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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 BH002

SHEET 1 of 3

REFERENCE No H10641

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

LOCATION Cut 10 COORDINATES 486791.1 E; 7080775.1 N

PROJECT No FG5825 SURFACE R.L. 141.32m PLUNGE DATE STARTED 20/10/09 GRID DATUM MGA94

JOB No 128/10A/901 HEIGHT DATUM AHD BEARING DATE COMPLETED 22/10/09 DRILLER R & D Drilling

DEPTH (m)	R.L. (m)	AUGER CASING 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	HM	JL	VL	EL	0	300	600				2000	
0	141.32					Clayey SILT (RESIDUAL) Pale brown to grey, slightly moist, stiff.																
					A	XW rock fragments throughout. Low to intermediate plasticity.	(ML-MI)												4,4,7 N=11	SPT		
	139.82				B	PHYLLITE (HW): Generally exhibits the engineering properties of pale brown to grey, slightly moist, hard clayey silt. Low to medium plasticity.	HW												5,15,30/130 N>50	SPT		
	138.82				(7)	PHYLLITE (MW): Pale to dark brown with patches of dark grey, fine grained, foliated. Foliations dip at <10°. Defects are generally close to medium spaced.																
				100	(44)	Defects sets at 10, 20° and sub-vertical. Defect surfaces are typically clay infilled or iron stained.																
				100	(3)																	
				100	(22)																	
				100	(21)																	
	131.70			100	(48)	PHYLLITE (SW): (See over)	SW															

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 BH002
SHEET 3 of 3
REFERENCE No H10641

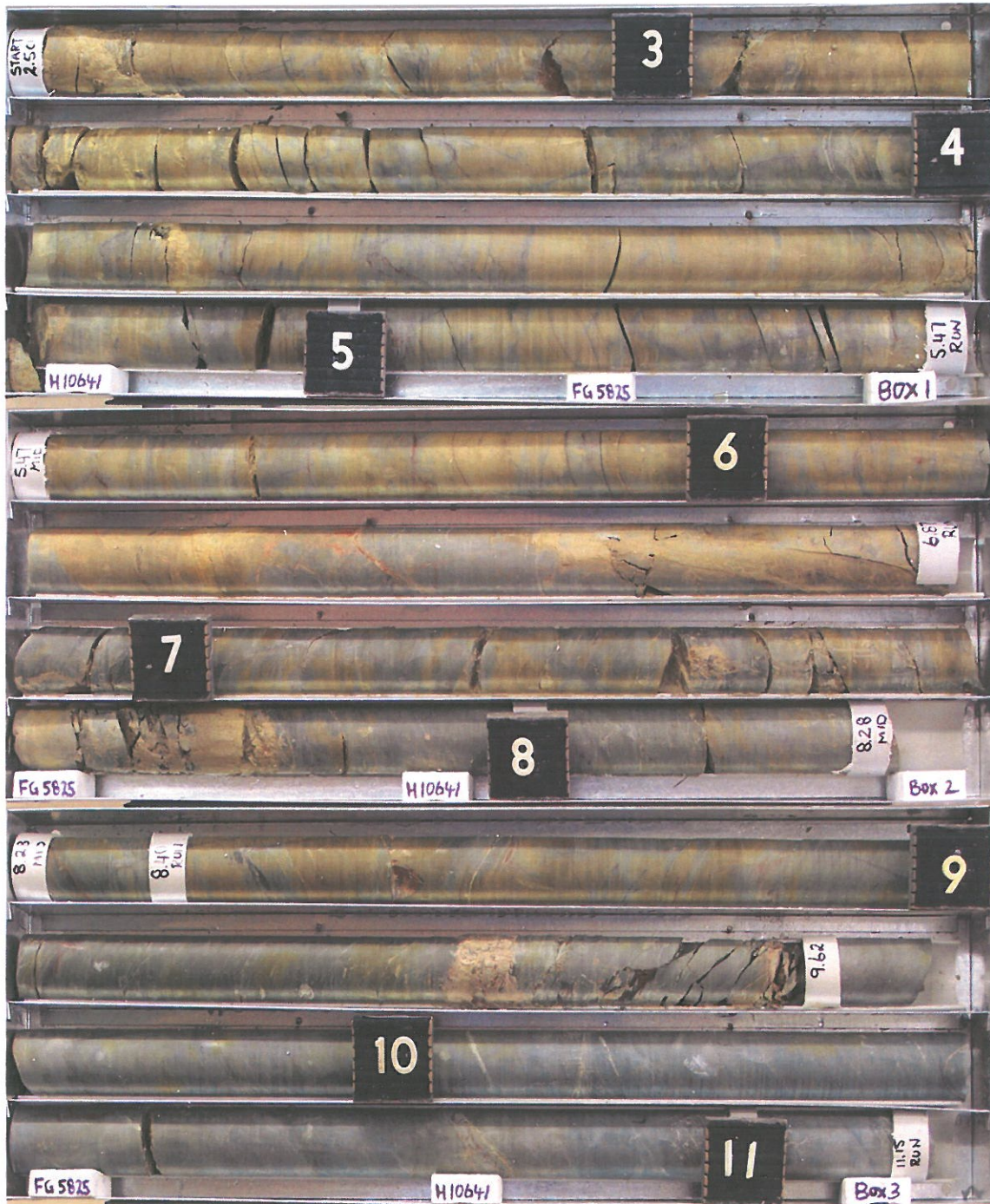
PROJECT BRUCE HIGHWAY (COOROY - CURRA) SECTION A GEOTECHNICAL INVESTIGATION
LOCATION Cut 10 COORDINATES 486791.1 E; 7080775.1 N
PROJECT No FG5825 SURFACE R.L. 141.32m PLUNGE DATE STARTED 20/10/09 GRID DATUM MGA94
JOB No 128/10A/901 HEIGHT DATUM AHD BEARING DATE COMPLETED 22/10/09 DRILLER R & D Drilling

DEPTH (m)	R.L. (m)	AUGER CASING 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
20	121.32		(5)			PHYLLITE (SW): (Cont'd)							Broken zone	
21						Detailed defect descriptions are shown on Form GEOT533/8 attached.							Is(50) = 0.05MPa Is(50) = 0.62MPa	x o
22			100 (19)			22.0 - 22.3: Clayey sheared zone.							Clayey sheared zone	
23							SW						Is(50) = 0.32MPa Is(50) = 0.22MPa	x o
24			100 (0) 100 (30)			23.6 - 23.8: Clayed crushed zone with quartz veins.							Quartz vein Clayey crushed zone with quartz veins. Quartz vein	
25													Is(50) = 0.36MPa Is(50) = 0.10MPa Is(50) = 0.38MPa Is(50) = 0.71MPa	x o o x
25	116.12		100			Borehole terminated at 25.2m							Quartz vein	
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: **BH2**
Start Depth: 2.50m
Finish Depth: 25.20m
Project No: FG5825
H No: 10641



SCALE 1:5

F:GEOT043/1

Project: **Bruce Highway Upgrade (Cooroy – Curra) Section A**
Borehole No: **BH2**
Start Depth: 2.50m
Finish Depth: 25.20m
Project No: FG5825
H No: 10641



0 100 200 300 400 500 600mm

SCALE 1:5

F:GEOT043/1

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

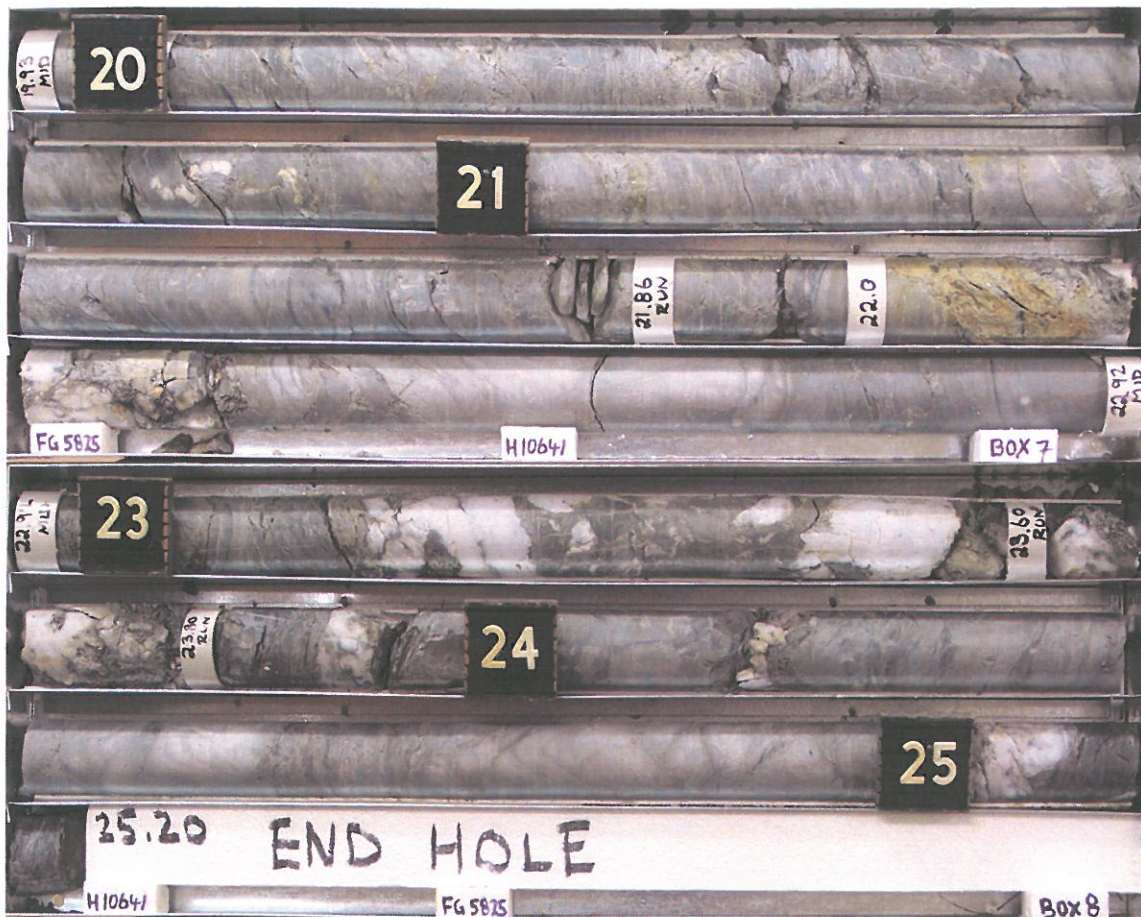
Borehole No: **BH2**

Start Depth: 2.50m

Finish Depth: 25.20m

Project No: FG5825

H No: 10641



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.: BH02
SHEET: 1 of 5
REFERENCE NO.: H10641

PROJECT:	Bruce Highway Upgrade (Cooroy - Curra) Section A Geotechnical Investigation		
LOCATION:	Cut 10		
PROJECT NO.:	FG5825	SURFACE R.L.:	141.3
JOB NO.:	128/10A/901	DATUM:	MGA94
		DRILLER:	R & D Drilling
		DATE DRILLED:	20/10/09

DEPTH	DEFECT TYPE	DIP°	PLANARITY	ROUGHNESS	APERTURE	WALL ALTERATION	OTHER
2.54-2.58	Clay seam						
2.66	FP	30	PI	S	O		
2.71	FP	30	PI	S	O		
2.79	J	30	PI	S	O	MnSt, FeSt	Cln, 2mm
2.92	J	50	Un	S	O	FeSt, MnSt	Clay veneer
3.07	J	45	PI		C		Cln, 4mm
3.12	J	35	PI	S	C	FeSt	
3.30	J	20	PI	S	O		
3.42	Di						
3.45	J	15	PI	S	O	MnSt	
3.52	J	20	PI	S	O		Clay veneer
3.57	J	20	PI	S	O	MnSt	
3.69	J	10	PI	S	C	FeSt	Cln, 2mm
3.80	J	10	PI	S	O	FeSt	
3.88	WS	30					10mm wide
4.10-4.12	Clay seam	35					10mm wide
4.20	J	60	St	Sr	C	FeSt	
4.47	J	10	PI	S	O	FeSt	

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

ROUGHNESS		WALL ALTERATIONS		TYPE		OTHER	
R	Rough	FeSt	Iron Stained	J, Js	Joint, Joints	Cln	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
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	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.:	BH02
SHEET:	2 of 5
REFERENCE NO.:	H10641

DEPTH	DEFECT TYPE	DIP (DEGREES)	PLANARITY	ROUGHNESS	APERTURE	WALL ALTERATION	OTHER
4.75	J	50	Un	S		C	Clay veneer
4.86	J	20	Pl	S	C	FeSt, MnSt	
4.93	J	15	Pl	S	C	MnSt, FeSt	Clay veneer
5.07	J	20	Pl	S	C	FeSt, MnSt	
5.20	J	20	Pl	S	C	FeSt, MnSt	
5.31	FP	20	Pl	S	C	MnSt	
5.35	FP	15	Pl	S	C	MnSt	
5.53	J	10	Pl	S	C		
5.66	J	5	Pl	S	C		Cln, 2mm
5.92	J	10	Pl	S	C	FeSt, MnSt	
5.97	J	40	Un	S	C		Cln, FE-rich 1mm
6.05	J	15	Pl	S	C	MnSt, FeSt	
6.06	J	20	Pl	S	C	MnSt, FeSt	
6.25	J	20	Pl	S	C	FeSt	
6.25	Clay seam						20mm wide
6.40	WS	55	Pl		C	FeSt	Cln, 3mm
6.55-6.79	Clay seam	75	Pl		C		
6.92	J	20	Pl	S	C	MnSt	
6.95	J	40	Pl	S	C	MnSt	
7.11	J	40	Un	S	C	FeSt	
7.23	J	15	Un	S	C		Cn
7.30	J	30	Pl	S	C		
7.38	J	15	Pl	S	C		
7.44	J	30	Pl	S	C	FeSt	
7.49	J	20	Pl	S	C	FeSt	
7.56	J	20	Pl	S	C	FeSt, MnSt	
7.66							
7.69	J	15	Pl	S	C	FeSt	
7.69-7.74	CZ						
7.74-7.80	Clay seam						
7.87	J	20	Pl	S	C	FeSt, MnSt	Cln, 2mm
7.94	J	35	Pl	S	C	FeSt	
8.13	J	20	Pl	S	C	FeSt, MnSt	
8.15	J	5	Pl	S	C	FeSt, MnSt	
8.33	Rehealed J	60	Pl		C		
8.44	J	30	Pl	S	C	MnSt, FeSt	
8.71	J	20	Pl	S	C	FeSt	
8.76	J	20	Pl	S	C	FeSt	
8.79	J	20	Pl	S	C	FeSt, MnSt	
8.85	J	15	Pl	S	C	FeSt	Clay veneer
8.90	J	25	Pl	S	C		Cn
9.19	J	20	Pl	S	C	MnSt	
9.26	J	25	Pl	S	C	MnSt	
9.31	J	40	Pl	S	C	FeSt, MnSt	
9.36-9.40	Clay seam						crushed angular rock in clay
9.42-9.47	Js x 4			Joints typically dipping 10°, Pl, S, C, Cn			
9.49	Un	60	Un	Sr	C		Cn
9.49-9.61	Js x 3			Joints typically 50°, Pl, S, C, Cn			
9.74	J	30	Pl				
9.87	J	25	Pl				
10.08	J	15	Pl	S	C		
10.17	J	25	Pl	S	C		Cn
10.53	J	5	Pl	S	O	FeSt	
10.61	J	20	Pl	S	C		

BOREHOLE NO.:	BH02
SHEET:	3 of 5
REFERENCE NO.:	H10641

DEPTH	DEFECT TYPE	DIP (DEGREE)	PLANARITY	ROUGHNESS	APERTURE	WALL ALTERATION	OTHER
10.66	J	25	PI	S	C	FeSt	
10.73	J	15	PI	S	C	FeSt	
10.81	J	30	PI	S	C	FeSt	
11.03	J	20	PI	Sr	C		Cn
11.15	J	25	St	S	C		Cn
11.19	J	20	PI	Sr	C		Cn
11.53	J	35	PI		C		
11.53-11.60	CZ						
11.82	WS	20	Un		C	FeSt	Cln, 4mm
12.05	J	25	PI	Sr	C		
12.21	QZ Vn	50	PI		C		
12.29-12.34	WS						
12.37	J	25	St	Sr	C	FeSt	Clay veneer
12.48	J	20	Un	S	C		
12.56	WS	5	PI		C	FeSt	3mm wide
12.67	J	30	Un	R	C	FeSt	
12.96	WS	5	Un		C		6mm wide
13.28	QZ Vn	60	Un		C	W	2mm wide
13.30	J	25	PI	S	C		Cn
13.37	J	55	PI	Sr	C	FeSt	
13.45	J	30	Un	S	C	FeSt	
13.56	J	25	PI	S	C	FeSt, MnSt	
13.64	J	30	Un	R	C		Clay veneer
13.92	J	30	Un	S	C		Cln, 2mm
14.15	J	15	PI	S	C		Cn
14.20	J	0	St	S	C		Cln, <1mm, Cn
14.31	J	15	Un	S	C		Cn
14.37	J	20	Un	W	C		Cn
14.41	J	25	Un	S	C		Cn
14.48	J	20	PI	S	C		Cn
14.63	J	15	Un	S	C		Cn
14.70	J	20	PI	S	C		Cn
14.75	J	15	PI			W	
14.83	J	20	PI	S	C		Cn
15.15	J	20	Un	S	C		Cn
15.22	J	15	Un	Sr	C		Cn
15.25	J	20	Un	S	C		Cn
15.29	Rehealed J	70	PI		C		
15.35	J	15	Un	S	C		Cn
15.45	J	45	IR	S	C		Cn
15.49	J	20	Un	Sr	C		Cn
15.51	J	25	PI	Sr	C	W	Cln, 1mm
15.65	J	15	PI	S	C		Cn
15.69	J	20	St	S	C		Cn
15.81	J	10	Un	S	C		Cn
15.85	J	50	Un	R	C	W	Cln, 1mm
15.90	J	20	Un	S	C	FeSt	
15.94	J	50	Un	Sr	C	W	
16.07	J	20	Un	S	C	W	
16.13	FP	15	Un	S	C		Cn
16.19	FP	20	Un	S	C		Cn
16.21	J	20	Un	S	C		Cn
16.25	J	15	Un	S	C		Cn
16.35	J	15	Un	Sr	C		Cn
16.42	J	30	IR	S	C		Cn
16.49	J	20	Un	R	C	FeSt, W	Cln, <1mm
16.71	J	20	Un	S	C		Cn
16.79	J	20	Un	S	C		Cn

BOREHOLE NO.:	BH02
SHEET:	4 of 5
REFERENCE NO.:	H10641

DEPTH	DEFECT TYPE	DIP (Degrees)	PLANARITY	ROUGHNESS	APERTURE	WALL ALTERATION	OTHER
16.87	J	60	Un	R	C	W	
16.92	J	15	Un	S	C	FeSt	
17.05	J	30	Pl	Sr	C	W	
17.12	J	10	Un	S	C	FeSt	
17.20	Rehealed J	20	Pl		C		
17.22	J	20	Un	S	C	FeSt	
17.35	J	15	Un	S	C		Cn
17.50	WS	20	Pl		C		10mm wide
17.55	J	10	Un	S	C		Cn
17.65	Rehealed J	15	Pl		C		
17.72-17.76	WS	0	Pl		C		
17.83	J	20	Pl	S	C		Cn
17.92	J	20	Pl	S	C		Cn
17.94	J	15	Un	S	C		Cn
18.00-18.07	Zone of closely spaced micro fractures						
18.17	J	35	Pl	S	C	W	
18.24	J	35	Un	S	C	W	
18.33	J	30	Un	S	C	W	
18.38	Rehealed J	30	Pl		C		
18.64-18.68	WS						
18.75	J	30	Un	S	C	W	
18.80	J	25	Un	S	C		Cn
18.83	J	25	Pl	S	C	W	
18.95	J	25	Un	S	C		Cn
19.05	Rehealed J	70	Pl		C		Cn
19.25-19.41	Zone of closely spaced weathered seams						
19.37	QZ	30	Pl		C		7mm wide
19.41-19.76	FP x 10	15-20	Un	S	C		Cn
19.81	J	15	Un	S	C		Cn
19.88	QZ Vn	60	Un		C		5mm wide
20.00-20.12	BZ						
20.37	J	20	Un	S	C		Cn
20.44	J	30	Un	S	C		Cn
20.50	J	25	Un	S	C		Cn
20.60	J	25	Un	S	C		Cn
20.75	J	5	Un	S	C		Cn
20.79	J	35	Un	S	C		Cn
20.96-20.87	QZ Vn	70-90	IR		C		Non pervasive
20.87	J	20	Un	S	C		Cn
20.91	J	25	Un	S	C		Cn
21.02	J	30	Un	S	C		Cn
21.06-21.11	WS						
21.16	J	10	Un	S	C		Cn
21.28	WS	15	Pl		C		7mm wide
21.38	Rehealed J	45	Pl		C		
21.50	J	50	Pl	S	C		Cln, <1mm
21.64	J	30	Un	S	C		Cn
21.68	FP	30	Pl	S	C		Cn
21.72	FP	30	Pl	S	C		
21.79	J	40	Pl	R	C	FeSt	
21.94	J	35	Pl	S	C		crushed rock in defect
22.00-22.16	WS						clayey matrix
22.16-22.32	QZ Vn						clay & weathered phyllite matrix
22.35	J	35	Pl		C		
22.40-22.48	Zone Of Closely Spaced Microfractures						
22.82	J	20	Pl	S	C		Cn
23.05	J	10	Un	S	C		Cn

BOREHOLE NO.:	BH02
SHEET:	5 of 5
REFERENCE NO.:	H10641

DEPTH	DEFECT TYPE	DIP (DEGREES)	PLANARITY	ROUGHNESS	APERTURE	WALL ALTERATION	OTHER
23.12	J	15	Pl		C		crushed rock in defect
23.15-23.30	QZ Vn						
23.40-23.77	QZ Vn						
23.37-23.90	QZ Vn						
23.85	J	30	Un	Sr	C	W, FeSt	
23.91	J	30	Un	R	C	W	
24.14	J	50	Un	Sr	C		Cn
24.21	J	35	Un	S	C		Cn
24.49	J	20	Pl	S	C		Cn
24.85	J	30	IR	Sr	C		Cn
24.81-25.00	Disturbed Foliations						
25.00-25.12	QZ Vn						