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REPORT OF BOREHOLE: CRR 204

SHEET: 1 OF 6

CLIENT: Aecom Australia Pty Ltd
 PROJECT: Cross River Rail
 LOCATION: Botanic Gardens
 JOB NO: 107632034

COORDS: 503036.52 m E 6960985.09 m N MGA94 56
 SURFACE RL: 4.00 m DATUM: AHD
 INCLINATION: -90°
 HOLE DEPTH: 50.00 m

DRILL RIG: FD500
 CONTRACTOR: Foundril Pty Ltd
 LOGGED: SRT DATE: 2/9/10
 CHECKED: NK DATE: 18/10/10

Drilling			Sampling			Field Material Description					
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED GRAPHIC LOG	USC SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
ADT M-H RD M			0	4.00			CH	Silty CLAY high plasticity, dark brown			D - M
			0.70	3.30				----- brown and grey			
			1		SPT 1.00-1.45 m 6, 7, 11 N=18 PP > 600 kPa						Vst - H
			2								
			3		U50 2.50-2.90 m PP = 500 kPa						
			4		SPT 4.00-4.45 m 4, 6, 9 N=15						Vst
			5								
			5.20	-1.20			CH	Silty CLAY high plasticity, dark grey			M
			6		U50 5.50-5.90 m PP = 130 kPa						St
			7		U50 7.00-7.40 m PP = 190 kPa						
		7.80	-3.80			CH	Silty CLAY high plasticity, grey and brown				
		8									
		9		SPT 8.50-8.95 m 4, 5, 6 N=11 PP = 300 kPa						Vst	
		10									

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GAP gINT FN. F01a
RL3

GAP 8.03 LIB: GLE Log GAP NON-CORED FULL PAGE 107632034_ACO.GPJ <<DrawingFile>> 29/11/2010 13:38 8.2.007



REPORT OF BOREHOLE: CRR 204

SHEET: 2 OF 6

CLIENT: Aecom Australia Pty Ltd
 PROJECT: Cross River Rail
 LOCATION: Botanic Gardens
 JOB NO: 107632034

COORDS: 503036.52 m E 6960985.09 m N MGA94 56
 SURFACE RL: 4.00 m DATUM: AHD
 INCLINATION: -90°
 HOLE DEPTH: 50.00 m

DRILL RIG: FD500
 CONTRACTOR: Foundril Pty Ltd
 LOGGED: SRT DATE: 2/9/10
 CHECKED: NK DATE: 18/10/10

Drilling			Sampling			Field Material Description					
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED GRAPHIC LOG	USC SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
RD	M		10		U50 10.00-10.40 m PP = 300 kPa	CH		Silty CLAY high plasticity, grey and brown			
			11								
			12		SPT 11.50-11.95 m 5, 6, 9 N=15 PP = 350 kPa						VSt
			13		SPT 13.00-13.45 m 5, 4, 7 N=11 PP = 300 kPa						
			13.50 -9.50						zones tending sandy clay		
			14								
RT	H		15		SPT 14.50-14.95 m 9, 10, 10 N=20	SM		Silty SAND fine to medium grained, orange brown	M	MD	
			15.20 -11.20								
			16		SPT 16.00-16.45 m 5, 8, 11 N=19 PP = 280 kPa	CH		Silty CLAY medium plasticity, brown			St-VSt
NMLC	L		17								
			18		SPT 17.50-17.89 m 23, 22, 30/90 mm HB N>52	SW-SC		Gravelly Clayey SAND fine to coarse grained, yellow grey brown and dark grey, fine to coarse gravel, layers of coarse gravel to 200 mm			
RT	H		19		SPT 19.00-19.13 m 30/130 mm						VD
			17.90 -13.90								
			20								

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GAP gINT FN. F01a
RL3

GAP 8.03 LIB: GLE Log GAP NON-CORED FULL PAGE 107632034_ACO.GPJ <<DrawingFile>> 29/11/2010 13:38 8.2.007



REPORT OF BOREHOLE: CRR 204

SHEET: 3 OF 6

CLIENT: Aecom Australia Pty Ltd
 PROJECT: Cross River Rail
 LOCATION: Botanic Gardens
 JOB NO: 107632034

COORDS: 503036.52 m E 6960985.09 m N MGA94 56
 SURFACE RL: 4.00 m DATUM: AHD
 INCLINATION: -90°
 HOLE DEPTH: 50.00 m

DRILL RIG: FD500
 CONTRACTOR: Foundril Pty Ltd
 LOGGED: SRT DATE: 2/9/10
 CHECKED: NK DATE: 18/10/10

Drilling				Sampling			Field Material Description					
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED GRAPHIC LOG	USC SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY	DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
RT	H		20		SPT 20.50-20.60 m 30/100 mm		SW-SC	Gravelly Clayey SAND fine to coarse grained, yellow grey brown and dark grey, fine to coarse gravel, layers of coarse gravel to 200 mm				
			21								M	VD
			22		SPT 22.00-22.11 m 30/110 mm							
			23					For Continuation Refer to Sheet 4				
			24									
			25									
			26									
			27									
			28									
			29									
			30									

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GAP gINT FN. F01a
RL3

GAP 8.03 LIB: GLE Log GAP NON-CORED FULL PAGE 107632034_ACO.GPJ <<DrawingFile>> 29/11/2010 13:38 8.2.007



REPORT OF BOREHOLE: CRR 204

SHEET: 4 OF 6

CLIENT: Aecom Australia Pty Ltd
 PROJECT: Cross River Rail
 LOCATION: Botanic Gardens
 JOB NO: 107632034

COORDS: 503036.52 m E 6960985.09 m N MGA94 56
 SURFACE RL: 4.00 m DATUM: AHD
 INCLINATION: -90°
 HOLE DEPTH: 50.00 m

DRILL RIG: FD500
 CONTRACTOR: Foundril Pty Ltd
 LOGGED: SRT DATE: 2/9/10
 CHECKED: NK DATE: 18/10/10

Drilling					Field Material Description				Defect Information				
METHOD	WATER	TCR	RQD (SCR)	DEPTH (metres)	DEPTH RL	GRAPHIC LOG	ROCK / SOIL MATERIAL DESCRIPTION	WEATHERING	INFERRED STRENGTH $I_{s(50)}$ MPa	DEFECT DESCRIPTION & Additional Observations		FRACTURE FREQUENCY (Defects per unit metre length)	
				20									
				21									
				22									
				22.90			Continuation of Sheet 3						
				23			CORE LOSS						
		70	20	23.70			META SILTSTONE fine grained, dark grey and white, frequent quartz veins from 1 mm to 30 mm thickness	FR			23.14: J, 5°, Pl, Sm, Ct, clay, low plasticity, dark grey and carbonaceous 23.29: X, 30°, Un, Sm, Vr, clay, pale grey, talc with rock fragments 23.32: X, 30°, Un, Ro, Cn 23.40: X, 45°, Un, Vr, clay dark grey 23.52: X, 30°, Pl, Sm, Cn 23.60-23.86: CZ, 260 mm, gravelly clay, low plasticity, dark grey and carbonaceous 23.90: X, 45°, Pl, Sm, Vr, clay dark grey 24.00: X, 40°, Un, Ro, Vr, clay dark grey 24.05-24.30: FZ, 250 mm, gravel sized angular rock fragments, fine to coarse grained 24.30-24.40: CS, 100 mm, angular fragments of rock with some clay. Rock fragments are fine to medium gravel size. Clay is dark grey and carbonaceous 24.45: X, 10°, Un, Sm-Ro, Ct, 10 mm, fine gravel with some clay, dark grey 24.58-24.62: CS, 40 mm, angular fragments of rock with some clay. Rock fragments are fine gravel size. Clay is dark grey and carbonaceous 24.64-24.76: X, 30°, Un, Sm, Vr, clay, average spacing 25mm 25.10: X, 60°, Un, Sm, Vr, clay, dark grey 25.19: X, 60°, Pl-Un, Sm, Vr, clay, dark grey, fragmented rock 25.32-25.38: X, 40°, Un, Sm, Vr, clay, average spacing 20mm 25.43: X, 40°, Un, Sm, Cn 25.47: X, 45°, Un, Sm, Cn 25.54: X, 45°, St 25.58: X, 45°, Un, Sm, Cn 25.66: X, 45°, Un, Sm, Vr, clay, dark grey 26.21: HB, broken by hand along foliation 26.32: X, 40°, Un, Sm, Cn 26.41: X, 50°, St, Sm-Ro, Ct, 3 mm, clay, low plasticity, grey 26.48: DB, sharp, angular and fresh 26.68: DB, rough, fresh, against foliation 26.71: X, 30°, Un, Sm, Cn 26.75: X, 45°, St, Sm, Cn 26.87: J, 0°, St, Sm, Vr, clay, pale grey 26.91: X, 40°, Un, Sm, Cn 26.92-26.97: V, 40°, 90 mm, quartz 27.00: HB, broken for core box 27.21: X, 20°, Un, Sm, Cn 27.26: X, 20°, Un, Sm, Cn 27.30: X, 30°, Un, Sm, Vr, pale grey with angular rock fragments 27.33-27.36: CS, 30 mm, angular rock fragments, sharp and thin, talc coated 27.45: X, 30°, Un, Sm, Ct, 3 mm, fine rock fragments with some clay 27.48: X, 30°, Un, Sm, Ct, 3 mm, fine rock fragments with some clay 27.50: DL 27.50-27.60: FC 27.63: X, 40°, Un, Sm, Cn 28.40: FC, 45°, Un, Ro, Cn, core fractured with medium gravel sized rock fragments 29.70: X, 30°, Un, Ro, Cn		
		100	45	24									
		100	0				CORE LOSS						
		100	55										
				24.76			CORE LOSS						
		75	20	25			META SILTSTONE fine grained, dark grey and white, large quartz veins, foliations at 50°	FR					
		100	20										
				26									
		100	100										
				27									
		100	40										
				28									
		100	90										
				29									
				30									

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GAP gINT FN. F02b
RL3

GAP 8_03 LIB: GLE Log GAP CORED BOREHOLE 107632034_ACO.GPJ <<DrawingFile>> 29/11/2010 13:51 8.2.007



REPORT OF BOREHOLE: CRR 204

SHEET: 5 OF 6

CLIENT: Aecom Australia Pty Ltd
 PROJECT: Cross River Rail
 LOCATION: Botanic Gardens
 JOB NO: 107632034

COORDS: 503036.52 m E 6960985.09 m N MGA94 56
 SURFACE RL: 4.00 m DATUM: AHD
 INCLINATION: -90°
 HOLE DEPTH: 50.00 m

DRILL RIG: FD500
 CONTRACTOR: Foundril Pty Ltd
 LOGGED: SRT DATE: 2/9/10
 CHECKED: NK DATE: 18/10/10

Drilling					Field Material Description				Defect Information			
METHOD	WATER	TCR	RQD (SCR)	DEPTH (metres)	DEPTH RL	GRAPHIC LOG	ROCK / SOIL MATERIAL DESCRIPTION	WEATHERING	INFERRED STRENGTH Is(50) MPa	DEFECT DESCRIPTION & Additional Observations		FRACTURE FREQUENCY (Defects per unit metre length)
									EL 0.03 VL 0.01 J 0.1 M 0.3 H 1 VH 10 EH			5 10 15 20 25 30
		100	90	30			META SILTSTONE fine grained, dark grey and white, large quartz veins, foliations at 50°	FR			30.31: J, 10°, Un, Sm, Cn 30.40: J, Un, Sm, Cn 30.50: X, 30°, Pl, Sl-Sm, Vr, clay, pale grey, talc 30.61: X, 30°, Un, Sm, Cn 30.77: X, 30°, Un, Sm, Cn, angular rock fragments	
		90	0	32	32.18 32.33		CORE LOSS				31.19: J, 45°, Un, Sm, Cn 31.34: J, 45°, Un, Sm, Vr, clay, low plasticity, grey, trace talc 31.51: J, 30°, Un, Sm, Vr, clay, low plasticity, pale grey, talc 31.51-31.68: J, 90°, Un, Sm, Vr, clay, low plasticity, pale grey, talc 31.56: J, 30°, Un, Sm, Vr, clay, low plasticity, pale grey, talc 31.78: J, 20°, St, Sm, Ct, gravelly clay, low plasticity, grey. Joint is filled with rock fragments. 31.90: J, 80°, Un, Sm, Vr, clay, grey with platy rock fragments, trace talc 32.00-32.88: SZ, 880 mm, closely spaced fractures, zones of gravelly clay, low plasticity, dark grey 32.96: J, 30°, Un, Sm, Cn	
		85	0	33	28.33		META SILTSTONE fine grained, dark grey and white, large quartz veins, 50 to 60° foliation	FR			33.72: J, 30°, Un-St, Sm, Vr, clay, dark grey 33.76: J, 10°, Un, Sm, Vr, clay, dark grey	
		100	50	34							34.30: J, 80°, Un, Sm, Cn 34.43: J, 30°, Un, Sm, Cn, angular rock fragments, fine gravel sized 34.48: J, 70°, Un, Sm, Cn 34.55: J, 90°, Un, Ro, Vr, clayey sand, fine, grey and brown 34.74-34.92: CZ, 140 mm, angular rock fragments, fine to medium gravel sized and 40mm thickness clayey gravel seam 35.00: J, 80°, Un, Sm, Cn 35.11: J, 80°, Un, Sm, Ct, 10 mm, gravelly clay, low plasticity, dark grey 35.18: J, 80°, Un, Sm, Cn 35.62: X, 60°, Un, Sm, Cn 35.88: J, 70°, Un, Sm, Cn 36.00: J, 70°, Un, Sm, Vr, clay, grey	
		100	40	35							36.27: J, 5°, Un, Sm, Cn 36.35-36.45: FZ, core highly fractured, clayey rock fragments, fine to medium gravel size 36.50: J, 45°, Pl-St, Sm, Vr, rock fragments with some clay, fine gravel sized, dark grey 36.67-37.25: SZ, 580 mm, closely spaced fractures 70°, rock fragments, fine to medium gravel sized	
		100	85	36							37.59-38.16: SZ, 570 mm, closely fractured rock with gravelly clay, low plasticity, dark grey	
		100	20	37								
		100	40	38	37.87 -33.87		shear seam weathering to clay at 37.87 m					
		75	0	38	38.16 38.30		CORE LOSS					
		100	95	39	34.30		META SILTSTONE fine grained, dark grey and white, thin quartz veins, foliations 50 to 60°	FR			38.31: X, 45°, Un-St, Sm, Cn 38.34: X, 45°, Pl, Sm, Cn 38.48: X, 45°, Pl, Sm, Cn	
		100	95	40	40.00							

NMLC

GAP 8.03 LIB: GLE Log GAP CORED BOREHOLE 107632034_ACO.GPJ <<DrawingFile>> 29/11/2010 13:51 8.2.007

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GAP gINT FN. F02b
RL3



REPORT OF BOREHOLE: CRR 204

SHEET: 6 OF 6

CLIENT: Aecom Australia Pty Ltd
 PROJECT: Cross River Rail
 LOCATION: Botanic Gardens
 JOB NO: 107632034

COORDS: 503036.52 m E 6960985.09 m N MGA94 56
 SURFACE RL: 4.00 m DATUM: AHD
 INCLINATION: -90°
 HOLE DEPTH: 50.00 m

DRILL RIG: FD500
 CONTRACTOR: Foundril Pty Ltd
 LOGGED: SRT DATE: 2/9/10
 CHECKED: NK DATE: 18/10/10

Drilling					Field Material Description				Defect Information				
METHOD	WATER	TCR	RQD (SCR)	DEPTH (metres)	DEPTH RL	GRAPHIC LOG	ROCK / SOIL MATERIAL DESCRIPTION	WEATHERING	INFERRED STRENGTH Is(50) MPa	DEFECT DESCRIPTION & Additional Observations		FRACTURE FREQUENCY (Defects per unit metre length)	
				40	-36.00		META SILTSTONE fine grained, dark grey and white, thin quartz veins, foliations 50 to 60°	FR					
				40.50	-36.50		quartz veins becoming more random, and foliations at 70°						
		100	100	41									
				42									
		100	100	43									
				44									
				45									
		100	100	46									
				46	-42.00		foliations are at 50°						
				47									
		100	80	47									
				48									
				49									
		100	100	49									
				50	50.00		END OF BOREHOLE @ 50.00 m ground water @ 3.5m 7.00am 03/08/10 10.45am drilled to 34m set up for packer test; water level at 4.3m 05/08/10						

NMLC

GAP 8_03 LIB: GLE Log GAP CORED BOREHOLE 107632034_ACO.GPJ <<DrawingFile>> 29/11/2010 13:51 8.2.007

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GAP gINT FN. F02b
RL3

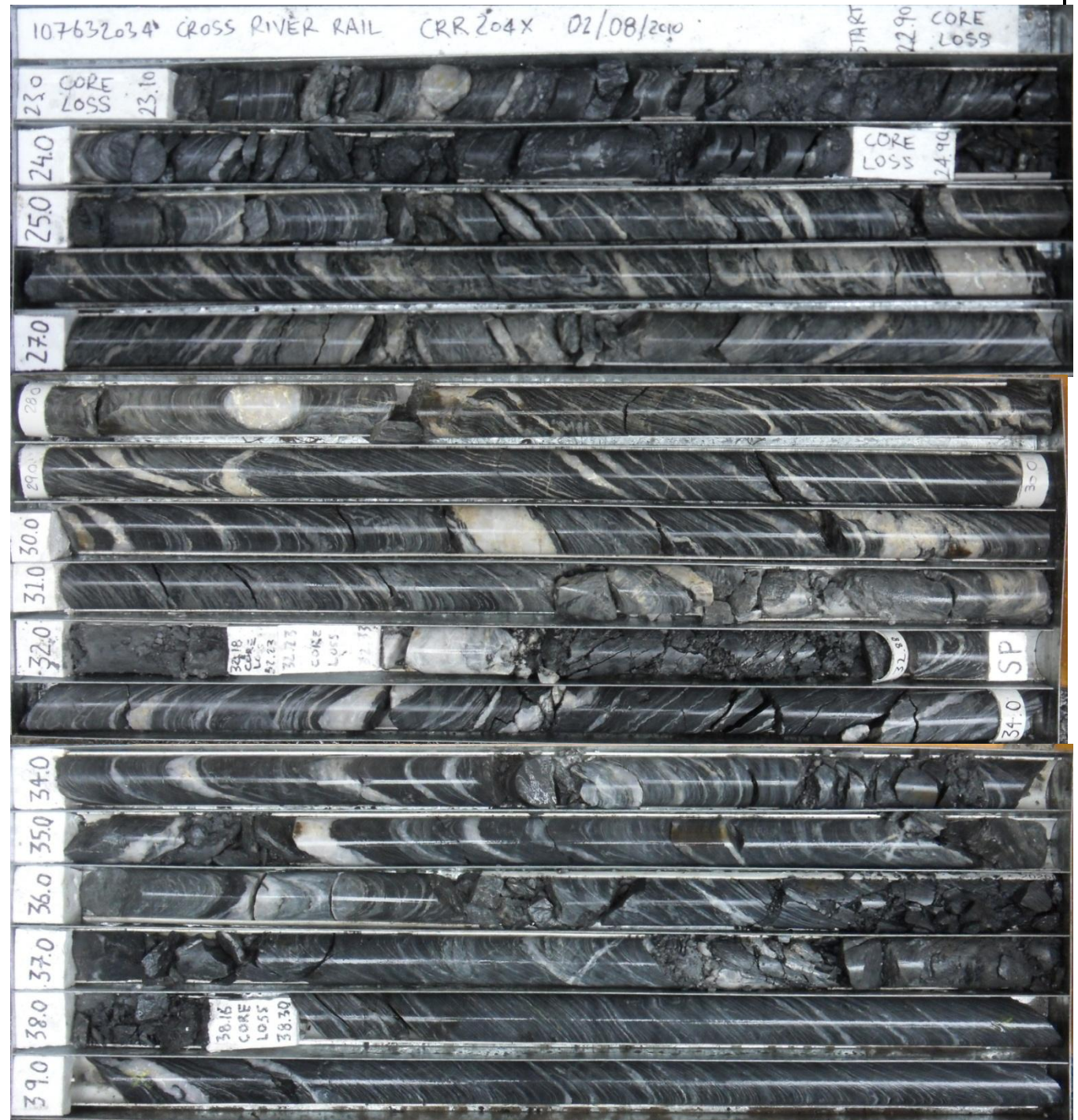


REPORT OF CORE PHOTOGRAPHS: CRR 204

CLIENT: Aecom Australia Pty Ltd
PROJECT: Cross River Rail
LOCATION: Botanical Gardens
JOB NO: 107632034

COORDS: 503036 m E 6960985 m N
SURFACE RL: 4.0 DATUM: AHD
INCLINATION: -90°
HOLE DEPTH: 50.0 m

DEPTH RANGE: 22.9-40.0 m
DRILL RIG: FD500
DRILLER: Foundril Pty Ltd
LOGGED: SRT/CA DATE: 3/08/10
CHECKED: NK DATE: 4/10/10





REPORT OF CORE PHOTOGRAPHS: CRR 204

CLIENT: Aecom Australia Pty Ltd
PROJECT: Cross River Rail
LOCATION: Botanical Gardens
JOB NO: 107632034

COORDS: 0503036 m E 6960985 m N
SURFACE RL: 4.00 DATUM: AHD
INCLINATION: -90°
HOLE DEPTH: 50.0 m

DEPTH RANGE: 40.0- 50.0 m
DRILL RIG: FD500
DRILLER: Foundril Pty Ltd
LOGGED: SRT/CA DATE: 3/08/10
CHECKED: NK DATE: 4/10/10





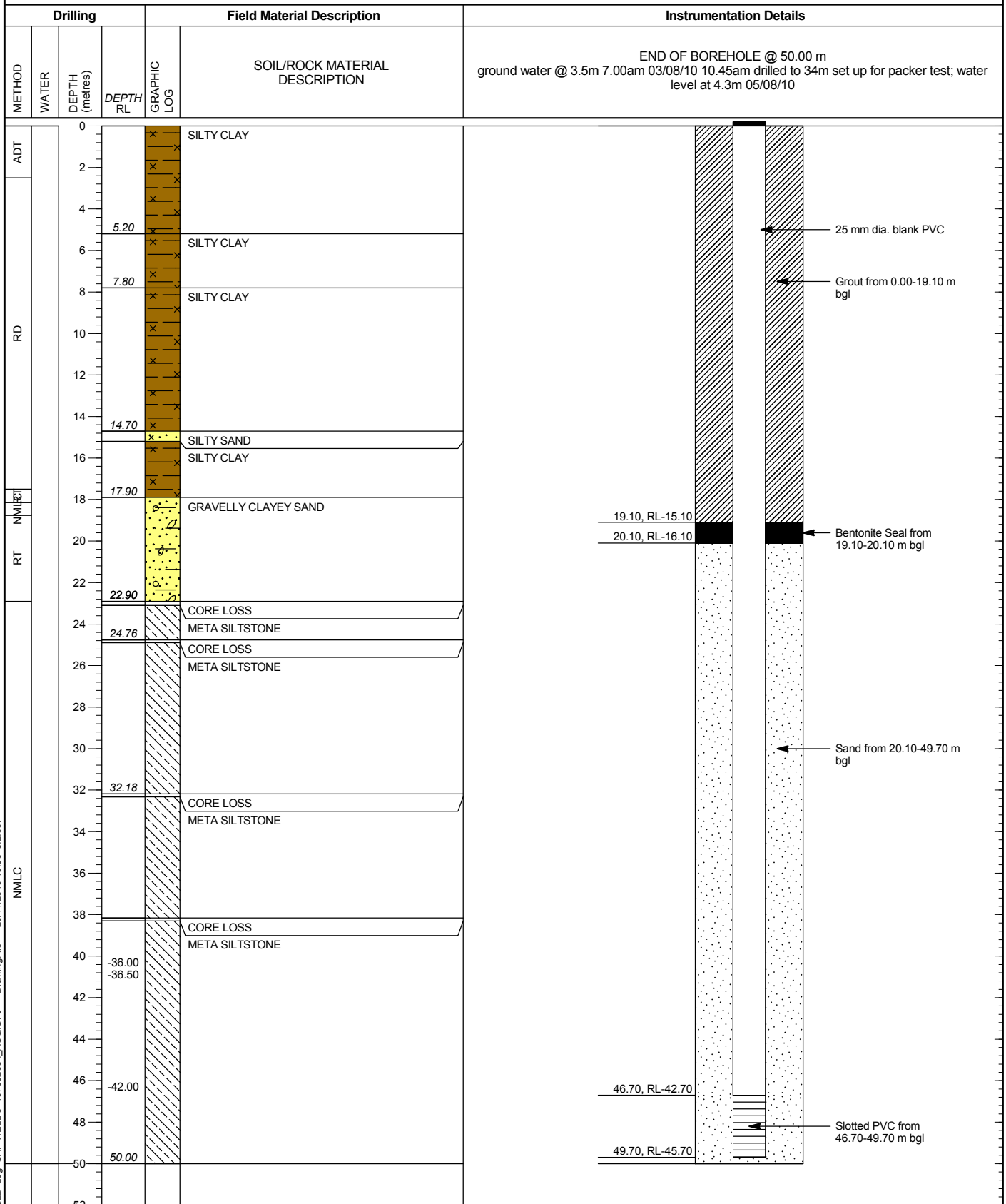
REPORT OF STANDPIPE INSTALLATION: CRR 204

SHEET: 1 OF 1

CLIENT: Aecom Australia Pty Ltd
 PROJECT: Cross River Rail
 LOCATION: Botanic Gardens
 JOB NO: 107632034

COORDS: 503036.52 m E 6960985.09 m N MGA94 56
 SURFACE RL: 4.00 m DATUM: AHD
 INCLINATION: -90°
 HOLE DEPTH: 50.00 m

DRILL RIG: FD500
 CONTRACTOR: Foundril Pty Ltd
 LOGGED: SRT DATE: 2/9/10
 CHECKED: NK DATE: 18/10/10



GAP-8_03.LIB.GLB Log GAP WELL 3 107632034_ACO.GPJ <-DrawingFile>> 29/11/2010 15:36 8.2.007

This report of standpipe installation must be read in conjunction with accompanying notes and abbreviations. It has been prepared for geotechnical purposes only, without attempt to assess possible contamination. Any references to potential contamination are for information only and do not necessarily indicate the presence or absence of soil or groundwater contamination.

GAP gINT FN. F17
RL1



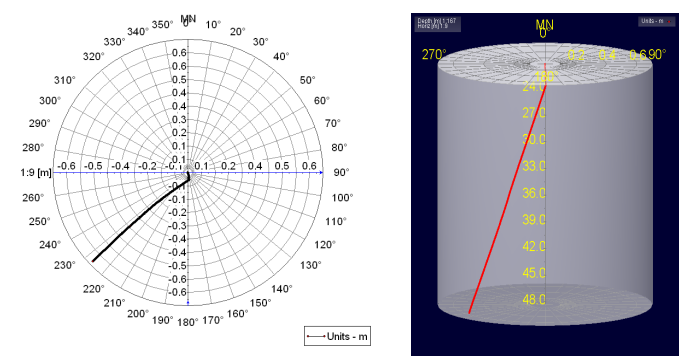
GEOPHYSICAL RECORD OF BOREHOLE: CRR 204

PROJECT **Cross River Rail** PROJECT # **107632034**
 CLIENT **Department of Transport and Main Roads** DATE **11/10/2010**

LOCATION- **Botanic Gardens** LOGGED BY- **SRT**
 EASTING- **503032.00 m E** LOGGED DATE- **2/9/10**
 NORTHING- **6960983.00 m N** LOGGING DATUM-
 ELEVATION- LOGGED DEPTH- **50.00 m**
 DRILLED DEPTH- **50.00 m** DIAMETER- DRAWN BY- **RCD**
 PLUNGE- **-90°** AZIMUTH- **000** REVIEWED BY- **TR**
 CASING- DEPTH- FILE NAME- **CRR203-U.HED.WCL**

Lithology

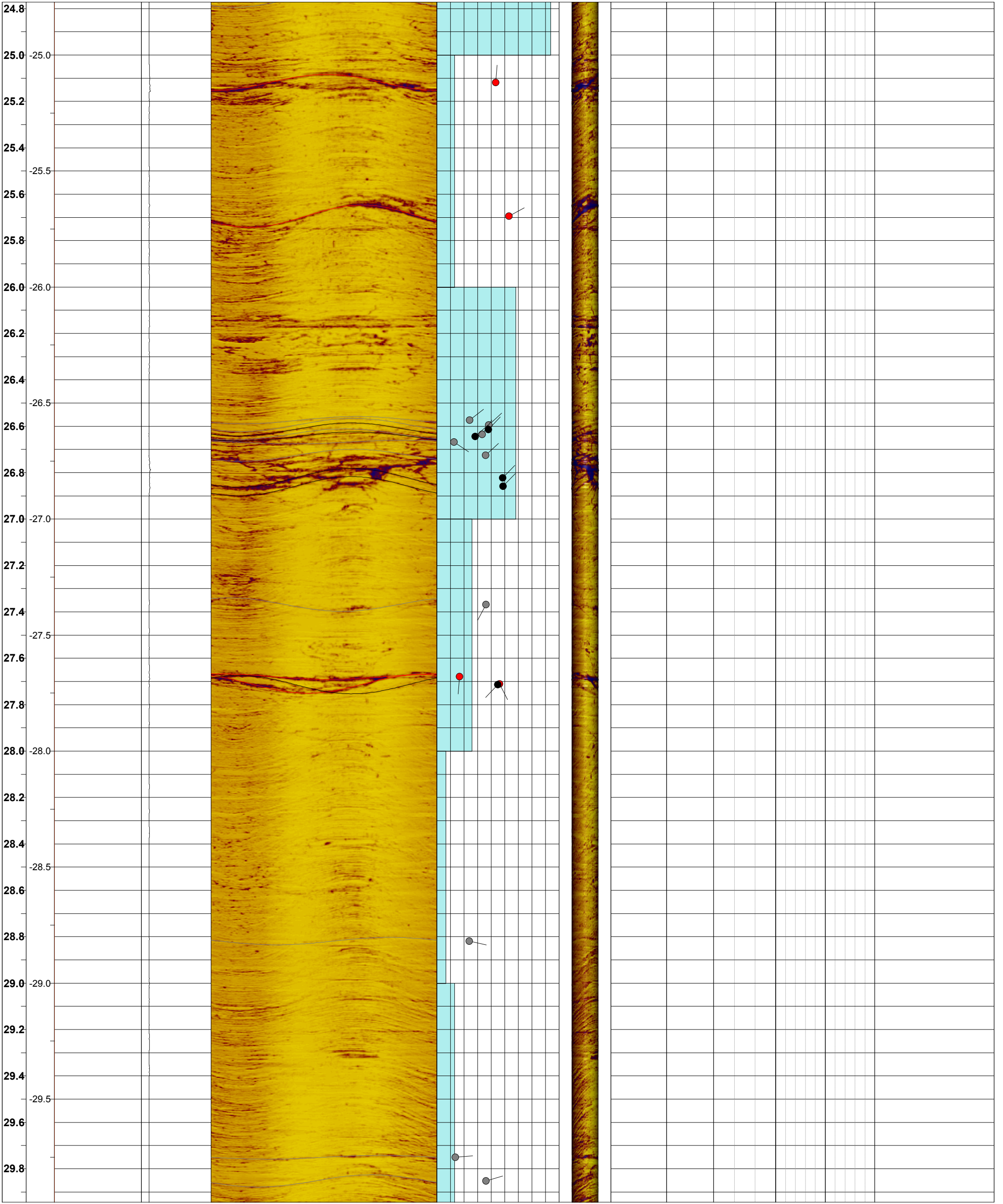
DEVIATION DATA

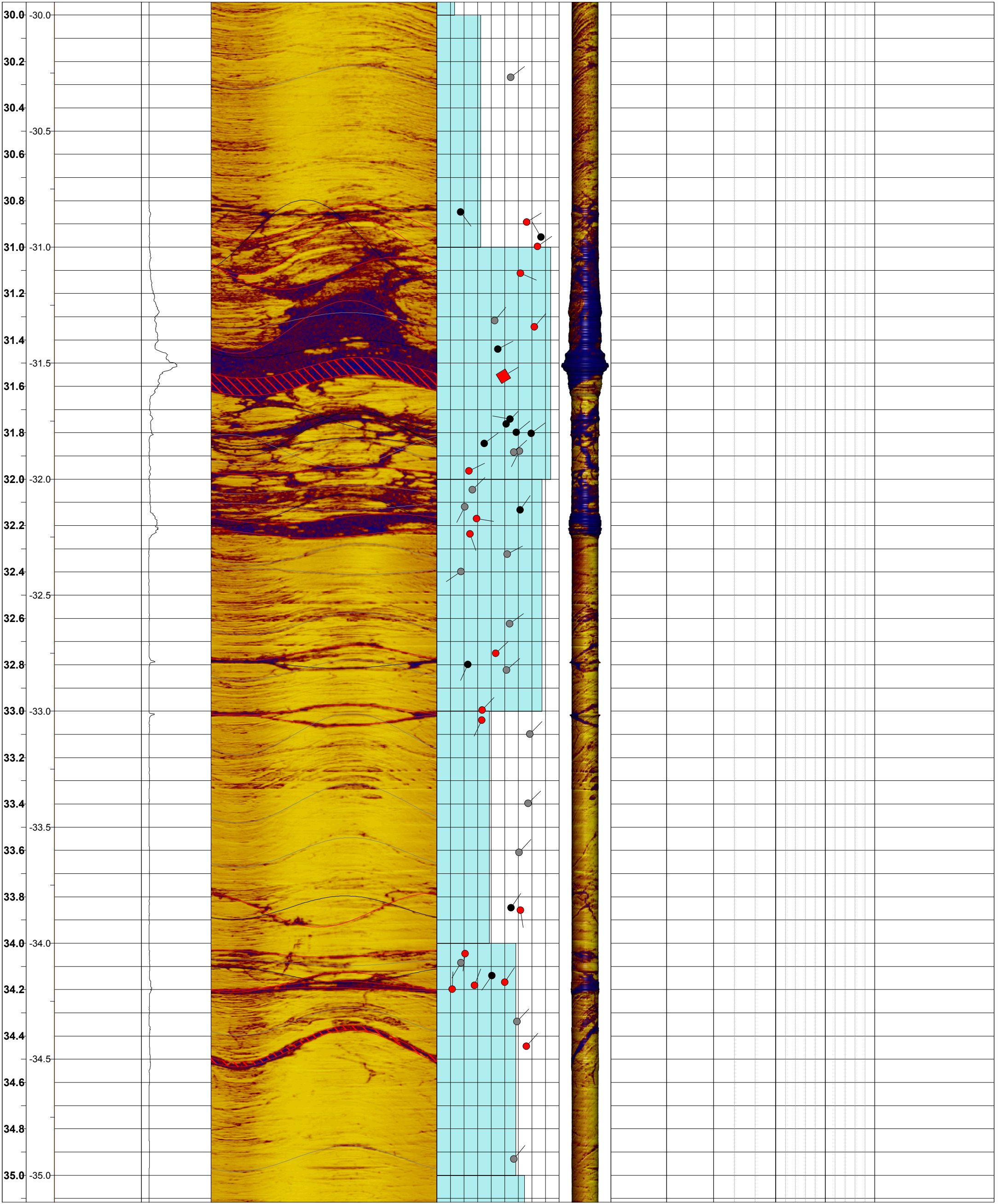


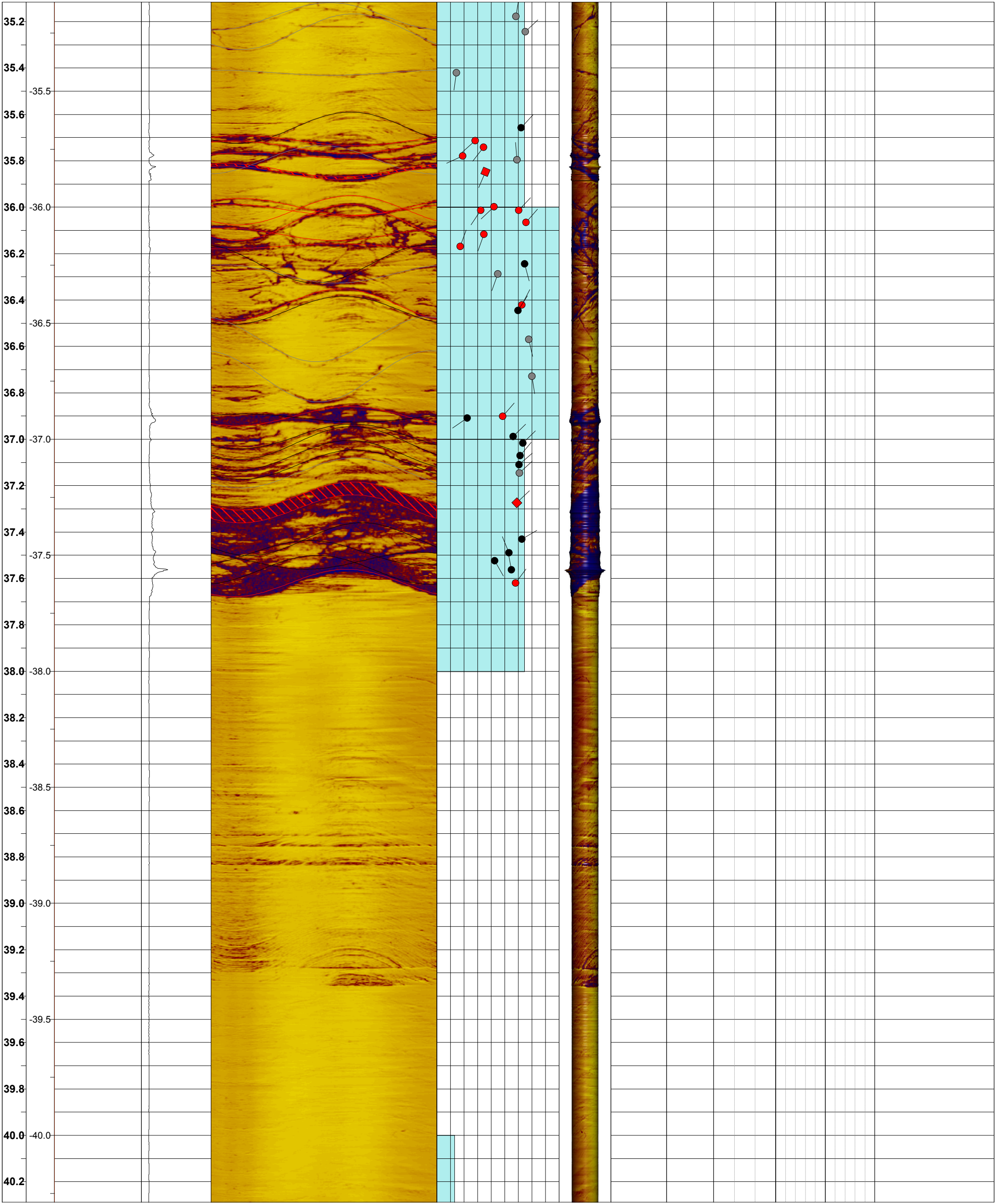
Interpreted Structures

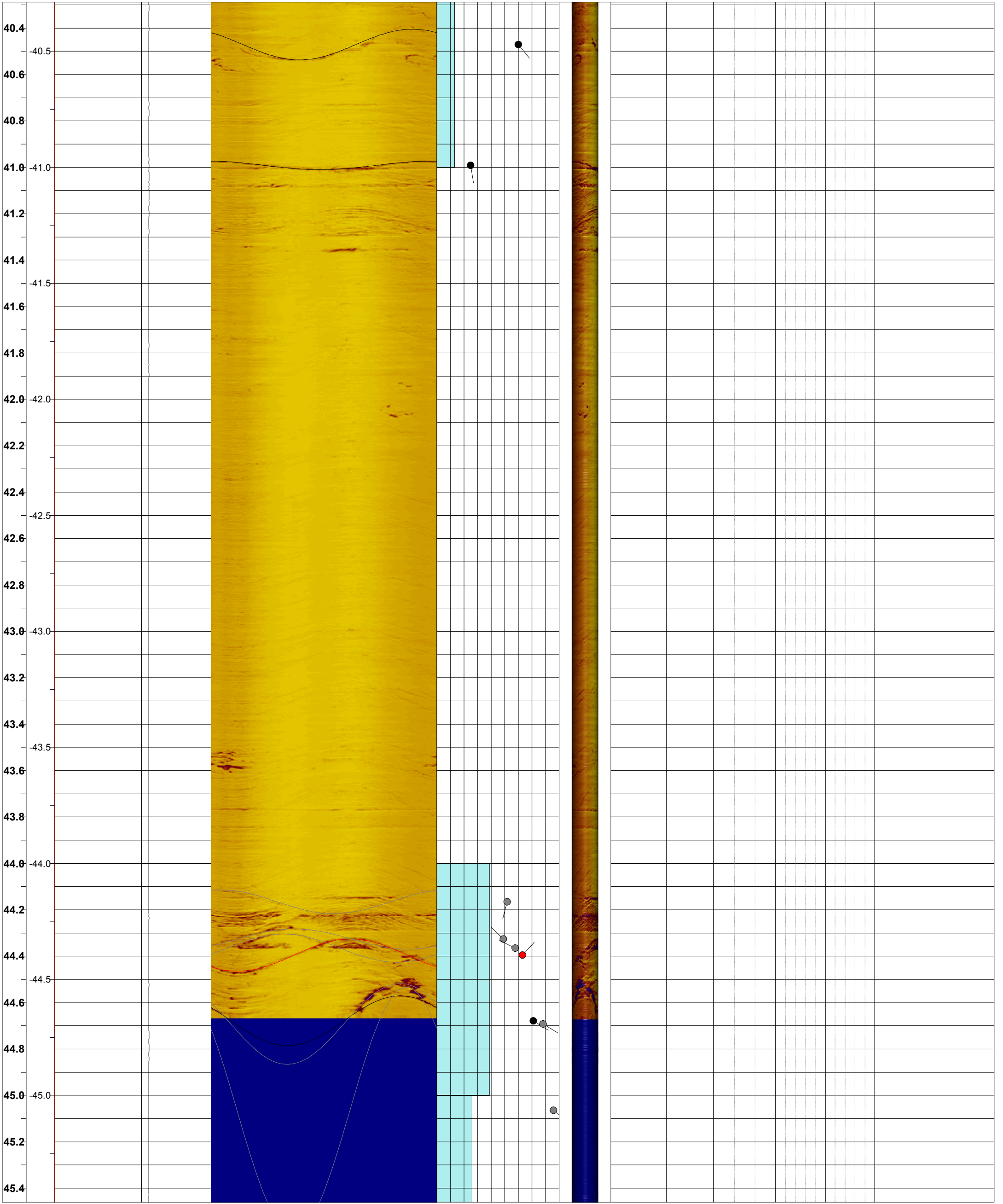
- Joint - Low Confidence
- Foliation - High Confidence
- Foliation - Medium Confidence
- Foliation - Low Confidence
- ◆ Crushed Seam - High Confidence
- Joint - High Confidence
- ◆ Sheared Seam - High Confidence
- Joint - Medium Confidence

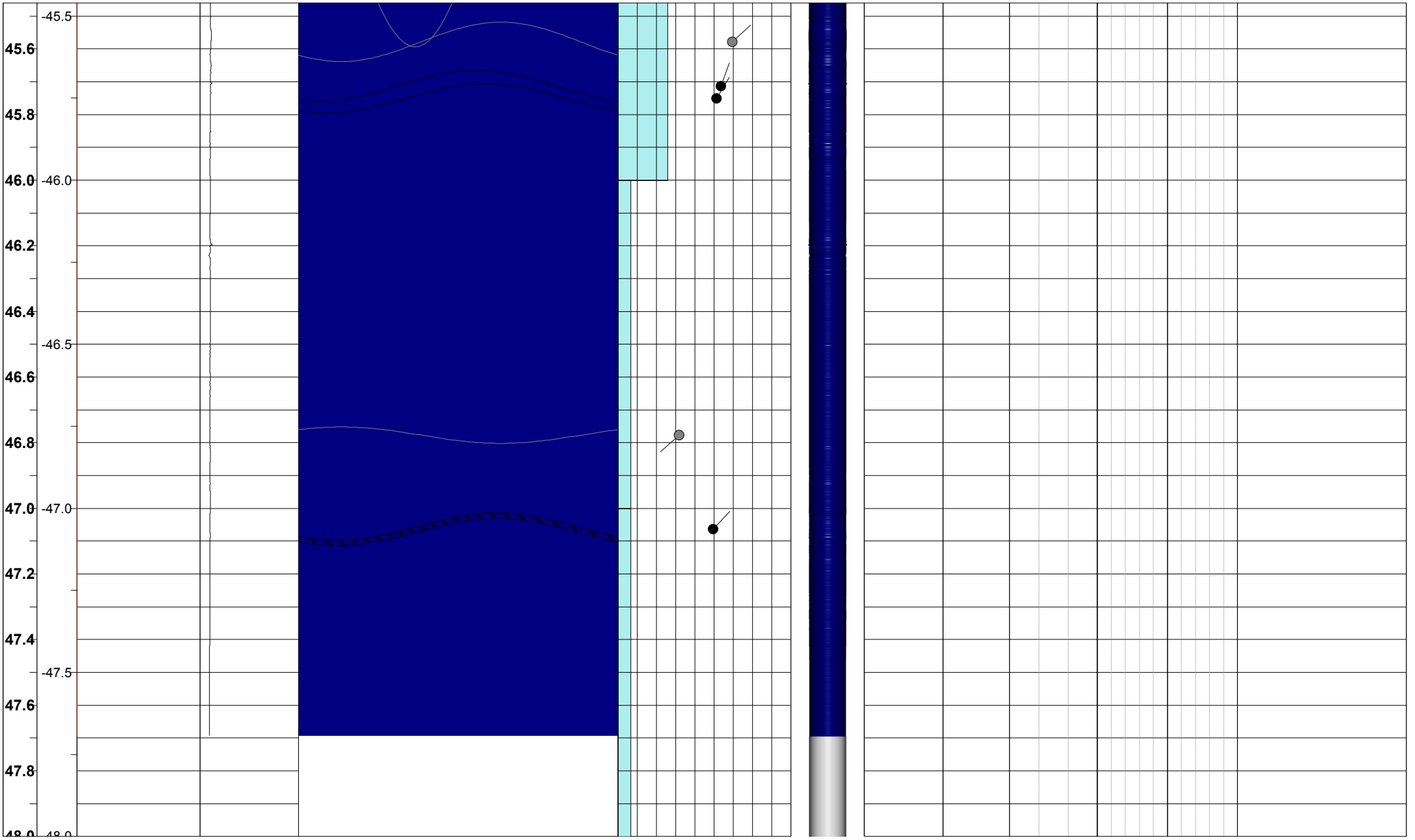
Depth 1:15	RL	TELEVIEWER DATA					CORE DATA													
		NATURAL GAMMA 0 cps 300	ATV Caliper 70 mm 120	Amplitude 0° 90° 180° 270° 0°	Structure Orientations 0 90	3D log 293°	Core Photo	Lithology	Logged FF 0 30	RQD 0 100	TCR 0 100	Defect Description								
		Interpreted Structures					(Refer to detailed core log, provided separately)													
21.4	-21.5																			
21.6																				
21.8																				
22.0	-22.0																			
22.2																				
22.4	-22.5																			
22.6																				
22.8																				
23.0	-23.0																			
23.2																				
23.4	-23.5																			
23.6																				
23.8																				
24.0	-24.0																			
24.2																				
24.4	-24.5																			
24.6																				











GA-BQ-291 RL1
Issued 31/03/10



WATER PRESSURE TEST

Revision No : 12.00

Job No. : 107632034	Hole No. : CRR204	Drilling Method : NMLC	Vertical depth to Groundwater : 3.50	Immediately prior to test (m bgl) : 3.50
Client : AECOM	Dip (Deg) : -90	Hole Diameter (m) : 0.0757		Used in analysis (m bgl) : 3.50
Project : Cross River Rail	Interval Top (m) : 28.00	Tested Length (m) : 6.00		Pressure Gauge Height (m agl) : 1.70
Location : Botanical Gardens	Interval Base (m) : 34.00	Packer Type : Mechanical - Non-Wireline - Single		Presumed Water Temperature : 25
Tested By : CJA	Computed By : CJA	Rock tested :		Casing Inner Diameter (mm) : 60.300
Date : 3/08/2010	Date : 3/08/2010	Water Meter Reading in Litres	Checked By : NK	Date : 28/10/2010

Pressure Stage	Gauge Pressure kPa	No	Actual	Time	Water Meter Readings	Volume	Discharge	Discharge/m	Remarks
			Time (h:m:s)	Intervals (min)	Reading (Litres)	(L)	(L/min)	(L/min/m)	
P1	65	0	0:00:00	0	17655.75	0.00	0.00	0.00	c : 1
		1	0:01:00	01:00	17655.75	0.00	0.00	0.00	
		2	0:02:00	01:00	17655.75	0.00	0.00	0.00	
		3	0:03:00	01:00	17655.75	0.00	0.00	0.00	
		4	0:04:00	01:00	17655.75	0.00	0.00	0.00	
		5	0:05:00	01:00	17655.75	0.00	0.00	0.00	
		6	0:06:00	01:00	17655.75	0.00	0.00	0.00	
		7	0:07:00	01:00	17655.75	0.00	0.00	0.00	
		8	0:08:00	01:00	17655.75	0.00	0.00	0.00	
		9	0:09:00	01:00	17655.75	0.00	0.00	0.00	
		10	0:10:00	01:00	17655.75	0.00	0.00	0.00	
Total :						0.00	0.00	0.000	
Average:						0.000	0.000	0.000	
P2	130	0	0:11:00	0	17656.00	0.00	0.00	0.00	c : 1
		1	0:12:00	01:00	17656.30	0.30	0.30	0.05	
		2	0:13:00	01:00	17656.50	0.20	0.20	0.03	
		3	0:14:00	01:00	17656.75	0.25	0.25	0.04	
		4	0:15:00	01:00	17657.00	0.25	0.25	0.04	
		5	0:16:00	01:00	17657.25	0.25	0.25	0.04	
		6	0:17:00	01:00	17657.50	0.25	0.25	0.04	
		7	0:18:00	01:00	17657.75	0.25	0.25	0.04	
		8	0:19:00	01:00	17658.00	0.25	0.25	0.04	
		9	0:20:00	01:00	17658.20	0.20	0.20	0.03	
		10	0:21:00	01:00	17658.40	0.20	0.20	0.03	
Total :						2.40	2.40	0.40	
Average:						0.240	0.240	0.040	
P3	190	0	0:22:00	0	17667.10	0.00	0.00	0.00	c : 1
		1	0:23:00	01:00	17669.20	2.10	2.10	0.35	
		2	0:24:00	01:00	17671.20	2.00	2.00	0.33	
		3	0:25:00	01:00	17673.15	1.95	1.95	0.33	
		4	0:26:00	01:00	17675.10	1.95	1.95	0.32	
		5	0:27:00	01:00	17677.10	2.00	2.00	0.33	
		6	0:28:00	01:00	17679.10	2.00	2.00	0.33	
		7	0:29:00	01:00	17681.00	1.90	1.90	0.32	
		8	0:30:00	01:00	17682.90	1.90	1.90	0.32	
		9	0:31:00	01:00	17684.80	1.90	1.90	0.32	
		10	0:32:00	01:00	17686.40	1.60	1.60	0.27	
Total :						19.30	19.30	3.22	
Average:						1.930	1.930	0.322	
P4	130	0	0:33:00	0	17693.40	0.00	0.00	0.00	c : 1
		1	0:34:00	01:00	17694.20	0.80	0.80	0.13	
		2	0:35:00	01:00	17695.10	0.90	0.90	0.15	
		3	0:36:00	01:00	17696.00	0.90	0.90	0.15	
		4	0:37:00	01:00	17696.85	0.85	0.85	0.14	
		5	0:38:00	01:00	17697.70	0.85	0.85	0.14	
		6	0:39:00	01:00	17698.50	0.80	0.80	0.13	
		7	0:40:00	01:00	17699.30	0.80	0.80	0.13	
		8	0:41:00	01:00	17700.10	0.80	0.80	0.13	
		9	0:42:00	01:00	17701.00	0.90	0.90	0.15	
		10	0:43:00	01:00	17701.80	0.80	0.80	0.13	
Total :						8.40	8.40	1.40	
Average:						0.840	0.840	0.140	
P5	65	1	0:44:00	0	17712.00	0.00	0.00	0.00	c : 1
		2	0:45:00	01:00	17713.70	1.70	1.70	0.28	
		3	0:46:00	01:00	17715.40	1.70	1.70	0.28	
		4	0:47:00	01:00	17717.10	1.70	1.70	0.28	
		5	0:48:00	01:00	17718.80	1.70	1.70	0.28	
		6	0:49:00	01:00	17720.55	1.75	1.75	0.29	
		7	0:50:00	01:00	17722.30	1.75	1.75	0.29	
		8	0:51:00	01:00	17724.00	1.70	1.70	0.28	
		9	0:52:00	01:00	17725.75	1.75	1.75	0.29	
		10	0:53:00	01:00	17727.45	1.70	1.70	0.28	
		11	0:54:00	01:00	17729.15	1.70	1.70	0.28	
		Total :						17.15	
Average:						1.715	1.715	0.286	

TEST RESULTS

Stage No.	Houlsby (1976) Value	Lugeon Value Curve	Nett Pressures	Pressure Vs Flow	Interpreted Result & Hydraulic Conductivity
P1	0.0		116.0		$H_{LOSS} = 0.05$ kPa Stage No. P5 Gauge Pressure 65 kPa Q 1.72 L/min H 11.8 m Interpreted Result 4 uL Reported k at Stage P5
P2	0.3		181.0		Analytical Method 1: (ref = Golder geotechnical field notes draft 1997) $k = Q/H \times 6.10889 \times 10^{-6} \times (\log(2L/D)/L)$ $k = 3.2E-07$ m/s Analytical Method 2: (ref = Sharp, J.C 1975 Pit Slope Manual, CANMET report) $k = 1/(2L \times 3.14) \times (Q/H) \ln(R/r)$ m/s (convert L/min to m/s). Assume R = radius of influence of 100m & r = radius of borehole. $k = 5.1E-07$ m/s
P3	1.7		240.9		
P4	1.1		181.0		
P5	4.4		115.9		
Flow Type		WASH-OUT	COMMENTS No Flow		



WATER PRESSURE TEST

Revision No : 12.00

Job No. : 107632034	Hole No. : CRR204	Drilling Method : NMLC	Vertical depth to Groundwater : 4.30	Immediately prior to test (m bgl) : 4.30
Client : AECOM	Dip (Deg) : -90	Hole Diameter (m) : 0.0757		Used in analysis (m bgl) : 4.30
Project : Cross River Rail	Interval Top (m) : 34.00	Tested Length (m) : 6.00		Pressure Gauge Height (m agl) : 1.70
Location : Botanical Gardens	Interval Base (m) : 40.00	Packer Type : Mechanical - Non-Wireline - Single		Presumed Water Temperature : 25
Tested By : CJA	Computed By : CJA	Rock tested :		Casing Inner Diameter (mm) : 60.300
Date : 4/08/2010	Date : 4/08/2010	Water Meter Reading in Litres	Checked By : NK	Date : 28/10/2010

Pressure Stage	Gauge Pressure kPa	No	Actual	Time	Water Meter Readings	Volume	Discharge	Discharge/m	Remarks
			Time (h:m:s)	Intervals (min)	Reading (Litres)	(L)	(L/min)	(L/min/m)	
P1	80	0	0:00:00	0	17752.00	0.00	0.00	0.00	c : 1
		1	0:01:00	01:00	17752.20	0.20	0.20	0.03	
		2	0:02:00	01:00	17752.30	0.10	0.10	0.02	
		3	0:03:00	01:00	17752.30	0.00	0.00	0.00	
		4	0:04:00	01:00	17752.30	0.00	0.00	0.00	
		5	0:05:00	01:00	17752.30	0.00	0.00	0.00	
		6	0:06:00	01:00	17752.30	0.00	0.00	0.00	
		7	0:07:00	01:00	17752.30	0.00	0.00	0.00	
		8	0:08:00	01:00	17752.30	0.00	0.00	0.00	
		9	0:09:00	01:00	17752.30	0.00	0.00	0.00	
		10	0:10:00	01:00	17752.30	0.00	0.00	0.00	
Total :						0.30	0.05		
Average:						0.030	0.005		
P2	160	0	0:11:00	0	17752.30	0.00	0.00	0.00	c : 1
		1	0:12:00	01:00	17752.45	0.15	0.15	0.03	
		2	0:13:00	01:00	17752.45	0.00	0.00	0.00	
		3	0:14:00	01:00	17752.45	0.00	0.00	0.00	
		4	0:15:00	01:00	17752.45	0.00	0.00	0.00	
		5	0:16:00	01:00	17752.45	0.00	0.00	0.00	
		6	0:17:00	01:00	17752.45	0.00	0.00	0.00	
		7	0:18:00	01:00	17752.45	0.00	0.00	0.00	
		8	0:19:00	01:00	17752.45	0.00	0.00	0.00	
		9	0:20:00	01:00	17752.45	0.00	0.00	0.00	
		10	0:21:00	01:00	17752.45	0.00	0.00	0.00	
Total :						0.15	0.03		
Average:						0.015	0.003		
P3	245	0	0:22:00	0	17752.45	0.00	0.00	0.00	c : 1
		1	0:23:00	01:00	17752.45	0.00	0.00	0.00	
		2	0:24:00	01:00	17752.45	0.00	0.00	0.00	
		3	0:25:00	01:00	17752.45	0.00	0.00	0.00	
		4	0:26:00	01:00	17752.45	0.00	0.00	0.00	
		5	0:27:00	01:00	17752.45	0.00	0.00	0.00	
		6	0:28:00	01:00	17752.45	0.00	0.00	0.00	
		7	0:29:00	01:00	17752.45	0.00	0.00	0.00	
		8	0:30:00	01:00	17752.45	0.00	0.00	0.00	
		9	0:31:00	01:00	17752.45	0.00	0.00	0.00	
		10	0:32:00	01:00	17752.45	0.00	0.00	0.00	
Total :						0.00	0.00		
Average:						0.000	0.000		
P4	160	0	0:33:00	0	17752.50	0.00	0.00	0.00	c : 1
		1	0:34:00	01:00	17752.50	0.00	0.00	0.00	
		2	0:35:00	01:00	17752.50	0.00	0.00	0.00	
		3	0:36:00	01:00	17752.50	0.00	0.00	0.00	
		4	0:37:00	01:00	17752.50	0.00	0.00	0.00	
		5	0:38:00	01:00	17752.50	0.00	0.00	0.00	
		6	0:39:00	01:00	17752.50	0.00	0.00	0.00	
		7	0:40:00	01:00	17752.50	0.00	0.00	0.00	
		8	0:41:00	01:00	17752.50	0.00	0.00	0.00	
		9	0:42:00	01:00	17752.50	0.00	0.00	0.00	
		10	0:43:00	01:00	17752.50	0.00	0.00	0.00	
Total :						0.00	0.00		
Average:						0.000	0.000		
P5	80	1	0:44:00	0	17752.50	0.00	0.00	0.00	c : 1
		2	0:45:00	01:00	17752.50	0.00	0.00	0.00	
		3	0:46:00	01:00	17752.50	0.00	0.00	0.00	
		4	0:47:00	01:00	17752.50	0.00	0.00	0.00	
		5	0:48:00	01:00	17752.50	0.00	0.00	0.00	
		6	0:49:00	01:00	17752.50	0.00	0.00	0.00	
		7	0:50:00	01:00	17752.50	0.00	0.00	0.00	
		8	0:51:00	01:00	17752.50	0.00	0.00	0.00	
		9	0:52:00	01:00	17752.50	0.00	0.00	0.00	
		10	0:53:00	01:00	17752.50	0.00	0.00	0.00	
		11	0:54:00	01:00	17752.50	0.00	0.00	0.00	
Total :						0.00	0.00		
Average:						0.000	0.000		

TEST RESULTS

Stage No.	Hours by (1976) Value	Lugeon Value Curve	Nett Pressures	Pressure Vs Flow	Interpreted Result & Hydraulic Conductivity
P1	0.1		138.8		<p>H_{LOSS} 0.00 kPa</p> <p>Stage No. Average</p> <p>Gauge Pressure 145 kPa</p> <p>Q 0.01 L/min</p> <p>H 20.8 m</p> <p>Interpreted Result 0 uL</p> <p>Reported k at Stage Average</p> <p>Analytical Method 1: (ref = Golder geotechnical field notes draft 1997) $k = Q/H \times 6.10889 \times 10^{-6} \times (\log(2L/D)/L)$</p> <p>k = 9.7E-10 m/s</p> <p>Analytical Method 2: (ref = Sharp, J.C 1975 Pit Slope Manual, CANMET report) $k = 1/(2L \times 3.14) \times (Q/H) \ln(R/r)$ m/s (convert L/min to m/s). Assume R = radius of influence of 100m & r = radius of borehole.</p> <p>k = 1.5E-09 m/s</p>
P2	0.0		218.8		
P3	0.0		303.8		
P4	0.0		218.8		
P5	0.0		138.8		
<p>Hours by (1976) method - no pressure corrections for Hf (head losses), nor is the pressure corrected for Hg (location of watertable).</p>					
Flow Type	LOW PERMEABILITY	COMMENTS	No Flow		