Queensland Government
Department of Main Roads

ENGINEERING BOREHOLE LOG

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

BOREHOLE No BH038
SHEET 1 of 2
REFERENCE No H10589

PROJECT BRUCE HIGHWAY (COOROY - CURRA) SECTION A GEOTECHNICAL INVESTIGATION
LOCATION Cut 13 COORDINATES 484695.1 E; 7081189.2 N
PROJECT No FG5825 SURFACE R.L. 157.33m PLUNGE ____ DATE STARTED 27/7/09 GRID DATUM MGA94
JOB No 128/10A/901 HEIGHT DATUM AHD BEARING ____ DATE COMPLETED 27/7/09 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 (EH VH H M L VL EL)	DEFECT SPACING (mm) (20 60 200 600 2000)	GRAPHIC LOG	ADDITIONAL DATA AND TEST RESULTS	SAMPLES / TESTS
0	157.33												
	157.13				**Clayey SILT (TOPSOIL)** Brown, moist, firm.								
				A	**Clayey SILT (RESIDUAL)** Red-brown, moist,stiff.							3,5,5 N=10	SPT
1				B	Becoming gravelly at 1.5m, angular fine quartz gravels.							6,6,13 N=19	SPT
2	154.83			C	**PHYLLITE (XW):** Exhibits engineering properties of grey to mottled red, moist, hard clayey Silt.		XW					10,11,20 N=31 Hard quartz band	SPT
3	154.13				Laminations preserved throughout.								
				D	**PHYLLITE (HW):** Exhibits engineering properties of pale grey to light brown, moist, hard clayey Silt.		HW					25,30/110 N>50	SPT
	153.53		(0) 77		Rock fabric preserved throughout; large quartz gravels up to 30mm.							Broken zone	
4			(0) 100		**PHYLLITE (MW):** Light brown to slightly green, fine grained, foliated.							Is(50) = 0.72MPa Is(50) = 0.12MPa	x o
			(0) 100		Foliation dips at ~20° and are indistinct.							Clayey broken zone	
5			(0) 88		Defects are generally close to medium spaced.							Broken zone	
			(0) 60										
			(56)		Prominent defect set parallel to folaition with another subvertical set.							Is(50) = 0.17MPa Is(50) = 0.48MPa	x o
6			100 (30)		Defect surfaces are typically iron stained or minor clay infilled.							Is(50) = 0.65MPa Is(50) = 0.47MPa	x o
					Occasional quartz veins up to 50mm thick.		MW						
			100 (0)		**Detailed defect descriptions are shown on Form GEOT533/8 attached.**							Broken zone	
7	150.03		66		7.0 - 7.3m: Possible clayey weathered zone.								
			(0) 100									Broken zone	
8			(0) 95									Broken zone	
			(16)									Is(50) = 0.44MPa Is(50) = 0.65MPa	x o
9	148.13											Broken zone	
					PHYLLITE (MW - SW):		MW-SW						
10			97		(See over)								

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

LOGGED BY JA

QLD_DMR_LIB_01.GLB Log A_ENGINEERING BOREHOLE LOG W LITHOLOGY FG5825 BRUCE HWY COOROY-CURRA SECTION A BHS.GPJ DWG95012.GDW Datgel CPT Tool gINt Add-in 12/05/2010 10:30

Queensland Government
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ENGINEERING BOREHOLE LOG

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

BOREHOLE No BH038
SHEET 2 of 2
REFERENCE No H10589

PROJECT BRUCE HIGHWAY (COOROY - CURRA) SECTION A GEOTECHNICAL INVESTIGATION
LOCATION Cut 13 COORDINATES 484695.1 E; 7081189.2 N
PROJECT No FG5825 SURFACE R.L. 157.33m PLUNGE DATE STARTED 27/7/09 GRID DATUM MGA94
JOB No 128/10A/901 HEIGHT DATUM AHD BEARING DATE COMPLETED 27/7/09 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 (EH VH H M L VL EL)	DEFECT SPACING (mm) (20 60 200 600 2000)	GRAPHIC LOG	ADDITIONAL DATA AND TEST RESULTS	SAMPLES	TESTS
10	147.33		(37)		**PHYLLITE (MW - SW):** (Cont'd) Pale grey with dark grey mottling, fine grained, foliated. Foliation dips at ~30°. Defects are generally medium to widely spaced. Prominent defect set parallel to foliation with another set at 50°. Defect surfaces are typically iron stained or thinly clay infilled. **Detailed defect descriptions are shown on Form GEOT533/8 attached.**							Is(50) = 0.29MPa		x
												Is(50) = 1.01MPa		o
11			100											
			(52)											
12												Is(50) = 0.71MPa		x
												Is(50) = 1.07MPa		o
			100											
			(17)					MW-SW						
13												Drilling induced broken zone		
			79		**NOTE:** From 4.1 - 5.3m and 14.1 - 16.0m poor core recovery in BH38. Redrill carried out to recover lost core (BH38A).									
			(0)											
14			100											
			(50)									Is(50) = 0.53MPa		x
			100									Is(50) = 1.27MPa		o
			(40)									Drilling induced broken zone		
			100									Broken zone		
15			(0)											
			58									Broken zone		
			(36)									Crushed zone		
												Is(50) = 0.29MPa		x
												Is(50) = 1.35MPa		o
	141.33		100									Is(50) = 0.45MPa		x
16												Is(50) = 1.41MPa		o
					Borehole terminated at 16m									
17														
18														
19														
20														

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

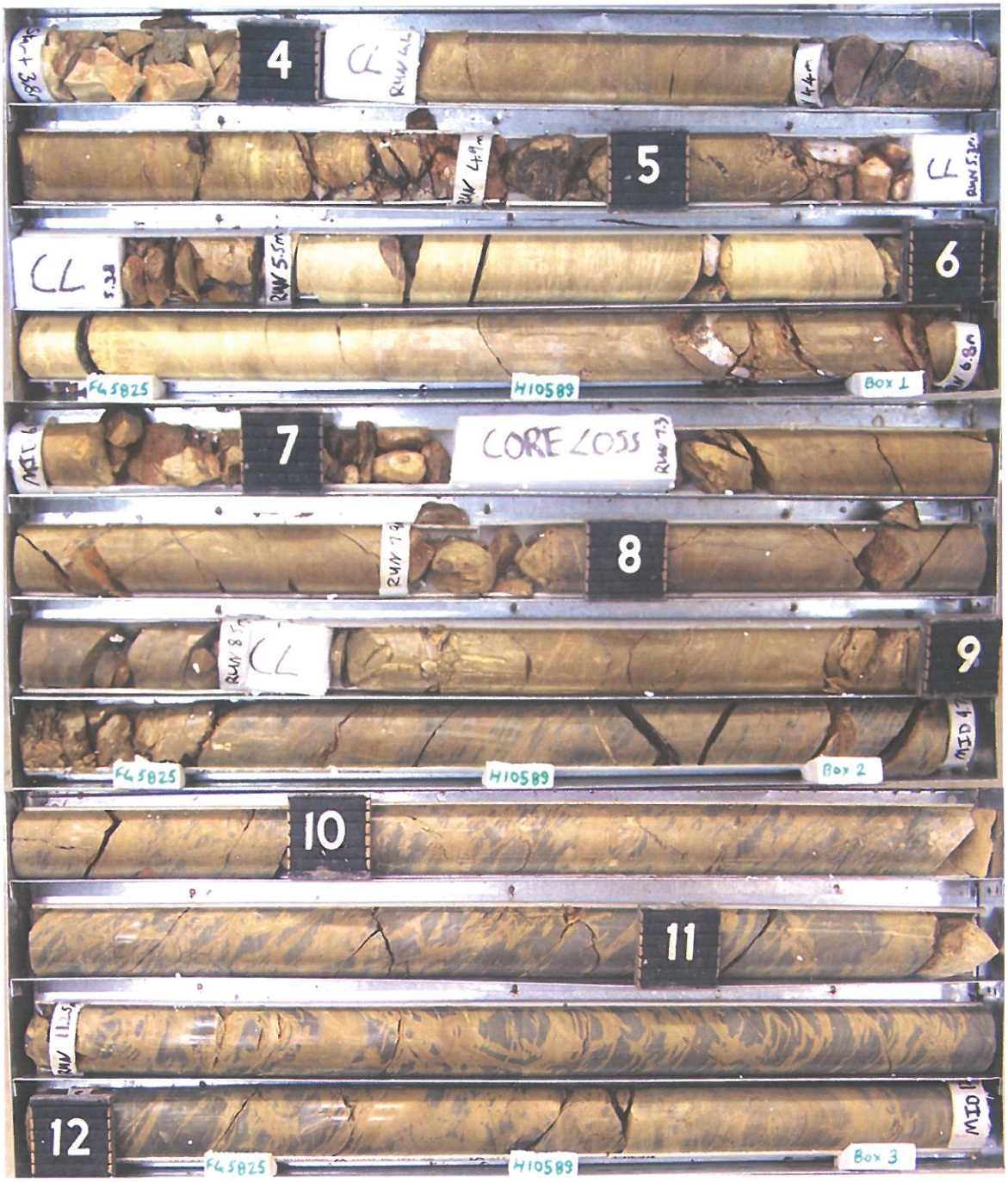
LOGGED BY JA

QLD_DMR_LIB_01.GLB Log A_ENGINEERING BOREHOLE LOG W LITHOLOGY FG5825 BRUCE HWY COOROY-CURRA SECTION A BHS.GPJ DWG95012.GDW Datgel CPT Tool gINt Add-In 12/05/2010 10:30

Project: **Bruce Highway Upgrade (Cooroy – Curra) Section A**

Borehole No: **BH38**

Start Depth: 3.80m
Finish Depth: 16.00m
Project No: FG5825
H No: 10589



0 100 200 300 400 500 600mm

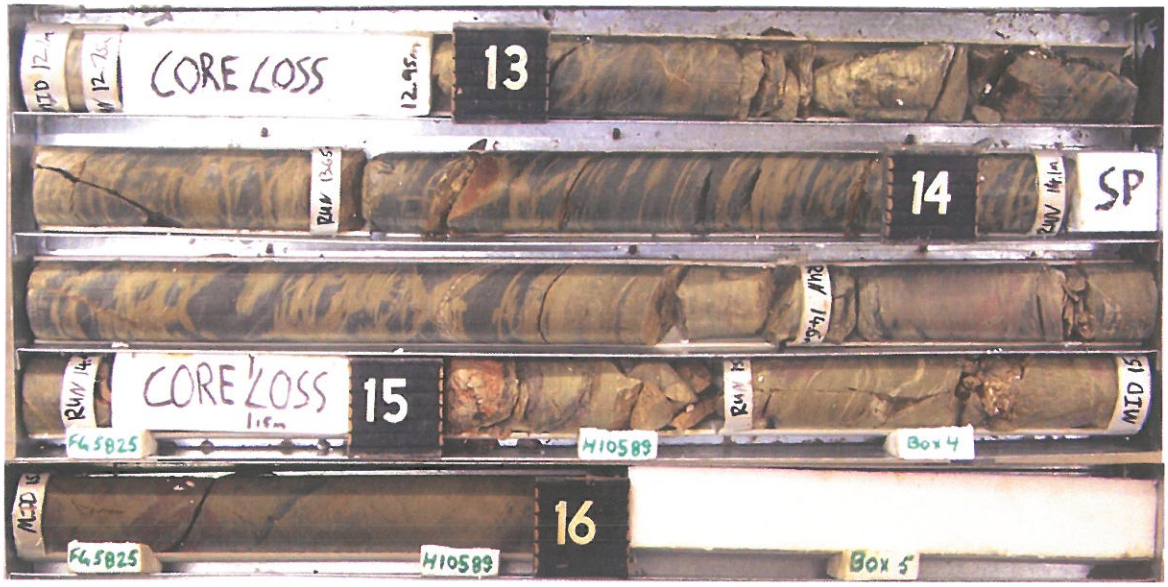
SCALE 1:5

F:GEOT043/1

Project: **Bruce Highway Upgrade (Cooroy – Curra) Section A**

Borehole No: **BH38**

Start Depth: 3.80m
Finish Depth: 16.00m
Project No: FG5825
H No: 10589



0 100 200 300 400 500 600mm

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

Queensland Government
Department of Main Roads

DEFECT DESCRIPTIONS OF ENGINEERING BORELOGS

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

BOREHOLE NO.:	BH38
SHEET:	1 of 3
REFERENCE NO.:	H10589

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

LOCATION: Cut 13

PROJECT NO.:	FG5825	**SURFACE R.L.:**	158.32	**DRILLER:**	R & D Drilling
JOB NO.:	128/10A/901	**DATUM:**	MGA94	**DATE DRILLED:**	27/7/09

DEPTH	DEFECT TYPE	DIP°	PLANARITY	ROUGHNESS	APERTURE	WALL ALTERATION	OTHER
3.80-4.04	Bz					FeSt, W	
4.16	J	35	Pl	SR	O	MnSt, FeSt	
4.25	J	15	Pl	S	O	FeSt	
4.32	J	25	Pl	S	O	MnSt, FeSt	
4.45	J	40	Pl	S	C		
4.46	J	40	Pl	S	C	FeSt	
4.71	J	25	Un	SR	O	MnSt, FeSt	
4.79	J	35	Pl	S	C	W, FeSt	
4.82	J	70	Pl	S	C	MnSt, FeSt, W	Qz, Vn
4.88-5.00	Bz						Clay veneer
5.00-5.14	DISTURBED FOLIATIONS					Closely spaced microfracturing	
5.08	Qz	45	Un-St		C	discontinuous	1mm-5mm cuperture
5.15-5.50	Bz					Broken quartz	
5.63	J	15	Pl	S	C	MnSt, FeSt	
5.67	Vn	20	Pl		C		
5.68	J	10	Pl	SR	C	MnSt, FeSt	
5.84	J	20	Pl	SR	O	MnSt, FeSt	
6.00	J	25	Pl	S	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	Sl	Sand Infill
PLANARITY		**APERTURE**		CLV	Cleavage	QZ	Quartz
Pl	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	Lam (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.:	BH 38
SHEET:	2 of 3
REFERENCE NO.:	H10589

DEPTH	DEFECT TYPE	DIP°	PLANARITY	ROUGHNESS	APERTURE	WALL ALTERATION	OTHER
6.05	J	20	Pl	S	C	W, FeSt	
6.25	FP	20	Pl	S	C	FeSt, MnSt	
6.31	FP	25	St-Un	SR	O	W	
6.42	J	35	St	R	C	FeSt, MnSt	
6.47	FP	60	Pl		C		In
6.50	Qz	60	Pl		C		Rehealed, In
6.57	FP	50	Un	SR	C	FeSt, MnSt	
6.61	J	30	Un-St	R	O	FeSt, MnSt, W	
6.66	J	50	Pl	SR	C	FeSt, W	
6.72	FP	40	Pl	S	C	FeSt	
6.73-6.80	FP	40					In
6.80-7.13	Bz						
7.30	DI						
7.36	J	60	Pl	SR	O	FeSt	
7.37	J	30	Pl	S	C	FeSt	
7.47	J	25	St-Un	S	C	FeSt, MnSt	
7.57	J	45	Un	SR	C	FeSt, MnSt	
7.61	J	40	Pl-Un	R	C	FeSt, W	Cl, 1mm
7.65	Vn	55	Pl		C	Rehealed	
7.70	J	45	Pl	S	C	FeSt, W	
7.75	J	35	Pl	S	C	FeSt, MnSt	
7.82	J	45	Un	SR	C	FeSt	Clay veneer
7.86 – 7.95	Bz, DI						
8.02	J	60-75	Un-St	R	C	W, FeSt, MnSt	Clay veneer
8.18	J	50	Un	R	O	MnSt, FeSt, w	
8.22	Vn	40	Pl		C		In, rehealed
8.26	J	35	Pl	S	C		Cl, 1mm
8.34-8.40	FPX3	35	Pl	S	C		Cn
8.43-8.48	Bz						
8.56	J	50	Pl	S	C		Cn
8.62	J	0	Pl		C		Cl, 10mm w/crushed rock and qz gravel
8.67	J	35	Pl	SR	C	FeSt, MnSt	
8.74	Qz	35	Pl		C		In, 2mm Qz
8.76	FP	35	Pl	S	C	FeSt	
8.80	J	50	St	SR	C	FeSt	
8.92	J	30	Un	S	C	FeSt	
8.95	J	50	Pl	SR	C	FeSt	
9.00	J	35	Un				
9.05-9.20	Bz						Clay & Broken Rock
9.20	J	45	Un	C			Cl, 3mm
9.29	J	40	Pl	SR	C	FeSt	
9.36	J	40	Pl	SR	C	MnSt, FeSt	
9.48	Qz	20	Pl		C		Qz 1-3mm
9.53	J	40	Pl	S-SR	C	MnSt, FeSt	Qz Infill, 2mm
9.59	J	30	Pl	S	C	FeSt	
9.67	J	30	Pl	S	C		
9.73	Vn	90	Un-St	R	C	W, MnSt	rehealed
9,74	J	40	Pl	S	C		
9.84	J	35	Pl	SR	C	FeSt	
9.94	J	30	Un	S	C		
9.95	Vn	75	Un		C		
9.99	J	25	Un	SR	C	MnSt, FeSt	
10.13	Qz	45	St		C		
10.20	J	30	Pl		C		
10.35	J/FP	30	Pl	S	C		

BOREHOLE NO.:	BH 38
SHEET:	3 of 3
REFERENCE NO.:	H10589

DEPTH	DEFECT TYPE	DIP°	PLANARITY	ROUGHNESS	APERTURE	WALL ALTERATION	OTHER
10.53	J	45	Pl	S	C		
10.63	J	45	Pl	S	C	FeSt	
10.78	J	45	Pl	S	C		
10.80	J	25	St-Un	SR	C	MnSt	
10.92	FP	40	Un	S	C	W	
10.95	J	50	Un	SR	C	W, FeSt	
11.07	J	40	Pl	S	C	FeSt	
11.22	J	30	Pl	R	C	W, FeSt	
11.39	J	40	St	S	C	FeSt	
11.43	J	40	Pl	S	C	FeSt	
11.52	J	40	Pl	S	C	MnSt, FeSt	
11.66	J	30	Pl-Un	S	C	FeSt	
11.75	Vn	50	Un		C	MnSt	In <1mm, rehealed
11.89	Vn	10	Un		C	MnSt	In <1mm rehealed
12.18	J	40	Pl	SR	C	W, FeSt	
12.26	J	30	Un	S	C	W	
12.41	J	30	Un	SR	C	W	
12.46	J	35	St	SR	C	FeSt	
12.47	J	0	Un	SR	C	FeSt	
12.53	Vn	60	Pl		C		Rehealed
13.05	J	45	Pl-Un	R	C	W, FeSt	
13.16	J	45	St	R	O	W, FeSt	
13.16-13.30	DI	Broken zone – drilling induced					
13.30	J	50	Pl	R	C		
13.35	J	50	Pl	SR	C	Slightly weathered	
13.48	J	75	St	R	C	W, MnSt, FeSt	
13.65	J	35	Pl	SR	C	W, MnSt, FeSt	
13.72	J	35	Pl	SR	C	W	Cl, 2-3mm w/crushed rock
13.79-14.12	FPX6	40	Pl	S	C	FeSt	
14.27	J	25	Un	S	C	W	clay veneer
14.46	Qz	45	Pl		C		
14.53	J	30	Un	SR	C		
14.60	J	35	Pl	S	C	MnSt	Sandy clay in defect, 1mm
14.6-14.73	DI	Broken zone - Drilling induced					
14.84	J	25	Pl	S	C		
14.87-14.89	Bz	0					
15.07-15.20	Cz						Angular gravel in red clay matrix
15.20	J	45	Pl		C	W	
15.24-15.30	DI-BZ						
15.33	J	90	Un	R	C	MnSt, FeSt	
15.42-15.46	Cz						Gravel in clay matrix, infill, 40mm
15.73	FP	35	Un	S	C	Cn	