Queensland Government
Department of Main Roads

ENGINEERING BOREHOLE LOG

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

BOREHOLE No BH062
SHEET 1 of 4
REFERENCE No H10628

PROJECT BRUCE HIGHWAY (COOROY - CURRA) SECTION A GEOTECHNICAL INVESTIGATION
LOCATION Cut 23 COORDINATES 481757.8 E; 7080622.8 N
PROJECT No FG5825 SURFACE R.L. 125.05m PLUNGE DATE STARTED 7/9/09 GRID DATUM MGA94
JOB No 128/10A/901 HEIGHT DATUM AHD BEARING DATE COMPLETED 9/9/09 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	125.05													
	124.95				**TOPSOIL**									
				A	**PHYLLITE (HW)** Generally exhibits engineering properties of pale brown, dry, hard, clayey SILT. Low plasticity, rock fabric present throughout.		HW					17,25,30/140 N>50		SPT
1				B								30/100 N>50		SPT
2	122.55													
			(0)		**PHYLLITE (MW/SW)** Pale brown with dark grey interbeds, fine grained. Weakly to moderately foliated, typically dips 70°- 80°. Defects are generally medium spaced. Prominant defect sets generally dip parallel to foliation and at 10° and 40°. Defect surfaces are typically clay infilled or iron stained. Major subvertical clay infilled joints up to 450mm. Occasional clay seams up to 80mm thick.							Jt, 60°, Pl, C, Cl		
3												Is(50) = 0.41MPa		x
												Clay seam		
												Major subvertical clay infilled joint, 450mm long		
												Clay seam		
4			100 (35)									Is(50) = 0.59MPa		x
												Jt, 60°, Pl, C, Cl		
												Is(50) = 1.01MPa		x
												Is(50) = 1.94MPa		x
5												Is(50) = 1.45MPa		x
			100 (72)									Is(50) = 1.90MPa		x
												Clay seam		
6							MW-SW					Clay seam		
												MC = 3.6%; UCS=8.20MPa		UCS
7			100 (57)		**Detailed defect descriptions shown on Form GEOT335/8 attached**							Is(50) = 1.11MPa		x
												Is(50) = 1.51MPa		x
8												Is(50) = 1.66MPa		x
			100 (81)											
9												Is(50) = 1.66MPa		x
												MC = 3.6%; UCS=8.61MPa		UCS
10					(See over)									

REMARKS Standpipe piezometer installed at base of hole. **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 DWG66872.GDW Datgel CPT Tool gINt Add-In 12/05/2010 13:47

Queensland Government
Department of Main Roads

ENGINEERING BOREHOLE LOG

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

BOREHOLE No BH062
SHEET 2 of 4
REFERENCE No H10628

PROJECT BRUCE HIGHWAY (COOROY - CURRA) SECTION A GEOTECHNICAL INVESTIGATION
LOCATION Cut 23 COORDINATES 481757.8 E; 7080622.8 N
PROJECT No FG5825 SURFACE R.L. 125.05m PLUNGE DATE STARTED 7/9/09 GRID DATUM MGA94
JOB No 128/10A/901 HEIGHT DATUM AHD BEARING DATE COMPLETED 9/9/09 DRILLER R & D Drilling

DEPTH (m)	R.L. (m)	RQD ( )% / CORE REC %	MATERIAL DESCRIPTION	USC	WEATHERING	ADDITIONAL DATA AND TEST RESULTS	SAMPLES	TESTS
10	115.05		**PHYLLITE (MW/SW)** (Cont'd)		MW-SW	Is(50) = 1.17MPa		x
11		100 (0)						
	113.66		**PHYLLITE (HW) (CRUSHED ZONE)** Pale brown, fine grained. Heavily fractured and crushed. Clay seams throughout.		HW			
12	112.75	100 (78)	**PHYLLITE (MW/SW)** Pale brown with dark grey interbeds, fine grained. Moderately foliated, typically dips at 70° Defects medium to widely spaced. Prominent defect sets dip at 20°, 45° and 90°. Defect surfaces are typically iron stained and clay infilled. Clay seams throughout.		MW-SW	Is(50) = 2.28MPa		x
13						MC = 2.4%; UCS=14.8MPa		UCS
						Is(50) = 2.71MPa		x
14						Is(50) = 1.59MPa		x
						Is(50) = 2.60MPa		x
15		100 (51)				MC = 2.2%; UCS=3.68MPa		UCS
16	108.98		**ANDESITE (MW)** Orange-brown, fine grained crystals in a medium grained groundmass.		MW	Is(50) = 0.66MPa		x
	108.14		**PHYLLITE (MW/SW)** Pale grey with dark grey mottling, fine grained.			Is(50) = 0.80MPa		x
17		100 (85)	Moderately foliated, typically dips at 70° Defects medium to widely spaced. Prominent defect sets dip at 20°, 45° and 90°. Defect surfaces are typically iron stained and clay infilled. Clay seams throughout.		MW-SW	Is(50) = 9.31MPa		x
						Is(50) = 3.84MPa		x
18						Is(50) = 3.19MPa		x
						Is(50) = 3.10MPa		x
19			**Detailed defect descriptions shown on Form GEOT335/8 attached**			Is(50) = 3.53MPa		x
						Is(50) = 2.79MPa		x
20								

REMARKS Standpipe piezometer installed at base of hole. **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 DWG66872.GDW Datgel CPT Tool gINt Add-In 12/05/2010 13:47

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Department of Main Roads

ENGINEERING BOREHOLE LOG

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

BOREHOLE No BH062
SHEET 3 of 4
REFERENCE No H10628

PROJECT BRUCE HIGHWAY (COOROY - CURRA) SECTION A GEOTECHNICAL INVESTIGATION
LOCATION Cut 23 COORDINATES 481757.8 E; 7080622.8 N
PROJECT No FG5825 SURFACE R.L. 125.05m PLUNGE DATE STARTED 7/9/09 GRID DATUM MGA94
JOB No 128/10A/901 HEIGHT DATUM AHD BEARING DATE COMPLETED 9/9/09 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
20	105.05				(See over) **PHYLLITE (MW/SW)** (Cont'd)						Is(50) = 6.59MPa	x
			100 (32)								Is(50) = 5.36MPa	x
21											Is(50) = 6.77MPa	x
											Is(50) = 3.65MPa	x
22												
											Is(50) = 1.86MPa	x
											▽ 7/10/09	
23							MW-SW				Is(50) = 3.16MPa	x
			100 (30)									
24											Is(50) = 1.62MPa	x
25											Is(50) = 3.86MPa	x
	99.11				**PHYLLITE (MW)** **Brecciated Shear Zone** Dark grey, fine grained.							
26			100 (0)		Moderately foliated in parts.							
27			100 (0)		Defects generally close to medium spacing. Defecs typically closed or healed. Heavily brecciated and clayey crushed zones throughout.						Is(50) = 0.27MPa	x
28							MW				Crushed Zone	
			100 (0)		**Detailed defect descriptions shown on Form GEOT335/8 attached**							
29												
30					(See over)							

REMARKS Standpipe piezometer installed at base of hole. **Detailed defect descriptions are shown on Form GEOT533/8 attached.**

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QLD_DMR_LIB_01.GLB Log A_ENGINEERING BOREHOLE LOG W LITHOLOGY FG5825 BRUCE HWY COOROY-CURRA SECTION A BHS.GPJ DWG66872.GDW Datgel CPT Tool gINt Add-In 12/05/2010 13:47

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ENGINEERING BOREHOLE LOG

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

BOREHOLE No BH062
SHEET 4 of 4
REFERENCE No H10628

PROJECT BRUCE HIGHWAY (COOROY - CURRA) SECTION A GEOTECHNICAL INVESTIGATION
LOCATION Cut 23 COORDINATES 481757.8 E; 7080622.8 N
PROJECT No FG5825 SURFACE R.L. 125.05m PLUNGE DATE STARTED 7/9/09 GRID DATUM MGA94
JOB No 128/10A/901 HEIGHT DATUM AHD BEARING DATE COMPLETED 9/9/09 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
30	95.05				**PHYLLITE (MW)** Brecciated Shear Zone (Cont'd)									
			100 (0)				MW					Crushed Zone		
31														
32			100 (12)											
	92.44				**PHYLLITE (SW)** Dark grey, fine grained. Moderately foliated, typically dips at 60°. Defects generally medium spacing. Prominent defect sets dip at 10°, 45°, 70°. Defect surfaces generally clay infilled.							Is(50) = 0.82MPa		x
33														
34			100 (37)				SW					Is(50) = 0.28MPa		x
35												Is(50) = 2.67MPa		x
36					**Detailed defect descriptions shown on Form GEOT335/8 attached**									
	88.30		100											
37					Borehole terminated at 36.75m									
38														
39														
40														

REMARKS Standpipe piezometer installed at base of hole. **Detailed defect descriptions are shown on Form GEOT533/8 attached.**

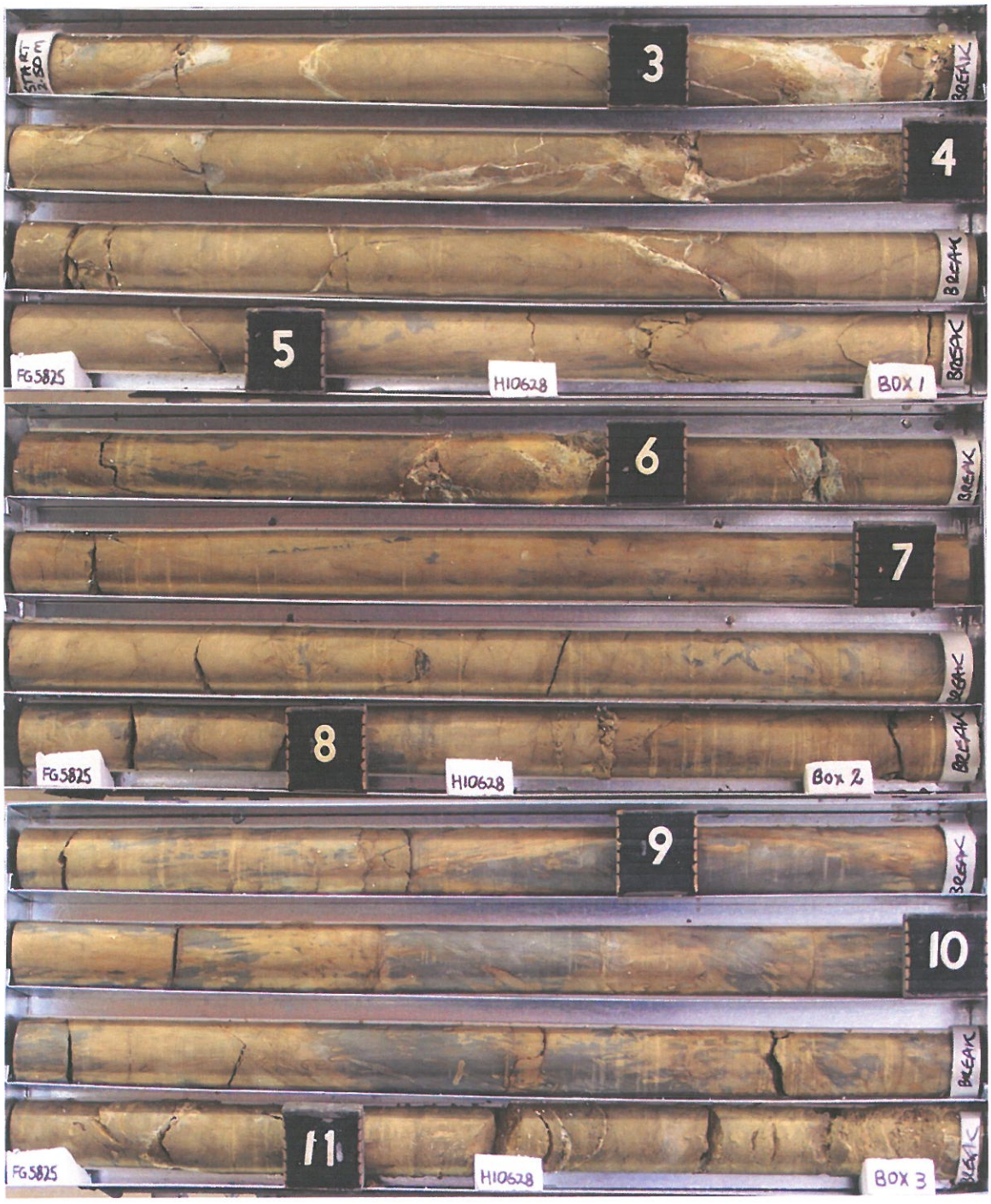
LOGGED BY JA

QLD_DMR_LIB_01.GLB Log A_ENGINEERING BOREHOLE LOG W LITHOLOGY FG5825 BRUCE HWY COOROY-CURRA SECTION A BHS.GPJ DWG66872.GDW Datgel CPT Tool gINt Add-In 12/05/2010 13:47

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

Borehole No: **BH 62**

Start Depth: 2.50m
Finish Depth: 36.75m
Project No: FG5825
H No: 10628



0 100 200 300 400 500 600mm

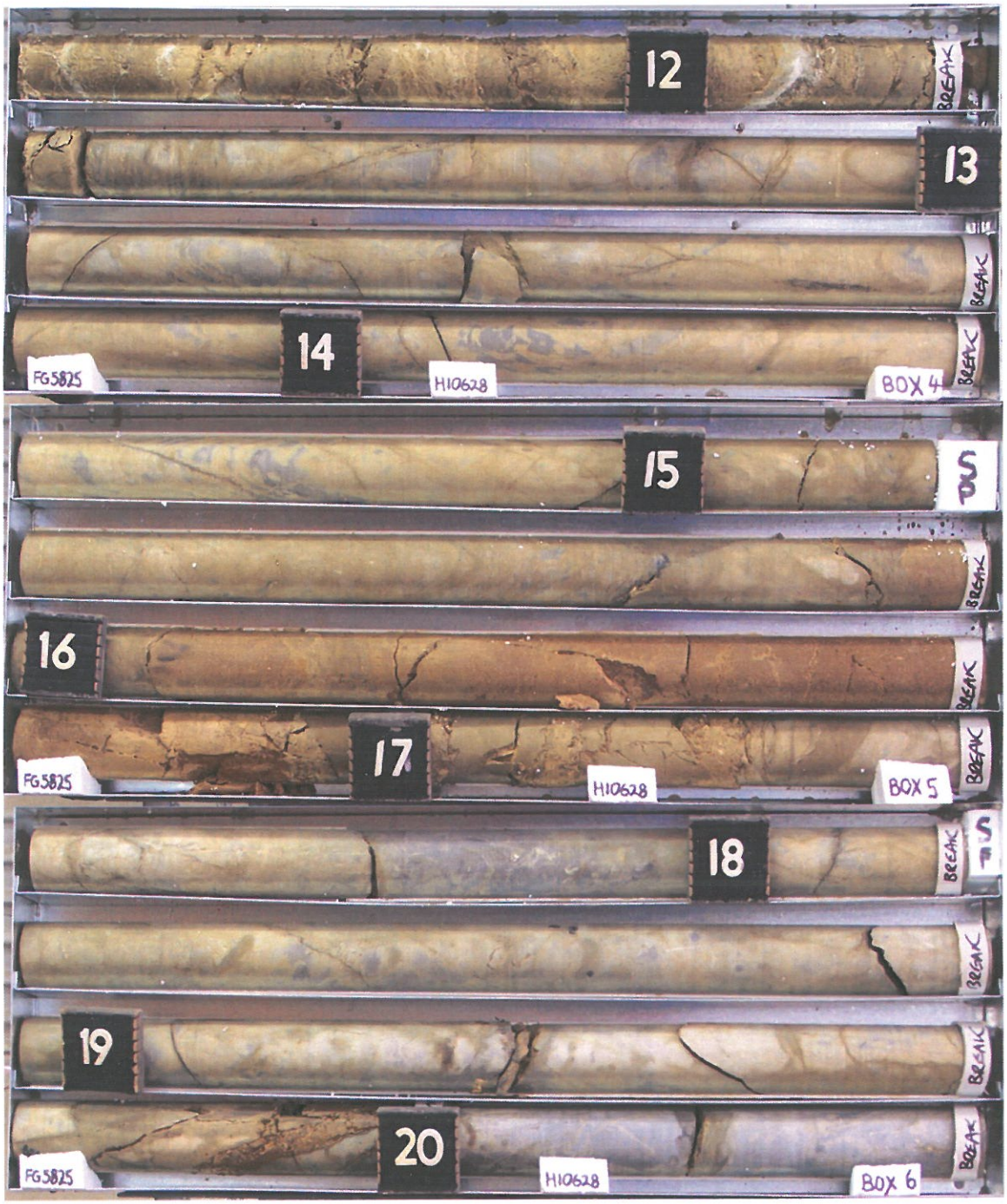
SCALE 1:5

F:GEOT043/1

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

Borehole No: **BH 62**

Start Depth: 2.50m
Finish Depth: 36.75m
Project No: FG5825
H No: 10628



0 100 200 300 400 500 600mm

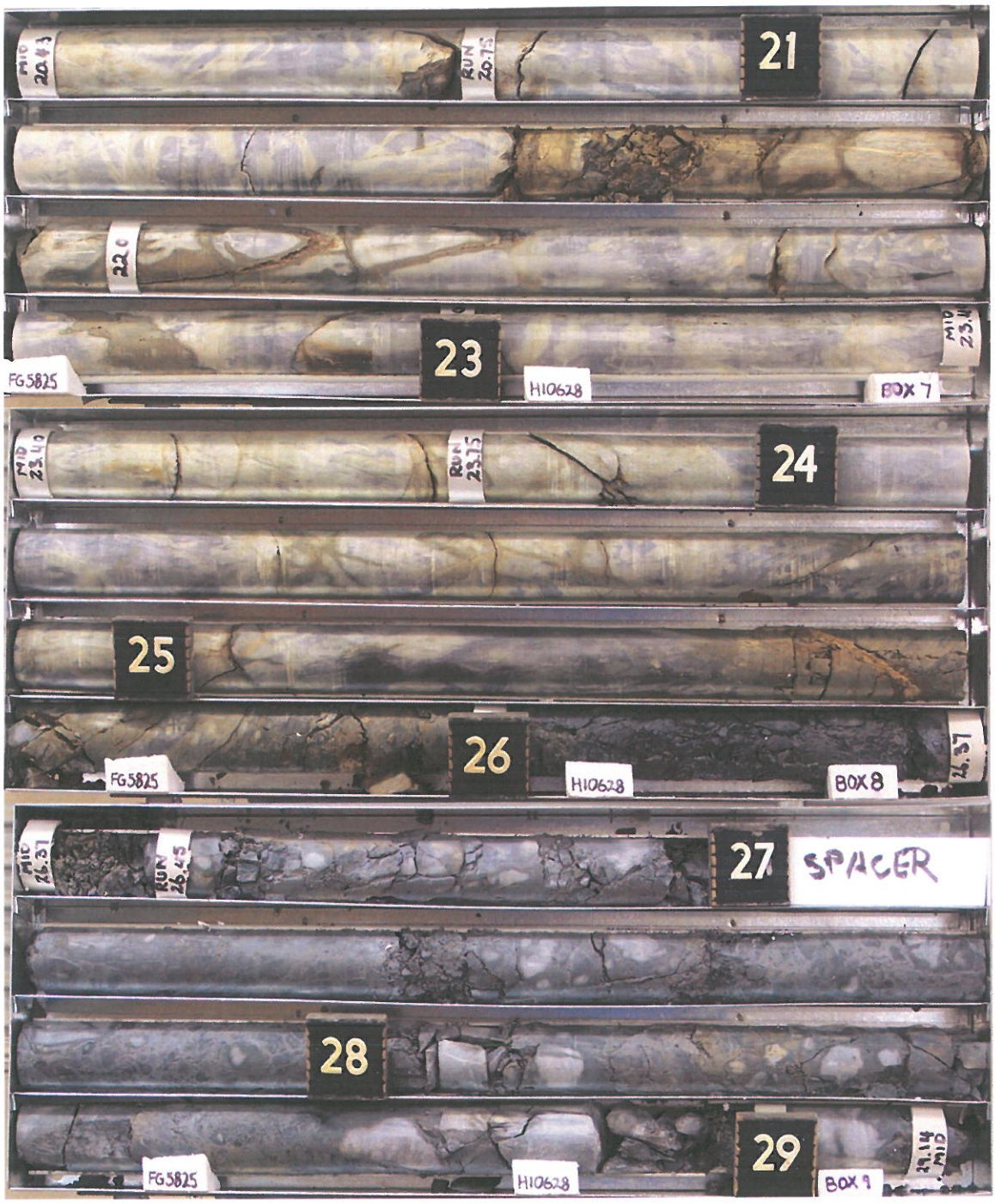
SCALE 1:5

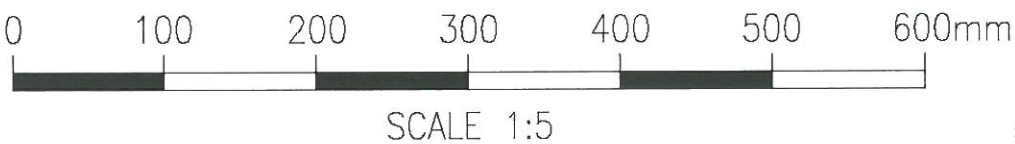
F:GEOT043/1

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

Borehole No: **BH 62**

Start Depth: 2.50m
Finish Depth: 36.75m
Project No: FG5825
H No: 10628





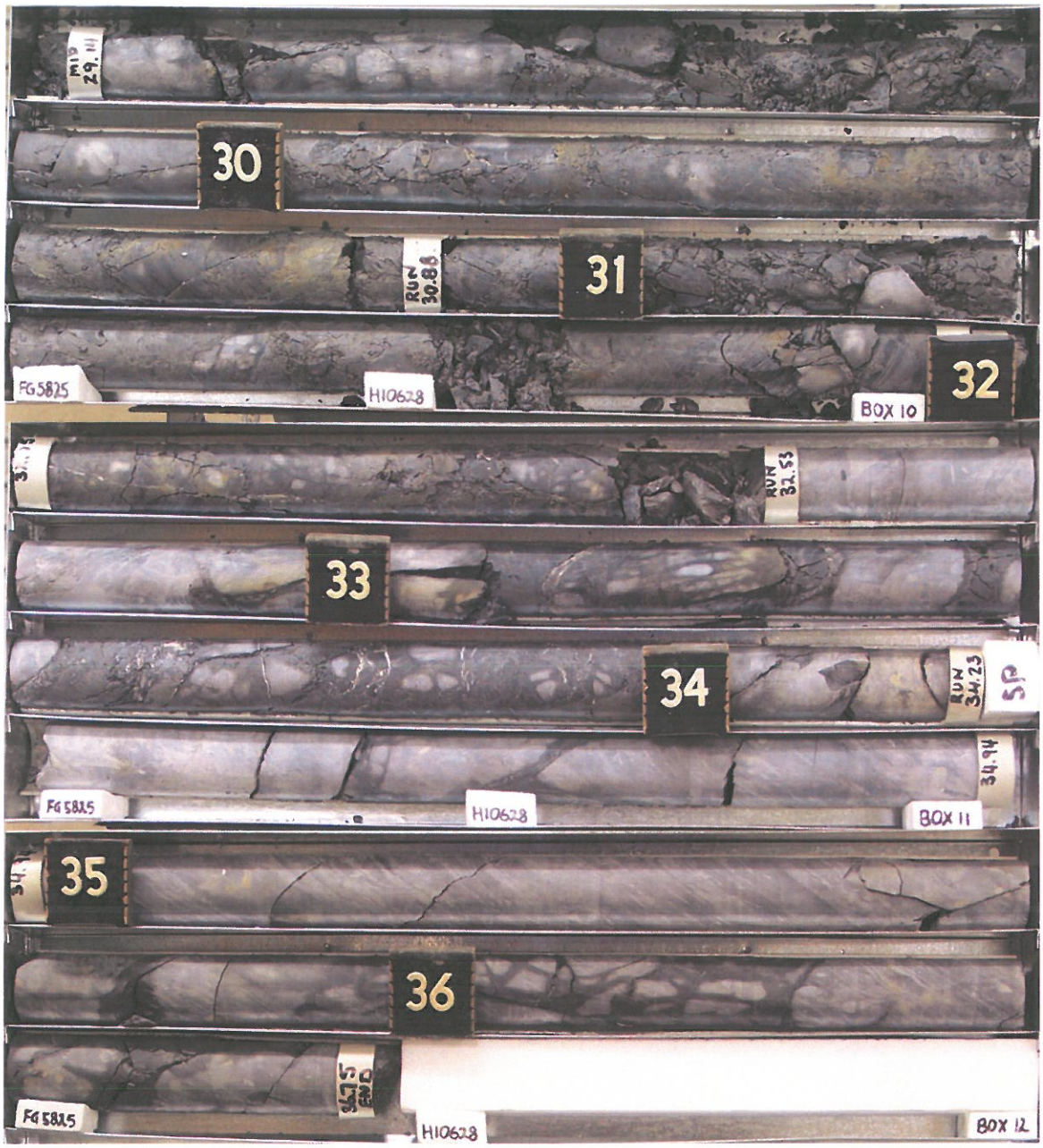
SCALE 1:5

F:GEOT043/1

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

Borehole No: **BH 62**

Start Depth: 2.50m
Finish Depth: 36.75m
Project No: FG5825
H No: 10628



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.:	BH62
SHEET:	1 of 3
REFERENCE NO.:	H10628

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

LOCATION: Cut 23

PROJECT NO.:	FG5825	**SURFACE R.L.:**	125.1	**DRILLER:**	R & D Drilling
JOB NO.:	128/10A/901	**DATUM:**	AHD	**DATE DRILLED:**	07/09/09

DEPTH	DEFECT TYPE	DIP°	PLANARITY	ROUGHNESS	APERTURE	WALL ALTERATION	OTHER
2.5-2.68	Ws	75					
2.94-3.07	Jt	70	Pl				Ci, 2mm
3.04-3.32	Ws						
3.47-4.00	Ws						
4.36	Jt	80	Un	S	C	FeSt	Clay veneer
4.52	Jt	70	Pl		C		Ci, 4mm
4.83	Jt	50	Un	Sr	C		Ci, 1mm
5.10	Jt	75	Un	S		FeSt	
5.38	Jt	65	Pl		C		
5.43	Jt	75	Pl	S	C	MnSt	
5.60	Jt	75	Un	R	C	FeSt, MnSt	
5.85	Jt	65	Pl	R	C	FeSt	Ci, 2mm
5.93-5.96	Ws						Clay seam
7.06	Jt	25	Pl		C		
7.16	Di						
7.30	Jt	20	Pl	S	C	FeSt	
7.44	Jt	15	Pl	R		FeSt	
7.85	Jt	25	Pl	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	Ci	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
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.:	BH62
SHEET:	2 of 3
REFERENCE NO.:	H10628

DEPTH	DEFECT TYPE	DIP°	PLANARITY	ROUGHNESS	APERTURE	WALL ALTERATION	OTHER
7.91	Jt	70	Un	S	C	FeSt	
7.99	Jt	15	Pl	S	C	MnSt, FeSt	
8.43	Jt	15	Ir	Sr	C	FeSt	
8.56	Jt	25	Pl	R	C		Cn
9.26	Jt	20	Pl	R	C		
9.41	Jt	25	Pl	Sr	C	MnSt	
10.09	Jt	20	Pl	S	C	FeSt	
10.26	Jt	45	Un	R	C	FeSt	
10.44	Jt	20	St	R	C	FeSt	
10.64	Jt	20	Un	R	O	FeSt, MnSt	
10.92	Jt	75	Pl		C		Ci, 3mm
11.05	Jt	20	St	S	C	FeSt	
11.20	Jt	35	Un	S	C	FeSt	
11.25	Jt	45	Pl		C		Rehealed
11.34	Jt	25	St	S	C	FeSt, MnSt	
11.45-12.16	Ws						
11.54	Jt	35	Pl		C		Ci, 4mm
11.68	Jt	40	Pl		C		
11.78	Jt	0-5	Pl		C		
11.89	Jt	30	Pl		C		
12.18	Jt	20	Pl	R	C		Ci, 1mm
12.84	Jt	35	Ir	Sr	C		Cn
13.05	Jt	45	Pl	Sr	C	FeSt, MnSt	
14.08	Jt	25	Pl	Sr	C	MnSt	
14.95	Jt	70	Un	S	C	FeSt	
15.11	Jt	20	Un	R	C	MnSt, FeSt	
15.83	Jt	40	St	R	C	FeSt	
16.05	Jt	40	Un	R	C	FeSt, MnSt	Ci, <1mm
16.13	Jt	0-10	St	R	C	FeSt	
16.36	Jt	75	Un	St	C	FeSt, MnSt	
16.59	Jt	15	Ir	Sr	C	MnSt	
16.77	Jt	75	Un	St	C	FeSt	
16.93	Jt	35	Un	Sr	C	FeSt	
17.03-17.05	Ws	5-10	Pl				Clay seam
17.19	Jt	10	Pl		C		
17.11-17.14	Ws	0-30					Clay seam
17.22-17.26	Ws	0					Clay seam
17.28	Jt	30	Un-St	R	C	FeSt, MnSt	Ci w/ crushed rock
17.14	Jt	25	Un-St	R	C	FeSt, MnSt	
17.72	Jt	30	Un	R	C		Cn
18.87	Jt	40	St	S		MnSt	
19.10	Jt	35	Pl	S	C	FeSt, MnSt	
19.37	Jt	30	Pl	Sr	C		
19.52	Jt	35	Un		C		
19.84	Jt	70	Pl	R	C	FeSt, MnSt	Clay veneer
19.94	CZ	75	Pl		C		15-25mm wide, clayey matrix
20.75	Jt	60	Un	S	C		Cn
20.83	Jt	30	Un	R	C	FeSt	
21.14	Jt	30	Pl	R	C	FeSt	
21.60	Jt	15-20	Ir		C		
21.70	Jt	60	Pl		C		Crushed rock w/clay
21.79	Jt	35	Pl	S	C	FeSt	Clay veneer
21.92	Jt	70	Pl	Sr	C	FeSt, MnSt	
22.11	Jt	80	Pl		C		Ci
22.22	Jt	75	Pl		C		
22.52	Jt	20	Un	Sr	C	FeSt, MnSt	

BOREHOLE NO.:	BH62
SHEET:	3 of 3
REFERENCE NO.:	H10628

DEPTH	DEFECT TYPE	DIP°	PLANARITY	ROUGHNESS	APERTURE	WALL ALTERATION	OTHER
22.93	Jt	50	Pl	R	C	FeSt, MnSt	
23.06	Jt	20	Ir	R	C	FeSt	
23.50	Jt	35	Pl	Sr	C	FeSt, MnSt	
23.70	Jt	25	Un	S	C		Cn
23.82	Jt	65	Un	Sr	C	FeSt, MnSt	
25.06	Jt	40	Pl	Sr	C	FeSt	
25.48	Jt	85	Un	S		FeSt, MnSt	
25.57	Jt	60	Pl		C		Ci, 6mm
25,73	Jt	50	Un	S	C	FeSt	
25.80	Jt	40	Un	S	C	FeSt	
25.87	Jt	20	Un		C		Crushed rock in defect
26.00	B	80	Pl		C		
26.40-27.21	Bz						
26.76	Jt	15	Un	S	C		Cn
27.43	Jt	70	Un	S	C		Cn
27.54	Jt	60	Pl		C		Crushed rock in defect, 5mm
27.66-28.00	Breciated zone						
28.24	Jt	50	Un		C		Ci, 2mm
28.29	Jt	50	Un		C		
28.37	Jt	80	Un	S	C		Cn
28.61	Jt	70	Pl	Sr	C		
28.62-28.76	Breciated zone						
28.78	Jt	70	Pl		C		
28.82	Jt	30	Pl		C		
29.07	Jt	30	Un	R	C	W	
29.37	Jt	75	Un	Sr	C		Cn
29.57	Jt	75	Un	S	C		
29.63-29.90	Bz						
29.13-32.45	Zone of closely spaced microfractures						
29.55	Jt	30	Pl		C		
29.76	Jt	55	Un		C		
29.83	Jt	60	Un		C		
30.05	Jt	60	Pl		C		
32.92	Jt	55	Un	Sr	C		Cn
33.11	Jt	10	Un	R	C		
33.19	Jt	40	Pl	R	C		Cn
33.33	Jt	40	Pl	R	C		Cn
33.50-33.99	Breciated zone						
34.05	Jt	55	Un	Sr	C		Cn
32.21	Jt	40	Un	R	C	FeSt	
34.28	Jt	60	Un	R	C		Cn
34.35	Jt	20	Un	Sr	C		Cn
34.42	Jt	30	Un	Sr	C		Cn
34.55	Jt	50	Un	S	C		Cn
34.94	Jt	45	Pl	Sr	C	FeSt	
35.16	Jt	50	Pl	Sr	C		Cn
35.28	Jt	60	Un	R	C		Cn
35.79	Jt	55	Pl	R	C	W	
36.08	Jt	75	Pl	S	C		Ci, 2mm
36.43	Jt	35	Un	Sr	C		Cn
36.50	Jt	60	Pl		C		