

Narrabri Mine Community Consultative Committee Meeting #29

Environmental Monitoring Report March 2015 – May 2015

Noise Monitoring

Attended noise monitoring was undertaken between Tuesday 17th and Thursday 19th March 2015 (Tables 1-12) and Tuesday 26th May 2015 (Tables 13-16) to verify if noise levels were within compliance limits. The results from this monitoring are detailed in the tables below.

Location	Time	Total dB(A), Leq (15 min)	Wind speed/ direction	Temp Grad (oC/100m)	Identified Noise Sources
N1 Bow Hills	1:56 pm	36	4.8/325	n/a	Traffic (34), wind (29), NM (27)
N3 Naroo	3:34 pm	44	4.8/328	n/a	Wind (41), traffic (40), birds (30), NM (26)
N5 Oakleigh	2:49 pm	38	4.9/325	n/a	Traffic (36), birds (32), wind (28), NM (25)
N6 Newhaven	1:05 pm	59	5.4/330	n/a	Wind (59), NM (<20*)
N7 Merriman	12:20 pm	42	5.8/329	n/a	Wind (40), birds (36), traffic (32), NM inaudible

*Noise from vent fan

Location	Time	Total dB(A), Leq (15 min)	Wind speed/ direction	Temp Grad (oC/100m) ¹	Identified Noise Sources
N1 Bow Hills	9:16 pm	39	1.5/299	+1.1	Traffic (37), insects (34), NM (25)
N3 Naroo	8:01 pm	44	2.6/347	+1.1	Traffic (42), frogs & insects (40), NM (27)
N5 Oakleigh	9:16 pm	40	1.5/299	+1.1	Frogs & insects (39), traffic (31), NM (27)
N6 Newhaven	8:33 pm	36	3.3/333	+1.1	Insects (23), NM (<20*)
N7 Merriman	8:40 pm	38	2.8/335	+1.4	Frogs & insects (36), traffic (34), NM inaudible

*Noise from vent fan

Location	Time	Total dB(A), Leq (15 min)	Wind speed/ direction	Temp Grad (oC/100m)	Identified Noise Sources
N1 Bow Hills	11:07 pm	38	1.7/347	+2.4	Traffic (37), NM (28), frogs & insects (25)
N3 Naroo	12:12 am	38	3.6/145	+0.7	NM (35), traffic (34), frogs & insects (29)
N5 Oakleigh	11:25 pm	46	1.7/106	+2.0	Frogs & insects (46), traffic (27), NM (23)
N6 Newhaven	10:02 pm	35	2.0/204	+1.2	Insects (22), NM (<20*)
N7 Merriman	10:00 pm	39	2.0/204	+1.2	Traffic (37), frogs & insects (35), NM inaudible

*Noise from vent fan

Location	Time	Total dB(A), Leq (15 min)	Wind speed/ direction	Temp Grad (oC/100m)	Identified Noise Sources
N1 Bow Hills	9:40 am	52	9.9/324	n/a	Wind (52), traffic (33), NM inaudible
N3 Naroo	11:18 am	64	10.7/322	n/a	Wind (64), traffic (35), NM inaudible

Location	Time	Total dB(A), Leq (15 min)	Wind speed/ direction	Temp Grad (oC/100m)	Identified Noise Sources
N4 Greylands	10:45 am	54	10.9/320	n/a	Wind (54), traffic (25), birds (25), NM inaudible
N5 Oakleigh	7:49 am	44	6.0/329	n/a	Birds (43), traffic (35), NM (33)
N6 Newhaven	11:10 am	52	10.7/322	n/a	Wind (52), NM (<20*)
N7 Merriman	8:03 am	49	6.5/328	n/a	Wind (48), birds (42), traffic (31), NM inaudible
Matilda	10:02 am	52	8.7/327	n/a	Wind (52), birds (28), NM inaudible
Ardmona	9:31 am	48	7.2/321	n/a	Traffic (48), wind (32), birds (29), NM inaudible

*Noise from vent fan

Location	Time	Total dB(A), Leq (15 min)	Wind speed/ direction	Temp Grad (oC/100m)	Identified Noise Sources
N1 Bow Hills	8:33 pm	37	4.6/313	+1.1	Traffic (36), NM (29), frogs & insects (26)
N3 Naroo	9:10 pm	44	4.4/286	+1.6	Traffic (43), NM (35), wind (34), frogs & insects (28)
N4 Greylands	8:48 pm	32	4.3/311	+0.9	Traffic (30), wind (26), insects (24), NM inaudible
N5 Oakleigh	7:17 pm	41	6.5/328	0.0	Wind (40), insects (31), traffic (28), NM faintly audible
N6 Newhaven	9:11 pm	41	4.4/286	+1.6	Insects (27), NM (23*)
N7 Merriman	7:56 pm	39	5.7/321	+0.3	Wind (37), insects (31), domestic (29), traffic (27), NM inaudible
Matilda	8:22 pm	46	5.7/321	+0.9	Insects (45), wind (38), NM (25), traffic (24)
Ardmona	7:56 pm	44	5.9/325	0.0	Traffic (41), frogs & insects (40), wind (32), NM (30)

*Noise from vent fan

Location	Time	Total dB(A), Leq (15 min)	Wind speed/ direction	Temp Grad (oC/100m)	Identified Noise Sources
N1 Bow Hills	11:09 pm	39	3.7/290	+0.7	Traffic (36), NM (33), frogs & insects (33)
N3 Naroo	12:17 am	44	3.4/288	+1.4	Frogs & insects (41), traffic (38), NM (38)
N4 Greylands	11:59 pm	33	3.5/286	+1.0	Traffic (31), domestic (27), frogs & insects (22), NM inaudible
N5 Oakleigh	10:01 pm	44	4.1/296	+1.1	Frogs & insects (43), traffic (36), wind (33), NM (27)
N6 Newhaven	12:22 am	40	3.4/288	+1.4	Insects (27), NM (22*)
N7 Merriman	10:00 pm	41	4.1/296	+1.1	Traffic (40), wind (31), domestic (29), insects (27), NM inaudible
Matilda	11:33 pm	44	3.7/290	+1.0	Frogs & insects (43), wind (34), NM (30)
Ardmona	11:08 pm	44	3.8/293	+0.8	Traffic (43), NM (34), frogs & insects (30)

*Noise from vent fan

Table 7: NM Operational Noise Monitoring Results – 19 March 2015 (day)

Location	Time	Total dB(A), Leq (15 min)	Wind speed/ direction	Temp Grad (oC/100m)	Identified Noise Sources
N1 Bow Hills	9:36 am	37	0.5/32	n/a	Traffic (35), birds (32), NM (26)
N3 Naroo	11:14 am	45	1.7/306	n/a	Birds & insects (44), traffic (38), NM (27)
N5 Oakleigh	9:07 am	33	0.3/33	n/a	Birds (31), traffic (27), NM (24)
N6 Newhaven	10:55 am	32	1.8/343	n/a	Birds & insects (28), NM (<20*)
N7 Merriman	7:59 am	38	0.5/45	n/a	Traffic (34), NM (34), birds (31)

*Noise from vent fan

Table 8: NM Operational Noise Monitoring Results – 19 March 2015 (evening)

Location	Time	Total dB(A), Leq (15 min)	Wind speed/ direction	Temp Grad (oC/100m)	Identified Noise Sources
N1 Bow Hills	8:43 pm	44	2.4/286	+3.9	Traffic (41), frogs & insects (40), NM (35)
N3 Naroo	9:21 pm	43	2.5/293	+4.0	Traffic (41), NM (36), frogs & insects (34)
N5 Oakleigh	9:25 pm	46	2.5/293	+3.6	Insects (46), traffic (31), NM (25)
N6 Newhaven	8:46 pm	41	2.4/286	+3.9	Insects (29), NM (23*)
N7 Merriman	8:05 pm	39	1.5/296	+2.2	Frogs & insects (38), traffic (31), domestic (26), NM inaudible

*Noise from vent fan

Table 9: NM Operational Noise Monitoring Results – 19/20 March 2015 (night)

Location	Time	Total dB(A), Leq (15 min)	Wind speed/ direction	Temp Grad (oC/100m)	Identified Noise Sources
N1 Bow Hills	11:11 pm	41	2.1/299	+5.1	Traffic (39), NM (35), frogs & insects (30)
N3 Naroo	12:19 am	43	2.0/290	+6.8	Traffic (42), NM (36), frogs & insects (26)
N5 Oakleigh	11:17 pm	40	2.1/299	+5.1	Insects (40), traffic (25), NM (25)
N6 Newhaven	10:05 pm	40	2.4/292	+3.6	Insects (26), NM (22*)
N7 Merriman	10:02 pm	38	2.4/292	+3.6	Traffic (35), NM (32), frogs & insects (32)

*Noise from vent fan

Table 10: NM Sleep Disturbance Monitoring Results – 17/18 March 2015 (night)

Location	Time	dB(A),L1 (1 min)	Wind speed / direction	Temp Grad(oC/100m)
N1 Bow Hills	11:07 pm	35	1.7/347	+2.4
N3 Naroo	12:12 am	39	3.6/145	+0.7
N5 Oakleigh	11:25 pm	28	1.7/106	+2.0
N6 Newhaven	10:02 pm	23*	2.0/204	+1.2
N7 Merriman	10:00 pm	n/a	2.0/204	+1.2

*Noise from vent fan

Table 11: NM Sleep Disturbance Monitoring Results – 18/19 March 2015 (night)

Location	Time	dB(A),L1 (1 min)	Wind speed / direction	Temp Grad(oC/100m)
N1 Bow Hills	11:09 pm	37	3.7/290	+0.7



Table 11: NM Sleep Disturbance Monitoring Results – 18/19 March 2015 (night)				
Location	Time	dB(A),L1 (1 min)	Wind speed / direction	Temp Grad(oC/100m)
N3 Naroo	12:17 am	42	3.4/288	+1.4
N4 Greylands	11:59 pm	n/a	3.5/286	+1.0
N5 Oakleigh	10:01 pm	31	4.1/296	+1.1
N6 Newhaven	12:22 pm	24*	3.4/288	+1.4
N7 Merriman	10:00 pm	n/a	4.1/296	+1.1
Matilda	11:33 pm	33	-	-
Ardmona	11:08 pm	37	-	-

*Noise from vent fan

Table 12: NM Sleep Disturbance Monitoring Results – 19/20 March 2015 (night)				
Location	Time	dB(A),L1 (1 min)	Wind speed / direction	Temp Grad(oC/100m)
N1 Bow Hills	11:11 pm	39	2.1/299	+5.1
N3 Naroo	12:19 am	41	2.0/290	+6.8
N5 Oakleigh	11:17 pm	28	2.1/299	+5.1
N6 Newhaven	10:05 pm	24 ¹	2.4/292	+3.6
N7 Merriman	10:02 pm	37	2.4/292	+3.6

*Noise from vent fan

Table 13: NCM Noise Monitoring Results – 26 May 2015 (Day)				
Location	Time	Total dB(A), Leq (15 min)	Wind speed/ direction	Temp Grad (oC/100m)
Merriman	4:45 pm	38	1.5 / 160	Traffic (37), birds (29), NCM (26)
Bow Hills	4:23 pm	42	1.6 / 128	Traffic (42), birds (28), NCM (28)
Oakleigh	2:44 pm	34	2.3 / 125	Birds (34), traffic (22), NCM inaudible
Naroo	3:08 pm	48	2.6 / 131	Birds (48), traffic (36), NCM inaudible
Newhaven	1:44 pm	51	2.2 / 138	NCM (33)*, birds (28)
Greylands	3:59 pm	37	2.3 / 112	Traffic (36), birds (26), NCM (26)
Matilda	3:31 pm	41	2.5 / 121	Birds (41), tractor (25), traffic (23), NCM inaudible
Ardmona	2:15 pm	46	1.8 / 128	Traffic (46), birds (34), NCM inaudible

*Noise from vent fan

Table 14: NCM Noise Monitoring Results – 26 May 2015 (Evening)					
Location	Time	Total dB(A), Leq (15 min)	Wind speed/ direction	Temp Grad (oC/100m)	Identified Noise Sources
Merriman	9:33 pm	31	1.1 / 165	+6.8	Traffic (31), NCM (21)
Bow Hills	7:19 pm	47	1.6 / 158	+3.6	Traffic (47), NCM (30)
Oakleigh	6:32 pm	35	2.0 / 160	+3.6	Insects (33), traffic (29), NCM (23)
Naroo	7:42 pm	40	2.4 / 161	+3.4	Traffic (40), NCM (23)
Newhaven	9:05 pm	52	0.4 / 106	+5.8	NCM (34)*
Greylands	8:42 pm	43	1.1 / 63	+6.6	NCM (42), traffic (36)
Matilda	8:11 pm	38	1.5 / 154	+2.6	NCM (38), traffic (25)

Location	Time	Total dB(A), Leq (15 min)	Wind speed/ direction	Temp Grad (oC/100m)	Identified Noise Sources
Ardmona	6:56 pm	50	1.7 / 156	+3.0	Traffic (50), NCM (24)

*Noise from vent fan

Location	Time	Total dB(A), Leq (15 min)	Wind speed/ direction	Temp Grad (oC/100m)	Identified Noise Sources
Merriman	12:26 am	42	2.1 / 161	+6.6	Traffic (42), NCM (25)
Bow Hills	12:48 am	38	2.1 / 163	+7.0	Traffic (38), NCM (25)
Oakleigh	10:01 pm	34	0.6 / 134	+6.6	Traffic (34), NCM (26)
Naroo	10:47 pm	39	1.5 / 169	+6.4	Traffic (39), NCM faintly audible
Newhaven	12:01 am	52	2.0 / 158	+7.0	NCM (34)*
Greylands	11:37 pm	39	1.8 / 162	+6.6	Traffic (38), NCM (30)
Matilda	11:09 pm	36	1.7 / 156	+5.8	NCM (35), insects (27)
Ardmona	10:24 pm	47	1.2 / 63	+5.6	Traffic (47), NCM inaudible

*Noise from vent fan

Location	Time	dB(A),L1 (1 min)
Merriman	12:26 am	28
Bow Hills	12:48 am	29
Oakleigh	10:01 pm	29
Naroo	10:47 pm	21
Newhaven	12:01 am	34*
Greylands	11:37 pm	35

*Noise from vent fan

The results for March and May 2015 shows that exceedances did occur but under meteorological conditions outside the range of applicability of the noise criteria and are not exceedances. The level of 38 dB(A) measured at “Matilda” on 26 May is a non-compliance. Relevant notifications were made.

Deposited Dust Monitoring

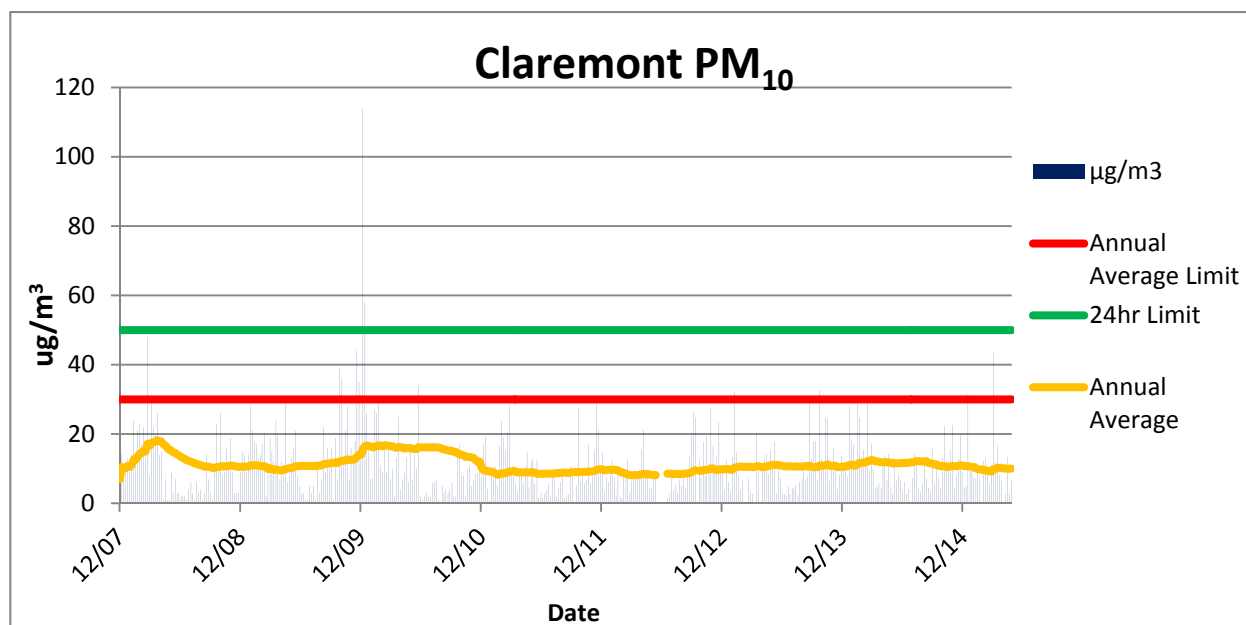
Month	ND1 Turrabaa	ND2 Claremont	ND3 Bow Hills	ND4a Matoppo	ND5 Claremont	ND6 Willarah	ND7 Claremont	ND8 Claremont	ND11 Oakleigh	ND12 Merriman
Jun-14	4.2	0.8	0.2	0.1	0.3	0.5	0.7	0.1	0.3	0.1
Jul-14	2.9	1.4	0.1	0.1	1.0	0.2	0.2	0.1	0.5	0.1
Aug-14	10.3	1.0	1.2	0.1	1.1	0.3	3.4	2.4	1.3	0.2
Sep-14	3.6	1.7	1.2	0.4	1.1	0.1	0.4	0.3	0.4	0.6
Oct-14	0.7	1.9	0.1	0.1	0.6	0.3	1.2	0.1	0.9	0.1
Nov-14	5.8	2.0	1.1	1.1	3.4	1.5	1.4	1.0	0.1	1.7
Dec-14	3.7	1.4	0.9	1.2	2.7	0.5	2.1	0.7	3.0	0.8

Month	ND1 Turrabaa	ND2 Claremont	ND3 Bow Hills	ND4a Matoppo	ND5 Claremont	ND6 Willarah	ND7 Claremont	ND8 Claremont	ND11 Oakleigh	ND12 Merriman
Jan-15	2.2	2.0	1.1	0.8	2.4	0.7	1.9	1.4	2.3	1.1
Feb-15	0.6	0.3	0.1	0.2	1.1	0.1	0.5	0.4	2.1	0.5
Mar-15	1.7	1.0	0.5	1.0	1.9	1.5	0.9	1.2	1.5	1.1
Apr-15	0.0	2.2	0.4	3.5	0.1	0.8	1.8	1.6	0.6	1.4
May-15	2.2	0.4	0.4	1.3	1.8	0.2	0.7	0.2	1.1	0.2
Annual Average	3.2	1.3	0.6	0.8	1.5	0.6	1.3	0.8	1.2	0.7

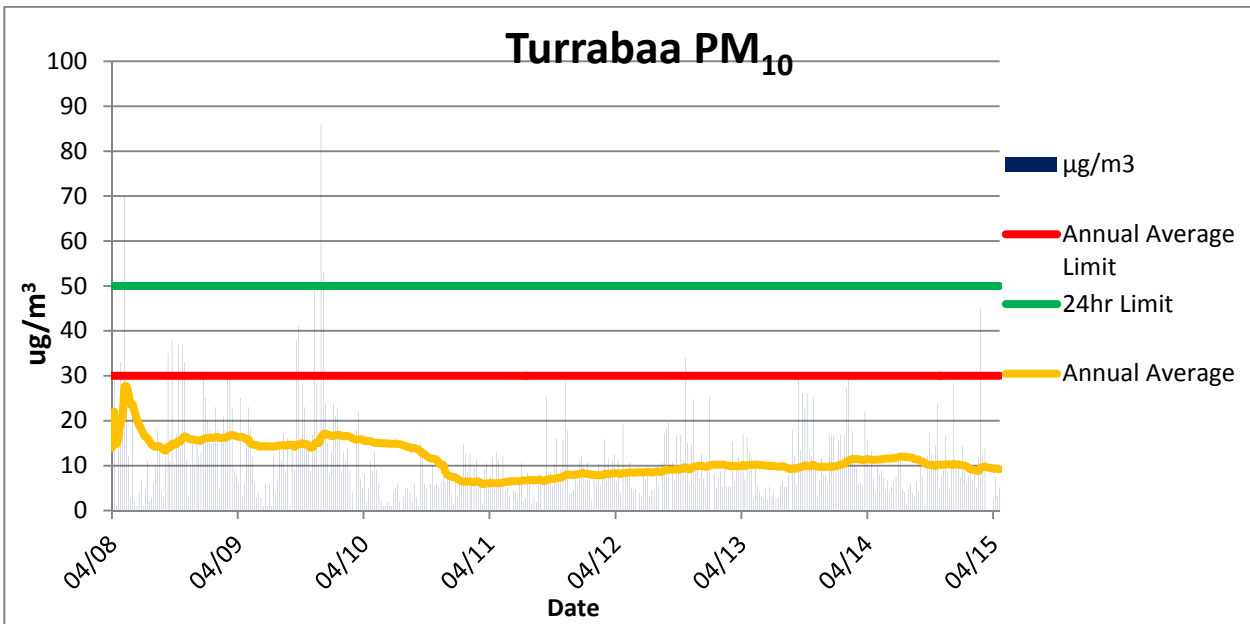
Deposited dust levels have remained at relatively low levels since the last meeting. All dust deposition annual averages are within compliance limits.

High Volume Air Sampling (PM₁₀)

PM₁₀ measurements taken to the end of April 2015 for the “Claremont” High Volume Air Sampler (HVAS) are returning a running annual average of 10.05 µg/m³ which is well below the annual average limit of 30 µg/m³.



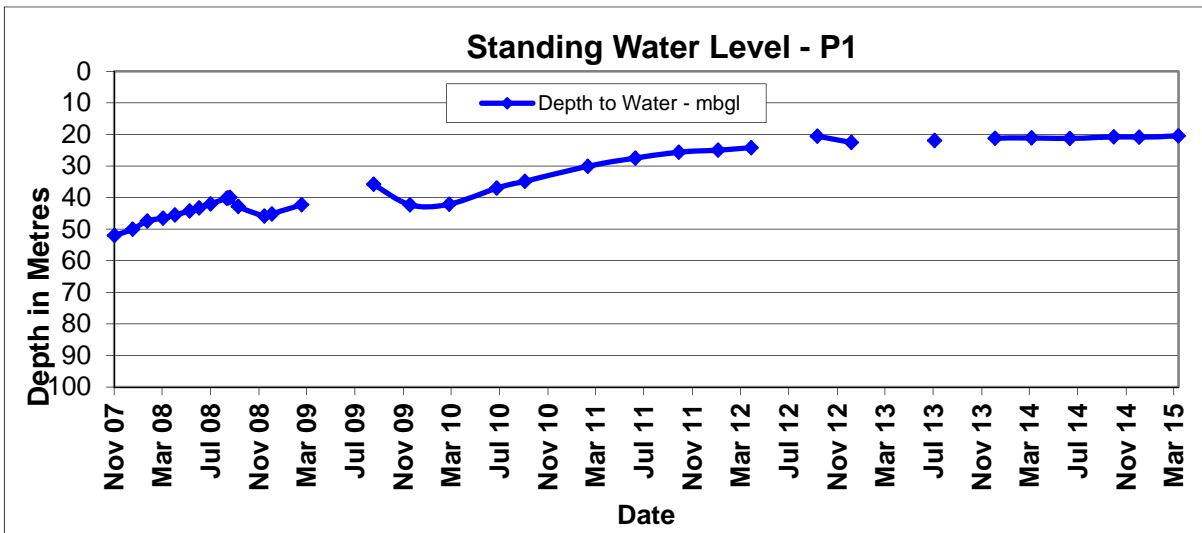
PM₁₀ measurements taken to the end of April 2015 for the “Turrabaa” High Volume Air Sampler are returning a running annual average of 9.21 µg/m³ which is also well below the annual average limit of 30 µg/m³.

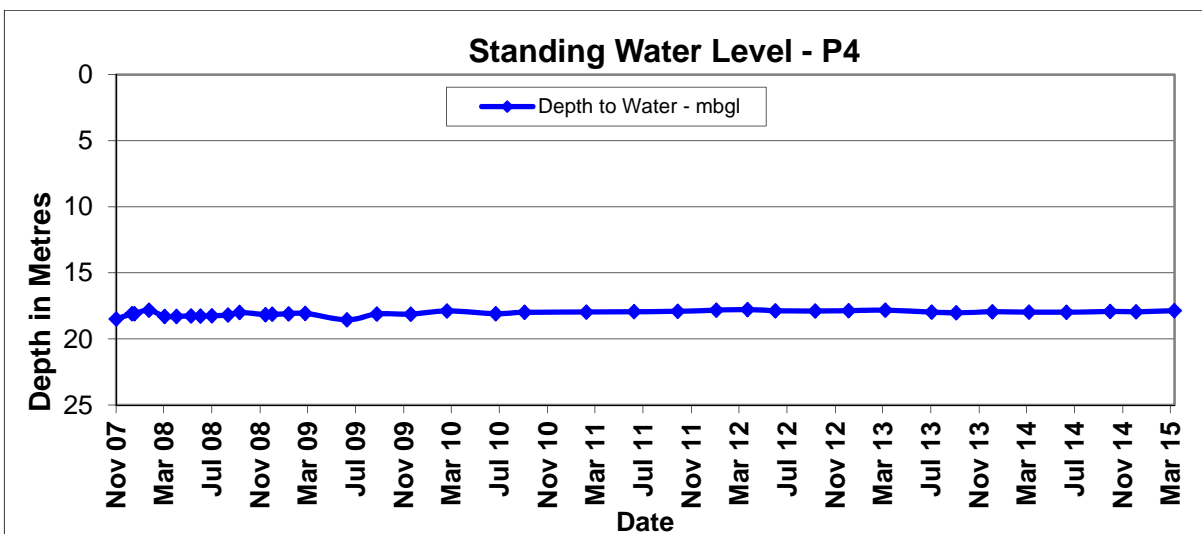
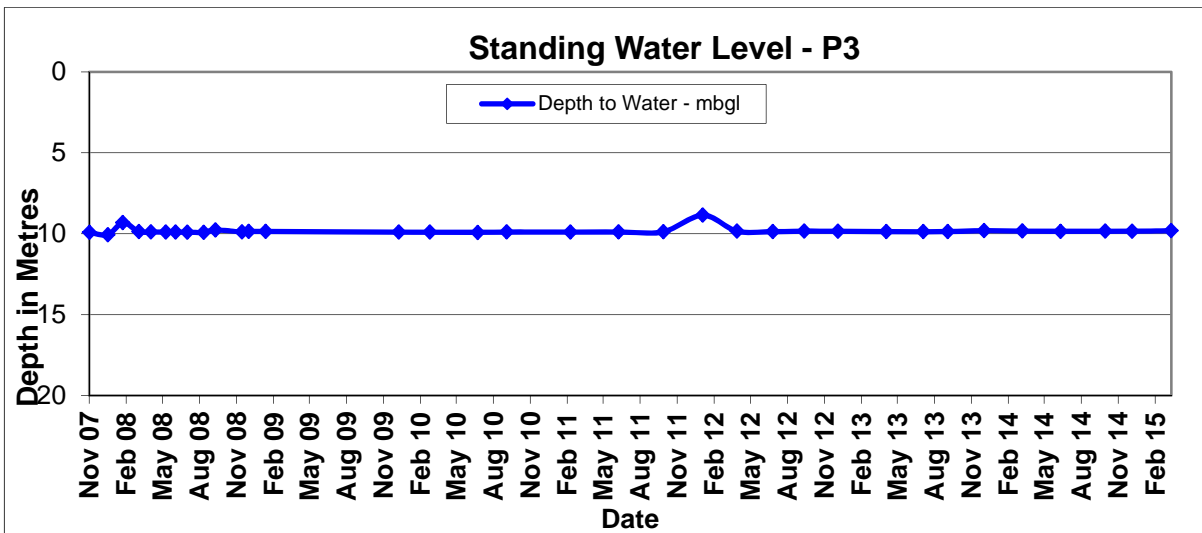
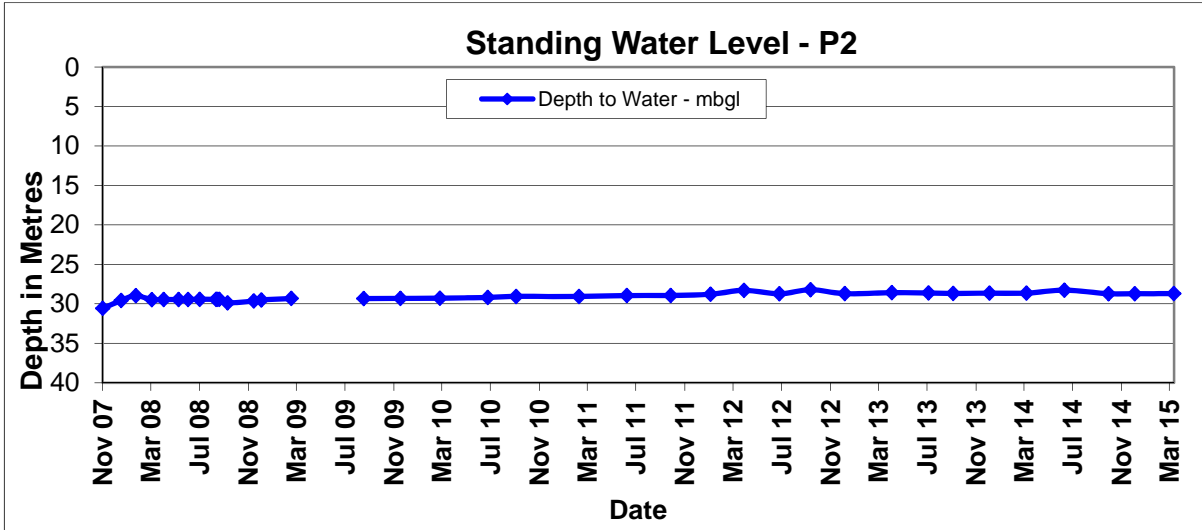


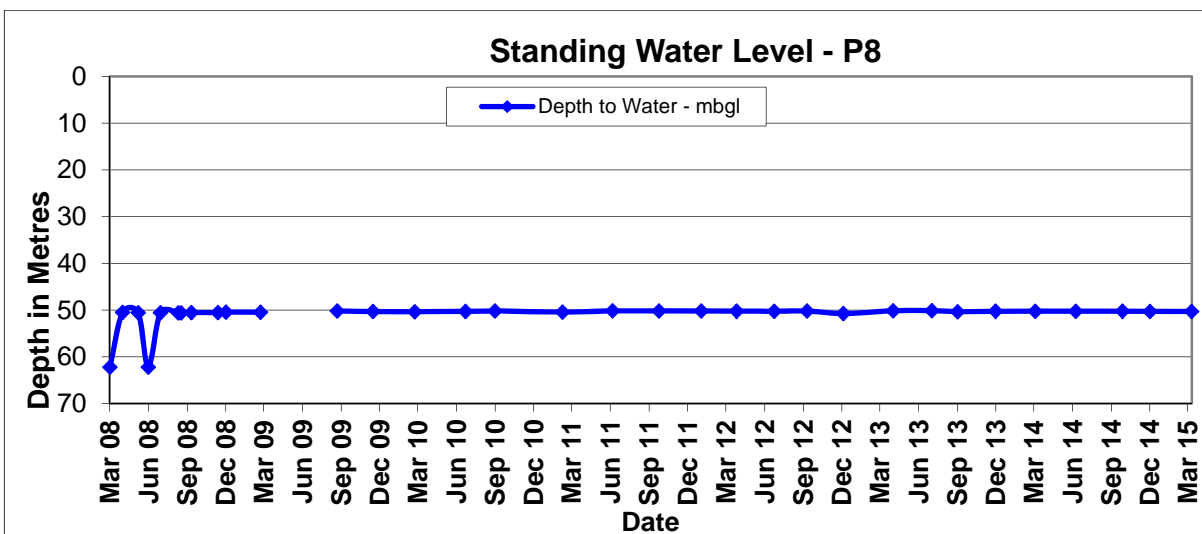
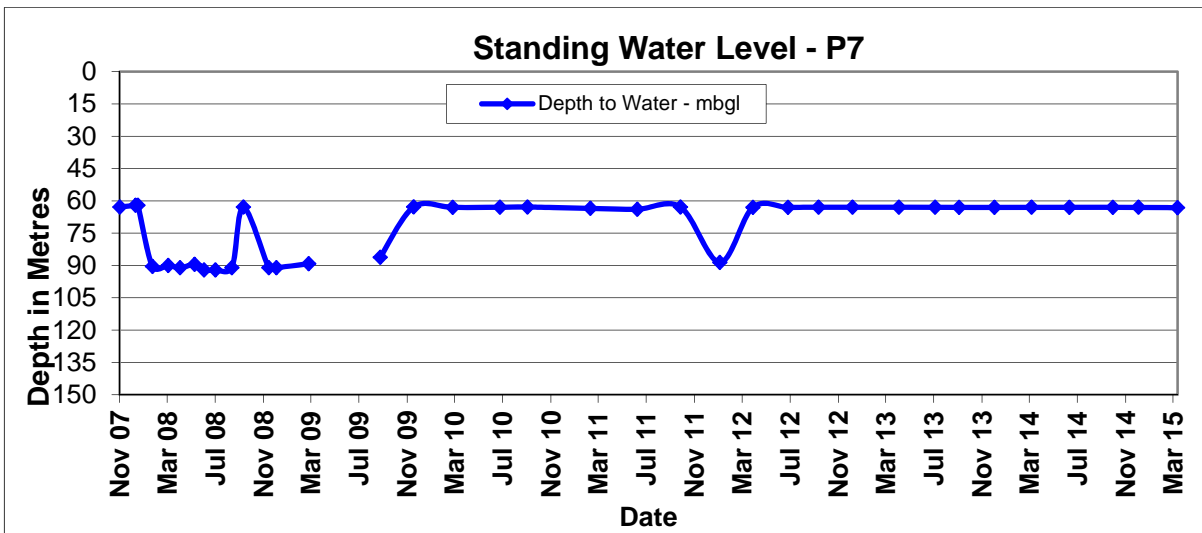
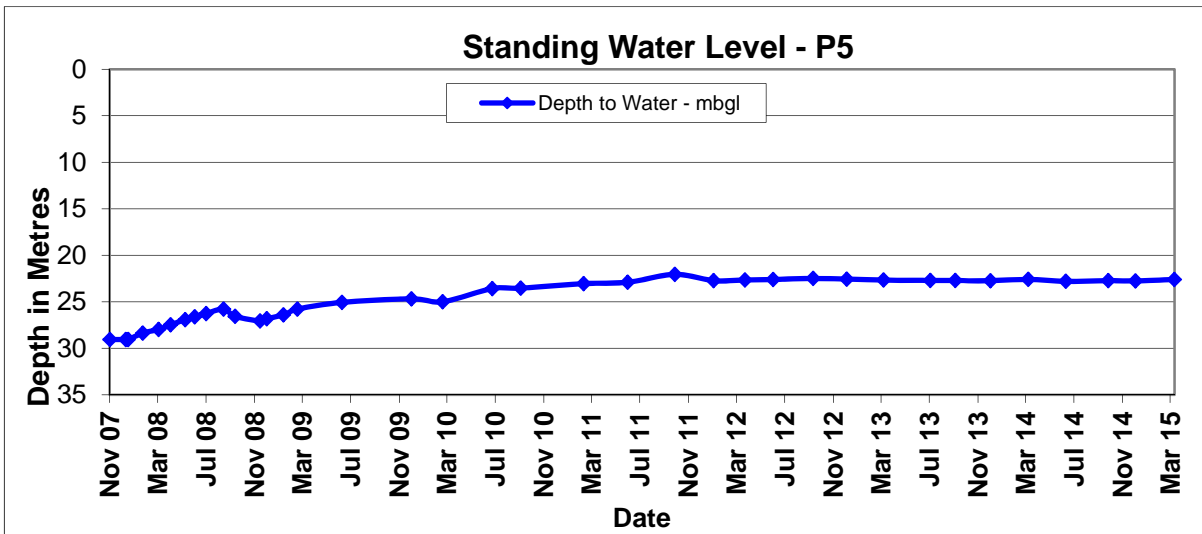
PM₁₀ levels have remained compliant since the last meeting.

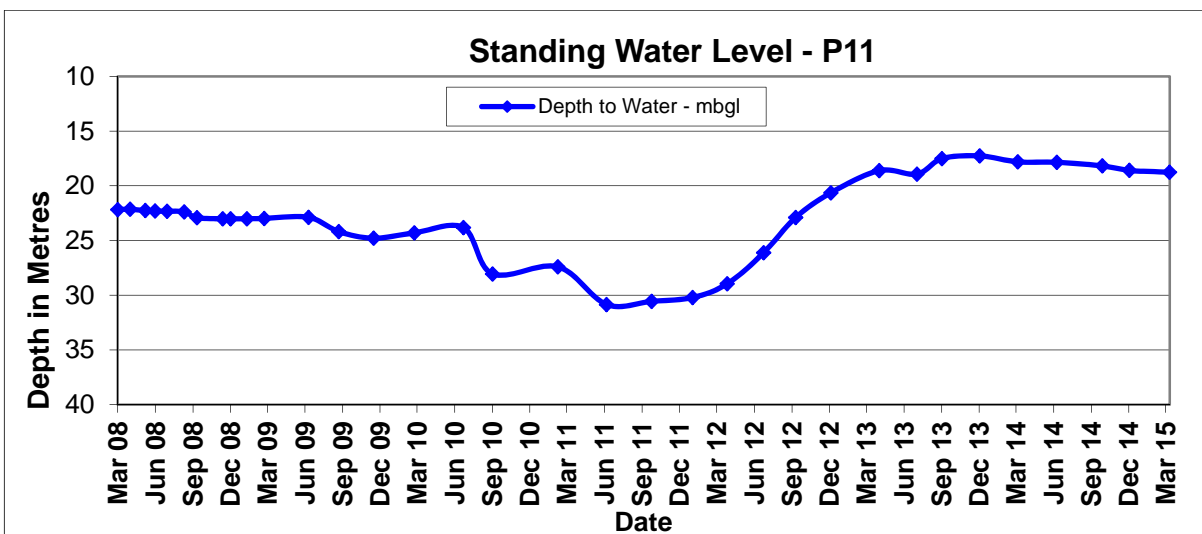
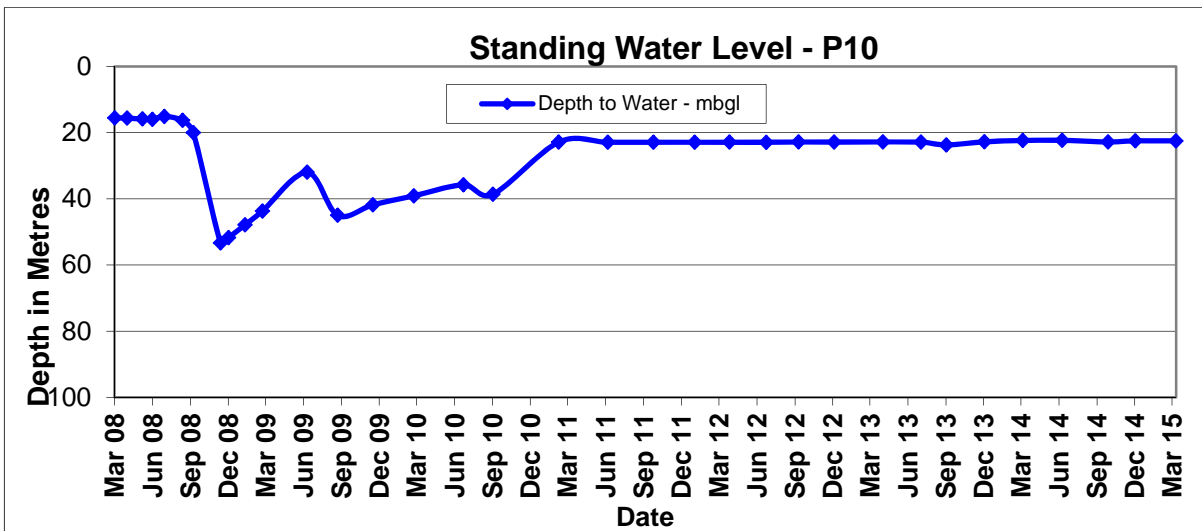
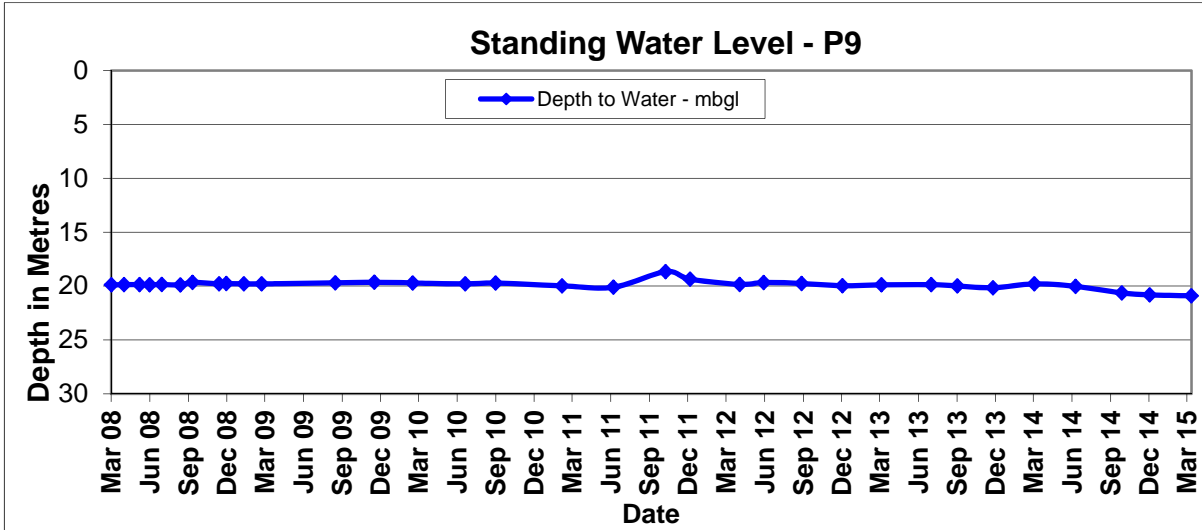
Groundwater Monitoring

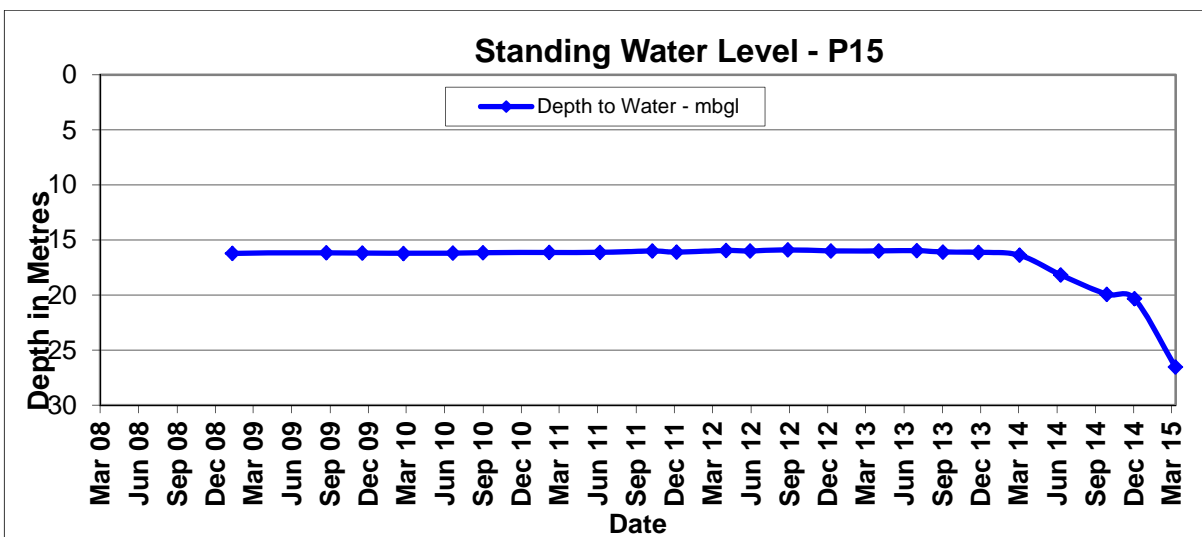
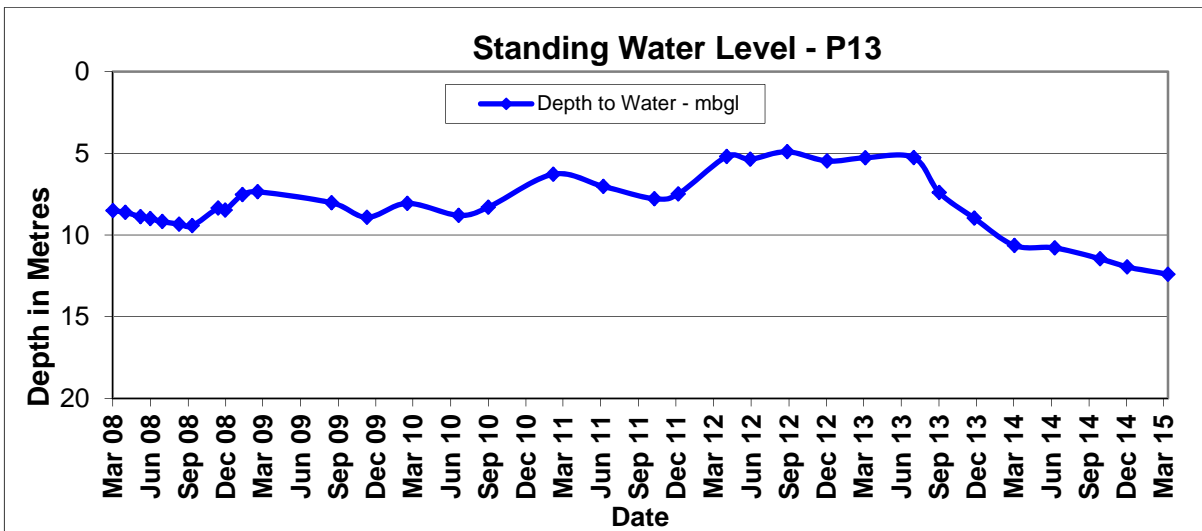
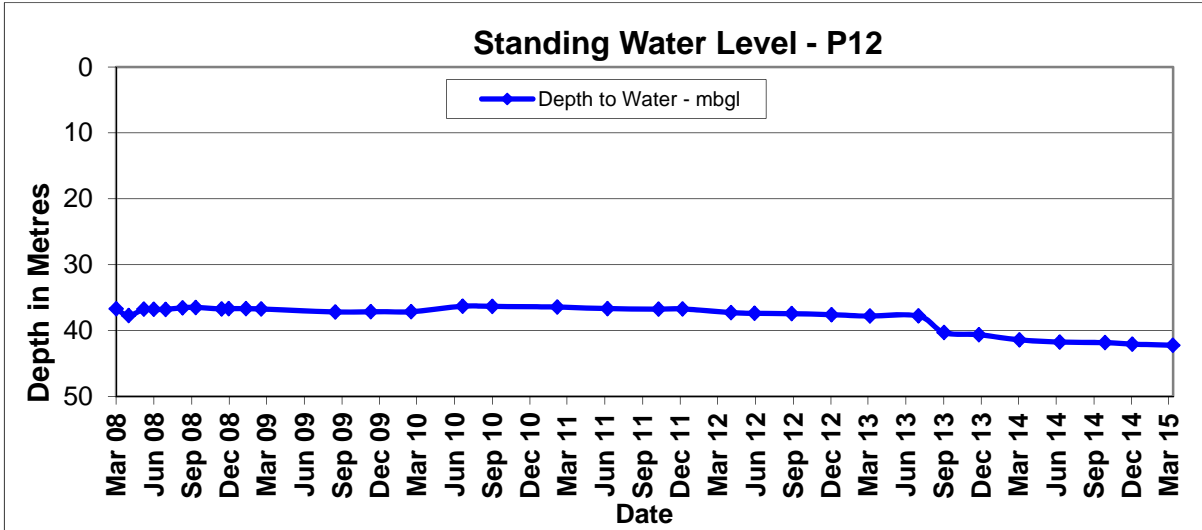
Groundwater monitoring was completed in March 2015. Nested piezometers have been installed on the "Omeo" and "Kurrajong" properties and two sets are also installed on the mine site to monitor the effects of the Longwall operation. Results of these units is included below.

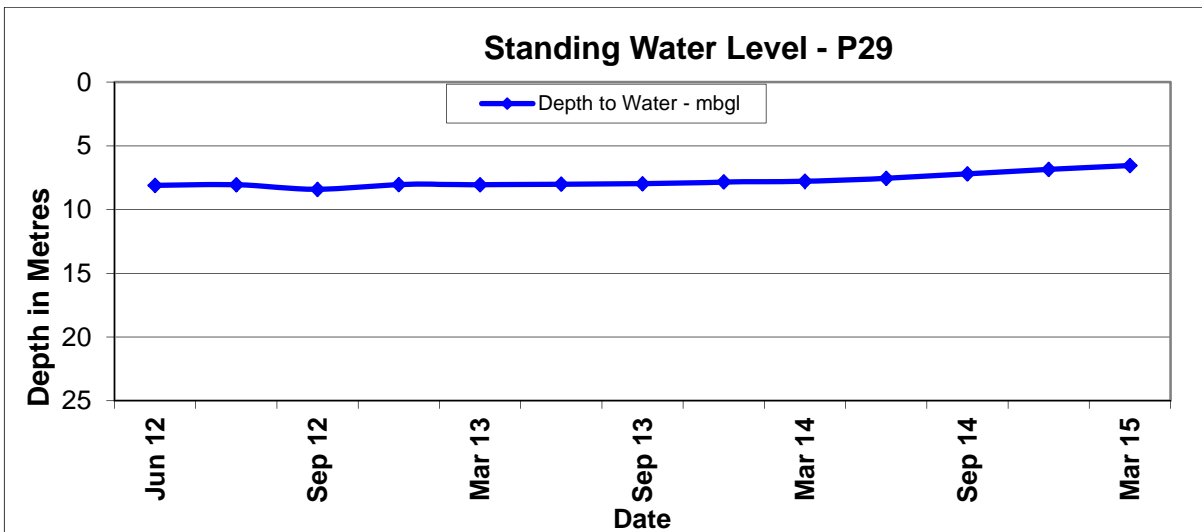
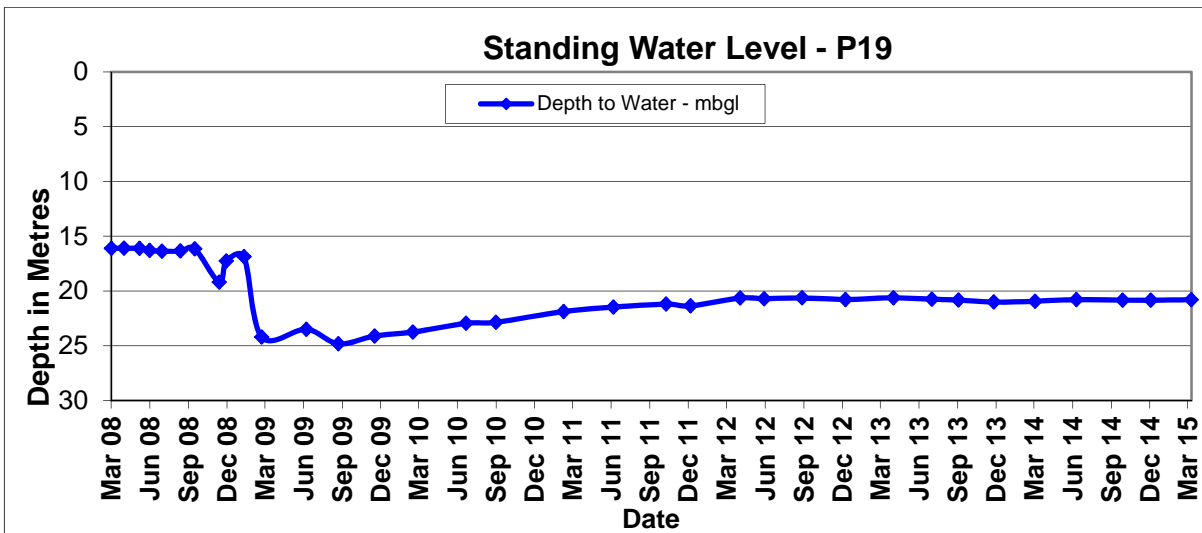
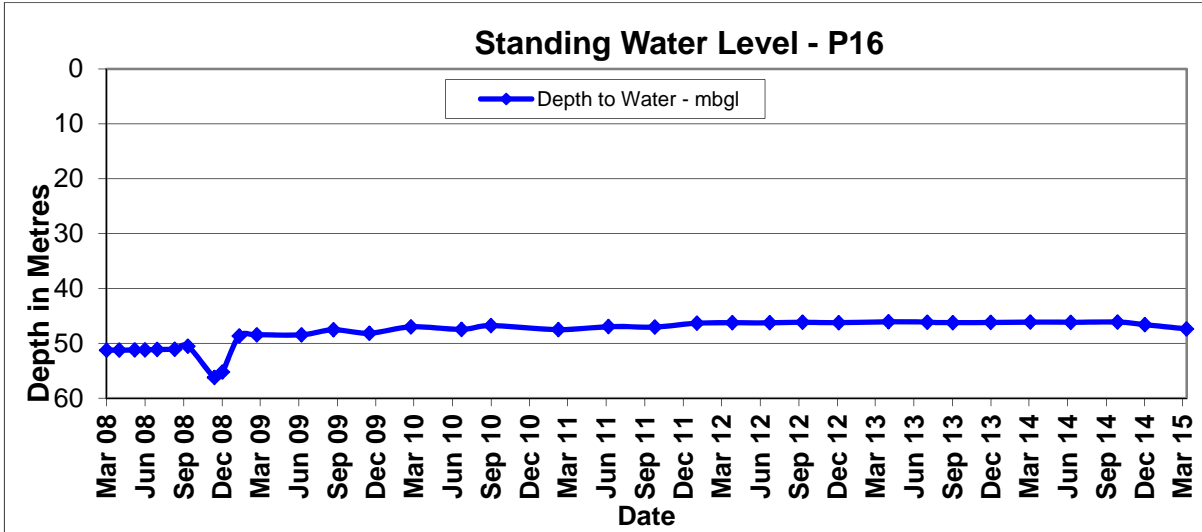


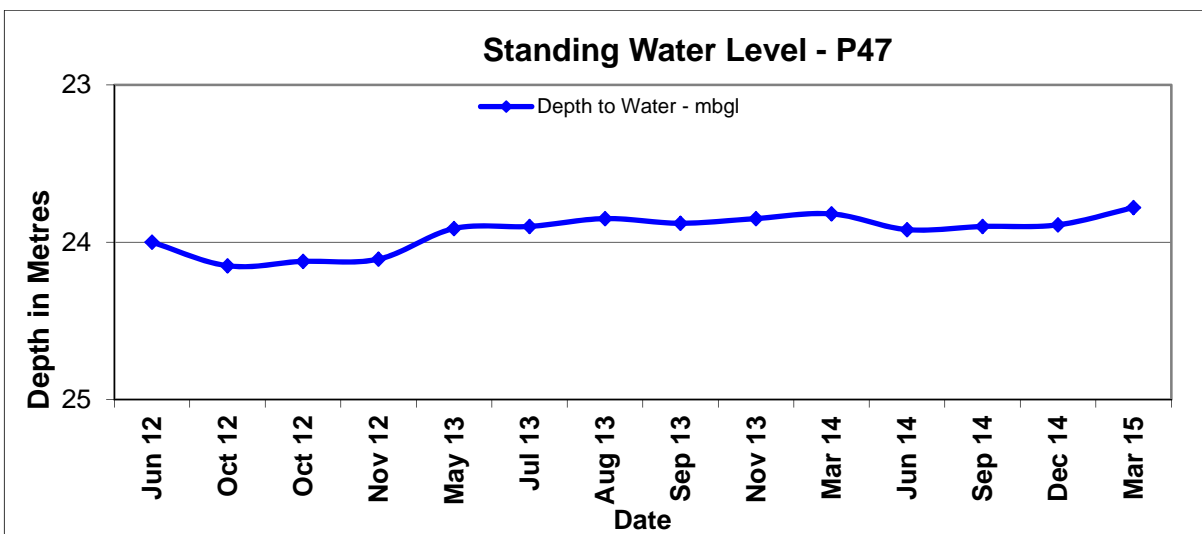
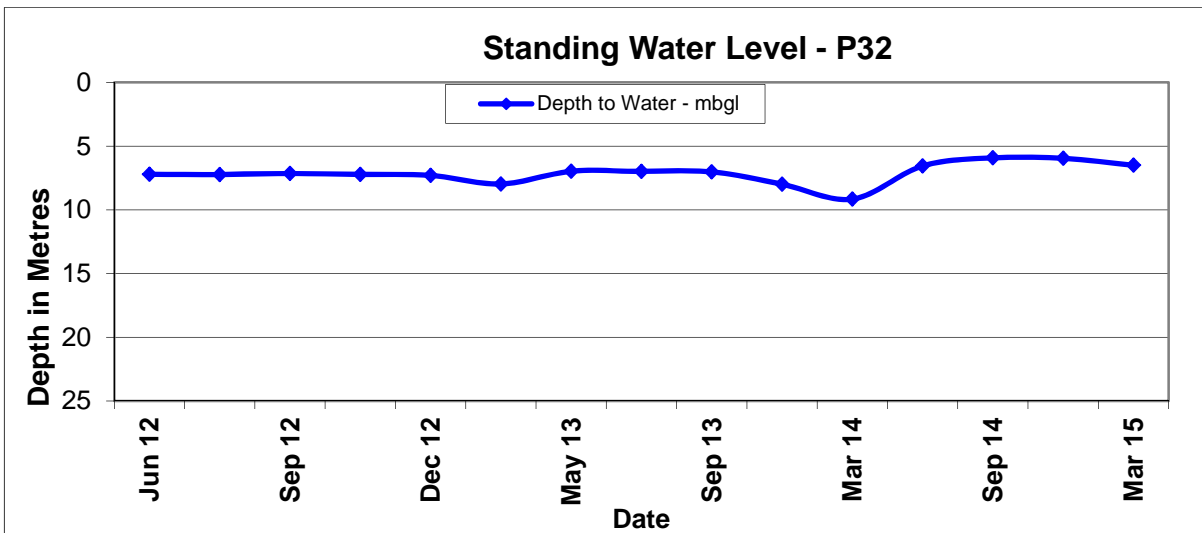
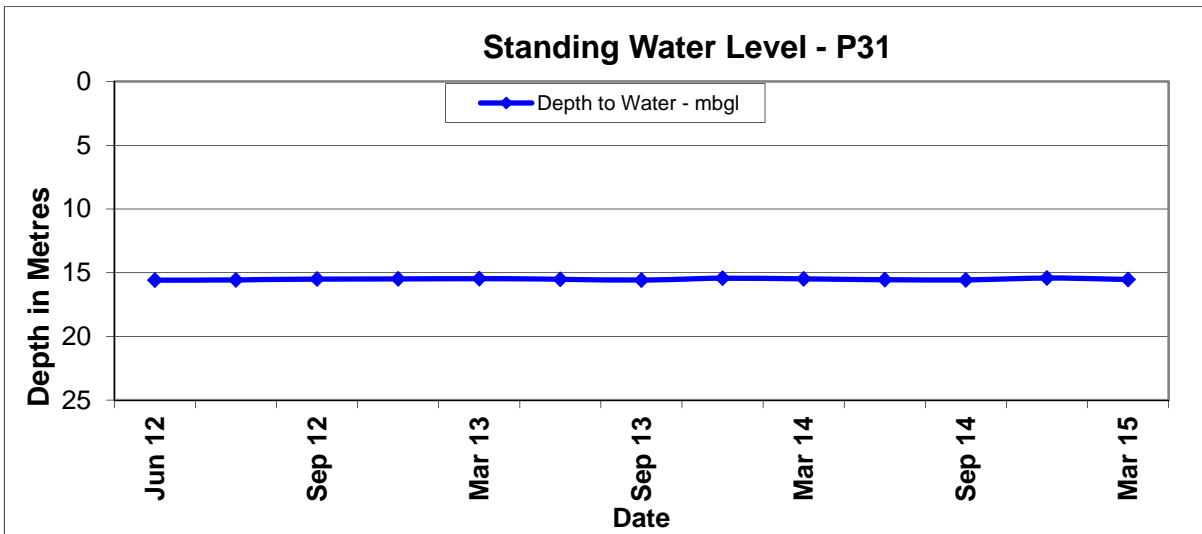


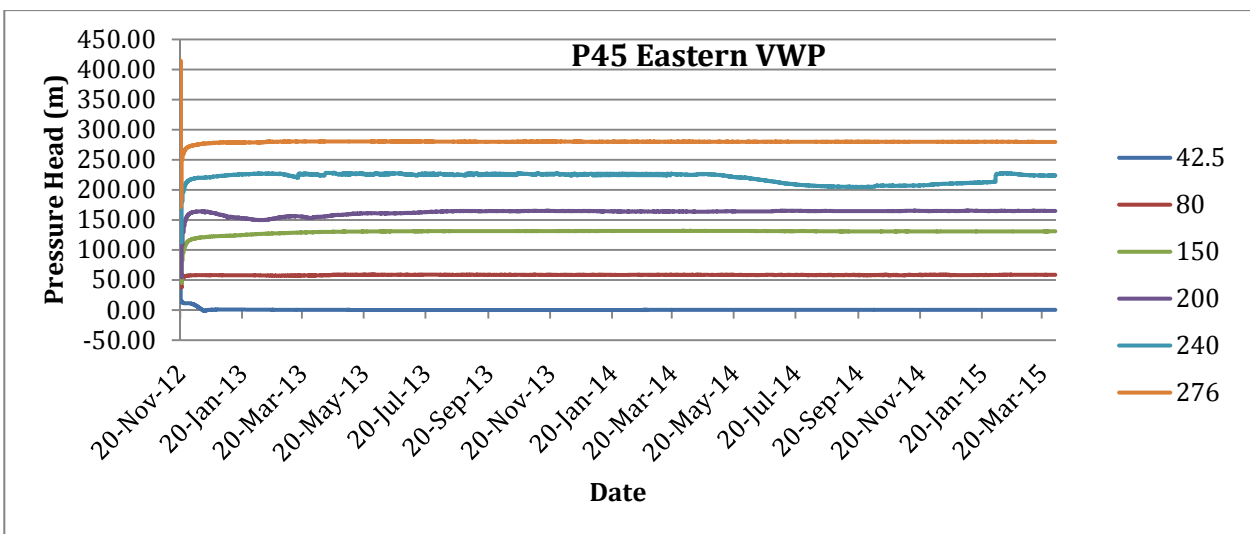
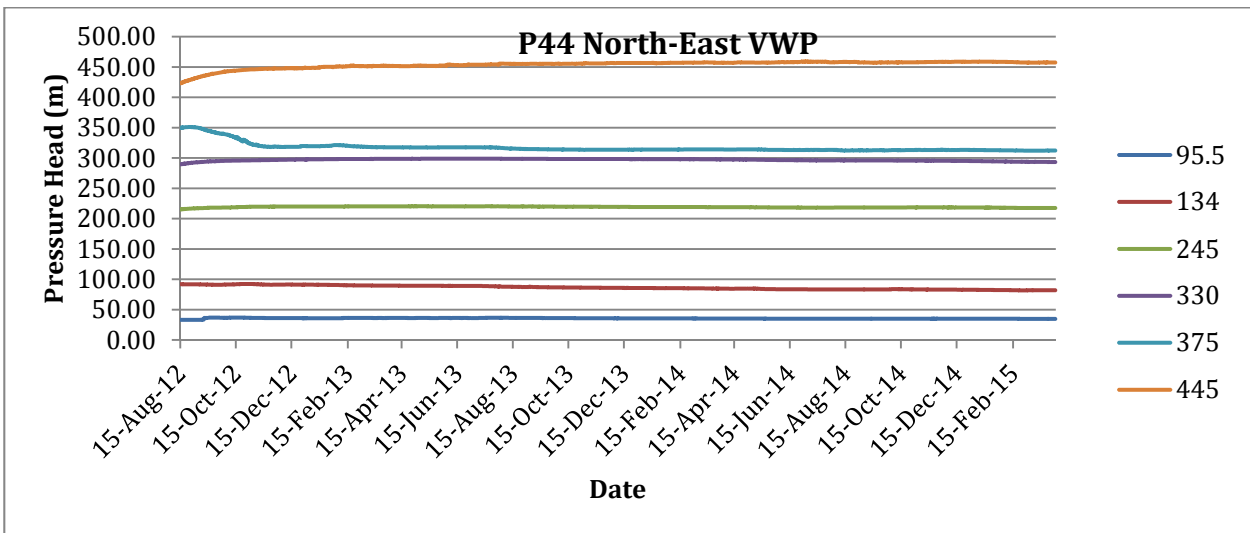
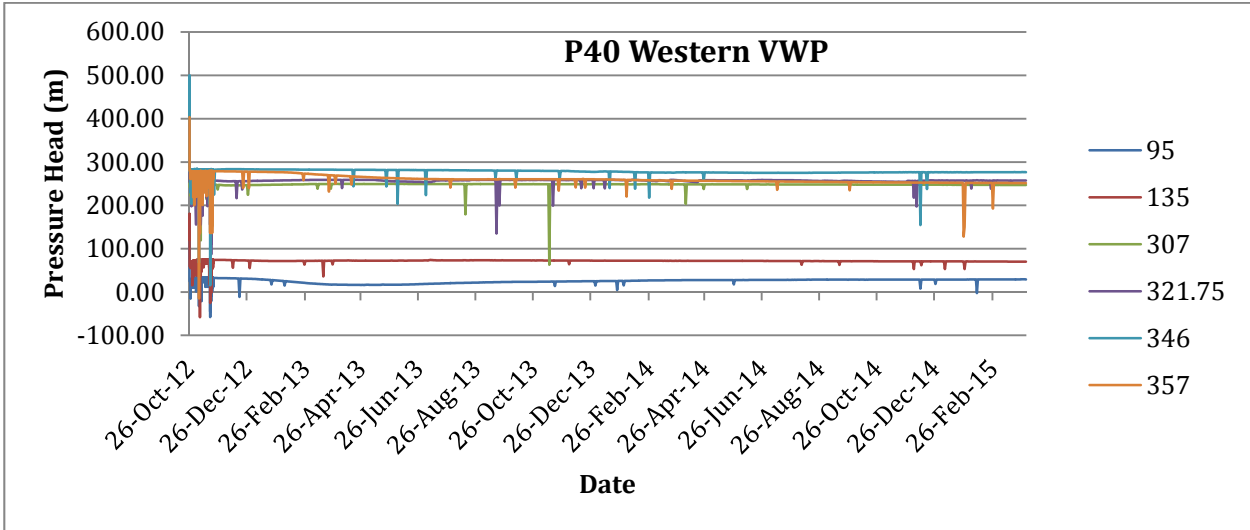


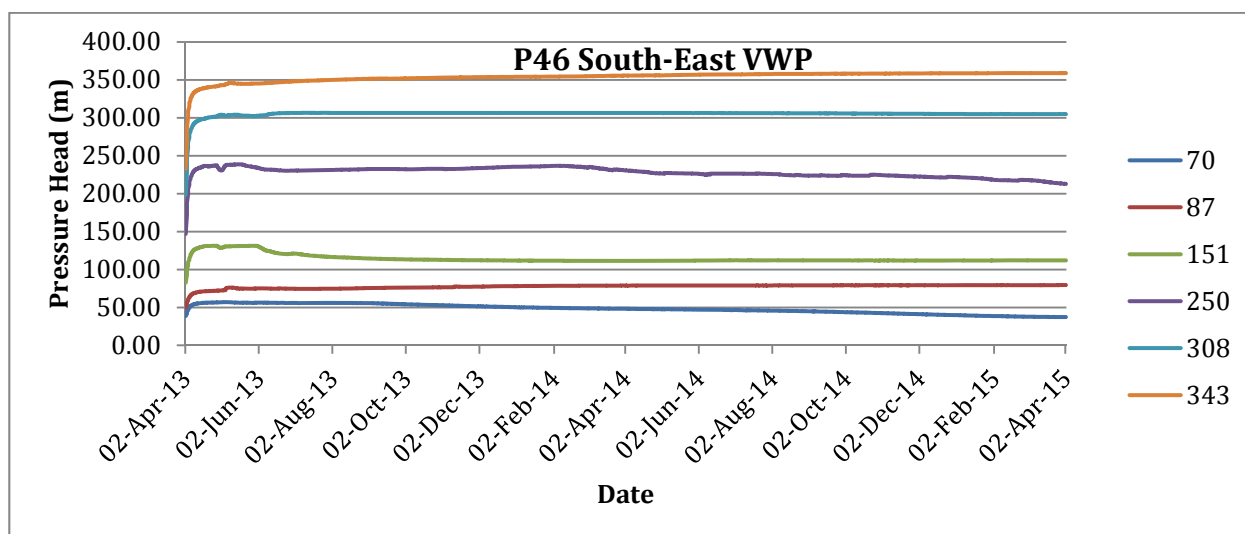












Monitoring well P13 has shown a steady decrease in water levels since September 2013. In the area of P13 pre-drainage of water and gas commenced in February 2011 and was completed during November 2013. It is considered likely that any impacts to the standing water level would have been identified during 2011. Bore P13 is 30 m deep and targets the Garrawilla Volcanics. A production bore, WB2, is approximately 300 m to the south and targets the same aquifer. Given the extended hot and dry period the drop in water level in P13 is likely associated with increased production from WB2.

Monitoring well P15 has shown a steady decrease in water level since March 2014. P15 is located above longwall panel (LW) 105 which is currently being developed for extraction and this is the likely cause of the water level drop in P15.

Groundwater Model Calibration

Groundwater model developed for the Stage 2 Longwall Project EA was calibrated by HydroSimulations. The report concluded the following:

- The calibration results of the simulation model show that the model performs reasonably well in representing the values and the patterns of the groundwater level for both steady state and transient conditions. The key statistic is 6.7% RMS and 10% RMS for steady state and transient calibration, respectively. The Scaled RMS is within the groundwater modelling guideline value of 5-10% (MDBC, 2001; Barnett et al., 2012) for acceptable model calibration.
- The model replicates very well the water level in all Hoskissons Seam monitoring sites that recorded the largest mining-induced drawdown effects to date.
- The predicted average mine inflows to LW101, LW102 and LW103 are expected to be around 0.5, 0.7 and 1.0 ML/day respectively. These rates agree very well with the average measured mine inflows of 0.6 and 1.0 ML/day for the mining periods April 2012 to March 2013 and April 2013 to March 2014, respectively.
- The model results reveal that the NM has no discernible impact on stream base flow and the variations are due almost entirely to natural conditions.
- The previous prediction of the effects of brine re-injection is unlikely to be materially different, due to similarity of hydraulic conductivities in the previous model and the current model, and good prediction of mine inflows with the previous model.

Surface Water Monitoring

No wet weather discharges from licensed discharge points occurred during March to May 2015. For the March to May 2015 period the surrounding creeks were sampled on three occasions on 4th, 7th and 21st April 2015.

Subsidence

Narrabri Mine has monitored the subsidence movement across the surface of LW101 to LW104 in accordance with the approved Extraction Plan. The table below outlines the maximum subsidence parameters recorded as part of the subsidence monitoring program and a comparison with the maximum predicted subsidence parameters as outlined in the Extraction Plan. Monitoring has been undertaken on the 11kv power line that traverses the southern end of LW101 to LW103.

Longwall Panels (LW) 101 to LW104		
	Maximum Predicted Extraction Plan	Maximum Measured
Line 101 – Centre of LW101		
Subsidence (m)	2.44	2.633
Tilt (mm/m)	47	29.1 – 46.3
Tensile Strain (mm/m)	11 – 22 [^]	8.7 – 20.7
Compressive Strain (mm/m)	14 – 28 [^]	7.5 – 26.6
Angle of Draw (°, Degrees)	22.5 – 26.5	20.2
Line 102 – Centre of LW102		
Subsidence (m)	2.44	2.694
Tilt (mm/m)	41	43.7
Tensile Strain (mm/m)	10 – 20 [^]	20.5
Compressive Strain (mm/m)	12 – 24 [^]	46.7
Angle of Draw (°, Degrees)	22.5 – 26.5	20.8
Line 103 – Centre of LW103 – Northern		
Subsidence (m)	2.44	2.671
Tilt (mm/m)	35	40.2
Tensile Strain (mm/m)	8 – 16 [^]	18.8
Compressive Strain (mm/m)	10 – 20 [^]	23.4
Angle of Draw (°, Degrees)	22.5 – 26.5	18.1
Line 103 – Centre of LW103 – Southern		
Subsidence (m)	2.44	2.524*
Tilt (mm/m)	35	30.3*
Tensile Strain (mm/m)	8 – 16 [^]	9.3*
Compressive Strain (mm/m)	10 – 20 [^]	8.5*
Angle of Draw (°, Degrees)	22.5 – 26.5	20.2*
Line 104 – Centre of LW104 – Northern		
Subsidence (m)	2.44	1.503*
Tilt (mm/m)	32	29.5*
Tensile Strain (mm/m)	7 – 14 [^]	19.4*
Compressive Strain (mm/m)	8 – 16 [^]	40.2*
Angle of Draw (°, Degrees)	22.5 – 26.5	15.8*
Line A – Cross Panel Survey Line		
Subsidence (m)	2.44	2.605*



Longwall Panels (LW) 101 to LW104		
	Maximum Predicted Extraction Plan	Maximum Measured
Tilt (mm/m)	47	56.3*
Tensile Strain (mm/m)	11 – 22^	19.1*
Compressive Strain (mm/m)	14 – 28^	26.7*
Angle of Draw (°, Degrees)	22.5 – 26.5	25.7*
Line B – Pine Creek Tributary 1		
Subsidence (m)	2.44	2.587*
Tilt (mm/m)	47	54.8*
Tensile Strain (mm/m)	11 – 22^	13.1*
Compressive Strain (mm/m)	14 – 28^	11.0*
Gradient Change (%)	Up to 6	5.47*
Line E – Pine Creek Tributary 1 Crossline 1		
Subsidence (m)	2.44	1.013*
Tilt (mm/m)	47	26.9*
Tensile Strain (mm/m)	11 – 22^	9.2*
Compressive Strain (mm/m)	14 – 28^	2.9*
Line F – Pine Creek Tributary 1 Crossline 2		
Subsidence (m)	2.44	2.698*
Tilt (mm/m)	41	59.1*
Tensile Strain (mm/m)	10 – 20^	6.6*
Compressive Strain (mm/m)	12 – 24^	21.7*
Line G – Pine Creek Tributary 1 Crossline 3		
Subsidence (m)	2.44	1.388*
Tilt (mm/m)	47	28.7*
Tensile Strain (mm/m)	11 – 22^	10.1*
Compressive Strain (mm/m)	14 – 28^	11.4*
Power Poles		
<i>Pole 2</i>		
Subsidence (m)	0	0.046
Dynamic Tilt (mm/m)	0	9.09
Final Tilt (mm/m)	0	9.09
Conductor length change between poles 2-3 (m)	0.13	-0.59
Conductor Clearance Loss (m)	0.77	+0.76
<i>Pole 3</i>		
Subsidence (m)	2.18	2.085
Dynamic Tilt (mm/m)	30	66.3
Final Tilt (mm/m)	12	50.07

Longwall Panels (LW) 101 to LW104		
	Maximum Predicted Extraction Plan	Maximum Measured
Conductor length change between poles 3 - 4 (m)	0.28	-0.81
Conductor Clearance Loss (m)	1.10	1.38
<i>Pole 4</i>		
Subsidence (m)	2.11	2.061
Dynamic Tilt (mm/m)	25	74.23
Final Tilt (mm/m)	15	31.80
Conductor length change between poles 4 - 5 (m)	0.13	0.02
Conductor Clearance Loss (m)	0.07	+1.40
<i>Pole 5</i>		
Subsidence (m)	0.31	0.183
Dynamic Tilt (mm/m)	2	25.66
Final Tilt (mm/m)	2	19.40
Conductor length change between poles 5 - 6 (m)	0.024	-1.03
Conductor Clearance Loss (m)	0.30	+2.04
<i>Pole 6</i>		
Subsidence (m)	1.41	1.540
Dynamic Tilt (mm/m)	1	129.68
Final Tilt (mm/m)	27	-
Conductor Clearance Loss (m)	1.08	-
<i>Pole 7</i>		
Subsidence (m)	2.42	0.007
Dynamic Tilt (mm/m)	3	215.91
Final Tilt (mm/m)	3	-
Conductor Clearance Loss (m)	1.71-	-

* - subsidence development incomplete.

^ - values for 'smooth' and 'discontinuous' (i.e. crack affected) subsidence profiles.

Based on the above table, several subsidence prediction exceedances have occurred above LW101 to LW104:

- The maximum subsidence measurements were within +/- 15% of the predicted value of 2.44 m.
- The maximum tilt measurements were within 15% of the predicted values for the centreline lines of LW101, LW102 and LW103. 94% of measured tilts in LW104 were within the predicted range.
- The maximum tensile strain measurements were generally within the predicted range of the values of 11 mm/m (smooth profile) and 22 mm/m (discontinuous or crack affected profiles) with the exception of LW104 which recorded a maximum tensile strain of 42.6 mm/m, however 92% of the measured tensile strain values in LW104 were within the predicted range.
- The maximum compressive strain measurements were generally within the range of the predicted values of 14 mm/m (smooth profile) and 28 mm/m (discontinuous or crack affected profiles) with the exception of

LW102, which recorded a maximum compressive strain of 46.7 mm/m, and LW104 which recorded a maximum compressive strain of 42.3 mm/m.

The centreline subsidence results for LW101 to LW104 indicate that the Garrawilla Volcanics and Basalt Sill have not reduced subsidence through spanning behaviour.

The maximum subsidence is also considered to be closer to 63% of the average mining height of 4.3m. However, since the measured subsidence effects were all within 15% of the current predicted maximum values, and surface impacts have not been greater than anticipated, it is not considered necessary to increase the values presented in the Extraction Plan for future longwall panels at this stage.

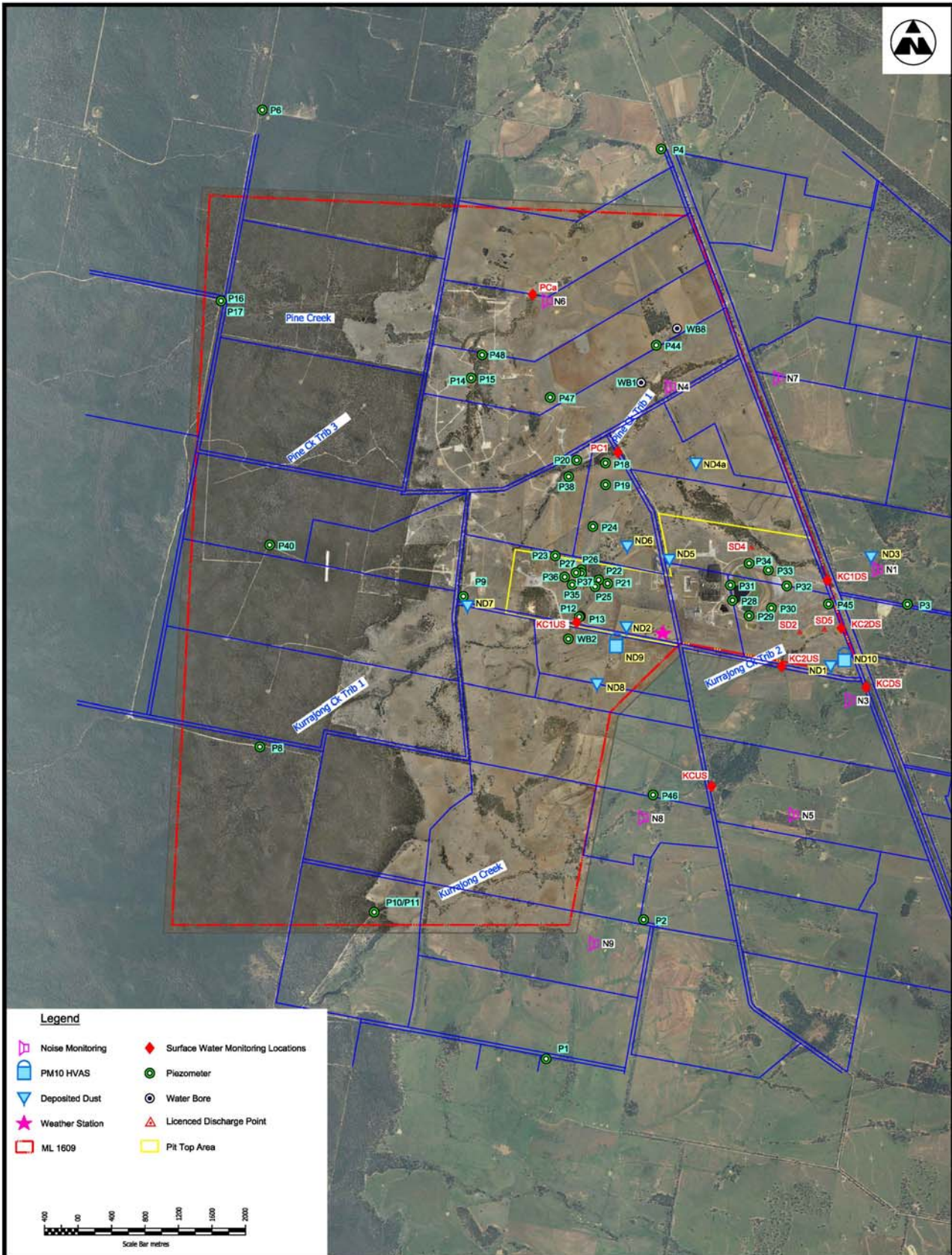
Complaints

Eight formal complaints were received during the period March to May 2015. Six were in relation to noise, one was in relation to dust and one was in relation to lights.

The noise complaints were followed up and actioned as required as complaints are usually received post-impact. Reversing beepers were changed on some equipment as they were found to be the source of noise in two of the noise complaints. The dust complaint related to dust from the product tripper but the dust was found to be contained within the coal processing area. The complaint in relation to lighting was actioned on the day of the complaint.

Environmental Incident(s)

No environmental incidents occurred at the mine during the period December 2014 to February 2015.



Rev	By	Description	Approved	Date
3	SJF	Up Dated Locations	SJF	30/05/13
2	TFS	Up Dated Locations	SJF	31/10/11
1	TFS	Up Dated Locations		17/10/11
4	SJF	Up Dated Locations	SJF	10/06/14

By	Date:
Drafted: TFS	30.06.11
Edited: SJF	10.06.14
Approved: SJF	10.06.14
Scale: 1 : 40000 at A3	

Current Environmental Monitoring Locations

Figure 2

Rev 4



NARRABRI MINE