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REPORT OF BOREHOLE: CRR 213

SHEET: 1 OF 5

CLIENT: Aecom Australia Pty Ltd
 PROJECT: Cross River Rail
 LOCATION: Yeronga Park and Ride
 JOB NO: 107632034

COORDS: 501820.37 m E 6956414.49 m N MGA94 56
 SURFACE RL: 14.30 m DATUM: AHD
 INCLINATION: -90°
 HOLE DEPTH: 40.00 m

DRILL RIG: FOX B40
 CONTRACTOR: Schneider Drilling Pty Ltd
 LOGGED: RCD DATE: 25/8/10
 CHECKED: NK DATE: 18/10/10

Drilling				Sampling	Field Material Description					
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	SAMPLE OR FIELD TEST	RECOVERED GRAPHIC LOG	USC SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
AS			0				ASPHALT			
			14.23 0.30 14.00			SP	Gravelly SAND medium grained, pale orange brown, coarse gravel, road base		VD	
			1	SPT 1.00-1.45 m 19, 24, 25 N=49		SC	Clayey SAND medium grained, pale grey and pale orange brown, high plasticity clay, residual soil		D	
		2	2.00 12.30	SPT 2.50-2.95 m 30, 0		CL-ML	Silty CLAY low plasticity, pale grey with pale orange brown, residual soil		VSt-H	
			3				For Continuation Refer to Sheet 2			
			4							
			5							
			6							
			7							
			8							
			9							
			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 13:39 8.2.007



REPORT OF BOREHOLE: CRR 213

SHEET: 2 OF 5

CLIENT: Aecom Australia Pty Ltd
 PROJECT: Cross River Rail
 LOCATION: Yeronga Park and Ride
 JOB NO: 107632034

COORDS: 501820.37 m E 6956414.49 m N MGA94 56
 SURFACE RL: 14.30 m DATUM: AHD
 INCLINATION: -90°
 HOLE DEPTH: 40.00 m

DRILL RIG: FOX B40
 CONTRACTOR: Schneider Drilling Pty Ltd
 LOGGED: RCD DATE: 25/8/10
 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)	
				0									
				1									
				2									
				3	3.00		Continuation of Sheet 1						
				3.10	3.20		SANDSTONE fine grained, pale orange brown and pale grey	EW					
				11.10			SANDY SILT pale grey, fine sand residual soil						
		70	0	3.50	10.80		CORE LOSS	EW - DW					
				4			SANDY SILT pale grey with pale orange brown and black, bands residual soil bands of siltstone fine grained black very low strength possible bedding @ 65°						
		100	0	5									
				5.55	8.75		CORE LOSS						
				6	6.00		SANDSTONE medium with coarse grained, pale orange brown becoming pale grey	SW			6.51: B, 20°, Un, Ro, Sn, limonite		
		85	50	7							6.95: B, 11°, Un, Ro, Sn, limonite 7.08: B, 11°, Un, Ro, Sn, limonite		
				7.61	6.69		CONGLOMERATE medium grained, pale grey with grey grey green and white				7.61: CZ, 3°, Un, Ro, Ct, 120 mm, rock fragments		
				7.95	6.05		SANDSTONE medium grained, pale grey						
		100	65	8.20	6.30		band of conglomerate 70 mm						
				8.30	6.00		band of conglomerate 55 mm						
							band of conglomerate 120 mm						
				9									
		100	100	9.75	4.55		becoming coarser						
				10	10.00								

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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 13:59 8.2.007



REPORT OF BOREHOLE: CRR 213

SHEET: 3 OF 5

CLIENT: Aecom Australia Pty Ltd
 PROJECT: Cross River Rail
 LOCATION: Yeronga Park and Ride
 JOB NO: 107632034

COORDS: 501820.37 m E 6956414.49 m N MGA94 56
 SURFACE RL: 14.30 m DATUM: AHD
 INCLINATION: -90°
 HOLE DEPTH: 40.00 m

DRILL RIG: FOX B40
 CONTRACTOR: Schneider Drilling Pty Ltd
 LOGGED: RCD DATE: 25/8/10
 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)
			100	10	4.30	[Yellow dotted pattern]	SANDSTONE medium grained, pale grey becoming medium grained	FR	[Grey vertical bar]	11.07: B, 20°, Un, Ro, Cn	[Vertical lines]
			100	10.40							
			100	3.90							
				11							
			100	13							
				14							
				15	14.95	[Brown dotted pattern]	CONGLOMERATE medium to coarse grained, pale grey grey and white				
			100	100	-0.65						
				16	16.28						
			100	100	-1.98						
				17							
				18	17.47	[Yellow dotted pattern]	SANDSTONE fine grained, pale grey, occasional band of black siltstone				
			100	100	-3.17						
				19							
				20	19.60		grain size increasing				
					-5.30						

NMLC

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GAP gINT FN. F02b
RL3



REPORT OF BOREHOLE: CRR 213

SHEET: 4 OF 5

CLIENT: Aecom Australia Pty Ltd
 PROJECT: Cross River Rail
 LOCATION: Yeronga Park and Ride
 JOB NO: 107632034

COORDS: 501820.37 m E 6956414.49 m N MGA94 56
 SURFACE RL: 14.30 m DATUM: AHD
 INCLINATION: -90°
 HOLE DEPTH: 40.00 m

DRILL RIG: FOX B40
 CONTRACTOR: Schneider Drilling Pty Ltd
 LOGGED: RCD DATE: 25/8/10
 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)
			100	100	20		SANDSTONE fine grained, pale grey, occasional band of black siltstone	FR		20.43: B, 13°, Un, Ro, Cn	
					20.83		band of conglomerate and multiple shale bands 205 mm			20.61: DS, 3°, Un, Ro, Ct, 20 mm, clay & rock fragments.	
					-6.53						
			100	100	22						
					22.74		band of conglomerate 75 mm				
					-8.44						
					23.41		coarse grained				
					-9.11						
					24.30						
					24.47		SILTSTONE fine grained, dark grey				
					24.64		SANDSTONE fine to medium grained, pale grey				
					24.80						
					-10.50						
			100	100	25		CONGLOMERATE fine to medium grained, pale grey				
					25.10						
					25.25		SANDSTONE medium to coarse grained, pale grey, with some grains up to 20 mm and bands of dark grey siltstone				
					25.40						
					-11.10						
					25.68		CONGLOMERATE medium grained, pale grey with grey white and green				
					25.78						
					-11.48						
					26.14		SANDSTONE medium grained, pale grey			25.76: C, 6°, Pl, Ro, Cn	
					-11.84		CONGLOMERATE coarse grained, pale grey				
							SANDSTONE medium grained, pale grey				
							SILTSTONE fine grained, grey, bedding @ 10°				
							SANDSTONE fine to medium grained, pale grey				
					27						
					28						
			100	100	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 13:59 8.2.007



REPORT OF BOREHOLE: CRR 213

SHEET: 5 OF 5

CLIENT: Aecom Australia Pty Ltd
 PROJECT: Cross River Rail
 LOCATION: Yeronga Park and Ride
 JOB NO: 107632034

COORDS: 501820.37 m E 6956414.49 m N MGA94 56
 SURFACE RL: 14.30 m DATUM: AHD
 INCLINATION: -90°
 HOLE DEPTH: 40.00 m

DRILL RIG: FOX B40
 CONTRACTOR: Schneider Drilling Pty Ltd
 LOGGED: RCD DATE: 25/8/10
 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)
				30			SANDSTONE fine to medium grained, pale grey	FR			
			100	31	31.60		dark grey siltstone bands, grain size increasing			31.63: B, 3°, Un, Ro, Cn	
				32	17.30						
				33	33.00		coarse grained			33.70: B, 12°, Un, Ro, Cn	
				34	18.70		fine to medium grained occasional coarse grain			33.94: B, 20°, Pl, Ro, Cn	
			100	35	33.25					34.21: B, 3°, Un, Ro, Cn	
				36	18.95						
				37	37.05		SILTSTONE fine grained, dark grey				
				38	22.22		conglomerate band				
				39	22.32		sandstone bands				
			100	40	37.46		SANDSTONE fine to medium grained, pale grey, occasional coarse grains			38.05: C, 22°, Un, Ro, Cn	
				41	23.16		SILTSTONE fine grained, dark grey and pale grey bands, bedding @ 10°				
				42	38.05						
				43	23.75						
			100	44	40.00		END OF BOREHOLE @ 40.00 m				

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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 13:59 8.2.007

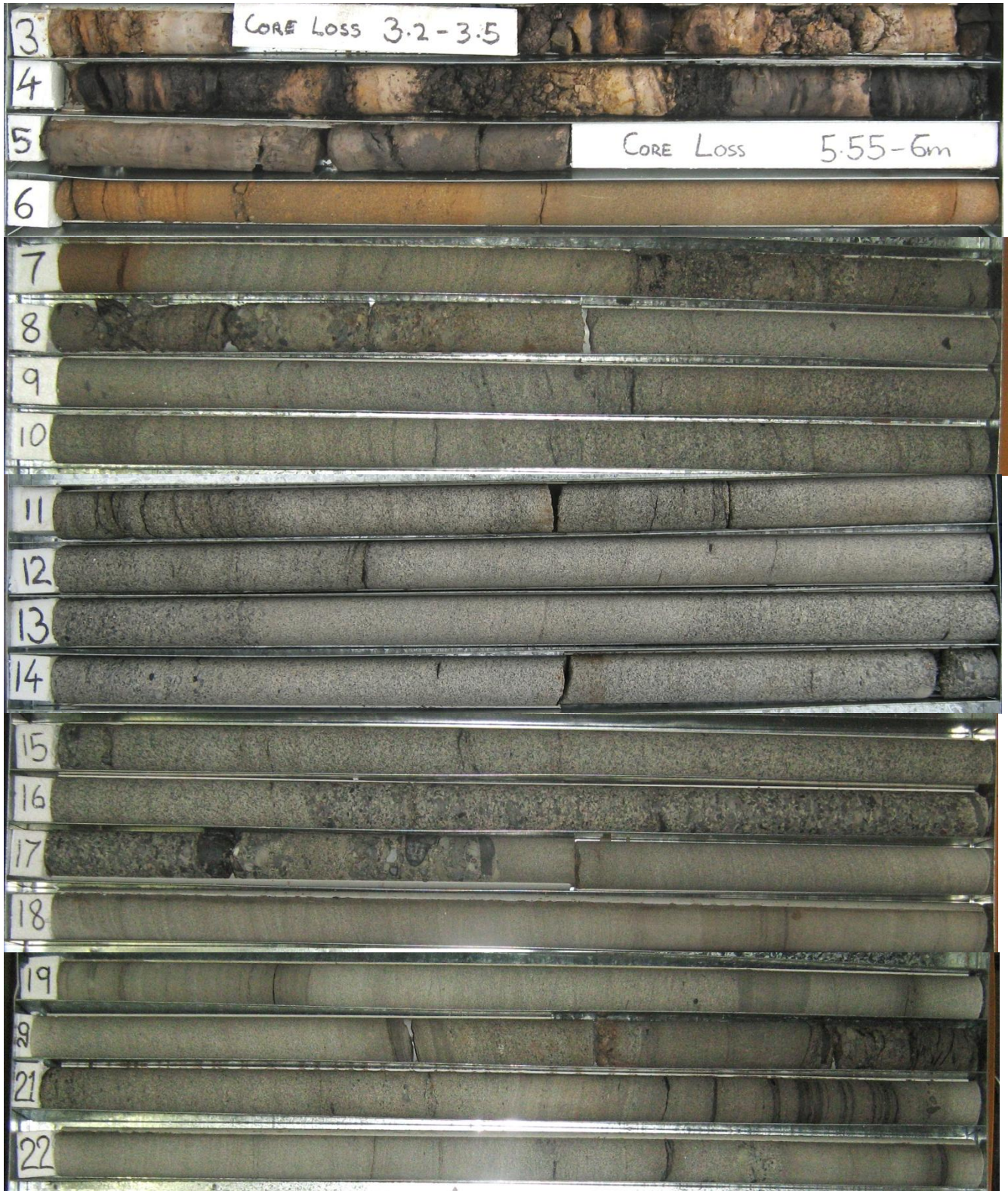


REPORT OF CORE PHOTOGRAPHS: CRR 213

CLIENT: Aecom Australia Pty Ltd
PROJECT: Cross River Rail
LOCATION: Yeronga Park and Ride
JOB NO: 107632034

COORDS: 0501820 m E 6956414 m N
SURFACE RL: 14.30 DATUM: AHD
INCLINATION: -90°
HOLE DEPTH: 40.0 m

DEPTH RANGE: 3.2-23.0 m
DRILL RIG: Fox B40
DRILLER: Schneider Drilling Pty Ltd
LOGGED: RCD DATE: 25/08/10
CHECKED: NK DATE: 4/10/10



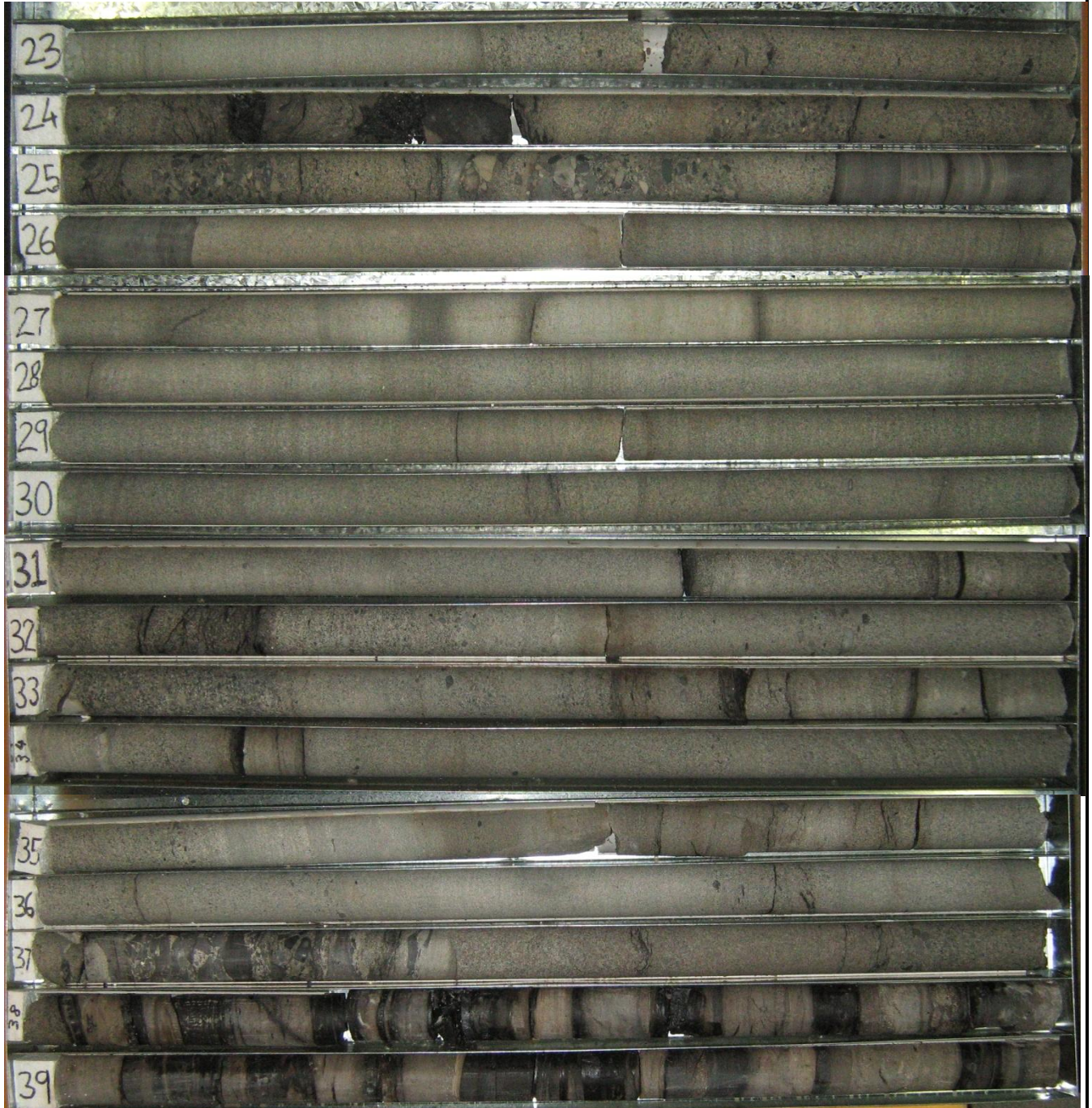


REPORT OF CORE PHOTOGRAPHS: CRR 213

CLIENT: Aecom Australia Pty Ltd
PROJECT: Cross River Rail
LOCATION: Yeronga Park and Ride
JOB NO: 107632034

COORDS: 0501820 m E 6956414 m N
SURFACE RL: 14.30 DATUM: AHD
INCLINATION: -90°
HOLE DEPTH: 40.0 m

DEPTH RANGE: 23.0-40.0 m
DRILL RIG: Fox B40
DRILLER: Schneider Drilling Pty Ltd
LOGGED: RCD DATE: 25/08/10
CHECKED: NK DATE: 4/10/10





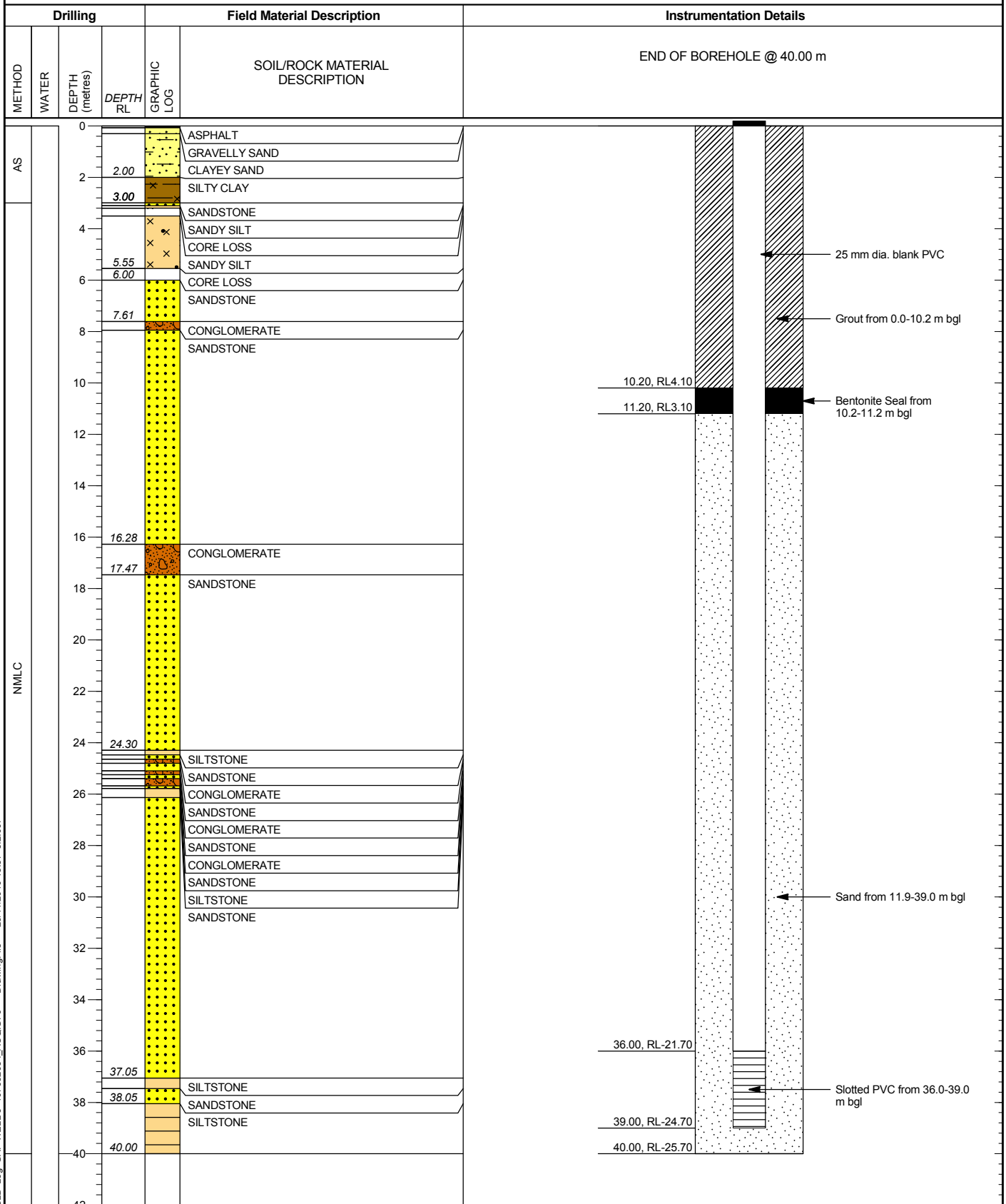
REPORT OF STANDPIPE INSTALLATION: CRR 213

SHEET: 1 OF 1

CLIENT: Aecom Australia Pty Ltd
 PROJECT: Cross River Rail
 LOCATION: Yeronga Park and Ride
 JOB NO: 107632034

COORDS: 501820.37 m E 6956414.49 m N MGA94 56
 SURFACE RL: 14.30 m DATUM: AHD
 INCLINATION: -90°
 HOLE DEPTH: 40.00 m


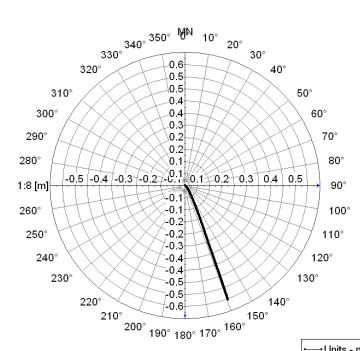
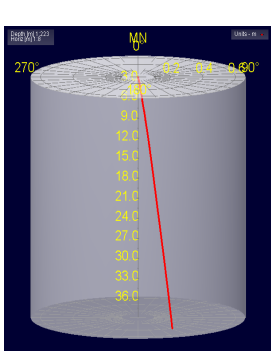
DRILL RIG: FOX B40
 CONTRACTOR: Schneider Drilling Pty Ltd
 LOGGED: RCD DATE: 25/8/10
 CHECKED: NK DATE: 18/10/10











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.

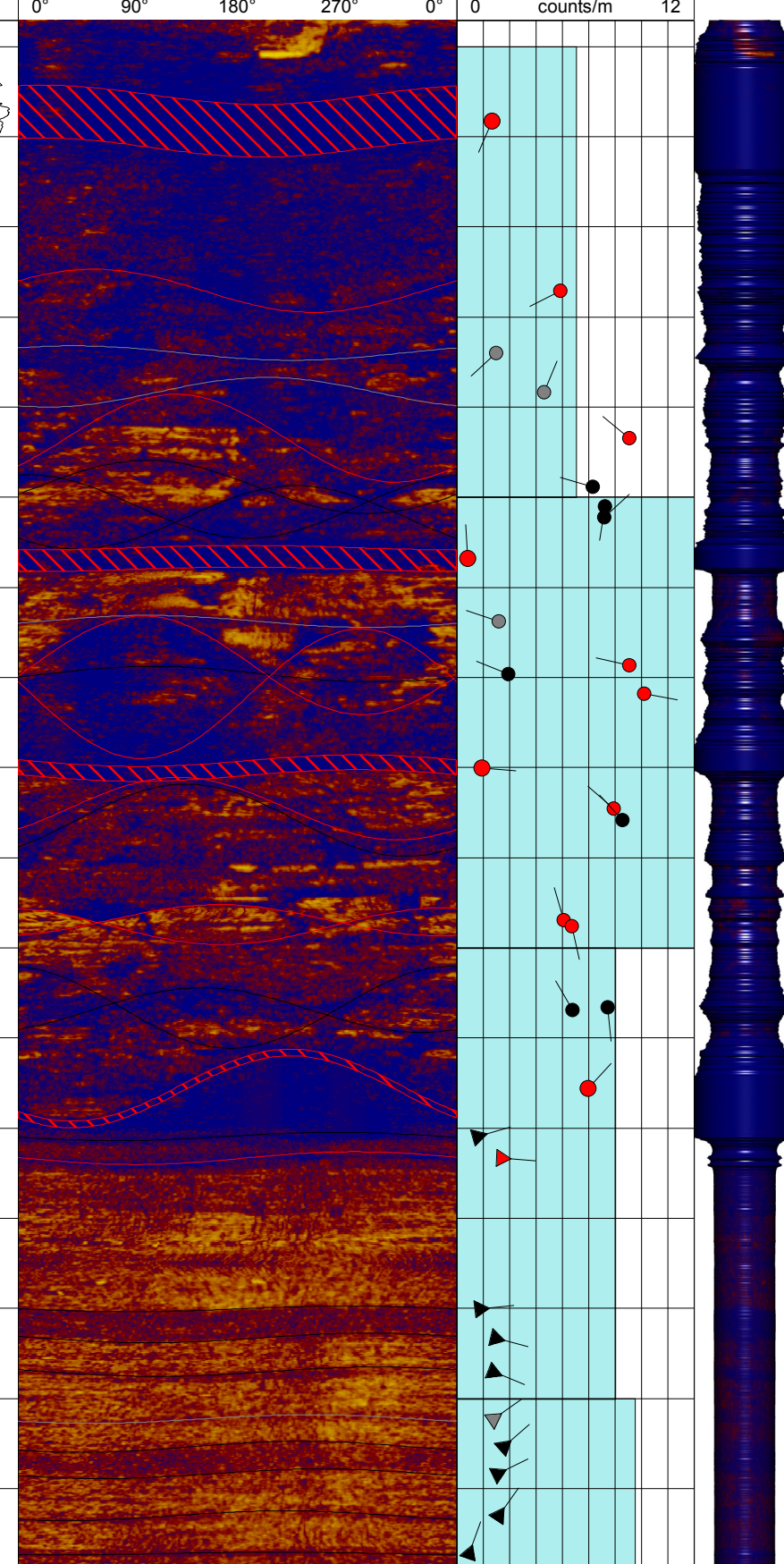
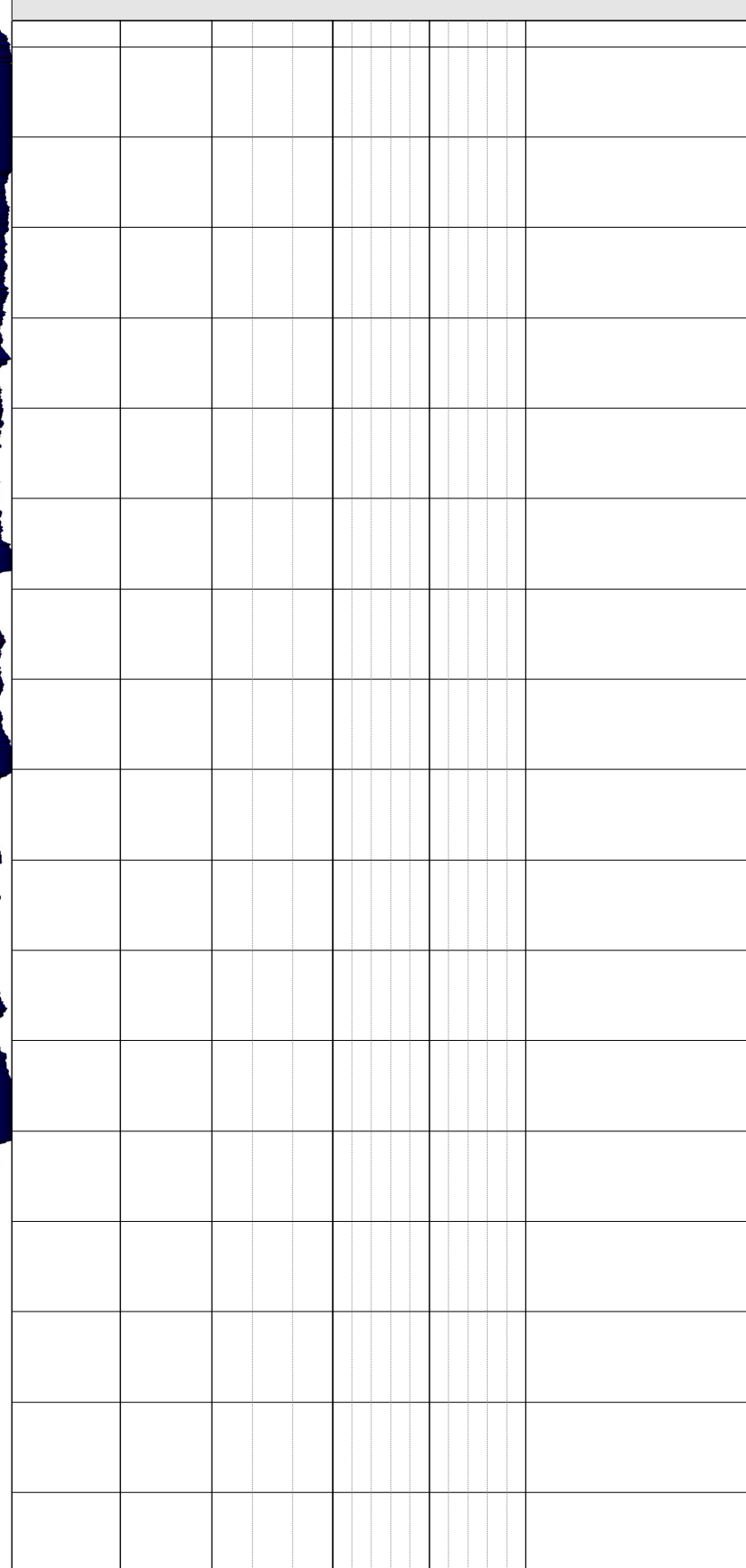
GAP gINT FN. F17 RL1

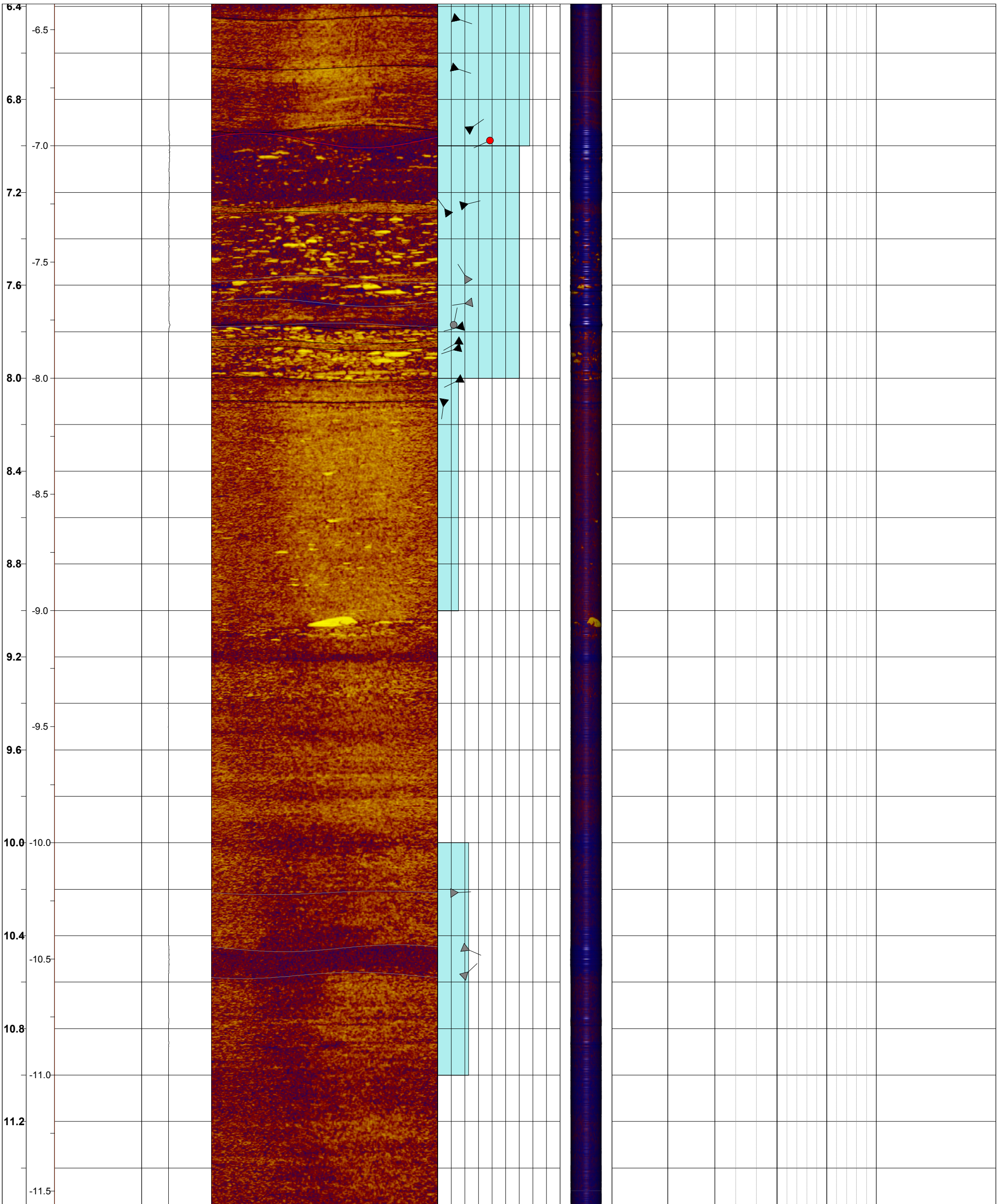
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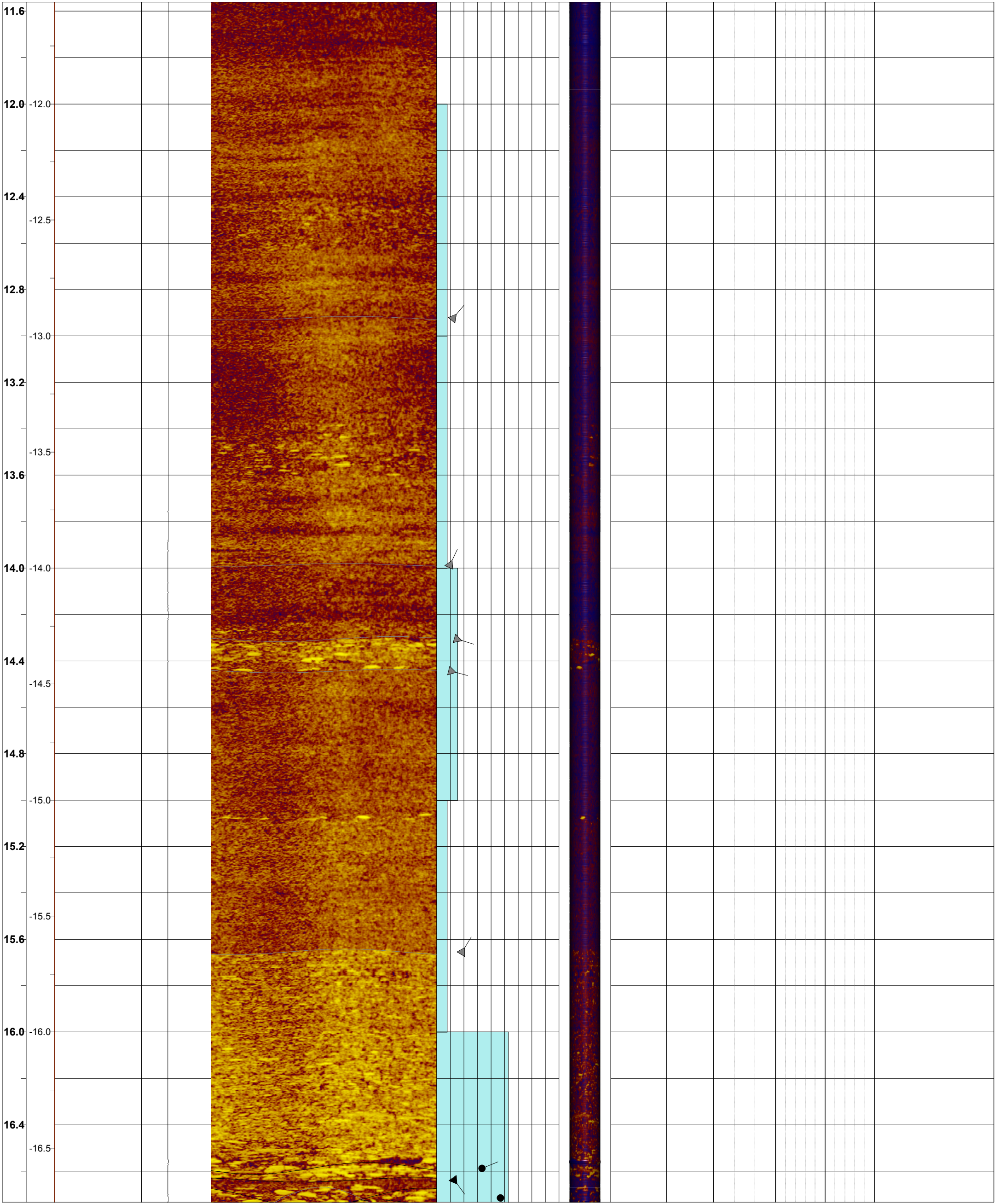
	GEOPHYSICAL RECORD OF BOREHOLE: CRR 213		DEVIATION DATA		
	PROJECT	Cross River Rail	PROJECT #	107632034	
	CLIENT	Department of Transport and Main Roads	DATE	12/10/2010	
LOCATION- Yeronga Park & Ride EASTING- 501830.00 m E NORTHING- 6956424.00 m N ELEVATION- DRILLED DEPTH- 40.00 m PLUNGE- -90° CASING-	LOGGED BY- RCD LOGGED DATE- 25/8/10 LOGGING DATUM- LOGGED DEPTH- 37.83 m DRAWN BY- RCD REVIEWED BY- TR FILE NAME- CRR213-U.HED.WCL	<h2>Lithology</h2>			 

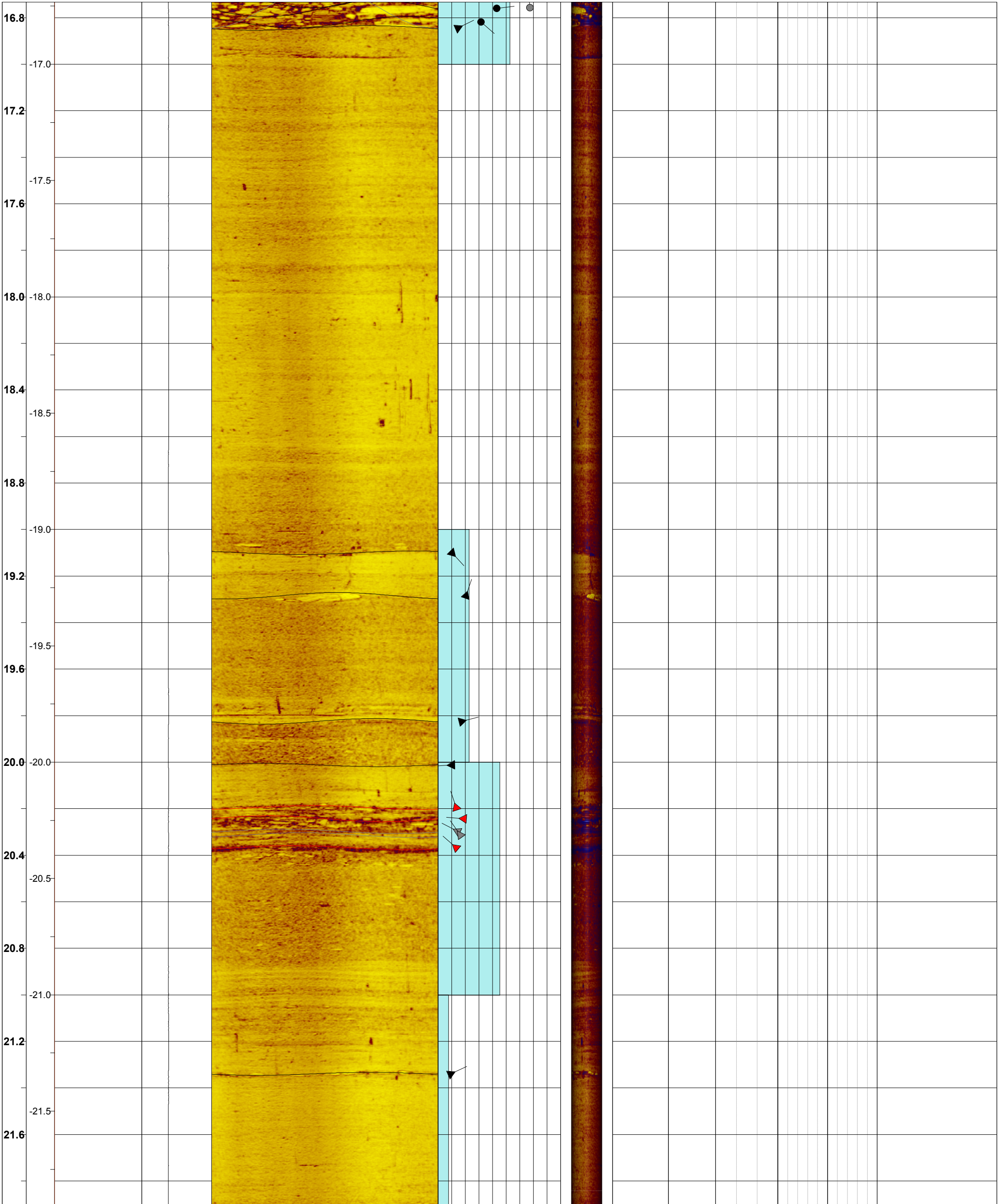
Interpreted Structures

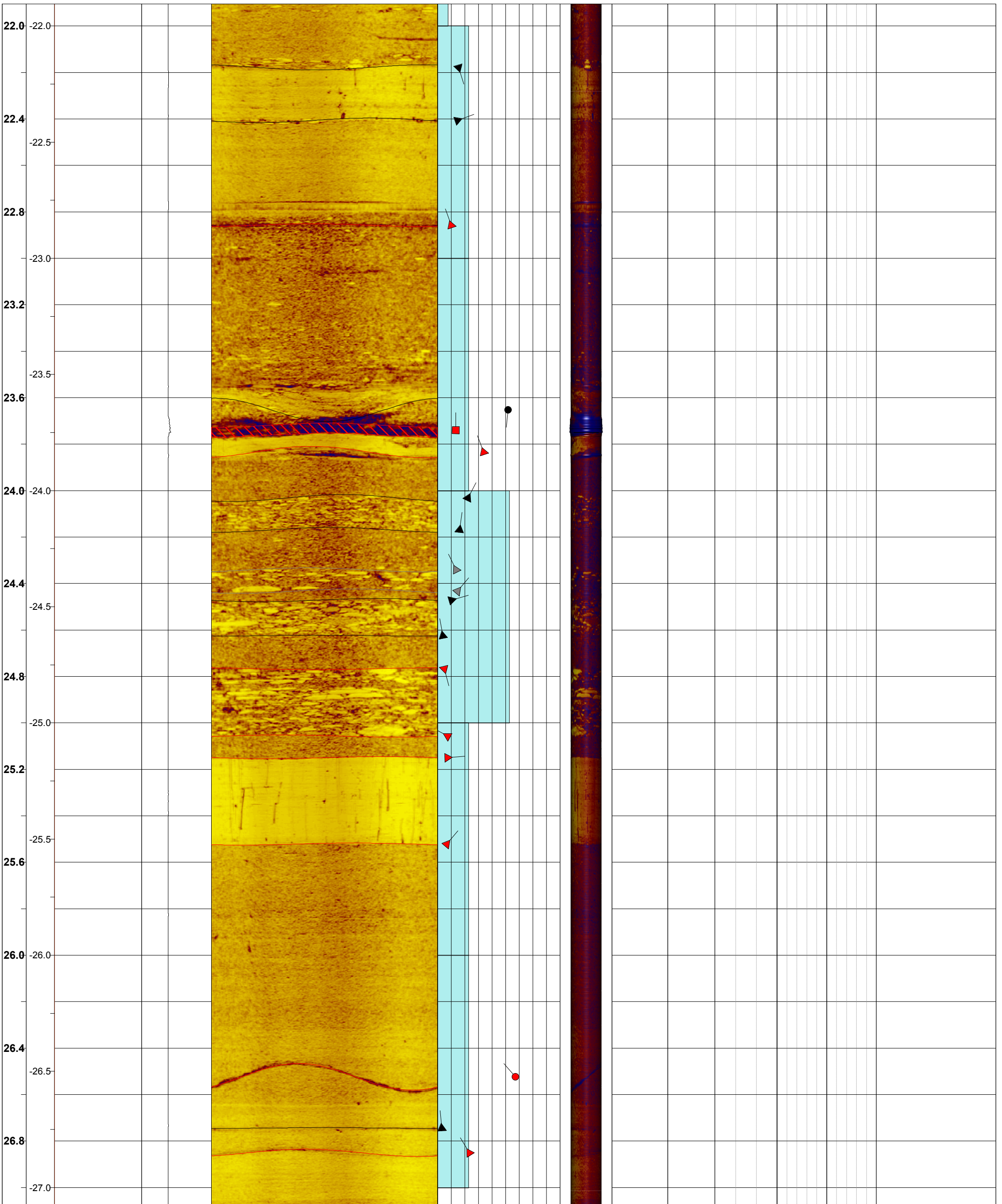
 Joint - High Confidence	 Joint - Low Confidence	 Joint - Medium Confidence	 Bedding - Medium Confidence	 Bedding - High Confidence
 Bedding - Low Confidence	 Crushed Seam - High Confidence	 Decomposed Seam - High Confidence		

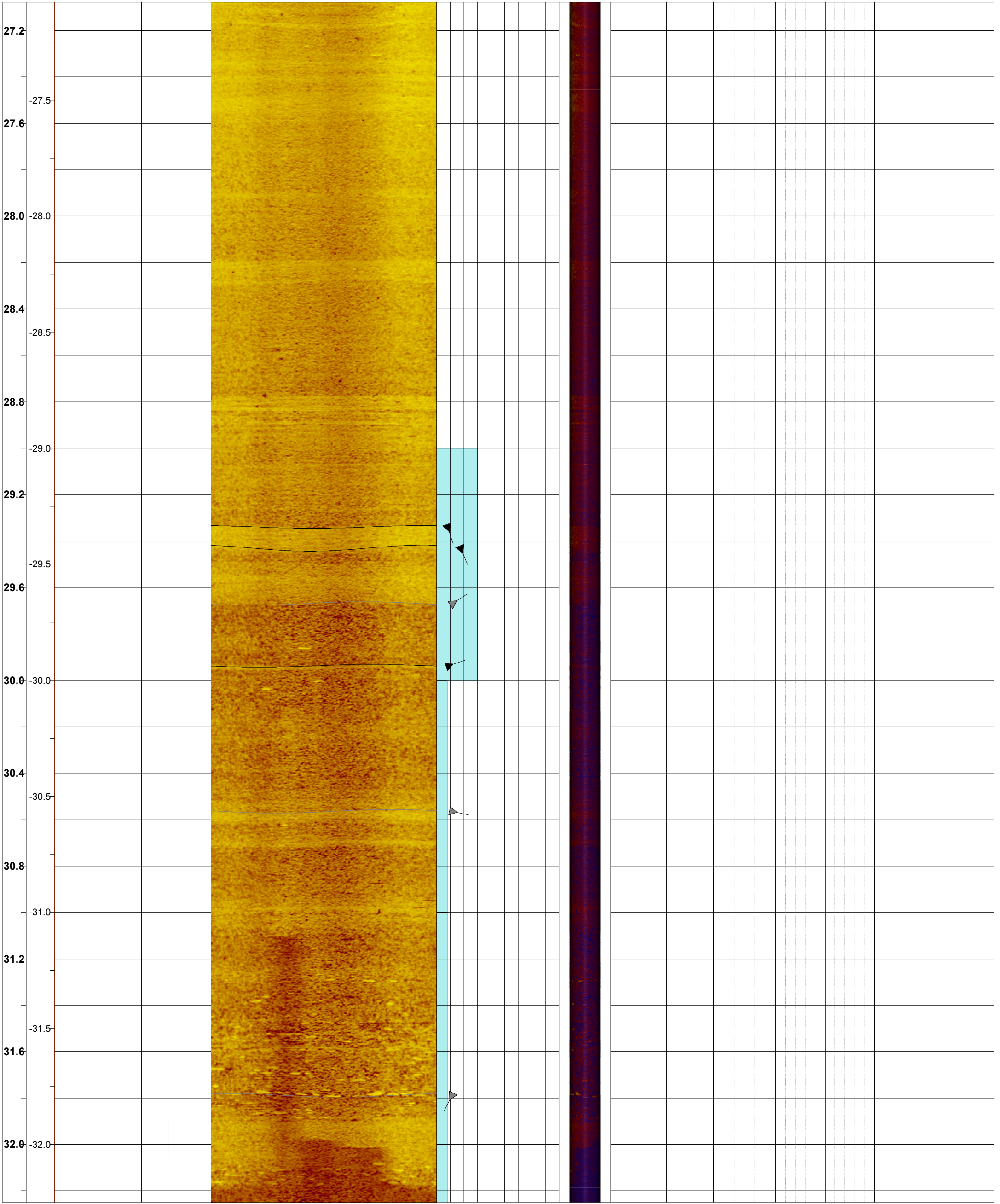
Depth 1:15	RL	TELEVIEWER DATA					CORE DATA					
		NATURAL GAMMA 0 cps 300	ATV - Caliper 0 mm 200	Amplitude 0° 90° 180° 270° 0°	Structure Orientations 0 90	3D log 235°	Core Photo	Lithology	Logged FF 0 30	RQD 0 100	TCR 0 100	Defect Description
		Interpreted Structures					ATV FF					
		0° 90° 180° 270° 0°					0 counts/m 12					
(Refer to detailed core log, provided separately)												
3.2												
3.6												
4.0												
4.4												
4.8												
5.2												
5.6												
6.0												

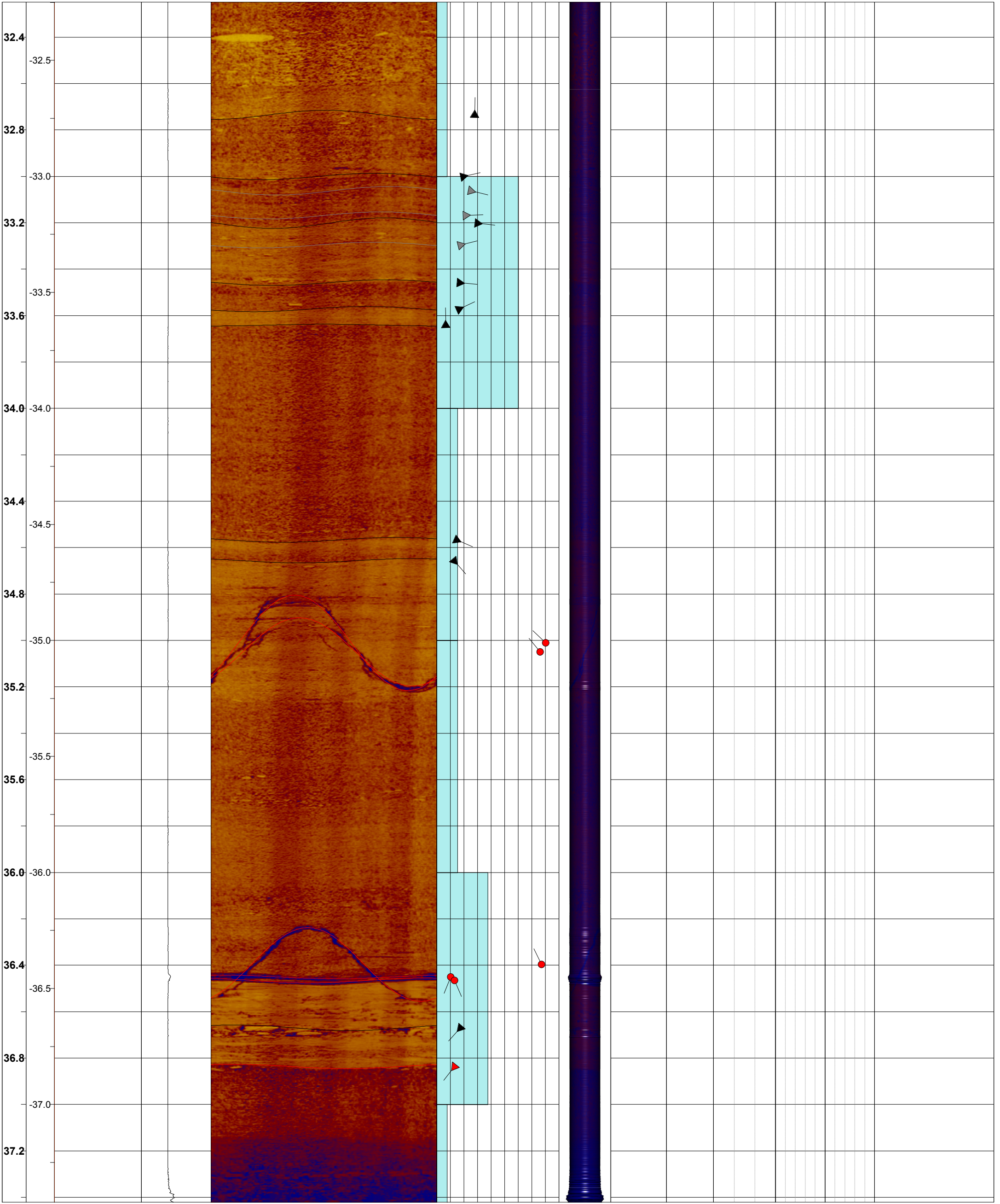


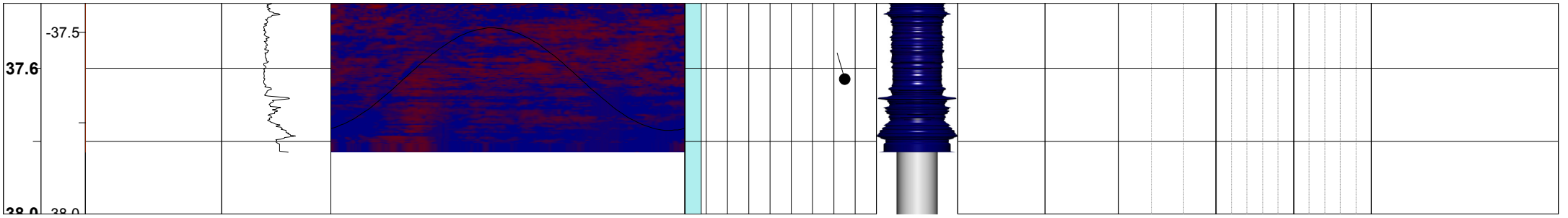




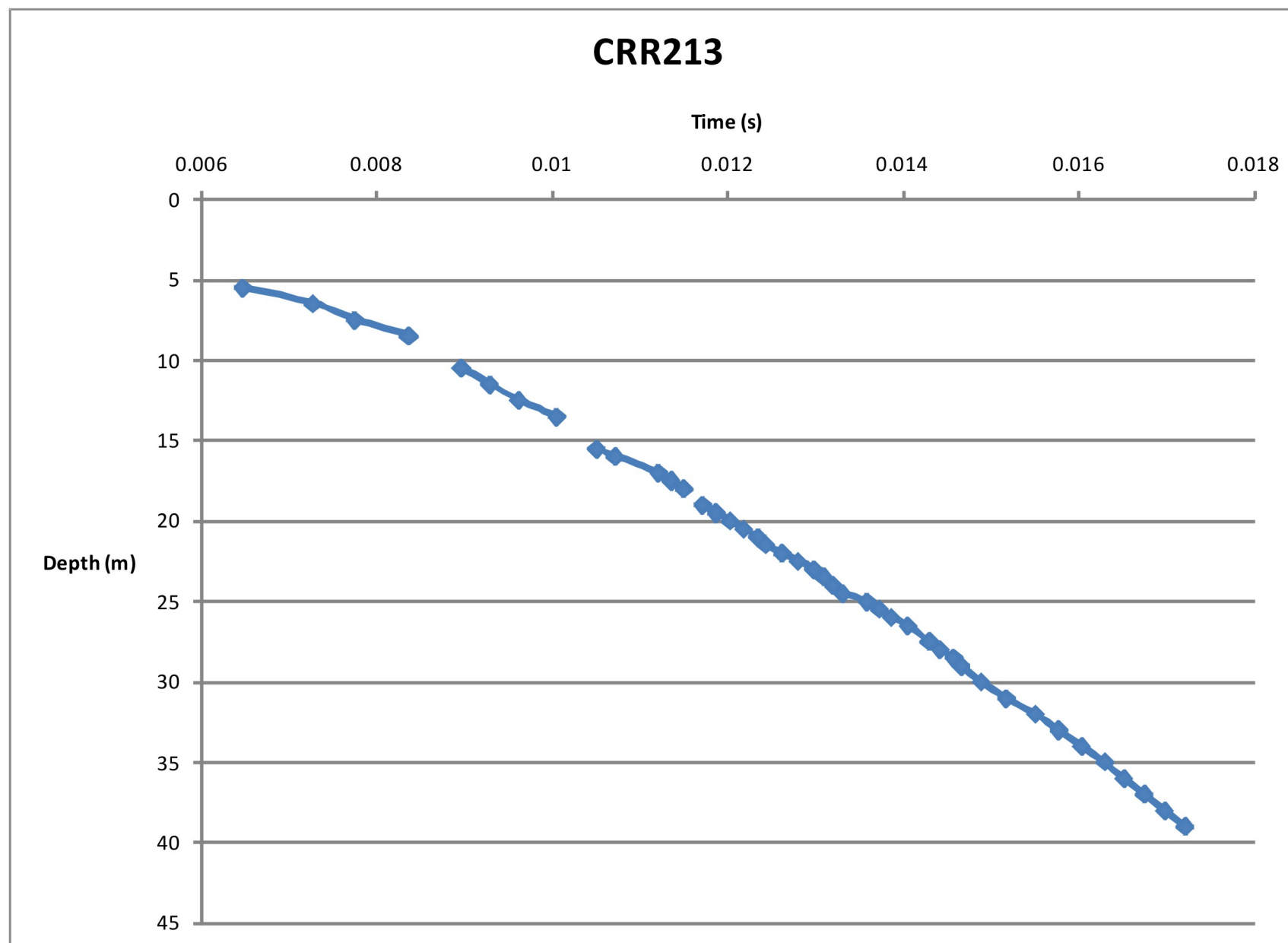








GA-BQ-291 RL1
Issued 31/03/10




Geophone Depth (m)		Interval velocity (P wave m/s)
from	to	
5.5	6.5	1257
6.5	7.5	2086
7.5	8.5	1629
8.5	9.5	*
9.5	10.5	*
10.5	11.5	3066
11.5	12.5	3077
12.5	13.5	2303
13.5	14.5	*
14.5	15.5	*
15.5	16	2392
16	17	2044
17	17.5	3424
17.5	18	3426
18	18.5	*
18.5	19	*
19	19.5	3169
19.5	20	3170
20	20.5	3171
20.5	21	3171
21	21.5	5316
21.5	22	2749
22	22.5	2749
22.5	23	2750
23	23.5	4367
23.5	24	4675
24	24.5	4675
24.5	25	1822
25	25.5	3557
25.5	26	3557
26	26.5	2666
26.5	27.5	4100
27.5	28	4101
28	28.5	3266
28.5	29	5697
29	30	4463
30	31	3532
31	32	2963
32	33	3812
33	34	3792
34	35	3793
35	36	4520
36	37	4307
37	38	4308
38	39	4308

Note:

* - 1st arrival not clear due to noise

Calculations done without accounting for borehole deviation

	CLIENT Department of Transport and Main Roads		PROJECT Cross River Rail	
	DRAWN GDK	DATE OCT 4	TITLE CRR213 VSP	
	CHECKED TR	DATE		
	SCALE NTS	PROJECT No 000-107632034	FIGURE No	REV No A3