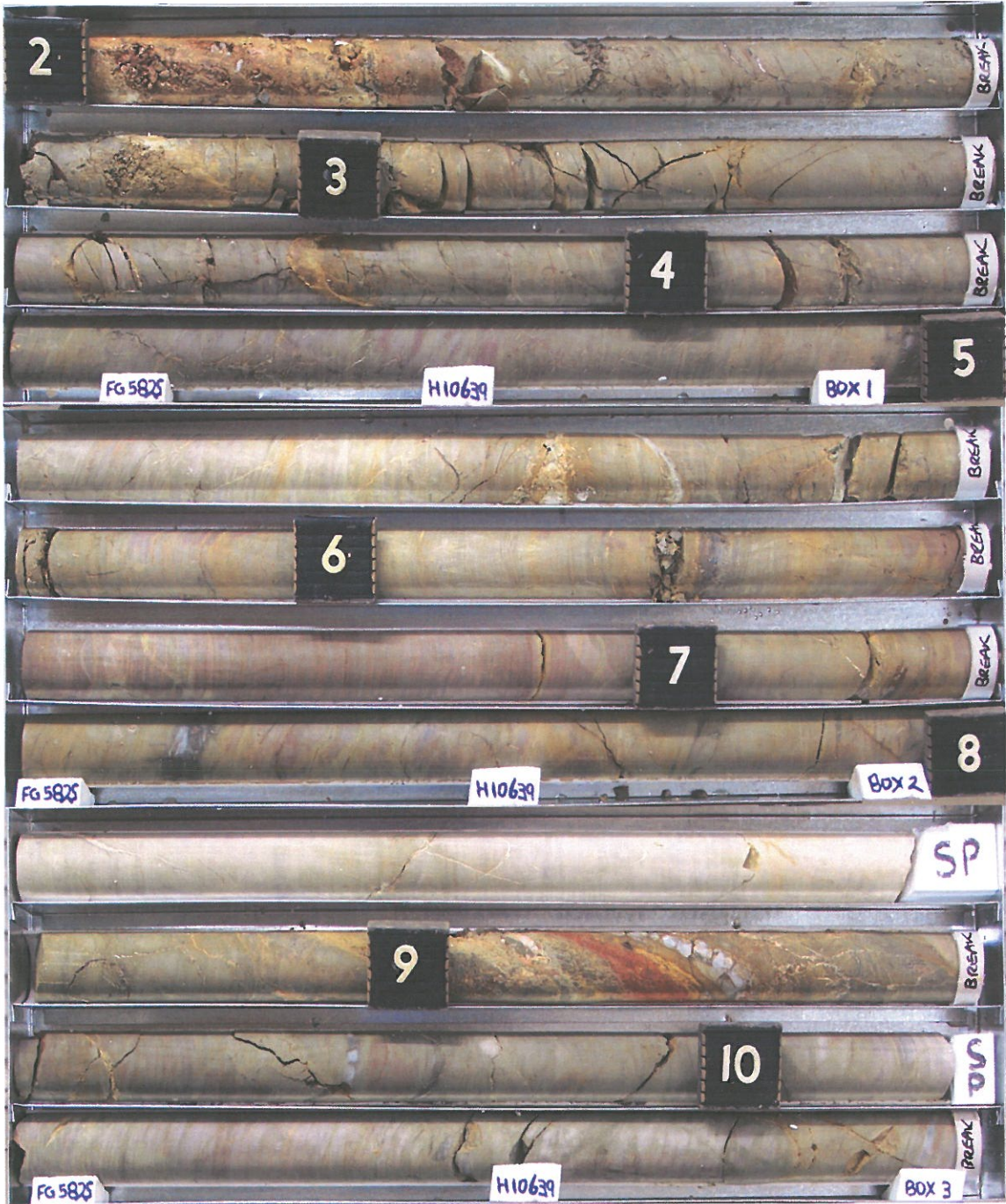
PROJECT BRUCE HIGHWAY (COOROY - CURRA) SECTION A GEOTECHNICAL INVESTIGATION
LOCATION Cut 12 COORDINATES 484920.3 E; 7081079.6 N
PROJECT No FG5825 SURFACE R.L. 163.23m PLUNGE _____ DATE STARTED 13/10/09 GRID DATUM MGA94
JOB No 128/10A/901 HEIGHT DATUM AHD BEARING _____ DATE COMPLETED 13/10/09 DRILLER R&D Drilling

DEPTH (m)	R.L. (m)	AUGER CASING WASH BORING CORE DRILLING	RQD () %	SAMPLE	MATERIAL DESCRIPTION	LITHOLOGY	USC WEATHERING	INTACT STRENGTH	DEFECT SPACING (mm)	GRAPHIC LOG	ADDITIONAL DATA AND TEST RESULTS	SAMPLES TESTS
10	153.23											
			CORE REC %									
			100 (43)		PHYLLITE (MW - SW): (Cont'd)						Is(50) = 0.84MPa	x
											Is(50) = 1.32MPa Is(50) = 0.63MPa	x o
11											Is(50) = 0.54MPa Is(50) = 1.12MPa	o x
			100 (29)								Is(50) = 0.72MPa Is(50) = 0.81MPa	o x
12											Is(50) = 0.50MPa Is(50) = 0.29MPa	o x
			100 (40)									
13												
			100 (40)									
14											Is(50) = 0.79MPa Is(50) = 0.85MPa	x o
			100 (33)									
15												
			100 (26)								Is(50) = 1.07MPa Is(50) = 1.21MPa	o x
16												
			100 (26)								Is(50) = 0.42MPa Is(50) = 0.78MPa	x o
17											Is(50) = 1.04MPa Is(50) = 0.60MPa	o x
	145.43											
18	144.98		100		PHYLLITE (SW): Dark grey, fine grained, foliated.						Is(50) = 1.13MPa Is(50) = 0.62MPa	x o
					Borehole terminated at 18.25m							
19												
20												

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

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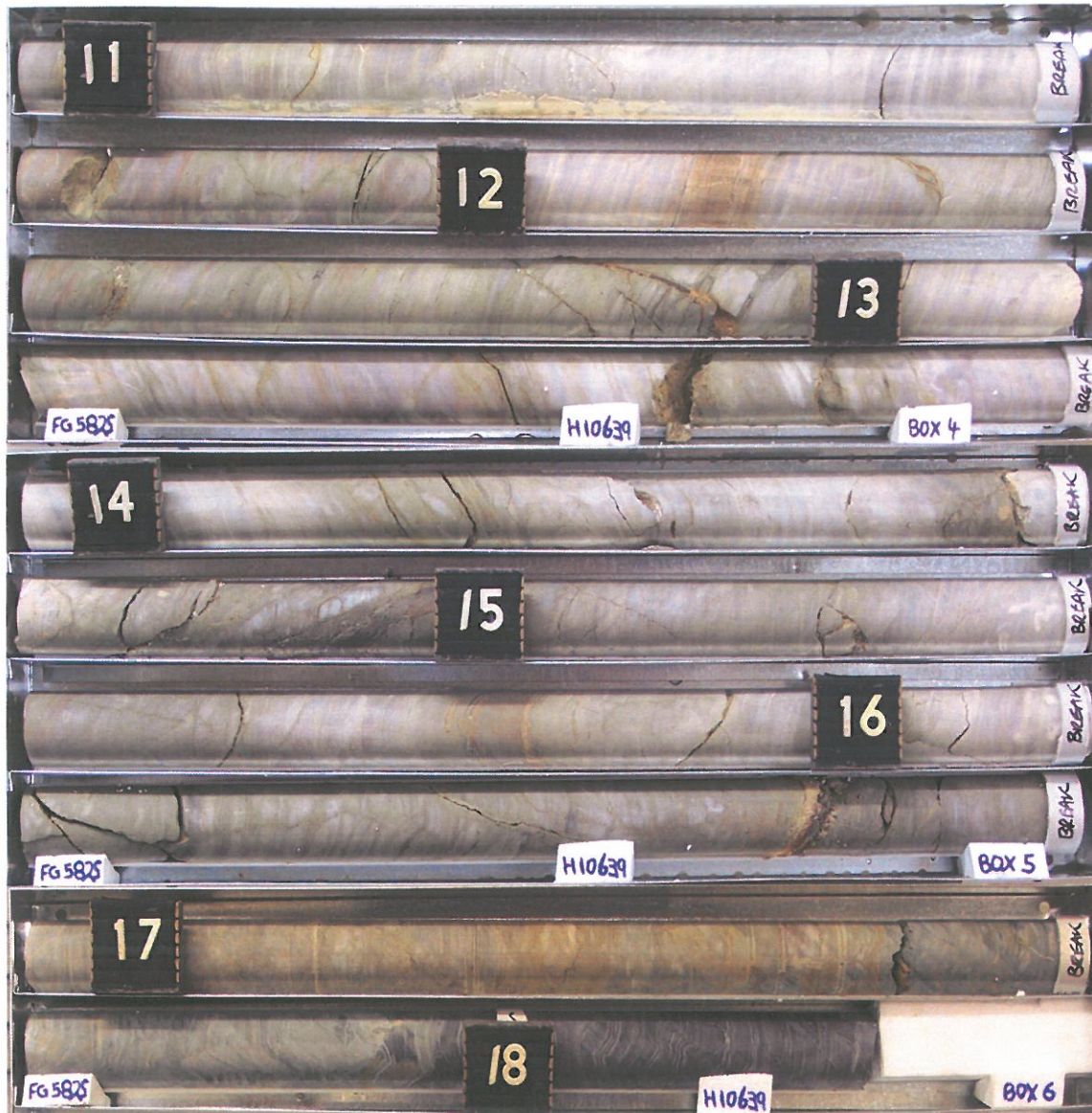
Project: **Bruce Highway Upgrade (Cooroy – Curra) Section A**
Borehole No: **BH5**
Start Depth: 2.00m
Finish Depth: 18.25m
Project No: FG5825
H No: 10639



SCALE 1:5

F:GEOT043/1

Project: **Bruce Highway Upgrade (Cooroy – Curra) Section A**
Borehole No: **BH5**
Start Depth: 2.00m
Finish Depth: 18.25m
Project No: FG5825
H No: 10639



SCALE 1:5

F:GEOT043/1

GEOTECHNICAL BRANCH LABORATORY

Materials Services - Brisbane
35 Butterfield Street, HERSTON Q 4006
Phone: (07) 3115 3035 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.:	BH5
SHEET:	1 of 3
REFERENCE NO.:	H10644

PROJECT: Bruce Highway Upgrade (Cooroy – Curra) Section A Geotechnical Investigation

LOCATION: Cut 7

PROJECT NO.: FG5825

SURFACE R.L.: 163.2

DRILLER: R & D Drilling

JOB NO.: 128/10A/901

DATUM: MGA94

DATE DRILLED: 13/10/09

DEPTH	DEFECT TYPE	DIP°	PLANARITY	ROUGHNESS	APERTURE	WALL ALTERATION	OTHER
2.21	J	50	PI	SR	O		Cl, 10mm
2.34	J	35	Un	SR	O	FeSt, MnSt	
2.47	J	60	Un	S	O	FeSt, MnSt	
2.51	J	60	Un	SR	O	FeSt, MnSt	
2.62	J	50	PI	SR	C	FeSt, MnSt	
2.70	J	60	Un	SR	O	FeSt, MnSt	
2.87	J	60	PI		C		Cl, 15-20mm
2.91	J	50	St	S	C	FeSt, MnSt	
3.04	J	40	St	S	C		
3.07	J	30	PI	S	C	FeSt	
3.11	J	30	PI	S	C	FeSt, MnSt	Cl, <1mm
3.15	J	30	PI	S	C	FeSt, MnSt	
3.22	J	65	Un	SR	C	FeSt, MnSt	
3.27	J	25	PI	S	C	MnSt, FeSt	Cl, <1mm
3.33	J	60	PI	SR	C	FeSt, MnSt	
3.55	J	35	PI		C		Cl, 1mm
3.58	J	65	Un	S	C	FeSt	
3.62	J	15	Un	SR	C	FeSt, MnSt	

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	Mn	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	Lom (s)	Lamination (s)
				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.:	BH5
SHEET:	2 of 3
REFERENCE NO.:	H10644

DEPTH	DEFECT TYPE	DIP (DEGREES)	PLANARITY	ROUGHNESS	APERTURE	WALL ALTERATION	OTHER
3.71	Clay Seam	60	Pl		C		5-15mm wide
3.88	Rehealed J	70	Un		C		
4.37	Rehealed J	60-70	Un		C		
4.55	J	15-30	Un	SR	C	MnSt	
4.71	J	35	Pl		C		
5.12	Weathered Clay Seam	60	Un		C		1mm wide
5.20	Weathered Clay Seam	60	Pl		C		1mm wide
5.30	Weathered Clay seam	55	Un		C		1mm wide
5.41	WS	25	Pl		C		5-20mm wide
5.49	WS	40	Pl		C		2mm wide
5.55	J	15	Un	SR	C	FeSt, MnSt	
5.61	J	35	Un	S	C	FeSt	Cl, 1mm
5.64	J	15	Pl	S	C	FeSt, MnSt	
5.67	J	15	Pl	S	C	FeSt, MnSt	
6.02	J	15	Pl	SR	C	FeSt, MnSt	
6.13	J	30	Pl	S	C	FeSt	
6.25	J	10	Pl	S	C		Broken rock in defect
6.40	Rehealed Joint	70	Un		C		
6.89	J	20	Un	R	C	FeSt, MnSt	
7.15	J	20	Un	SR	C	FeSt, MnSt	
7.50	J	25	Pl	S	C	FeSt	
7.67	J	30	Un	R	C	FeSt, MnSt	
7.86	J	15	Un	S	C		Cn
8.11	J	60	Un		C		Cl, 1-4mm
8.630	J	50	St	SR	C	MnSt, FeSt	Cl, <1mm
8.35	J	65	Pl		C		Cl, 1mm
8.75	J	30	Pl	R	C	FeSt	Cl, 1mm
8.84	J	25	Un	R	C	FeSt, MnSt	
9.00-9.31	WS	40	Un		C		Cl, 2mm
9.45	J	30	Un	S	C		
9.48	J	45	Un	SR	C	FeSt, MnSt	
9.99	J	40	Un	R	C	FeSt, MnSt	
10.43	J	20	Un	R	C	FeSt, MnSt	
10.68	J	15	Un	R	C	FeSt	
10.80	J	55	Un	R	C	FeSt	
10.96	J	15	Ir	S	C	FeSt, MnSt	Cl, 2mm
11.12	J	40	Ir	SR	C	FeSt, MnSt	
11.26	Rehealed J	60	Pl		C		
11.32	Rehealed J	50	Pl		C		
11.54	J	25	Un	SR	C		Cn
11.94	J	20	Un	S	C	FeSt, MnSt	
12.15	J	15	Pl	S	C	FeSt, MnSt	
12.49	J	60	Pl	SR	C	FeSt	Cl, 2mm
12.63	J	45	Un	SR	C	FeSt, MnSt	
12.82	J	45	Un	SR	C	FeSt, MnSt	
12.90	J	70	Pl		C	W	Fe Infill, 3mm
13.07	J	30	Pl	S	C	FeSt	
13.53	FP	30	Un	S	C	FeSt, MnSt	
13.66	J	30	Un	R	C	FeSt, MnSt	Cl, 1mm
13.78	J	50	Un	SR	C	FeSt, MnSt	
14.21	J	30	Un	SR	C	MnSt	Cl, 1mm
14.36	J	60-85	Un	R	C	FeSt, MnSt	Cl, 1mm
14.60	J	79-90	Un	R	C	FeSt, MnSt	Cl, 1mm
14.80	J	60	Un	R	C	FeSt, MnSt	Cl, 2mm
14.88-15.00	WS	70	Pl		C		20-35mm wide

BOREHOLE NO.:	BH5
SHEET:	3 of 3
REFERENCE NO.:	H10644

DEPTH	DEFECT TYPE	DIP (DEGREES)	PLANARITY	ROUGHNESS	APERTURE	WALL ALTERATION	OTHER
15.09	J	15	Un	SR	C	FeSt, MnSt	
15.27	J	30	Pl	S	C	MnSt	Cl, <1mm
15.69	DI						
15.77	J	35	Un	S	C	MnSt	
15.86	J	90	Un	R	C	FeSt, MnSt	
15.94	J	40	Un	SR	C	FeSt, MnSt	
16.14	J	70	Un	SR	C	FeSt, MnSt	
16.22	J	40	Un	SR	C	FeSt, MnSt	
16.26	J	75	Un	SR	C	FeSt, MnSt	
16.55	J	70	Un	R	C	FeSt, MnSt	
16.75	Iron Seam	25					25mm wide
16.80	J	30	Pl	S	C	FeSt	
17.33-17.72	Disturbed foliations						