ASHTON LONGWALL 7B – END OF PANEL SUMMARY REPORT

1 INTRODUCTION

This report has been prepared in conjunction with the SCT Operations Pty Ltd (SCT) Longwall 7B (short) – End of Panel Subsidence Report and the Aquaterra "Ashton Underground Mine LW7B End of Panel Goundwater Report".
The combination of these reports were prepared to satisfy the requirements of the *Subsidence Management Plan Approval, Ashton Coal Mine Extraction "Longwalls 7B Only", Clause 17* and the *Ashton Coal Project (ACP) Development Consent No. 309-11-2001.*

End of Panel Report

SMP Clause 17: Within 4 months of the completion of each longwall panel, an end of panel report must be submitted to the Director-General. The end of panel report must:

a) include a summary of the subsidence and environmental monitoring results for the applicable longwall panel;
b) include an analysis of these monitoring results against the relevant;
   - impact assessment criteria;
   - monitoring results from previous panels; and
   - predictions in the SMP;
c) identify any trends in the monitoring results over the life of the activity; and
d) describe what actions were taken to ensure adequate management of any potential subsidence impacts due to longwall mining.

Development Consent (DC) (MOD7) commitments Clause 3.3: Subsidence will be monitored and managed in accordance with approved Extraction Plans (or equivalent), the development of which will be informed by:

- Subsidence monitoring over LW1-4 in the lower seams, as each seam is mined, to allow more accurate predictions of subsidence parameters above LW5-8.
- An End of Panel Report for each longwall panel with a focus on subsidence.
- Consultation with the owner(s)/operator(s) of the Ravensworth Underground Mine on a seam by seam basis.

2 BACKGROUND

Longwall 7B began extraction on the 4 October 2011 and completed longwall mining on 17 January 2012. Longwall 7B was 750m long, 187m wide and was mined without any unexpected impact to the surface environment or infrastructure above it.
The effects of subsidence were monitored in accordance with the document "Subsidence Management Plan - Longwall 6B-8"; this included both regular survey monitoring and visual inspection of both land features and infrastructure.

3 MINE SUBSIDENCE

The Pikes Gully Seam section has been mined along the length of Longwalls 1 to 7B 'short' at Ashton Underground Mine. Mining height is nominally in the 2.5m to 2.6m range. The seam dips to the southwest at a grade of up to 1 in 10. Overburden ranges in thickness from 157m at the start of the longwall panel to 129m at the take off end. The final extraction void is nominally 198m. This includes the 5.5m width of development drivage either side of the longwall block. Maingate chain pillars are at a centre to centre width and length of 40m and 150m respectively. Tailgate chain pillars are at a centre to centre width and length of 35m and 150m respectively.

Ashton's longwall mining operation commenced in February 2007. Since then 9 panels have been completed (inclusive of Longwall 8 which succeeds LW7B). The progress of longwall extraction is shown in **Figure 1**.

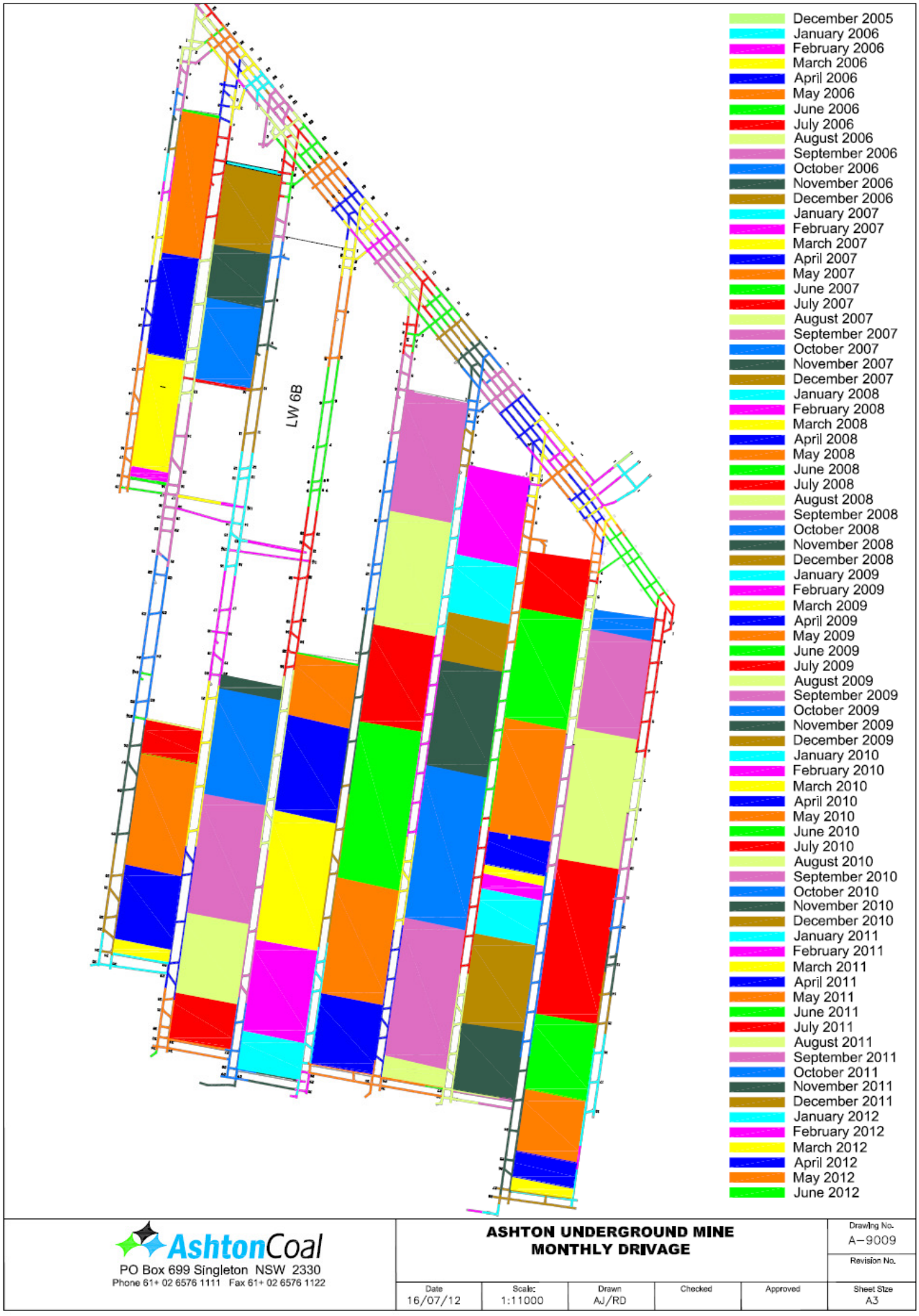

Figure 1: Progression of Longwall Extraction

4 MONITORING

Ashton Coal has monitored the subsidence movement on the surface during the extraction of Longwall's 1-7B using longitudinal subsidence lines. These are located over the start and finish lines of each panel, a main cross line extending over all seven southern panels and a dedicated cross line extending over Longwall 7B and 8. All panels have monitoring data for each start and end lines and various cross lines relevant to the panel, surface features or strata features. Several other subsidence lines have been used to monitor the slope leading down to Glennies Creek, closure across the New England Highway, and subsidence across a dyke. These locations can be seen in **Figure 2.**

The following table (**Table 1)** outlines the maximum subsidence parameters predicted and recorded during regular survey of subsidence lines as the longwall passed each location.

Subsidence monitoring over Longwall 7B consisted of regular survey of centreline 3 (CL3), centreline 4 (CL4) and cross line 13 (XL13). The frequency and results of this have been maintained per monitoring document *Ashton Mine Subsidence Monitoring Programme Longwall 6B-8.* This information was supplied to the Principal Subsidence Engineer.

Visual and survey monitoring of existing single pole 33kV power structures over Longwall 7B were undertaken regularly. The 33kV poles have been referenced as PP30 to PP38 (numbers referenced form poles north to south). The 33kV powerline was surveyed prior to undermining and visually inspected during/post undermining to ensure adequate clearance and safety. Signage has been erected to indicate maximum load heights under the 33kV powerline prior to commencement of LW7B. The powerline clearance has been updated in accordance with power line survey data. **Appendix 1**, **Figure 4 and 5** show the 33kV powerline post undermining and rollers being fitted prior to LW7B start. **Figure 6** shows the signs of 33kV powerline clearance. Survey data from the 33kV power lines was recorded and supplied to the Principal Subsidence Engineer as per the *Ashton Mine Subsidence Monitoring Programme Longwall 6B-8.* The effects of subsidence on the 33kV structures can be seen in **Appendix 2**. Maximum subsidence measured on power poles (PP) 30 to 38 during Longwall 7B mining are as follows: 0.007m, 0.386m, 0.099m, 0.700m, 1.033m, 1.123m, 0.047m, 0.212m and 0.027m respectively.

Over Longwall 8, the existing 33kV power structures will continue to be monitored by survey methods. The results of this will be discussed further in the LW8 End of Panel Report.

During mining of LW7B, monthly survey was not required on Narama Dam due to extraction taking place outside the notification area. Narama Dam is a prescribed dam under the Dam Safety Act 1978 and is located a minimum of 1040m from the goaf edge of LW7B.

Table 1: Subsidence of Mined Longwall Panels - Predicted vs. Actual (SCT End of Panel Subsidence Report, 2012)

	Maximum Predicted EIS	Maximum Predicted SMP	Maximum Measured	
North End of LW1			**CL2**	**XL8**
Subsidence (mm)	1430	1800	1528	1500
Tilt (mm/m)	122	244	100	103
Horizontal Movement (mm)	-	>500	476	500
Tensile Strain (mm/m)	16	73	40	15
Compressive Strain (mm/m)	25	98	28	27
Remainder of LW1			**CL1**	**XL5**
Subsidence (mm)	1690	1700	1318	1436
Tilt (mm/m)	60	141	60	75
Horizontal Movement (mm)	-	300-500	480	503

Tensile Strain (mm/m)	8	42	49	17		
Compressive Strain (mm/m)	12	56	23	24		
	Maximum Predicted EIS	**Maximum Predicted SMP**	**Maximum Measured**			
Longwall 2			**CL1**	**CL2**	**XL5**	
Subsidence (mm)	1690	1600	1296	1513	1266	
Tilt (mm/m)	91	102	40	82	78	
Horizontal Movement (mm)	-	300-500	440	298	390	
Tensile Strain (mm/m)	12	30	17	16	11	
Compressive Strain (mm/m)	18	41	16	32	28	
Longwall 3			**CL1**	**CL2**	**XL5**	
Subsidence (mm)	1500	1600	1420	1354	1429	
Tilt (mm/m)	65	78	41	48	97	
Horizontal Movement (mm)	-	300-500	463	345	394	
Tensile Strain (mm/m)	9	23	10	17	22	
Compressive Strain (mm/m)	13	31	7	18	24	
Longwall 4			**CL1**	**CL2**	**XL5**	**XL10**
Subsidence (mm)	1430	1600	1397	1194	1546	1263
Tilt (mm/m)	46	78	36	40	53	33
Horizontal Movement (mm)	-	300-500	230	560	360	258[1]
Tensile Strain (mm/m)	6	23	10	18	9	6
Compressive Strain (mm/m)	9	31	9	67	9	10
Longwall 5			**CL1**	**CL2**	**XL5**	
Subsidence (mm)	1430	1600	1266	1326	1376	
Tilt (mm/m)	29	78	23	29	35	
Horizontal Movement (mm)	-	300-500	399	339[2]	360	
Tensile Strain (mm/m)	4	23	21	6	5	
Compressive Strain (mm/m)	5	31	9	8	17	
Longwall 6A			**CL1**	**CL2**	**XL5**	
Subsidence (mm)	1430	1600	1415	1546	1263	
Tilt (mm/m)	29	57	24	53	33	
Horizontal Movement (mm)	-	300-500	338	360	258	
Tensile Strain (mm/m)	4	17	7.6	9	6	
Compressive Strain (mm/m)	5	23	9.6	9	10	
Longwall 7A			**CL1**	**CL2**	**XL5**	
Subsidence (mm)	1430	1600	1415	>860	1391	
Tilt (mm/m)	29	57	24	13	23	
Horizontal Movement (mm)	-	300-500	338	118	365	
Tensile Strain (mm/m)	4	17	7.6	2.4	10	
Compressive Strain (mm/m)	5	23	9.6	>3.8	12.1	

	Maximum Predicted EIS	Maximum Predicted SMP	Maximum Measured		
Longwall 7B			**CL3**	**CL4**	**XL13**
Subsidence (mm)	1430	1600	1375	1237	1500[3]
Tilt (mm/m)	29	57	30	20	30[3]
Horizontal Movement (mm)	-	300-500	321	209	395
Tensile Strain (mm/m)	4	17	10	3.4	1.6
Compressive Strain (mm/m)	5	23	6.9	4.3	1.8

[1] XL10 was installed after some horizontal movement associated with the previous longwall may have occurred so not all horizontal movements were measured.
[2] Maximum measured at end line so actual maximum expected to be greater.
[3] Estimated from the shape of the profile because subsidence line did not extend across the area of greatest subsidence.

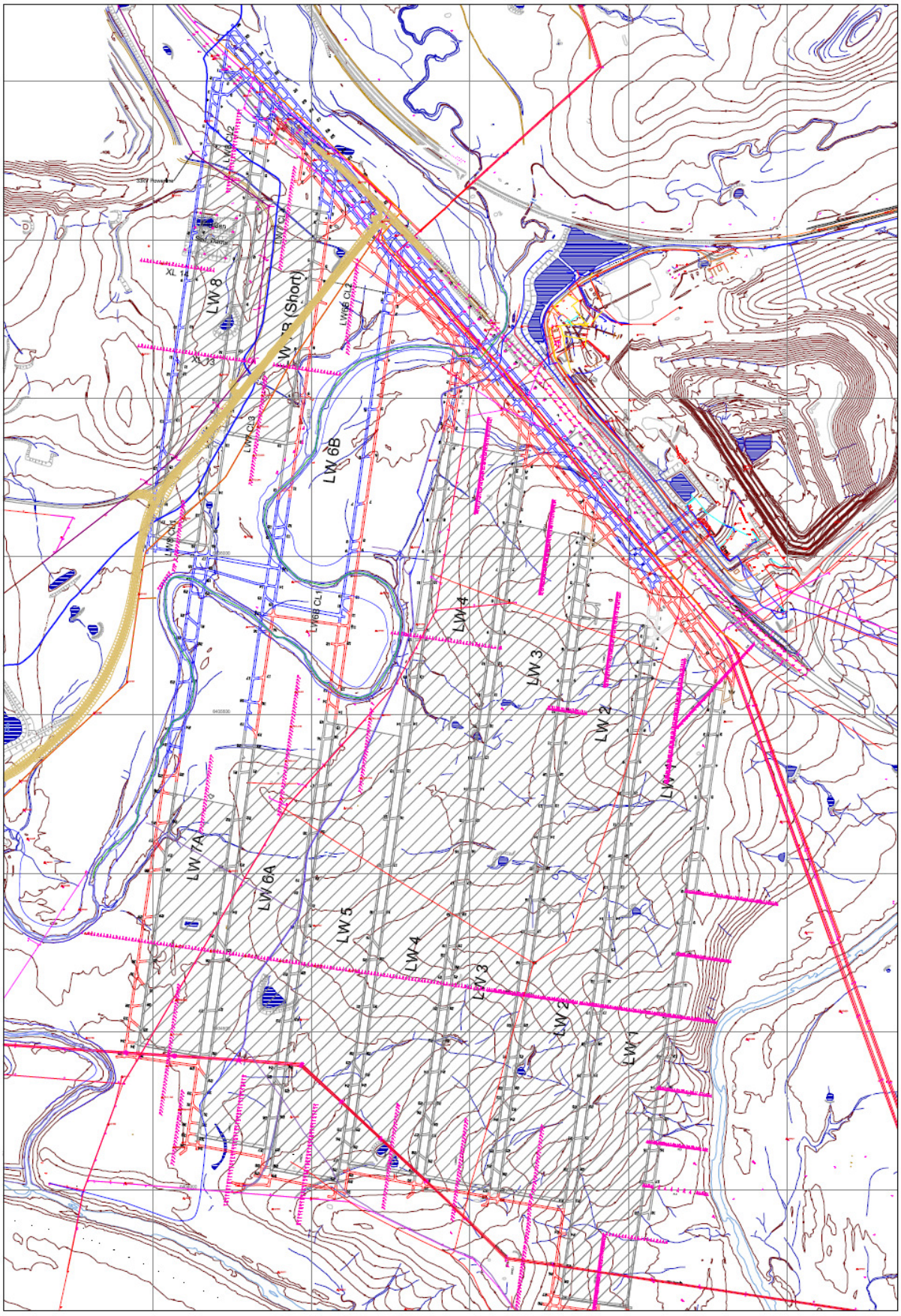

Figure 2: Plan location of Monitoring Cross Lines. Also shown is the 33kV power line and monitoring points (poles 30 to 38).

5 ABORIGINAL HERITAGE

Aboriginal Conservation Heritage Management Plan (ACHMP) procedures were followed during mining, prior to and during surface remediation. Prior to subsidence occurring in LW7B areas predicted to potentially require subsidence remediation were identified. Archaeological investigations, and where required salvage was undertaken in these zones in accordance with AHIP 1130976 and the ACHMP. It is noted that due to the active construction of the Lemington Road realignment by Xstrata at the time of this work some areas of LW7B were not able to be accessed by ACOL. For these areas ACOL actively consulted Xstrata in relation to the archaeological works that they had undertaken in the area and incorporated this information into the ACOL investigations.

While preservation is the ongoing aim of ACOL, due to the nature of subsidence impacts and the potential for emergency remediation works being required due to safety related issues Aboriginal Heritage Impact Permits (AHIP) have been applied for and received. These permits cover the surface area above all longwall panels (Longwalls 1 to 8) at Ashton.

A permit to disturb system operates onsite to take into account a range of issues, including Archaeology, flora and fauna, survey location of boreholes and other surface infrastructure (either buried or otherwise). This has proved successful as it requires systematic investigation of a range of potential issues prior to land disturbance activities. Prior to remediation occurring operators undertaking the remediation are required to undergo an induction reassessment in the ACHMP and shown the locations of sites within the work area prior to commencing work. This level of education and communication proved invaluable in the non disturbance of any archaeological site.

6 SUBSIDENCE IMPACTS

Surface subsidence cracks have developed along each gate edge of the Longwall panel. These generally run parallel to the gate road within the longwall block. Cracks are particularly evident on the up-hill side of each panel. Note: Photos of subsidence impacts are documented in **Appendix 1: Photos** (Figures 4-10).

Remediation of cracking over Longwall 7B has been completed. Most of cracking which has been identified is on the Macquarie Generation access road. Due to the limited width of cracking it poses minimal risk to injury of personnel, equipment or wildlife. In addition, the cracking which exists on the Macquarie Generation access road is face cracking. It opens up during undermining and in most cases closes again as the longwall continues to retreat. No subsidence cracking has been identified after grading of Macquarie Generation access road. Longwall 7B undermined areas of alluvium and heavy grass growth. These two factors resulted in limited visible cracking (similar to that experienced in Longwall 6A and 7A mining). Brunkers Lane and the Macquarie Generation access road was undermined by Longwall 7B. Brunkers Lane at the time of undermining was in the process of being upgraded by Ravensworth North to become Lemington Road. The roadworks being undertaken continually involved drainage and other earthworks thus restricted access for both survey and visual monitoring.

Previous remediation works undertaken on subsidence cracks at Ashton through the Voluntary Conservation Area above Longwall 1 were rehabilitated using a small excavator and skid steer loader. Cracked areas in open fields were remediated using a D6 dozer with ripping tines. Once the area was ripped, the ground was flattened using the blade. During remediation of cracking above Longwall 6A, the bladed off ground was compacted using a pad-foot roller and harrowed to encourage grass regrowth. The results of this extra work was beneficial for grass re-growth, ease of travelling across the paddock/worked area and due to the ground being flat/compact identifying secondary cracking was made significantly easier. Longwall 7A remediation involved filling of cracks with loam by hand and a small loader. This method required some secondary remediation due to the settling of the loam into the crack.

The extent of subsidence remediation at the goaf edge for all longwall's is outlined in **Figure 3.** A specific, defined example of cracking on/along the Macquarie Generation access road which developed over Longwall 7B is shown in **Figure 7** Remediation of the road using a motor grader is shown in **Figure 8**. During the Longwall 7B extraction period no road works on ACOL owned land occurred for subsidence remediation as the road was not undermined.

Initial caving over the start of Longwall 7B was typical of the caving behaviour observed elsewhere at ACOL and consistent with predicted subsidence behaviour. No crack was observed over the LW7B start line however a shallow depression formed. This resulted in ponding and will be discussed further below.

All previously reported areas of ponding remain relatively unchanged across the ACOL lease. A new area of ponding exists at the LW7B start area. This shallow area fills during rainfall however dries quickly during fine weather. **Figure 9** shows the start line ponding whilst holding a large amount of water with **Figure 10** showing the site following fine weather. No other new areas of ponding have been created by LW7B mining. All areas of ponding currently pose no safety or environmental issues however will need to be pumped out or have natural drains re-established to prevent continual filling and holding. This is planned as future remediation. Works were undertaken independent of, but during the Longwall 8 mining period, to repair a culvert under the alternate access road adjacent to 132kV pole set 9. This was due to water accumulating around the pole footings and the ground profile no longer allowing water to travel under the road towards Dam 11. **Figure 11** shows the works undertaken to allow water to travel through the existing culvert and towards Dam 11.

No farm dams were undermined by LW7B. Dam 14 was located above Maingate 8 and showed little subsidence induced tilt or cracking during undermining. The dam remained full during undermining with little reduction in storage capacity observed. Previously undermined dams across the ACOL lease continue to hold water with no issues observed.

No overhead power lines were negatively impacted by undermining by LW7B. The 33kV powerline was suitably fitted with rollers pre undermining and monitored for subsidence impacts. This work was undertaken in consultation with the infrastructure owners, Ravensworth Operations. Powerlines remained visually stable and relatively straight during and post undermining. A buried phone cable was undermined by LW7B with no reported issues occurring. An Xstrata Coal owned buried tailings pipeline was undermined with no subsidence induced issues occurring. Prior to undermining, ACOL notified Ravensworth Operations and requested that 'broken pipeline' procedures were in place so that water loss due to a pipe split could be minimised (by means of flow rate monitoring and pump shut-down). This was implemented satisfactorily by Ravensworth Operations. LW7B also undermined an ACOL owned tailings pipeline with no issues occurring. This pipeline was exposed within a 'spoon drain' and had 'broken pipeline' monitoring in place.

The maximum subsidence movements detected over Longwall 7B were less than those predicted in the SMP. This occurred for all centreline (CL) survey monitoring lines. Maximum cross line (XL) survey results were calculated based on the subsidence curve due to XL13 intersecting Brunkers Lane which was being upgraded. The upgrade resulted in no survey monitoring being placed in the vicinity of the road. Horizontal and vertical movement was within predictions for XL13, CL3 and CL4. Horizontal movement has occurred in the upslope direction above each of the Longwall panels. This movement has predominantly occurred within the longwall panels with limited displacement detected outside the panel. This result is consistent with previously mined panels. Quantitatively horizontal movement, tilt and strains are less than those predicted in the SMP. The results compared to other panels vary slightly due to depth of cover, strata and surface conditions. Following LW1 mining there has been no indication of any significant lateral movement of the steep slope adjacent Glennies Creek or of the New England Highway cutting.

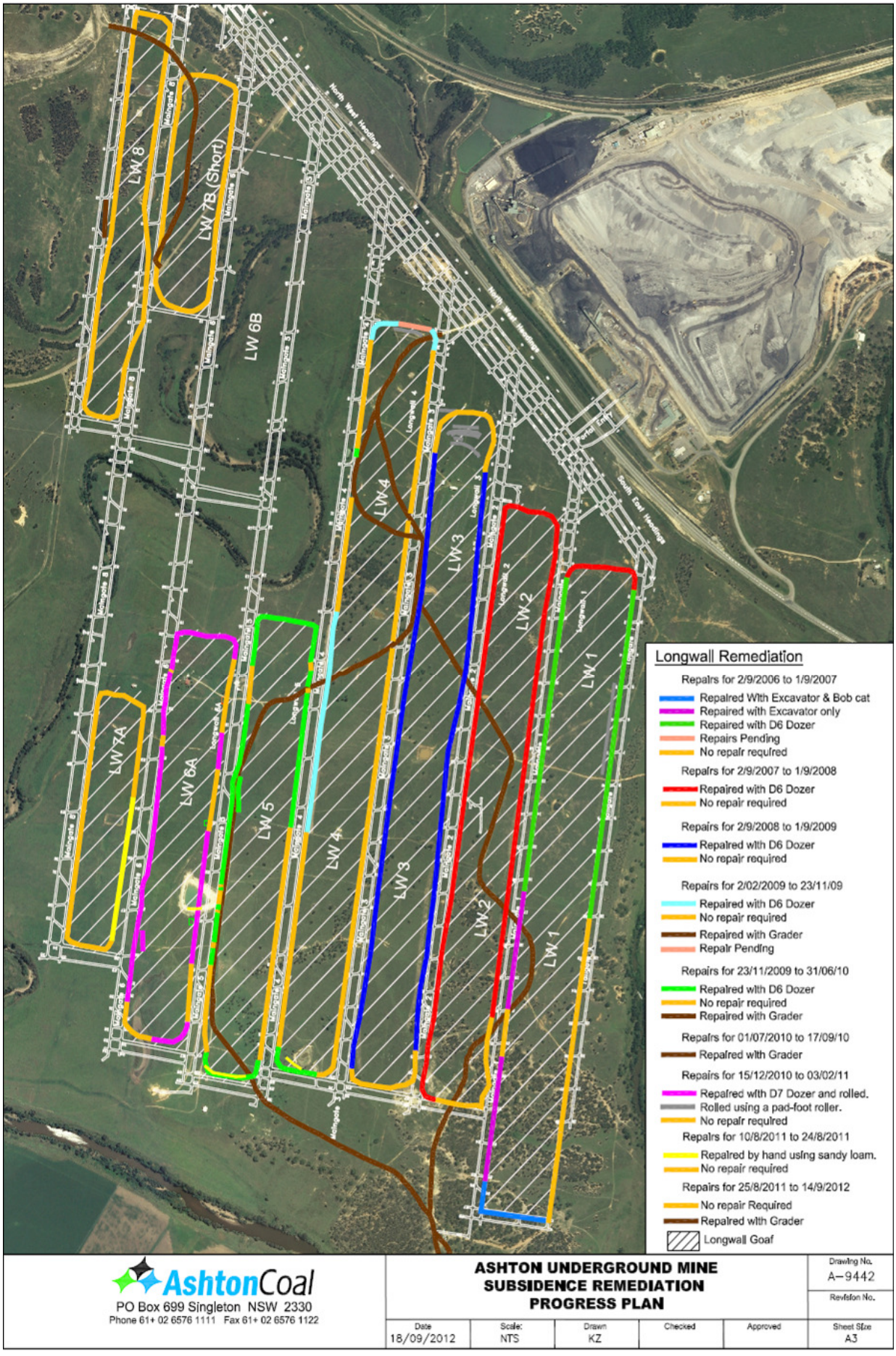

Figure 3: Subsidence remediation progress.

APPENDIX 1: PHOTO'S

Figure 4: 33kV power line (PP34) parallel to Maingate 8 in LW7B looking north post-undermining (18/09/12). Rollers were fitted to this line prior to undermining.

Figure 5: Concrete 33kV power pole (PP35) post subsidence (18/9/12).

Figure 6: 33kV power line clearance signs located at the entrance of Macquarie Generation access road (turn from the Brunkers Lane) prior to LW7B start.

Figure 7: LW7B cracking across the Macquarie Generation access road pre-remediation (28/11/12)

Figure 8: Macquarie Generation access road above LW7B following remediation.

Figure 9: LW7B ponding at the longwall start area (1/12/11).

Figure 10: LW7B ponding at the longwall start area post subsidence (18/9/12).

Figure 11: A repair to the culvert under the alternate access road adjacent to 132kV pole set 9 has been completed (over LW6). Water was accumulating around the pole footings and the ground profile was no longer allowing water to travel under the road towards Dam 11.

7 APPENDIX 2: SURVEY MONITORING RESULTS

Table 2: Ashton Coal Underground Survey Monitoring of 33kV Power line - Pole Number CB430.

AshtonCoal — Ashton Underground - 33kV Power Pole CB30 Monitoring

	Original	1:00:00 PM 15/5/2012															
Point	East	North	R.L.	LW8 Ch of Poles				36									
PP30BASE	317626.872	6407274.358	85.352														
PP30TOP	317626.679	6407274.847	101.095														
Direction of Longwall Extraction		8.04 16	(hms)														
	Test-01	11:00:00 AM 17/5/2012	-110m	Incremental δ						Total δ							
		LW8 Ch=	146														
	East	North	R.L.	δEast	δNorth	δR.L.	Hr	Bearing	Distance	δEast	δNorth	δR.L.	Hr	Bearing	Distance		
PP30BASE	317626.870	6407274.359	85.353	-0.003	0.001	0.001	#	289.47 56	0.003	-0.003	0.001	0.001	#	289.47 56	0.003		
PP30TOP	317626.685	6407274.835	101.096	0.006	-0.012	0.001	#	154.45 14	0.014	0.006	-0.012	0.001	#	154.45 14	0.014		
	Test-02	10:00:00 AM 21/5/2012	-69m	Incremental δ						Total δ							
		LW8 Ch=	105														
	East	North	R.L.	δEast	δNorth	δR.L.	Hr	Bearing	Distance	δEast	δNorth	δR.L.	Hr	Bearing	Distance		
PP30BASE	317626.874	6407274.358	85.353	0.004	-0.001	0.000	#	100.18 17	0.004	0.002	0.000	0.001	#	86.59 14	0.002		
PP30TOP	317626.681	6407274.862	101.093	-0.003	0.028	-0.003	#	353.21 46	0.028	0.003	0.015	-0.002	#	9.42 24	0.015		
	Test-03	2:00:00 PM 25/5/2012	6m	Incremental δ						Total δ							
		LW8 Ch=	30														
	East	North	R.L.	δEast	δNorth	δR.L.	Hr	Bearing	Distance	δEast	δNorth	δR.L.	Hr	Bearing	Distance		
PP30BASE	317626.877	6407274.361	85.349	0.003	0.003	-0.004	#	49.50 38	0.004	0.005	0.003	-0.003	#	61.13 56	0.006		
PP30TOP	317626.684	6407274.861	101.092	0.003	-0.001	-0.001	#	108.26 06	0.003	0.005	0.014	-0.003	#	20.20 10	0.015		
	Test-04	12:00:00 PM 1/6/2012	28m	Incremental δ						Total δ							
		LW8 Ch=	8														
	East	North	R.L.	δEast	δNorth	δR.L.	Hr	Bearing	Distance	δEast	δNorth	δR.L.	Hr	Bearing	Distance		
PP30BASE	317626.879	6407274.362	85.346	0.002	0.001	-0.003	#	60.38 32	0.002	0.007	0.004	-0.006	#	61.05 27	0.008		
PP30TOP	317626.683	6407274.860	101.091	-0.001	-0.001	-0.001	#	225.00 00	0.002	0.004	0.013	-0.003	#	17.39 00	0.014		
	Test-05	11:00:00 AM 16/6/2012	36m	Incremental δ						Total δ							
		LW8 Ch=	0														
	East	North	R.L.	δEast	δNorth	δR.L.	Hr	Bearing	Distance	δEast	δNorth	δR.L.	Hr	Bearing	Distance		
PP30BASE	317626.882	6407274.362	85.345	0.003	0.001	-0.001	#	81.07 10	0.003	0.010	0.004	-0.007	#	67.00 41	0.011		
PP30TOP	317626.685	6407274.862	101.088	0.002	0.002	-0.003	#	42.16 25	0.003	0.006	0.015	-0.007	#	21.55 47	0.017		

Table 3: Ashton Coal Underground Survey Monitoring of 33kV Power line - Pole Number CB431.

AshtonCoal — Ashton Underground - 33kV Power Pole CB431 Monitoring

Point	East	North	R.L.													
	Original	1:00:00 PM 22/9/2011		LW7B Ch of Poles			-45									
				LW8 Ch of Poles			106									
PP31BASE	317751.337	6407186.374	83.354													
PP31TOP	317751.121	6407186.406	97.510													
Direction of Longwall Extraction		8.04 16	(hms)													
	Test-01	1:00:00 PM 22/12/2011	-83m	Incremental δ							Total δ					
		LW7 Ch=	38													
	East	North	R.L.	δEast	δNorth	δR.L.	Hr	Bearing	Distance		δEast	δNorth	δR.L.	Hr	Bearing	Distance
PP31BASE	317751.338	6407186.375	83.342	0.002	0.001	-0.012	#	56.18 36	0.002		0.002	0.001	-0.012	#	56.18 36	0.002
PP31TOP	317751.118	6407186.416	97.498	-0.003	0.010	-0.012	#	344.53 26	0.010		-0.003	0.010	-0.012	#	344.53 26	0.010
	Test-02	2:00:00 PM 3/1/2012	-55m	Incremental δ							Total δ					
		LW7 Ch=	10													
	East	North	R.L.	δEast	δNorth	δR.L.	Hr	Bearing	Distance		δEast	δNorth	δR.L.	Hr	Bearing	Distance
PP31BASE	317751.338	6407186.374	83.345	0.000	-0.001	0.003	#	175.14 11	0.001		0.002	0.000	-0.009	#	97.07 30	0.002
PP31TOP	317751.109	6407186.407	97.502	-0.009	-0.010	0.004	#	224.41 49	0.013		-0.012	0.000	-0.008	#	272.21 58	0.012
	Test-03	12:00:00 PM 24/1/2012	-51m	Incremental δ							Total δ					
		LW7 Ch=	6													
	East	North	R.L.	δEast	δNorth	δR.L.	Hr	Bearing	Distance		δEast	δNorth	δR.L.	Hr	Bearing	Distance
PP31BASE	317751.339	6407186.375	83.346	0.001	0.001	0.001	#	36.52 12	0.001		0.003	0.001	-0.008	#	68.11 55	0.003
PP31TOP	317751.124	6407186.417	97.501	0.015	0.011	-0.001	#	55.42 47	0.019		0.003	0.011	-0.009	#	16.41 57	0.011
	Test-04	12:00:00 PM 15/5/2012	-92m	Incremental δ							Total δ					
		LW8 Ch=	198													
	East	North	R.L.	δEast	δNorth	δR.L.	Hr	Bearing	Distance		δEast	δNorth	δR.L.	Hr	Bearing	Distance
PP31BASE	317751.341	6407186.356	83.345	0.002	-0.019	-0.001	#	173.14 20	0.020		0.005	-0.018	-0.008	#	165.22 45	0.019
PP31TOP	317751.118	6407186.363	97.499	-0.006	-0.054	-0.002	#	185.55 14	0.054		-0.002	-0.043	-0.011	#	183.03 42	0.043
	Test-05	12:00:00 PM 17/5/2012	-40m	Incremental δ							Total δ					
		LW8 Ch=	146													
	East	North	R.L.	δEast	δNorth	δR.L.	Hr	Bearing	Distance		δEast	δNorth	δR.L.	Hr	Bearing	Distance
PP31BASE	317751.340	6407186.356	83.342	-0.001	0.000	-0.004	#	264.48 20	0.001		0.004	-0.019	-0.012	#	168.41 24	0.019
PP31TOP	317751.117	6407186.359	97.496	-0.002	-0.004	-0.003	#	205.20 46	0.004		-0.004	-0.047	-0.013	#	185.00 24	0.047
	Test-06	11:00:00 AM 21/5/2012	1m	Incremental δ							Total δ					
		LW8 Ch=	105													
	East	North	R.L.	δEast	δNorth	δR.L.	Hr	Bearing	Distance		δEast	δNorth	δR.L.	Hr	Bearing	Distance
PP31BASE	317751.340	6407186.347	83.331	0.000	-0.009	-0.011	#	181.16 23	0.009		0.004	-0.027	-0.023	#	172.44 48	0.028
PP31TOP	317751.116	6407186.385	97.484	-0.001	0.026	-0.012	#	357.48 51	0.026		-0.005	-0.021	-0.026	#	193.54 19	0.021
	Test-07	2:00:00 PM 25/5/2012	76m	Incremental δ							Total δ					
		LW8 Ch=	30													
	East	North	R.L.	δEast	δNorth	δR.L.	Hr	Bearing	Distance		δEast	δNorth	δR.L.	Hr	Bearing	Distance
PP31BASE	317751.276	6407186.309	83.128	-0.064	-0.037	-0.203	#	239.45 17	0.074		-0.060	-0.065	-0.226	#	222.59 02	0.088
PP31TOP	317750.927	6407186.306	97.280	-0.189	-0.080	-0.204	#	247.02 25	0.205		-0.194	-0.101	-0.230	#	242.34 40	0.218
	Test-08	11:00:00 AM 16/6/2012	106m	Incremental δ							Total δ					
		LW8 Ch=	0													
	East	North	R.L.	δEast	δNorth	δR.L.	Hr	Bearing	Distance		δEast	δNorth	δR.L.	Hr	Bearing	Distance
PP31BASE	317751.251	6407186.325	82.976	-0.026	0.015	-0.152	#	301.01 46	0.030		-0.086	-0.049	-0.378	#	240.08 51	0.099
PP31TOP	317750.787	6407186.319	97.124	-0.140	0.013	-0.156	#	275.18 32	0.141		-0.334	-0.088	-0.386	#	255.18 11	0.345

Table 4: Ashton Coal Underground Survey Monitoring of 33kV Power line - Pole Number CB432.

AshtonCoal — Ashton Underground - 33kV Power Pole 32 Monitoring

Point	East	North	R.L.													
	Original	1:00:00 PM 22/9/2011		LW7B Ch of Poles			19									
PP32BASE	317865.536	6407105.557	81.918													
PP32TOP	317865.518	6407105.282	97.401													
Direction of Longwall Extraction		8.04 16	(hms)													
	Test-01	1:00:00 PM 22/12/2011	-19m	Incremental δ							Total δ					
		LW7 Ch=	38													
	East	North	R.L.	δEast	δNorth	δR.L.	Hr	Bearing	Distance		δEast	δNorth	δR.L.	Hr	Bearing	Distance
PP32BASE	317865.549	6407105.538	81.889	0.013	-0.019	-0.029	#	145.37 11	0.023		0.013	-0.019	-0.029	#	145.37 11	0.023
PP32TOP	317865.523	6407105.267	97.370	0.005	-0.015	-0.031	#	161.33 54	0.016		0.005	-0.015	-0.031	#	161.33 54	0.016
	Test-02	2:00:00 PM 3/1/2012	9m	Incremental δ							Total δ					
		LW7 Ch=	10													
	East	North	R.L.	δEast	δNorth	δR.L.	Hr	Bearing	Distance		δEast	δNorth	δR.L.	Hr	Bearing	Distance
PP32BASE	317865.563	6407105.525	81.867	0.014	-0.013	-0.022	#	133.15 51	0.019		0.027	-0.032	-0.051	#	140.05 18	0.041
PP32TOP	317865.526	6407105.252	97.336	0.003	-0.015	-0.034	#	170.13 49	0.015		0.008	-0.030	-0.065	#	165.49 46	0.031
	Test-03	12:00:00 PM 24/1/2012	13m	Incremental δ							Total δ					
		LW7 Ch=	6													
	East	North	R.L.	δEast	δNorth	δR.L.	Hr	Bearing	Distance		δEast	δNorth	δR.L.	Hr	Bearing	Distance
PP32BASE	317865.572	6407105.514	81.840	0.009	-0.011	-0.027	#	139.59 37	0.015		0.036	-0.043	-0.078	#	140.03 49	0.056
PP32TOP	317865.541	6407105.236	97.302	0.015	-0.016	-0.034	#	135.54 55	0.022		0.023	-0.046	-0.099	#	153.26 06	0.051
	Test-04	12:00:00 PM 15/5/2012	13m	Incremental δ							Total δ					
		LW7 Ch=	6													
	East	North	R.L.	δEast	δNorth	δR.L.	Hr	Bearing	Distance		δEast	δNorth	δR.L.	Hr	Bearing	Distance
PP32BASE	317865.574	6407105.490	81.829	0.002	-0.024	-0.011	#	174.54 54	0.024		0.038	-0.067	-0.089	#	150.13 38	0.077
PP32TOP	317865.571	6407105.186	97.302	0.029	-0.050	0.000	#	149.15 27	0.058		0.052	-0.096	-0.099	#	151.13 34	0.109

Table 5: Ashton Coal Underground Survey Monitoring of 33kV Power line - Pole Number CB433.

AshtonCoal — Ashton Underground - 33kV Power Pole 33 Monitoring

Point	Original East	1:00:00 PM 22/9/2011 North	R.L.	LW7B Ch of Poles	182
PP33BASE	317849.706	6406942.946	75.041		
PP33TOP	317849.971	6406942.858	85.548		
Direction of Longwall Extraction		8.04 16	(hms)		

	Test-01	3:00:00 PM 7/12/2011	-43m	Incremental δ						Total δ					
		LW7 Ch=	225												
	East	North	R.L.	δEast	δNorth	δR.L.	Hr	Bearing	Distance	δEast	δNorth	δR.L.	Hr	Bearing	Distance
PP33BASE	317849.705	6406942.930	75.026	-0.001	-0.016	-0.014	#	184.20 36	0.016	-0.001	-0.016	-0.014	#	184.20 36	0.016
PP33TOP	317849.976	6406942.846	85.533	0.005	-0.012	-0.015	#	156.51 38	0.013	0.005	-0.012	-0.015	#	156.51 38	0.013

	Test-02	2:00:00 PM 13/12/2011	16m	Incremental δ						Total δ					
		LW7 Ch=	166												
	East	North	R.L.	δEast	δNorth	δR.L.	Hr	Bearing	Distance	δEast	δNorth	δR.L.	Hr	Bearing	Distance
PP33BASE	317849.723	6406942.909	74.987	0.018	-0.021	-0.039	#	138.46 32	0.028	0.017	-0.037	-0.054	#	154.56 56	0.041
PP33TOP	317850.002	6406942.803	85.495	0.027	-0.044	-0.038	#	148.38 02	0.051	0.032	-0.055	-0.053	#	150.15 58	0.064

	Test-03	2:00:00 PM 15/12/2011	66m	Incremental δ						Total δ					
		LW7 Ch=	116												
	East	North	R.L.	δEast	δNorth	δR.L.	Hr	Bearing	Distance	δEast	δNorth	δR.L.	Hr	Bearing	Distance
PP33BASE	317849.908	6406942.844	74.628	0.185	-0.065	-0.359	#	109.19 48	0.196	0.203	-0.102	-0.413	#	116.41 22	0.227
PP33TOP	317850.289	6406942.657	85.131	0.287	-0.145	-0.364	#	116.53 31	0.321	0.318	-0.201	-0.417	#	122.15 02	0.376

	Test-04	1:00:00 PM 20/12/2011	108m	Incremental δ						Total δ					
		LW7 Ch=	74												
	East	North	R.L.	δEast	δNorth	δR.L.	Hr	Bearing	Distance	δEast	δNorth	δR.L.	Hr	Bearing	Distance
PP33BASE	317850.031	6406942.949	74.347	0.123	0.104	-0.281	#	49.42 11	0.161	0.325	0.002	-0.693	#	89.33 36	0.326
PP33TOP	317850.502	6406942.796	84.848	0.213	0.139	-0.283	#	56.54 12	0.254	0.531	-0.062	-0.700	#	96.39 13	0.535

Table 6: Ashton Coal Underground Survey Monitoring of 33kV Power line - Pole Number CB434.

AshtonCoal — Ashton Underground - 33kV Power Pole 34 Monitoring

Point	Original East	1:00:00 PM 22/9/2011 North	R.L.	LW7B Ch of Poles	341
PP34BASE	317834.146	6406784.521	69.603		
PP34TOP	317834.452	6406784.550	79.739		
Direction of Longwall Extraction		8.04 16	(hms)		

	Test-01	1:00:00 PM 10/11/2011	-61m	Incremental δ						Total δ					
		LW7 Ch=	402												
	East	North	R.L.	δEast	δNorth	δR.L.	Hr	Bearing	Distance	δEast	δNorth	δR.L.	Hr	Bearing	Distance
PP34BASE	317834.125	6406784.502	69.581	-0.021	-0.019	-0.022	#	227.36 57	0.028	-0.021	-0.019	-0.022	#	227.36 57	0.028
PP34TOP	317834.440	6406784.519	79.716	-0.012	-0.031	-0.022	#	201.23 29	0.034	-0.012	-0.031	-0.022	#	201.23 29	0.034

	Test-02	2:00:00 PM 24/11/2011	1m	Incremental δ						Total δ					
		LW7 Ch=	340												
	East	North	R.L.	δEast	δNorth	δR.L.	Hr	Bearing	Distance	δEast	δNorth	δR.L.	Hr	Bearing	Distance
PP34BASE	317834.121	6406784.488	69.563	-0.004	-0.014	-0.018	#	196.26 03	0.014	-0.025	-0.033	-0.040	#	217.03 56	0.041
PP34TOP	317834.422	6406784.513	79.699	-0.018	-0.006	-0.017	#	251.10 55	0.019	-0.030	-0.037	-0.040	#	218.50 44	0.048

	Test-03	8:00:00 AM 1/12/2011	56m	Incremental δ						Total δ					
		LW7 Ch=	285												
	East	North	R.L.	δEast	δNorth	δR.L.	Hr	Bearing	Distance	δEast	δNorth	δR.L.	Hr	Bearing	Distance
PP34BASE	317834.272	6406784.342	69.309	0.150	-0.146	-0.254	#	134.14 47	0.210	0.125	-0.179	-0.294	#	144.57 54	0.219
PP34TOP	317834.627	6406784.217	79.442	0.206	-0.295	-0.257	#	145.08 04	0.360	0.175	-0.333	-0.296	#	152.11 41	0.376

	Test-04	3:00:00 PM 7/12/2011	116m	Incremental δ						Total δ					
		LW7 Ch=	225												
	East	North	R.L.	δEast	δNorth	δR.L.	Hr	Bearing	Distance	δEast	δNorth	δR.L.	Hr	Bearing	Distance
PP34BASE	317834.470	6406784.458	68.669	0.199	0.116	-0.640	#	59.48 03	0.230	0.324	-0.063	-0.934	#	101.02 41	0.330
PP34TOP	317834.918	6406784.409	78.799	0.291	0.191	-0.644	#	56.37 30	0.348	0.466	-0.141	-0.940	#	106.50 33	0.487

	Test-05	2:00:00 PM 13/12/2011	175m	Incremental δ						Total δ					
		LW7 Ch=	166												
	East	North	R.L.	δEast	δNorth	δR.L.	Hr	Bearing	Distance	δEast	δNorth	δR.L.	Hr	Bearing	Distance
PP34BASE	317834.501	6406784.501	68.601	0.031	0.044	-0.068	#	35.19 33	0.053	0.355	-0.020	-1.002	#	93.10 28	0.356
PP34TOP	317834.967	6406784.465	78.732	0.049	0.056	-0.067	#	40.58 07	0.074	0.515	-0.085	-1.006	#	99.21 47	0.522

	Test-06	2:00:00 PM 15/12/2011	225m	Incremental δ						Total δ					
		LW7 Ch=	116												
	East	North	R.L.	δEast	δNorth	δR.L.	Hr	Bearing	Distance	δEast	δNorth	δR.L.	Hr	Bearing	Distance
PP34BASE	317834.506	6406784.505	68.583	0.005	0.004	-0.018	#	51.44 44	0.007	0.360	-0.016	-1.020	#	92.28 43	0.361
PP34TOP	317834.967	6406784.475	78.714	0.000	0.010	-0.019	#	359.25 17	0.010	0.515	-0.075	-1.025	#	98.17 20	0.520

	Test-07	1:00:00 PM 20/12/2011	267m	Incremental δ						Total δ					
		LW7 Ch=	74												
	East	North	R.L.	δEast	δNorth	δR.L.	Hr	Bearing	Distance	δEast	δNorth	δR.L.	Hr	Bearing	Distance
PP34BASE	317834.505	6406784.525	68.575	-0.002	0.019	-0.008	#	355.33 21	0.019	0.359	0.004	-1.028	#	89.24 34	0.359
PP34TOP	317834.976	6406784.493	78.706	0.010	0.018	-0.008	#	27.33 10	0.021	0.524	-0.057	-1.033	#	96.09 37	0.527

Table 7: Ashton Coal Underground Survey Monitoring of 33kV Power line - Pole Number CB435.

AshtonCoal — Ashton Underground - 33kV Power Pole 35 Monitoring

	Original	1:00:00 PM 22/9/2011														
Point	East	North	R.L.	LW7B Ch of Poles				510								
PP35BASE	317817.129	6406616.294	67.827													
PP35TOP1	317816.949	6406616.382	83.882													
PP35TOP2	317816.943	6406616.445	83.789													
Direction of Longwall Extraction		8.04 16	(hms)													
	Test-01	1:00:00 PM 21/10/2011	-51m	Incremental δ							Total δ					
			LW7 Ch=	561												
	East	North	R.L.	δEast	δNorth	δR.L.	Hr	Bearing	Distance		δEast	δNorth	δR.L.	Hr	Bearing	Distance
PP35BASE	317817.125	6406616.279	67.817	-0.004	-0.015	-0.010	#	194.55 53	0.016		-0.004	-0.015	-0.010	#	194.55 53	0.016
PP35TOP1	317816.943	6406616.360	83.873	-0.006	-0.022	-0.009	#	195.15 18	0.023		-0.006	-0.022	-0.009	#	195.15 18	0.023
PP35TOP2	317816.940	6406616.423	83.774	-0.003	-0.022	-0.015	#	187.45 55	0.022		-0.003	-0.022	-0.015	#	187.45 55	0.022
	Test-02	11:00:00 AM 27/10/2011	8m	Incremental δ							Total δ					
			LW7 Ch=	502												
	East	North	R.L.	δEast	δNorth	δR.L.	Hr	Bearing	Distance		δEast	δNorth	δR.L.	Hr	Bearing	Distance
PP35BASE	317817.143	6406616.252	67.791	0.018	-0.027	-0.026	#	146.18 36	0.032		0.014	-0.042	-0.036	#	161.33 54	0.044
PP35TOP1	317816.983	6406616.300	83.837	0.040	-0.060	-0.036	#	146.18 36	0.072		0.034	-0.082	-0.045	#	157.28 46	0.089
PP35TOP2	317816.981	6406616.365	83.748	0.041	-0.058	-0.026	#	144.44 37	0.071		0.038	-0.080	-0.041	#	154.35 32	0.089
	Test-03	12:00:00 PM 31/10/2011	37m	Incremental δ							Total δ					
			LW7 Ch=	473												
	East	North	R.L.	δEast	δNorth	δR.L.	Hr	Bearing	Distance		δEast	δNorth	δR.L.	Hr	Bearing	Distance
PP35BASE	317817.185	6406616.188	67.696	0.041	-0.065	-0.095	#	147.14 32	0.077		0.055	-0.106	-0.131	#	152.28 29	0.120
PP35TOP1	317817.144	6406616.075	83.757	0.161	-0.225	-0.080	#	144.30 29	0.277		0.195	-0.308	-0.125	#	147.38 45	0.364
PP35TOP2	317817.138	6406616.141	83.659	0.157	-0.224	-0.089	#	144.55 02	0.274		0.195	-0.304	-0.130	#	147.16 38	0.361
	Test-04	12:00:00 PM 3/11/2011	72m	Incremental δ							Total δ					
			LW7 Ch=	438												
	East	North	R.L.	δEast	δNorth	δR.L.	Hr	Bearing	Distance		δEast	δNorth	δR.L.	Hr	Bearing	Distance
PP35BASE	317817.268	6406616.104	67.300	0.084	-0.083	-0.396	#	134.59 60	0.118		0.139	-0.190	-0.527	#	143.48 42	0.235
PP35TOP1	317817.109	6406615.889	83.345	-0.035	-0.185	-0.412	#	190.37 31	0.189		0.160	-0.493	-0.537	#	162.01 10	0.518
PP35TOP2	317817.105	6406615.951	83.255	-0.033	-0.190	-0.404	#	189.58 31	0.193		0.162	-0.494	-0.534	#	161.50 38	0.520
	Test-05	12:00:00 PM 10/11/2011	107m	Incremental δ							Total δ					
			LW7 Ch=	403												
	East	North	R.L.	δEast	δNorth	δR.L.	Hr	Bearing	Distance		δEast	δNorth	δR.L.	Hr	Bearing	Distance
PP35BASE	317817.371	6406616.252	66.710	0.103	0.148	-0.590	#	34.50 09	0.180		0.242	-0.042	-1.117	#	99.50 45	0.246
PP35TOP1	317817.199	6406616.245	82.761	0.090	0.356	-0.584	#	14.11 15	0.367		0.250	-0.137	-1.121	#	118.43 22	0.285
PP35TOP2	317817.194	6406616.310	82.666	0.089	0.359	-0.589	#	13.55 25	0.370		0.251	-0.135	-1.123	#	118.16 25	0.285

Table 8: Ashton Coal Underground Survey Monitoring of 33kV Power line - Pole Number CB436.

AshtonCoal — Ashton Underground - 33kV Power Pole CB436 Monitoring

Point	Original East	1:00:00 PM 22/9/2011 North	R.L.	LW7B Ch of Poles 665 / LW8 Ch of Poles 816
PP36BASE	317702.551	6406475.737	67.804	
PP36TOP	317702.697	6406475.907	81.059	
Direction of Longwall Extraction		8.04 16	(hms)	

	Test-01	3:00:00 PM 10/10/2011	-27m	Incremental δ						Total δ					
		LW7 Ch=	692												
	East	North	R.L.	δEast	δNorth	δR.L.	Hr	Bearing	Distance	δEast	δNorth	δR.L.	Hr	Bearing	Distance
PP36BASE	317702.551	6406475.734	67.788	0.000	-0.003	-0.016	#	183.41 29	0.003	0.000	-0.003	-0.016	#	183.41 29	0.003
PP36TOP	317702.697	6406475.881	81.043	0.000	-0.026	-0.016	#	179.07 19	0.026	0.000	-0.026	-0.016	#	179.07 19	0.026

	Test-02	3:00:00 PM 14/10/2011	28m	Incremental δ						Total δ					
		LW7 Ch=	637												
	East	North	R.L.	δEast	δNorth	δR.L.	Hr	Bearing	Distance	δEast	δNorth	δR.L.	Hr	Bearing	Distance
PP36BASE	317702.558	6406475.736	67.784	0.007	0.002	-0.004	#	75.45 46	0.007	0.007	-0.001	-0.019	#	102.09 18	0.007
PP36TOP	317702.692	6406475.894	81.039	-0.006	0.013	-0.004	#	337.09 59	0.014	-0.005	-0.013	-0.020	#	202.06 34	0.014

	Test-03	3:00:00 PM 18/10/2011	60m	Incremental δ						Total δ					
		LW7 Ch=	605												
	East	North	R.L.	δEast	δNorth	δR.L.	Hr	Bearing	Distance	δEast	δNorth	δR.L.	Hr	Bearing	Distance
PP36BASE	317702.565	6406475.734	67.779	0.007	-0.001	-0.005	#	100.40 11	0.007	0.013	-0.003	-0.025	#	101.23 32	0.014
PP36TOP	317702.705	6406475.890	81.035	0.013	-0.004	-0.004	#	108.50 02	0.014	0.008	-0.017	-0.024	#	155.52 59	0.019

	Test-04	1:00:00 PM 21/10/2011	104m	Incremental δ						Total δ					
		LW7 Ch=	561												
	East	North	R.L.	δEast	δNorth	δR.L.	Hr	Bearing	Distance	δEast	δNorth	δR.L.	Hr	Bearing	Distance
PP36BASE	317702.5731	6406475.736	67.7734	0.009	0.002	-0.006	#	76.16 40	0.009	0.022	-0.001	-0.031	#	91.33 44	0.022
PP36TOP	317702.7216	6406475.887	81.028	0.017	-0.003	-0.006	#	100.16 31	0.017	0.025	-0.020	-0.030	#	129.18 07	0.032

	Test-05	##################	262m	Incremental δ						Total δ					
		LW7 Ch=	403												
	East	North	R.L.	δEast	δNorth	δR.L.	Hr	Bearing	Distance	δEast	δNorth	δR.L.	Hr	Bearing	Distance
PP36BASE	317702.585	6406475.744	67.7676	0.012	0.007	-0.006	#	59.10 41	0.014	0.034	0.007	-0.036	#	79.08 45	0.035
PP36TOP	317702.7655	6406475.898	81.0217	0.044	0.011	-0.006	#	76.10 44	0.045	0.069	-0.009	-0.037	#	97.52 23	0.069

	Test-06	3:00:00 PM 26/2/2012	665m	Incremental δ						Total δ					
		LW7 Ch=	0												
	East	North	R.L.	δEast	δNorth	δR.L.	Hr	Bearing	Distance	δEast	δNorth	δR.L.	Hr	Bearing	Distance
PP36BASE	317702.6173	6406475.77	67.7573	0.032	0.026	-0.010	#	51.03 36	0.042	0.066	0.033	-0.047	#	63.46 56	0.074
PP36TOP	317702.7834	6406475.936	81.0143	0.018	0.038	-0.007	#	25.13 22	0.042	0.087	0.029	-0.044	#	71.47 01	0.091

	Test-07	1:00:00 PM 28/3/2012	-46m	Incremental δ						Total δ					
		LW8 Ch=	862												
	East	North	R.L.	δEast	δNorth	δR.L.	Hr	Bearing	Distance	δEast	δNorth	δR.L.	Hr	Bearing	Distance
PP36BASE	317702.6059	6406475.765	67.7511	-0.011	-0.005	-0.006	#	248.01 32	0.012	0.055	0.028	-0.053	#	62.56 07	0.062
PP36TOP	317702.7714	6406475.949	81.0055	-0.012	0.014	-0.009	#	318.47 04	0.018	0.075	0.042	-0.053	#	60.30 14	0.086

	Test-08	11:00:00 AM 30/3/2012	-16m	Incremental δ						Total δ					
		LW8 Ch=	832												
	East	North	R.L.	δEast	δNorth	δR.L.	Hr	Bearing	Distance	δEast	δNorth	δR.L.	Hr	Bearing	Distance
PP36BASE	317702.5977	6406475.75	67.7529	-0.008	-0.015	0.002	#	208.11 20	0.017	0.047	0.013	-0.051	#	74.45 19	0.048
PP36TOP	317702.7617	6406475.94	81.0069	-0.010	-0.009	0.001	#	227.08 38	0.013	0.065	0.033	-0.052	#	62.54 28	0.073

	Test-09	11:00:00 AM 5/4/2012	52m	Incremental δ						Total δ					
		LW8 Ch=	764												
	East	North	R.L.	δEast	δNorth	δR.L.	Hr	Bearing	Distance	δEast	δNorth	δR.L.	Hr	Bearing	Distance
PP36BASE	317702.6039	6406475.749	67.7372	0.006	0.000	-0.016	#	94.36 38	0.006	0.053	0.012	-0.067	#	76.59 22	0.054
PP36TOP	317702.763	6406475.943	80.9916	0.001	0.003	-0.015	#	23.25 43	0.003	0.066	0.036	-0.067	#	61.19 44	0.075

	Test-10	1:00:00 PM 13/4/2012	96m	Incremental δ						Total δ					
		LW8 Ch=	720												
	East	North	R.L.	δEast	δNorth	δR.L.	Hr	Bearing	Distance	δEast	δNorth	δR.L.	Hr	Bearing	Distance
PP36BASE	317702.5933	6406475.755	67.7275	-0.011	0.006	-0.010	#	298.41 10	0.012	0.042	0.018	-0.076	#	66.53 59	0.046
PP36TOP	317702.7647	6406475.938	80.9815	0.002	-0.005	-0.010	#	162.49 27	0.006	0.068	0.031	-0.077	#	65.40 14	0.075

Table 9: Ashton Coal Underground Survey Monitoring of 33kV Power line - Pole Number CB437.

AshtonCoal — Ashton Underground - 33kV Power Pole CB437 Monitoring

Point	Original East	3:00:00 PM 27/2/2012 North	R.L.	LW8 Ch of Poles	996
PP37BASE	317570.905	6406313.567	71.215		
PP37TOP	317571.138	6406313.439	87.207		
Direction of Longwall Extraction		8.04 16	(hms)		

	Test-01	1:00:00 PM 13/3/2012	-157m	Incremental δ						Total δ					
		LW8 Ch=	1153												
	East	North	R.L.	δEast	δNorth	δR.L.	Hr	Bearing	Distance	δEast	δNorth	δR.L.	Hr	Bearing	Distance
PP37BASE	317570.904	6406313.566	71.212	-0.001	-0.001	-0.004	#	235.00 29	0.001	-0.001	-0.001	-0.004	#	235.00 29	0.001
PP37TOP	317571.123	6406313.417	87.206	-0.016	-0.022	-0.002	#	215.42 44	0.027	-0.016	-0.022	-0.002	#	215.42 44	0.027

	Test-02	11:00:00 AM 15/3/2012	-109m	Incremental δ						Total δ					
		LW7 Ch=	1105												
	East	North	R.L.	δEast	δNorth	δR.L.	Hr	Bearing	Distance	δEast	δNorth	δR.L.	Hr	Bearing	Distance
PP37BASE	317570.902	6406313.570	71.211	-0.003	0.003	-0.001	#	322.00 05	0.004	-0.004	0.003	-0.004	#	305.32 16	0.004
PP37TOP	317571.121	6406313.429	87.203	-0.002	0.011	-0.003	#	349.28 20	0.011	-0.018	-0.010	-0.004	#	239.33 46	0.021

	Test-03	10:00:00 AM 20/3/2012	-45m	Incremental δ						Total δ					
		LW8 Ch=	1041												
	East	North	R.L.	δEast	δNorth	δR.L.	Hr	Bearing	Distance	δEast	δNorth	δR.L.	Hr	Bearing	Distance
PP37BASE	317570.901	6406313.563	71.211	-0.001	-0.006	0.000	#	187.07 30	0.006	-0.004	-0.004	-0.005	#	227.47 34	0.006
PP37TOP	317571.106	6406313.427	87.199	-0.014	-0.002	-0.004	#	264.00 43	0.014	-0.032	-0.012	-0.008	#	249.36 04	0.034

	Test-04	12:00:00 PM 22/3/2012	18m	Incremental δ						Total δ					
		LW8 Ch=	978												
	East	North	R.L.	δEast	δNorth	δR.L.	Hr	Bearing	Distance	δEast	δNorth	δR.L.	Hr	Bearing	Distance
PP37BASE	317570.914	6406313.546	71.178	0.014	-0.017	-0.032	#	141.47 05	0.022	0.009	-0.021	-0.037	#	156.11 15	0.023
PP37TOP	317571.155	6406313.405	87.168	0.048	-0.022	-0.031	#	114.38 24	0.053	0.016	-0.034	-0.040	#	154.18 55	0.038

	Test-05	11:00:00 AM 26/3/2012	74m	Incremental δ						Total δ					
		LW8 Ch=	922												
	East	North	R.L.	δEast	δNorth	δR.L.	Hr	Bearing	Distance	δEast	δNorth	δR.L.	Hr	Bearing	Distance
PP37BASE	317570.946	6406313.535	71.109	0.031	-0.011	-0.069	#	108.49 02	0.033	0.041	-0.032	-0.106	#	128.06 27	0.052
PP37TOP	317571.207	6406313.356	87.098	0.052	-0.049	-0.069	#	133.18 31	0.072	0.069	-0.083	-0.109	#	140.31 13	0.108

	Test-06	1:00:00 PM 28/3/2012	134m	Incremental δ						Total δ					
		LW8 Ch=	862												
	East	North	R.L.	δEast	δNorth	δR.L.	Hr	Bearing	Distance	δEast	δNorth	δR.L.	Hr	Bearing	Distance
PP37BASE	317571.026	6406313.545	71.006	0.080	0.010	-0.103	#	83.04 10	0.080	0.121	-0.022	-0.210	#	100.28 34	0.123
PP37TOP	317571.356	6406313.352	86.995	0.149	-0.004	-0.103	#	91.20 54	0.149	0.217	-0.087	-0.212	#	111.47 16	0.234

Table 10: Ashton Coal Underground Survey Monitoring of 33kV Power line - Pole Number CB438.

AshtonCoal — Ashton Underground - 33kV Power Pole CB438 Monitoring

Point	Original East	3:00:00 PM 27/2/2012 North	R.L.	LW8 Ch of Poles	1086
PP38BASE	317478.572	6406235.048	74.058		
PP38TOP	317478.730	6406235.174	86.108		
Direction of Longwall Extraction		8.04 16	(hms)		

	Test-01	1:00:00 PM 13/3/2012	-67m	Incremental δ						Total δ					
		LW7 Ch=	1153												
	East	North	R.L.	δEast	δNorth	δR.L.	Hr	Bearing	Distance	δEast	δNorth	δR.L.	Hr	Bearing	Distance
PP38BASE	317478.573	6406235.046	74.053	0.001	-0.002	-0.004	#	159.08 44	0.002	0.001	-0.002	-0.004	#	159.08 44	0.002
PP38TOP	317478.726	6406235.174	86.104	-0.004	0.000	-0.004	#	264.33 35	0.004	-0.004	0.000	-0.004	#	264.33 35	0.004

	Test-02	11:00:00 AM 15/3/2012	-29m	Incremental δ						Total δ					
		LW8 Ch=	1115												
	East	North	R.L.	δEast	δNorth	δR.L.	Hr	Bearing	Distance	δEast	δNorth	δR.L.	Hr	Bearing	Distance
PP38BASE	317478.570	6406235.046	74.052	-0.003	0.000	-0.002	#	270.00 00	0.003	-0.002	-0.002	-0.006	#	218.59 28	0.003
PP38TOP	317478.724	6406235.169	86.103	-0.002	-0.005	-0.001	#	198.05 00	0.005	-0.006	-0.005	-0.005	#	227.34 45	0.008

	Test-03	10:00:00 AM 20/3/2012	45m	Incremental δ						Total δ					
		LW8 Ch=	1041												
	East	North	R.L.	δEast	δNorth	δR.L.	Hr	Bearing	Distance	δEast	δNorth	δR.L.	Hr	Bearing	Distance
PP38BASE	317478.577	6406235.041	74.047	0.006	-0.005	-0.005	#	126.08 07	0.008	0.005	-0.007	-0.011	#	145.31 40	0.008
PP38TOP	317478.736	6406235.171	86.098	0.012	0.002	-0.005	#	79.26 20	0.012	0.006	-0.003	-0.010	#	117.19 26	0.007

	Test-04	12:00:00 PM 22/3/2012	108m	Incremental δ						Total δ					
		LW8 Ch=	978												
	East	North	R.L.	δEast	δNorth	δR.L.	Hr	Bearing	Distance	δEast	δNorth	δR.L.	Hr	Bearing	Distance
PP38BASE	317478.589	6406235.038	74.039	0.012	-0.003	-0.008	#	105.41 42	0.013	0.017	-0.010	-0.019	#	121.09 55	0.020
PP38TOP	317478.751	6406235.164	86.090	0.015	-0.007	-0.008	#	113.38 56	0.017	0.021	-0.010	-0.018	#	114.42 25	0.023

	Test-05	11:00:00 AM 26/3/2012	164m	Incremental δ						Total δ					
		LW8 Ch=	922												
	East	North	R.L.	δEast	δNorth	δR.L.	Hr	Bearing	Distance	δEast	δNorth	δR.L.	Hr	Bearing	Distance
PP38BASE	317478.591	6406235.045	74.033	0.002	0.007	-0.007	#	15.15 18	0.007	0.019	-0.004	-0.025	#	100.42 47	0.019
PP38TOP	317478.752	6406235.171	86.083	0.001	0.006	-0.007	#	6.08 48	0.007	0.022	-0.003	-0.025	#	98.31 51	0.022

	Test-06	1:00:00 PM 28/3/2012	224m	Incremental δ						Total δ					
		LW8 Ch=	862												
	East	North	R.L.	δEast	δNorth	δR.L.	Hr	Bearing	Distance	δEast	δNorth	δR.L.	Hr	Bearing	Distance
PP38BASE	317478.603	6406235.047	74.032	0.012	0.003	-0.001	#	78.25 10	0.012	0.031	-0.001	-0.026	#	91.51 56	0.031
PP38TOP	317478.763	6406235.176	86.082	0.012	0.006	-0.001	#	64.01 32	0.013	0.034	0.002	-0.027	#	85.55 35	0.034