Narrabri Mine Community Consultative Committee Meeting Minutes

Meeting No: 28

Date: Wednesday 11th March 2015

Time: 9:00am

Location: Underground visit followed by meeting at the mine site

Present: Russell Stewart (RS) – Independent Chairman
James Stieger (JS)
Geoff Hunter (SH) – Alternative for Sally Hunter
Rodney Dunlop (RD)
John Tough (JT) – Narrabri Shire Council Alternative Delegate
Steve Bow (SB) – Narrabri Mine General Manager
Dave Ellwood (DE) – Narrabri Mine Technical Services Superintendent
Steve Farrar (SF) – Narrabri Mine Environmental Officer

1. UNDERGROUND VISIT

Prior to the meeting, DE and the shift undermanager escorted the members of the CCC underground for a visit. The visit went to the longwall unit which was on a maintenance day and to a development miner underground.

2. APOLOGIES

Owen Salisbury, Mark Foster, Cathy Redding and Peter Webb

3. DECLARATION OF PECUNIARY OR OTHER INTERESTS

JS declared in interest as Whitehaven currently negotiating to undertake noise/dust mitigation at this house.

4. PREVIOUS MINUTES

Moved: Russell Stewart Seconded: James Stieger

4.1. BUSINESS ARISING FROM PREVIOUS MINUTES

Workers leaving site – RS asked what had been done about the rush of workers leaving site. SB replied a Tool Box Talk (TBT) was issued.

Bins - SF handed response letter from Narrabri Shire Council (NSC) to RS to read. Letter read out to the members by RS. JS stated they won't do anything and didn't agree that there are enough truck stops along the highway. RS said NSC is right in that it is a State matter. JS stated that Whitehaven cleaned up 18 months ago at their own cost but the rubbish has since returned. JT stated that NSC do work along the highway and then charge Road and Maritime Services (RMS). JS asked if Whitehaven can follow up. SF said Whitehaven can follow up on the timeline for clean-up works outlined in the letter. SB said we have our own spot off the highway that we maintain. RS said thanks for the response and if Whitehaven can follow up to get details on the clean-up

program. JT also suggested submitting to the traffic committee in relation to truck stops and rubbish bins. SB suggested we go down the NSC route to first find out what is planned and when.

5. GENERAL BUSINESS

5.1. OPERATIONS PROGRESS REPORT

RS stated that he was disappointed that a lot of effort went into the Whitehaven Coal office relocation with senior management but little consideration was given to Narrabri as an option. He stated it is critical for large employers to have a face in the town. Especially given the bulk of operations are in Narrabri. RS acknowledged decision out of Narrabri Coal Operations control. SB said he appreciated the comments but not going through the reasons why Gunnedah was chosen. SB also stated that the company hasn't said no to an office in Narrabri and SB will follow this up. RS stated that communities are asked to support mines and that is easier to do when there is a shop in town. RS pointed out that Santos has an office in Narrabri and Gunnedah. JT stated that NSC doesn't do too well out of Whitehaven. RS agreed considering what goes out of the shire. SB said there may be some points of inequity. RS said an office needs to be considered. SB said he would pass the point on and ask again about a Narrabri shop front. RS stated it doesn't have to be a big thing.

The operations update was provided as follows:

Mine Progress Report (to 28 February 2015)

Coal produced (t):	February 2015	745,600
	FY-to-date	4,174,922
Coal Railed (t):	February 2015	512,369
	FY-to-date	4,096,763

Average workforce numbers (February 2015):

NCO	Waged – 173
	Salary – 104
	Total – 277
Contractors	Total – 80

Safety Update (FY to February 2015):

Lost Time Injury (LTI)	1
Total Recordable Injuries:	13
Planned Task Observations:	4,670
Take 5 Assessments:	74,957
Work Hours (Feb-15):	82,442
Days LTI Free:	189

Sb said we have currently have 3 miners onsite and most people employed in development. SB also stated that 1.7km of roadways were driven by development during February 2015. SB stated we are picking up more locals.

SB stated that the mine had three incidents in the last three days with one broken wrist taking the TRI's to 16.

SB said that focusing on locally based personnel as the contract with Civeo finishes in May 2015 and at this stage not looking to renew. GH asked if we fill rooms and SB stated that we are contracted to pay for rooms but at the moment we are not filling all of our rooms. SB stated that they may be looking for Santos to take rooms. JS said he is not sure if it will go ahead and he thinks they would sell tomorrow if they could. SB said the mine had requested that employees stay locally and also asked contractors to do the same. JS said not to forget about Baan Baa for accommodation. JT asked if there were any longwall contractors. SB said no, only during the longwall move but we have some fitters/electricians who are contractors on during the week. Other contractors include gas drainage personnel, drillers etc. RS stated that Boggabri was built after Narrabri if it may be going as well. SB stated that Boggabri Civeo built for the Maules Creek Coal (MCC) Project and it has a contract with them until 2018. This is because MCC was originally planned to be a contractor operated mine but it will now be Whitehaven operated.

RS wanted to note in the minutes an official thanks to Whitehaven for taking the CCC underground.

5.2. ENVIRONMENTAL OVERVIEW

JT stated that trains have two horns, one quieter and one louder and they be using the quieter horn now. JS said train noise had improved.

6. NEW BUSINESS

SF stated that contact was made with a local landholder to discuss air quality mitigation onsite and what has been done. SF stated that information was provided on the dust sprays and monitoring still shows compliance and complaints generally relate to visible dust. GH said more than visible dust.

SF handed out a presentation for a proposed modification to the mines coal stockpiles. GH asked if a presentation could be done at the next CCC meeting to go through the noise and air quality assessments to better understand the issues. JS asked if the dam was big enough for heavy rainfall events. SF stated that it would be bigger than required as the mine is planning to use some of the dam material in the construction of the expanded pads. SB stated that the mine is looking into using brine in the dust spray system and potentially using evaporators to reduce mine water held onsite.

7. COMPLAINTS AND COMPLAINTS HOTLINE

As per provided report.

8. NEXT MEETING

Wednesday 10th June 2015 at 4:00pm.

9. CLOSURE OF MEETING

Meeting closed at 2:25pm.

Narrabri Mine Community Consultative Committee Meeting #28

Environmental Monitoring Report December 2014 – February 2015

Noise Monitoring

Attended noise monitoring was undertaken between Monday 1st December and Wednesday 3rd December 2014 (Tables 1-12) to verify if noise levels were within compliance limits. The results from this monitoring are detailed in the tables below.

Table 1: NM Operational Noise Monitoring Results – 1 December 2014 (day)

Location	Time	Total dB(A), Leq (15 min)	Wind speed/ direction	Temp Grad (˚C/100m)	Identified Noise Sources
N1 Bow Hills	3:44 pm	42	4.3/317	n/a	Traffic (42), wind (29), birds (27), NM inaudible
N3 Naroo	12:27 pm	54	7.1/332	n/a	Wind (53), traffic (48), birds (31), NM faintly audible
N5 Oakleigh	1:42 pm	48	6.0/329	n/a	Wind (45), birds (43), traffic (40), NM inaudible
N6 Newhaven	3:31 pm	43	4.4/314	n/a	Birds (34), wind (28), NM (24*)
N7 Merriman	2:06 pm	43	5.7/325	n/a	Traffic (39), wind (39), birds (35), NM inaudible

*Noise from drill rig

Table 2: NM Operational Noise Monitoring Results – 1 December 2014 (evening)

Location	Time	Total dB(A), Leq (15 min)	Wind speed/ direction	Temp Grad (˚C/100m)	Identified Noise Sources
N1 Bow Hills	8:45 pm	41	2.8/332	+0.5	Traffic (39), insects (36), NM (29)
N3 Naroo	9:23 pm	36	2.3/324	+1.0	Traffic (33), insects (30), NM (29)
N5 Oakleigh	9:18 pm	37	2.2/324	+1.0	Frogs & insects (34), traffic (33), NM (26)
N6 Newhaven	8:33 pm	34	3.1/331	+0.5	Insects (33), traffic (25), NM (<10*)
N7 Merriman	8:01 pm	34	3.2/323	+0.3	Traffic (33), insects (25), domestic (25), NM inaudible

*Noise from drill rig

Table 3: NM Operational Noise Monitoring Results – 1/2 December 2014 (Night)

Location	Time	Total dB(A), Leq (15 min)	Wind speed/ direction	Temp Grad (oC/100m)	Identified Noise Sources
N1 Bow Hills	11:14 pm	38	3.2/284	Lapse	Traffic (36), NM (30), frogs & insects (27), wind (27)
N3 Naroo	12:22 am	36	2.1/291	Lapse	Traffic (33), birds & insects (31), NM (28)
N5 Oakleigh	11:19 pm	36	3.2/284	Lapse	Traffic (32), frogs & insects (32), NM (30)
N6 Newhaven	10:04 pm	34	2.6/320	+0.9	Insects (31), traffic (28), NM (<20*)
N7 Merriman	10:00 pm	37	2.6/320	+0.9	Traffic (35), insects (33), NM inaudible

*Noise from drill rig

Table 4: NM Operational Noise Monitoring Results – 2 December 2014 (day)					
Location	Time	Total dB(A), Leq (15 min)	Wind speed/ direction	Temp Grad (oC/100m)	Identified Noise Sources
N1 Bow Hills	10:49 am	46	6.0/314	n/a	Wind (45), traffic (39), birds (27), NM (24)
N3 Naroo	9:51 am	55	6.7/316	n/a	Wind (55), traffic (40), NM inaudible
N4 Greylands	2:15 pm	46	5.6/326	n/a	Wind (45), traffic (34), birds & insects (33), NM inaudible
N5 Oakleigh	11:32 am	51	5.8/307	n/a	Wind (50), birds (43), traffic (29), NM inaudible
N6 Newhaven	2:56 pm	42	3.5/309	n/a	Wind (40), birds (36), NM (<20*)
N7 Merriman	12:28 pm	43	5.6/252	n/a	Wind (42), traffic (33), birds (28), NM inaudible

*Noise from drill rig

Table 5: NM Operational Noise Monitoring Results – 2 December 2014 (evening)					
Location	Time	Total dB(A), Leq (15 min)	Wind speed/ direction	Temp Grad (oC/100m)	Identified Noise Sources
N1 Bow Hills	8:03 pm	39	1.9/309	+1.6	Traffic (38), insects (28), NM (26), sheep (24)
N3 Naroo	9:20 pm	37	1.9/301	+1.7	Traffic (36), frogs & insects (30), NM (25)
N5 Oakleigh	9:15 pm	38	1.9/307	+1.6	Traffic (37), insects (30), NM (25)
N6 Newhaven	8:31 pm	31	2.1/326	+1.7	Traffic (26), insects (26), NM (<10*)
N7 Merriman	7:14 pm	43	2.0/303	+1.6	Birds & insects (42), traffic (32), NM inaudible

*Noise from drill rig

Table 6: NM Operational Noise Monitoring Results – 2/3 December 2014 (night)					
Location	Time	Total dB(A), Leq (15 min)	Wind speed/ direction	Temp Grad (oC/100m)	Identified Noise Sources
N1 Bow Hills	11:57 pm	41	2.8/316	+3.9	Traffic (40), insects (34), NM (26)
N3 Naroo	12:01 am	38	2.8/316	+3.9	Traffic (35), NM (34), frogs & insects (26)
N5 Oakleigh	1:26 am	38	4.6/325	+0.3	Wind (37), traffic (30), insects (26), NM (25)
N6 Newhaven	10:49 pm	36	2.3/314	+3.9	Insects (30), traffic (30), NM (<20*)
N7 Merriman	10:31 pm	38	2.1/312	+3.2	Traffic (37), insects (32), NM inaudible

*Noise from drill rig

Table 7: NM Operational Noise Monitoring Results – 3 December 2014 (day)					
Location	Time	Total dB(A), Leq (15 min)	Wind speed/ direction	Temp Grad (oC/100m)	Identified Noise Sources
N1 Bow Hills	2:08 pm	42	4.7/303	n/a	Traffic (39), wind (39), birds & insects (26), NM inaudible
N3 Naroo	12:34 pm	47	5.5/316	n/a	Birds (45), traffic (40), wind (39), NM inaudible
N5 Oakleigh	10:51 am	53	6.9/312	n/a	Birds (50), wind (50), NM inaudible
N6 Newhaven	12:42 pm	43	5.0/315	n/a	Wind (38), birds (34), NM (<20*)
N7 Merriman	10:57 am	50	6.7/313	n/a	Wind (49), traffic (42), birds & insects (28), NM inaudible

*Noise from drill rig

Table 8: NM Operational Noise Monitoring Results – 3 December 2014 (evening)					
Location	Time	Total dB(A), Leq (15 min)	Wind speed/ direction	Temp Grad (oC/100m)	Identified Noise Sources
N1 Bow Hills	8:08 pm	34	1.6/341	+0.3	Traffic (33), birds & insects (27), NM inaudible
N3 Naroo	8:41 pm	43	1.8/339	+0.6	Traffic (43), NM (30), insects (27)
N4 Greylands	9:40 pm	47	6.1/231	Lapse	Wind (47), NM (26)
N5 Oakleigh	9:25 pm	36	6.4/232	Lapse	Traffic (35), insects (29), NM (25)
N6 Newhaven	9:02 pm	41	2.8/289	+0.6	Insects (28), NM (23*)
N7 Merriman	7:31 pm	39	1.7/352	0.0	Traffic (36), birds & insects (36), NM inaudible

*Noise from drill rig

Table 9: NM Operational Noise Monitoring Results – 3/4 December 2014 (night)					
Location	Time	Total dB(A), Leq (15 min)	Wind speed/ direction	Temp Grad (oC/100m)	Identified Noise Sources
N1 Bow Hills	11:09 pm	40	2.4/101	Lapse	Traffic (39), NM (33), insects (26)
N3 Naroo	12:58 am	51	4.2/118	Lapse	Wind (50), traffic (44), insects (26), NM inaudible
N4 Greylands	12:31 am	38	5.1/128	Lapse	Traffic (37), wind (30, insects (24), NM inaudible
N5 Oakleigh	11:28 pm	47	5.3/121	Lapse	Wind (47), insects (25), NM inaudible
N6 Newhaven	11:20 pm	41	2.4/101	Lapse	Insects (36), NM (23*)
N7 Merriman	10:03 pm	45	4.5/200	Lapse	Traffic (44), wind (39), insects (28), NM inaudible

*Noise from drill rig

Table 10: NM Sleep Disturbance Monitoring Results – 1/2 December 2014 (night)				
Location	Time	dB(A),L1 (1 min)	Wind speed / direction	Temp Grad(oC/100m)
N1 Bow Hills	11:14 pm	34	3.2/284	Lapse
N3 Naroo	12:22 am	31	2.1/291	Lapse
N5 Oakleigh	11:19 pm	33	3.2/284	Lapse
N6 Newhaven	10:04 pm	<20	2.6/320	+0.9
N7 Merriman	10:00 pm	n/a	2.6/320	+0.9

Table 11: NM Sleep Disturbance Monitoring Results – 2/3 December 2014 (night)				
Location	Time	dB(A),L1 (1 min)	Wind speed / direction	Temp Grad(oC/100m)
N1 Bow Hills	11:57 pm	30	2.8/316	+3.9
N3 Naroo	12:01 am	38	2.8/316	+3.9
N5 Oakleigh	1:26 am	28	4.6/325	+0.3
N6 Newhaven	10:49 pm	<20	2.3/314	+3.9
N7 Merriman	10:31 pm	n/a	n/a	+3.2

Table 12: NM Sleep Disturbance Monitoring Results – 3/4 December 2014 (night)				
Location	Time	dB(A),L1 (1 min)	Wind speed / direction	Temp Grad(oC/100m)
N1 Bow Hills	11:09 pm	37	2.4/101	Lapse
N3 Naroo	12:58 am	n/a	4.2/118	Lapse
N4 Greylands	12:31 am	n/a	5.1/18	Lapse
N5 Oakleigh	12:28 am	n/a	5.3/121	Lapse
N6 Newhaven	11:20 pm	25	2.4/101	Lapse
N7 Merriman	10:03 pm	n/a	4.5/200	Lapse

The results for December 2014 show that under the operating and meteorological conditions at the time the mine did not exceed the noise criteria at any of the receiver locations.

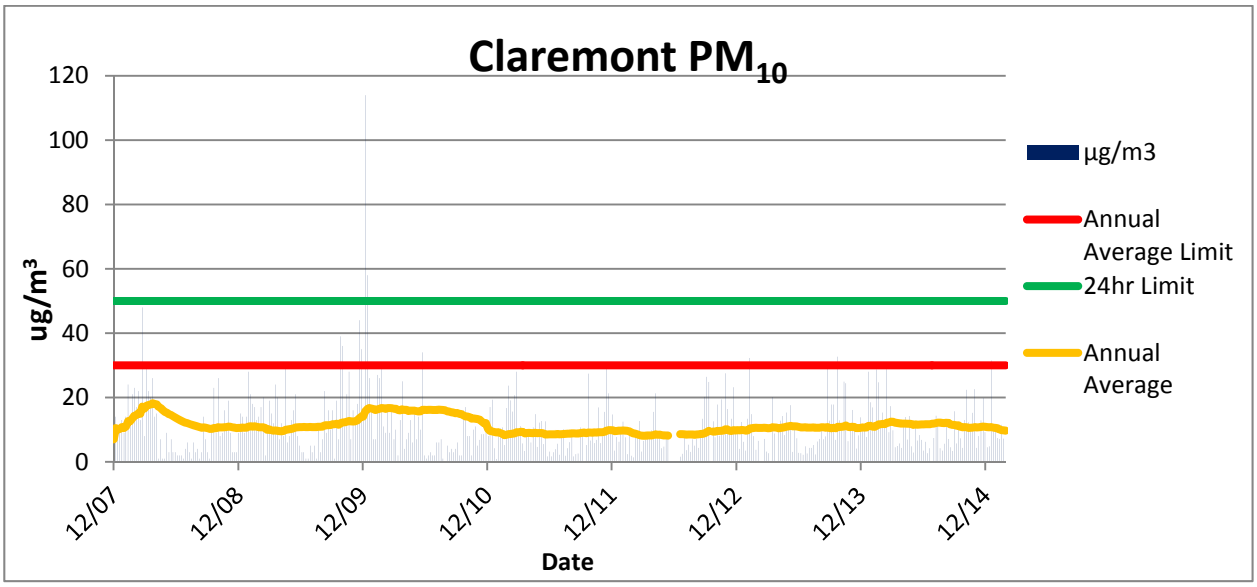
Deposited Dust Monitoring

Month	ND1 Turrabaa	ND2 Claremont	ND3 Bow Hills	ND4a Matoppo	ND5 Claremont	ND6 Willarah	ND7 Claremont	ND8 Claremont	ND11 Oakleigh	ND12 Merriman
Mar-14	0.4	1.7	0.6	0.1	2.6	1.0	1.0	0.9	0.6	1.2
Apr-14	5.8	0.5	0.3	0.1	1.2	0.4	0.1	0.4	1.8	0.5
May-14	0.8	0.2	1.2	0.4	0.6	0.1	0.5	0.4	0.8	0.7
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
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
Annual Average	3.4	1.2	0.7	0.4	1.5	0.5	1.1	0.7	1.2	0.6

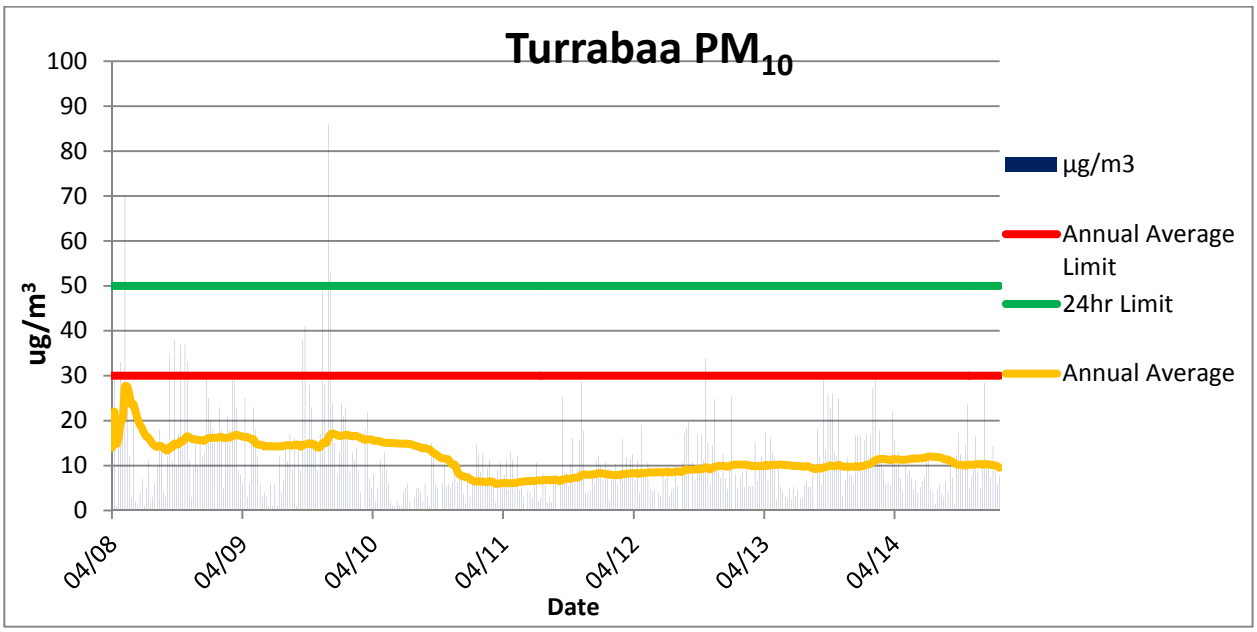
Deposited dust levels have remained at relatively low levels since the last meeting. All dust deposition annual averages are within compliance limits.

High Volume Air Sampling (PM_{10})

PM_{10} measurements taken to the end of January 2015 for the “Claremont” High Volume Air Sampler (HVAS) are returning a running annual average of 9.71 µg/m^3 which is well below the annual average limit of 30 µg/m^3.



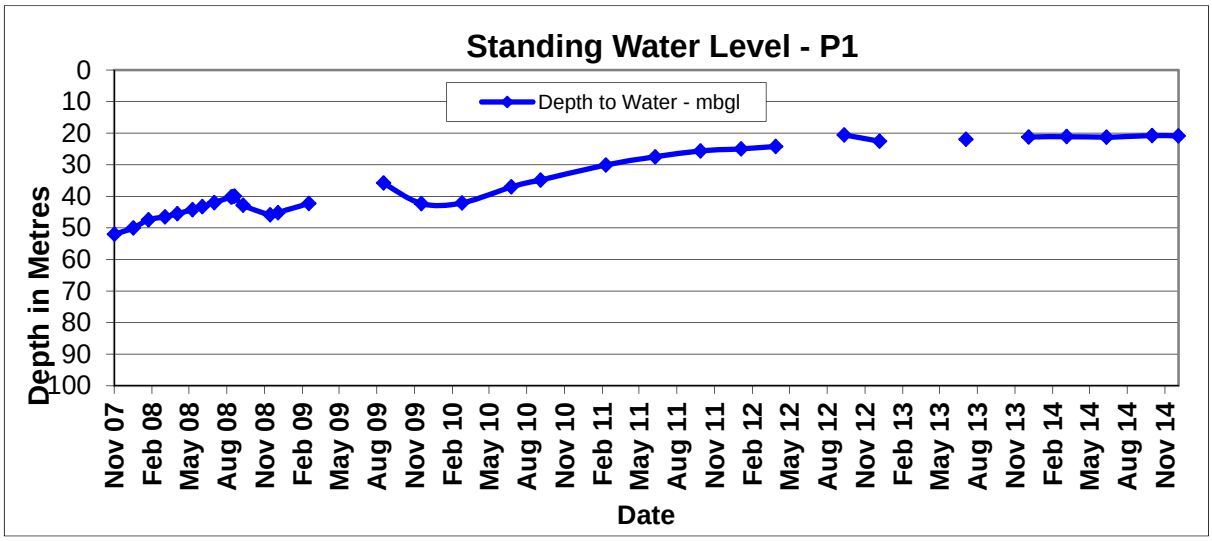
PM_{10} measurements taken to the end of January 2015 for the "Turrabaa" High Volume Air Sampler are returning a running annual average of 9.53 µg/m^3 which is also well below the annual average limit of 30 µg/m^3.



PM_{10} levels have remained compliant since the last meeting.

Groundwater Monitoring

Groundwater monitoring was completed in December 2014. 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.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Depth to Water - mbgl
Depth in Metres
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80
90
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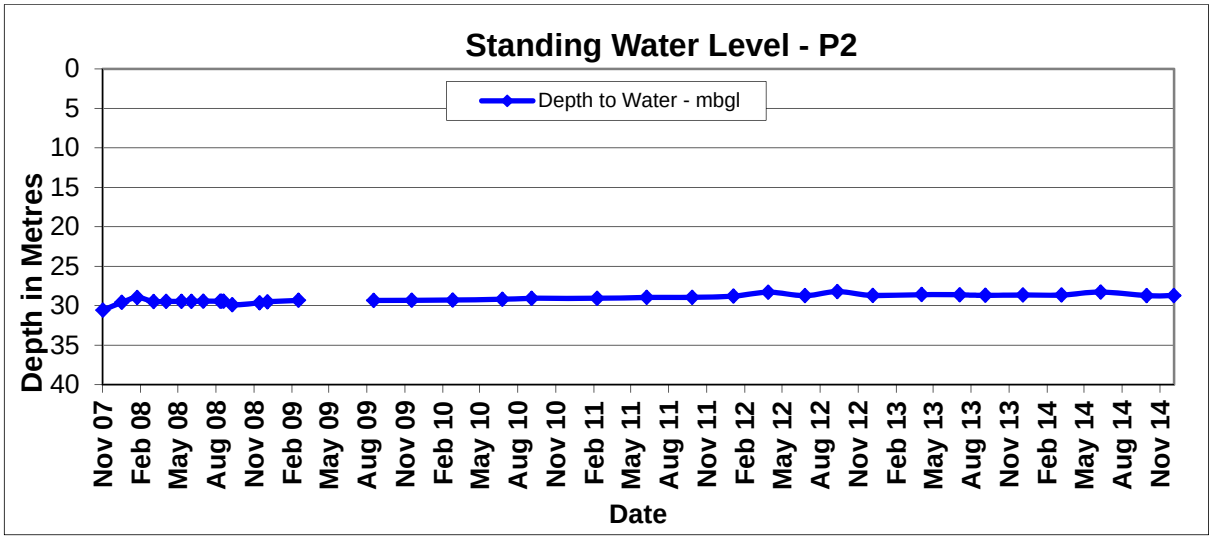
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Depth to Water - mbgl
Depth in Metres
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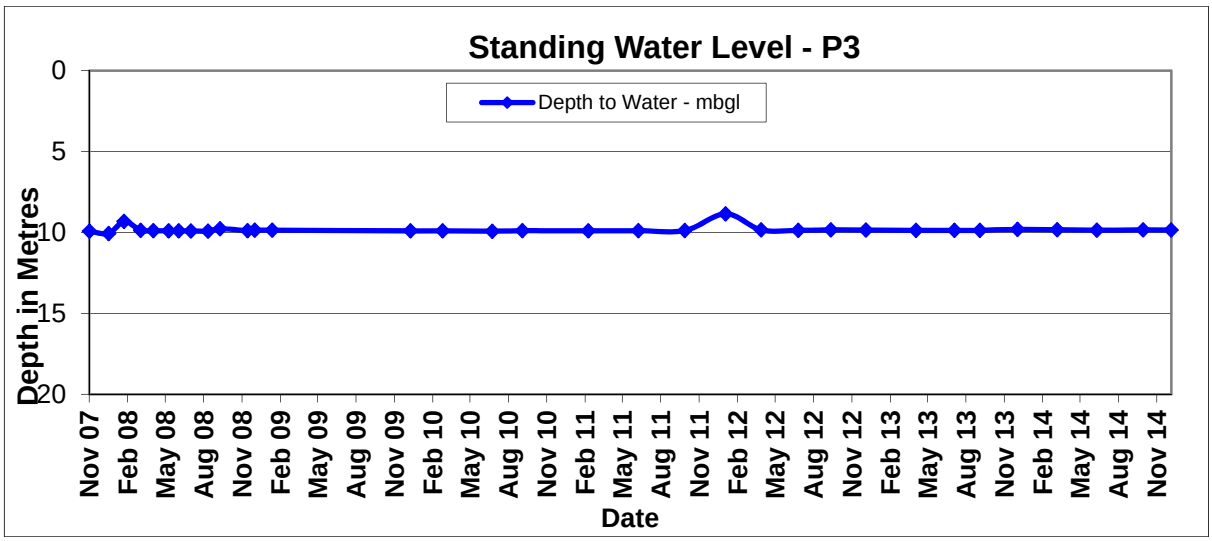
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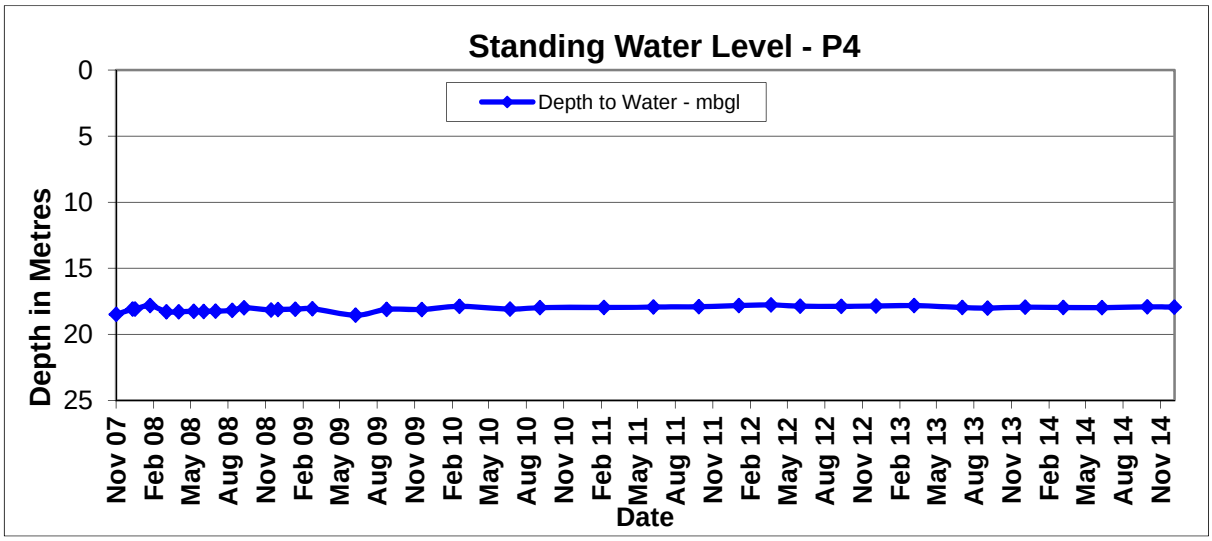
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Depth to Water - mbgl
Depth in Metres
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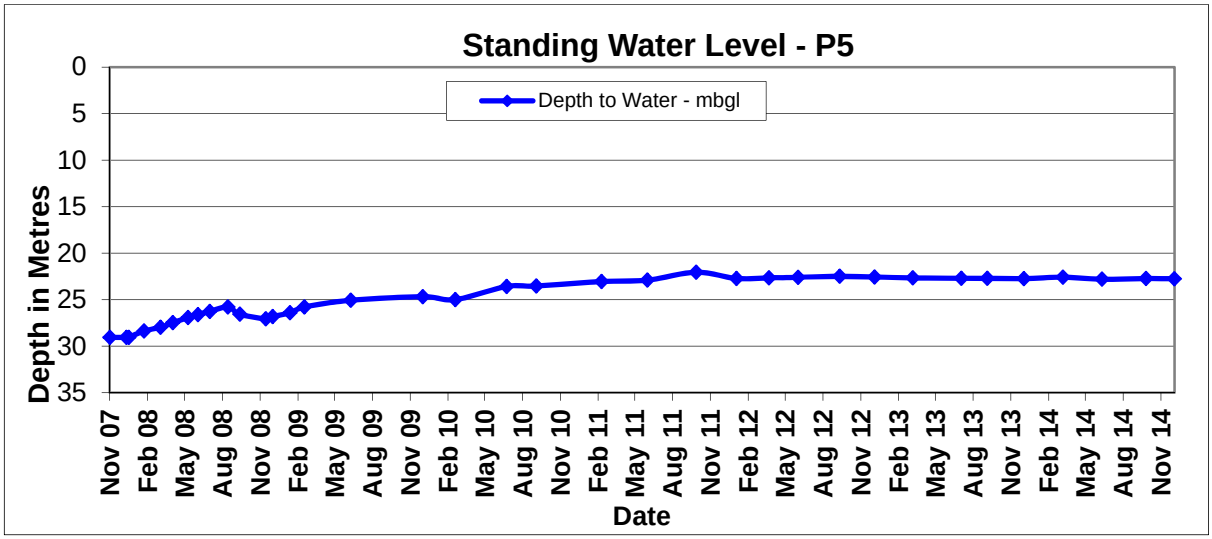
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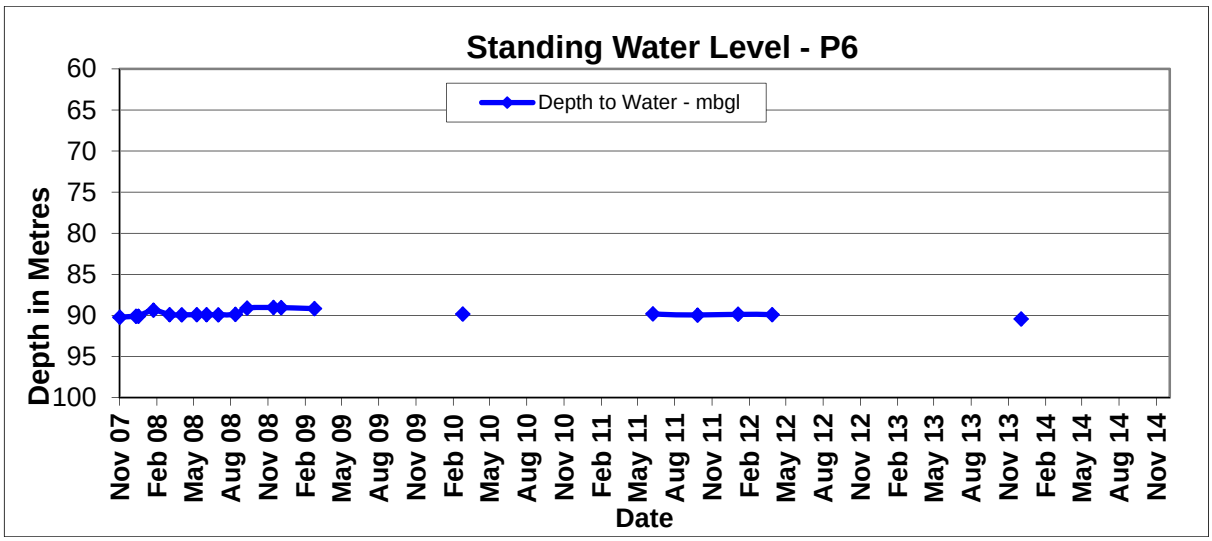
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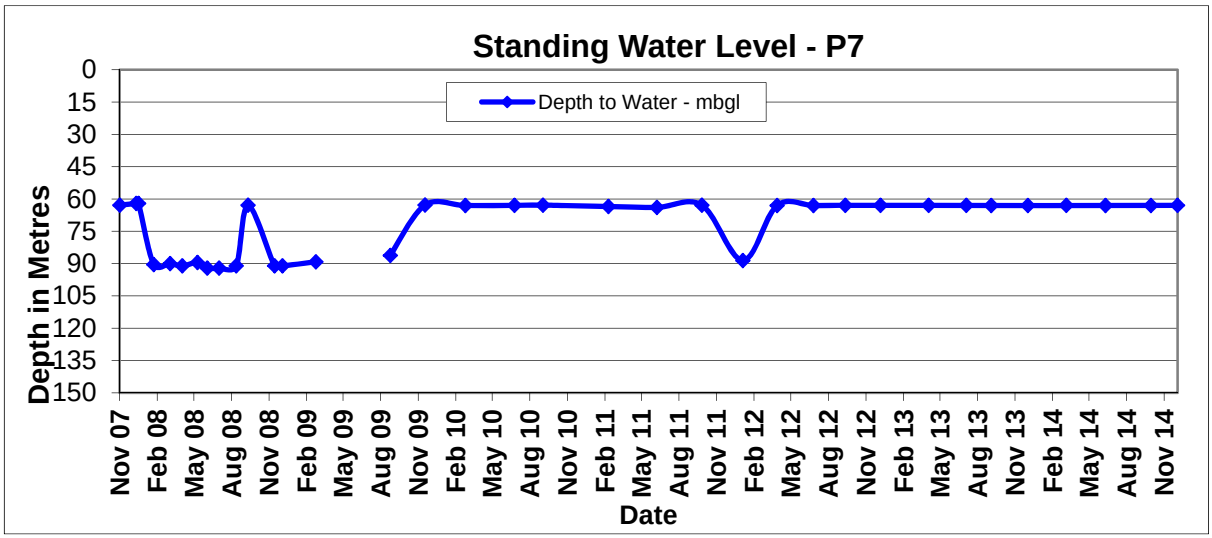
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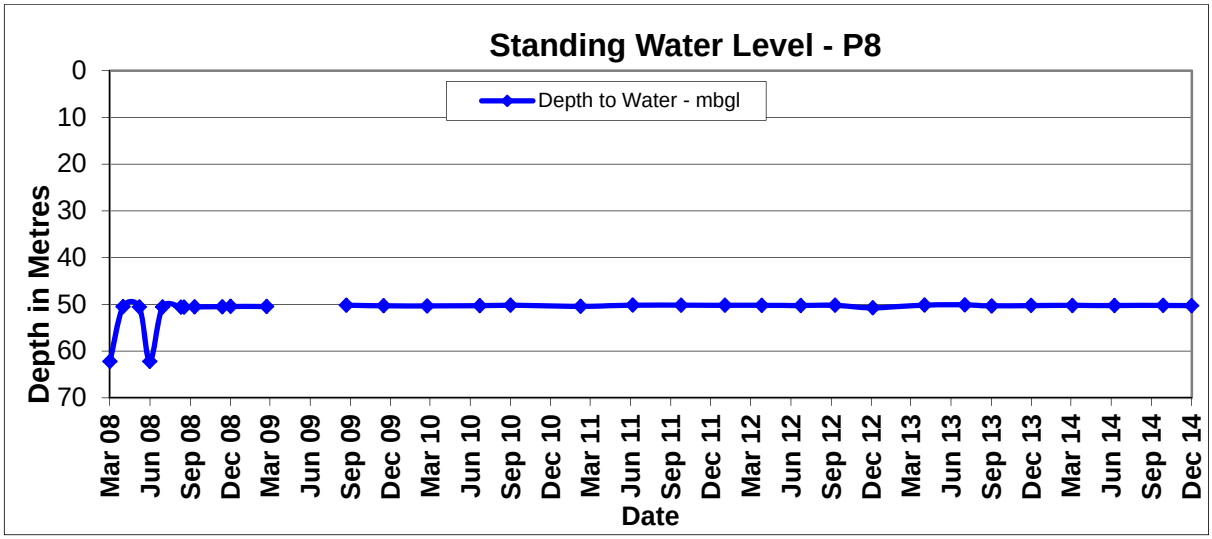
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Depth to Water - mbgl
Depth in Metres
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Mar 08
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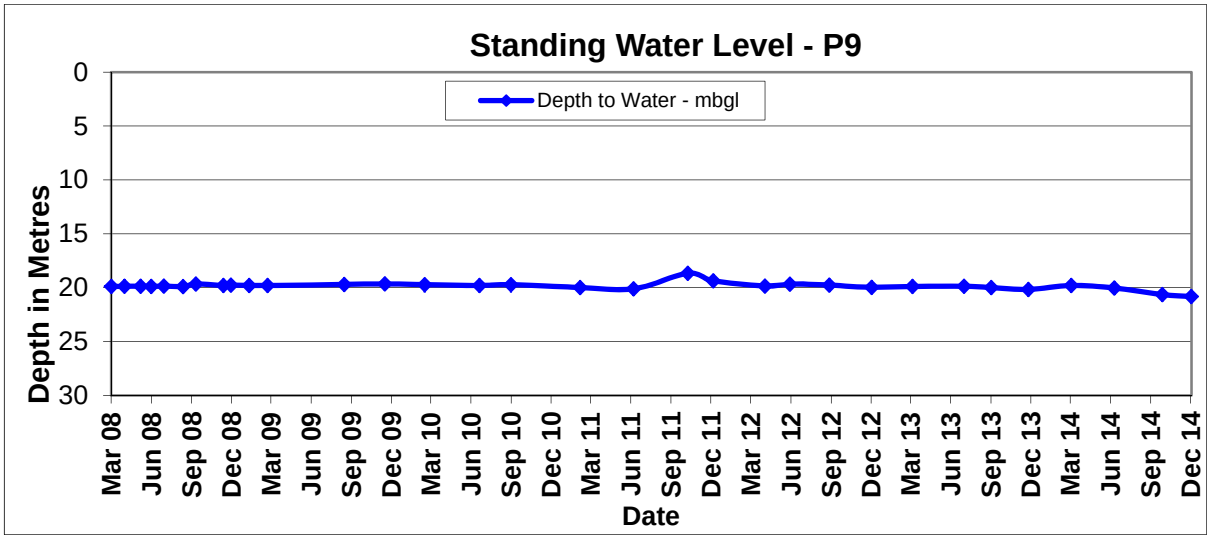
Standing Water Level - P9
Depth to Water - mbgl
Depth in Metres
0
5
10
15
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25
30
Mar 08
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Mar 09
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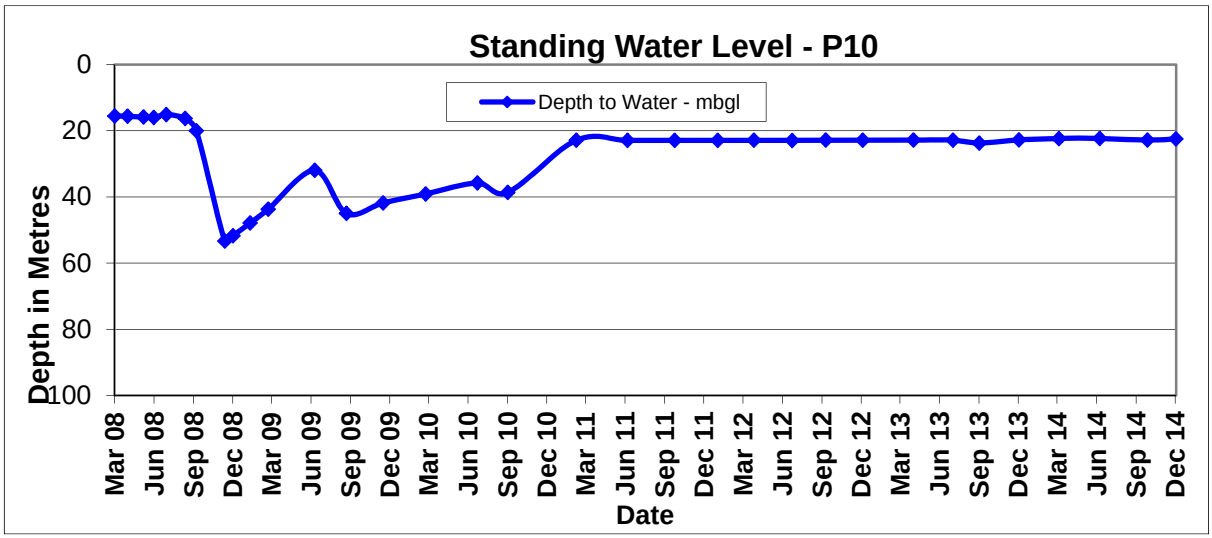
Standing Water Level - P10
Depth to Water - mbgl
Depth in Metres
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20
40
60
80
100
Mar 08
Jun 08
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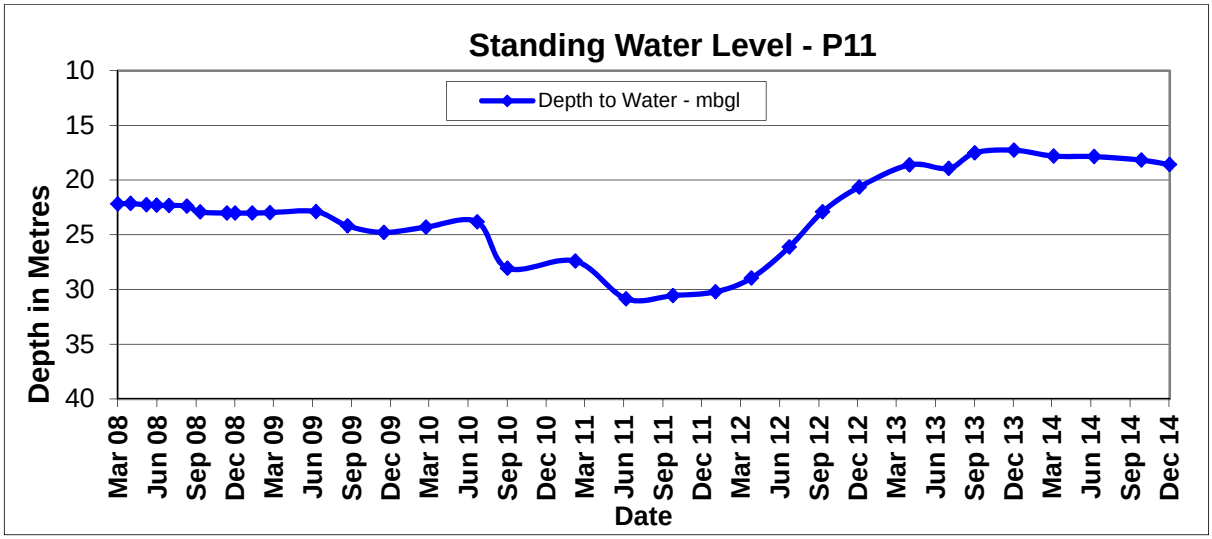
Standing Water Level - P11
Depth to Water - mbgl
Depth in Metres
10
15
20
25
30
35
40
Mar 08
Jun 08
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Jun 09
Sep 09
Dec 09
Mar 10
Jun 10
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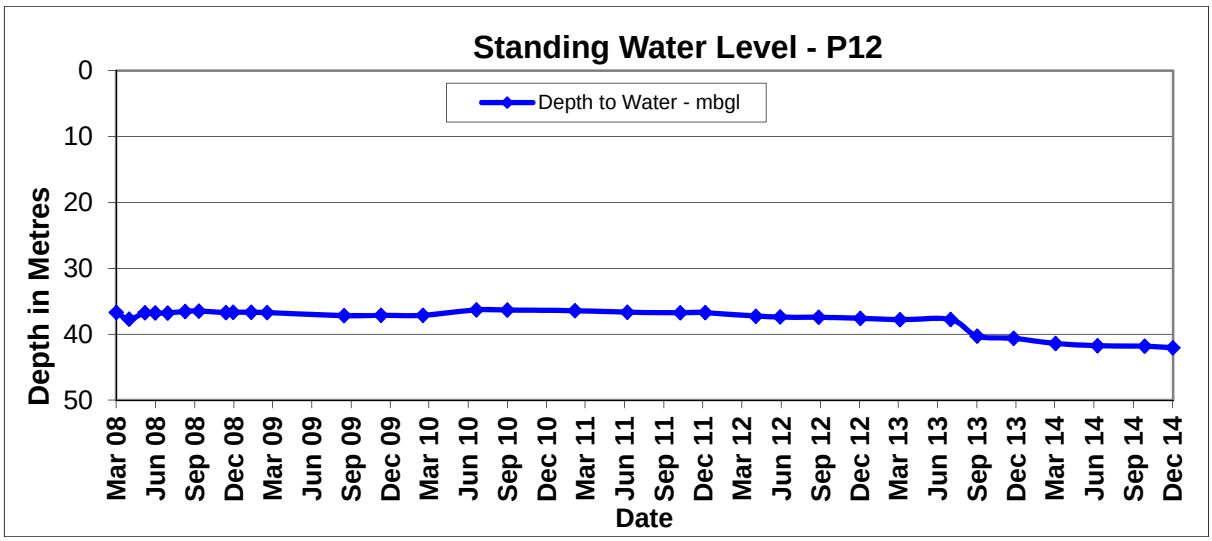
Date


Standing Water Level - P12
Depth to Water - mbgl
Depth in Metres
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10
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50
Mar 08
Jun 08
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Dec 08
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Jun 09
Sep 09
Dec 09
Mar 10
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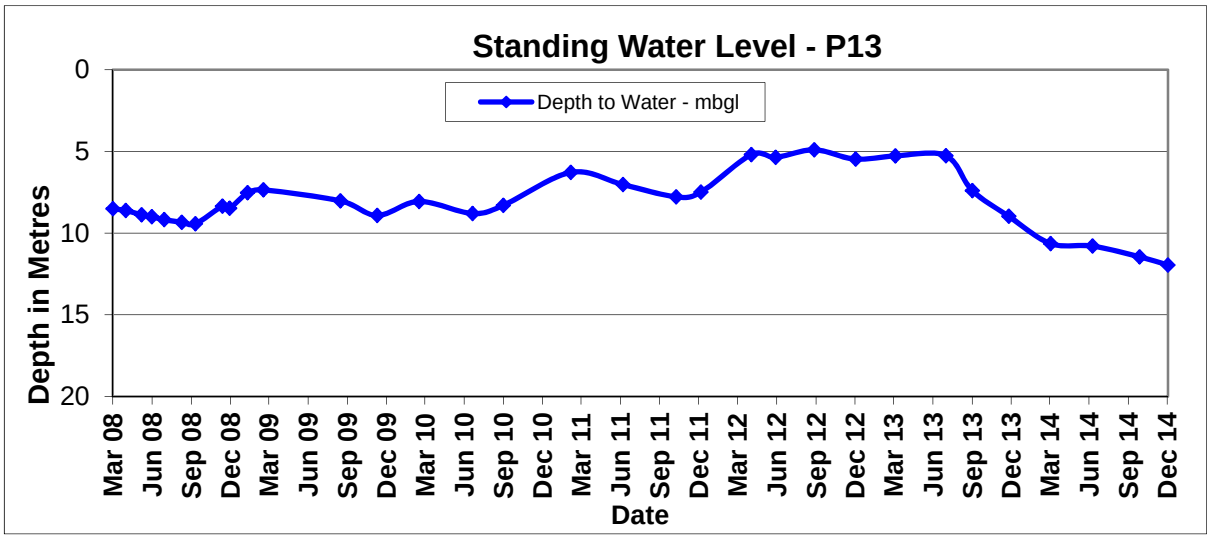
Standing Water Level - P13
Depth to Water - mbgl
Depth in Metres
0
5
10
15
20
Mar 08
Jun 08
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Sep 09
Dec 09
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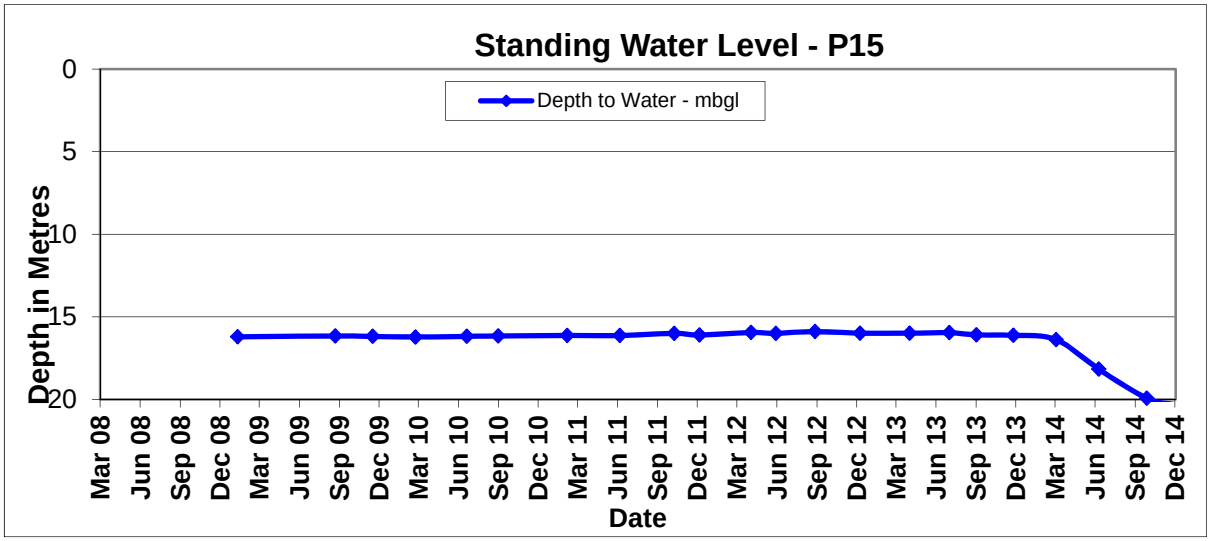
Standing Water Level - P15
Depth to Water - mbgl
Depth in Metres
0
5
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Mar 08
Jun 08
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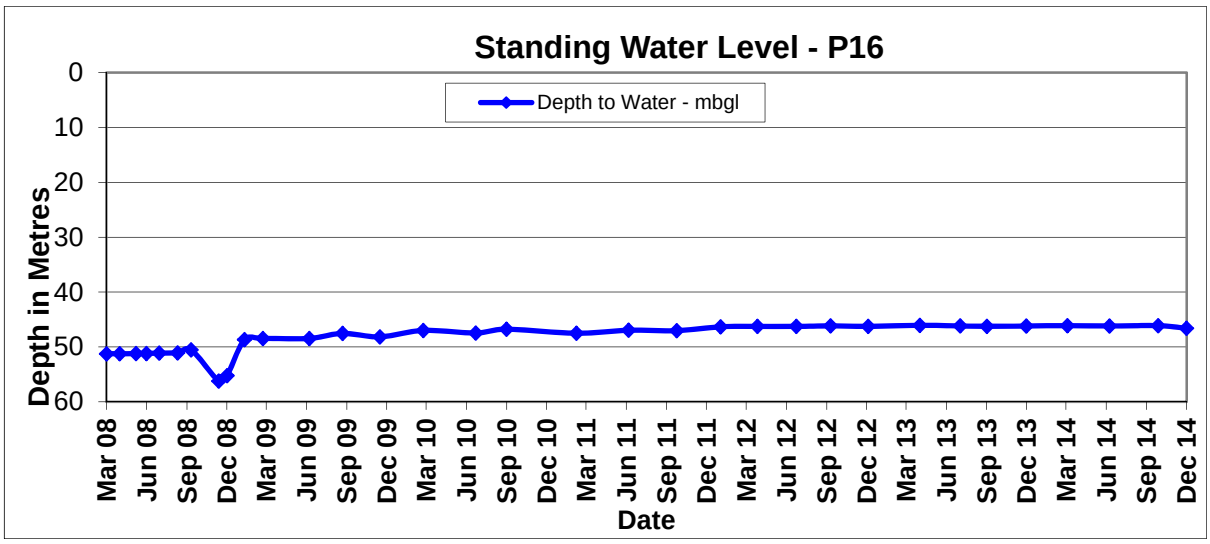
Date


Standing Water Level - P16
Depth to Water - mbgl
Depth in Metres
0
10
20
30
40
50
60
Mar 08
Jun 08
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Mar 09
Jun 09
Sep 09
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Mar 10
Jun 10
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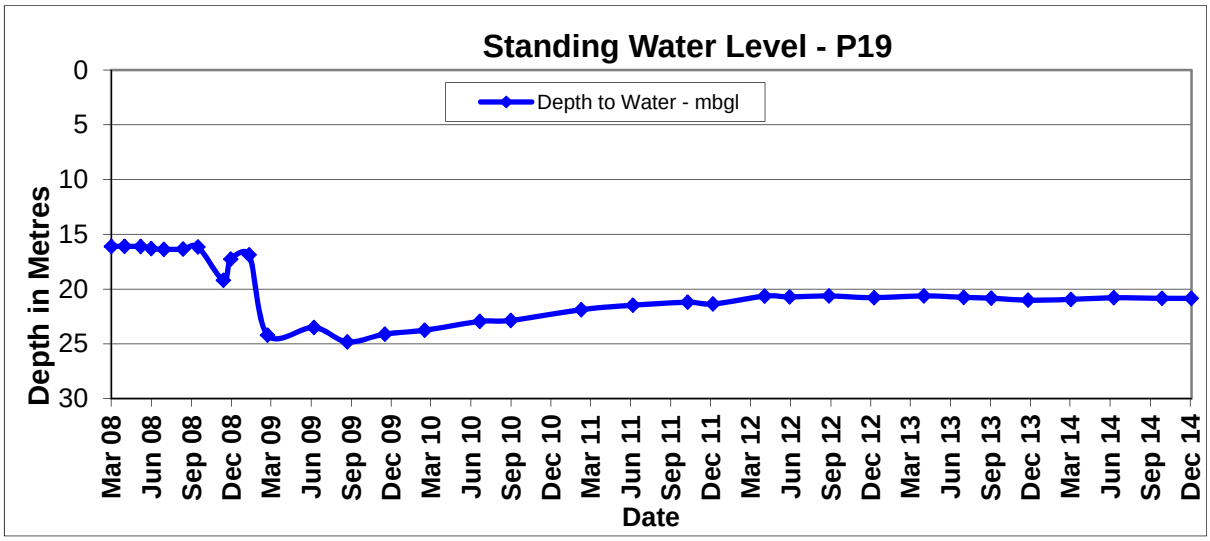
Date


Standing Water Level - P19
Depth to Water - mbgl
Depth in Metres
0
5
10
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Mar 08
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Mar 09
Jun 09
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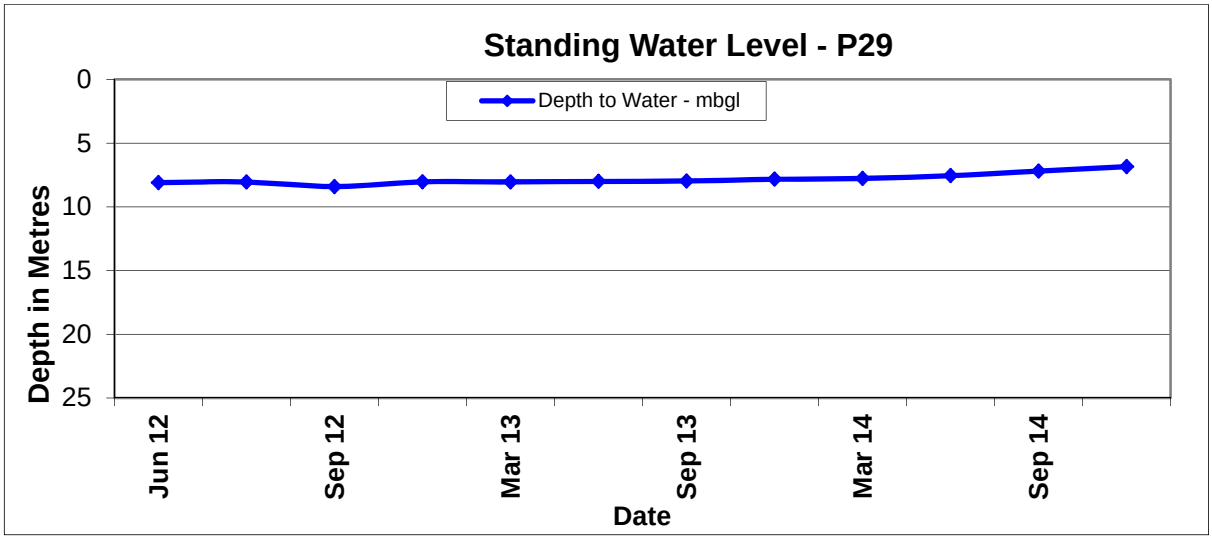
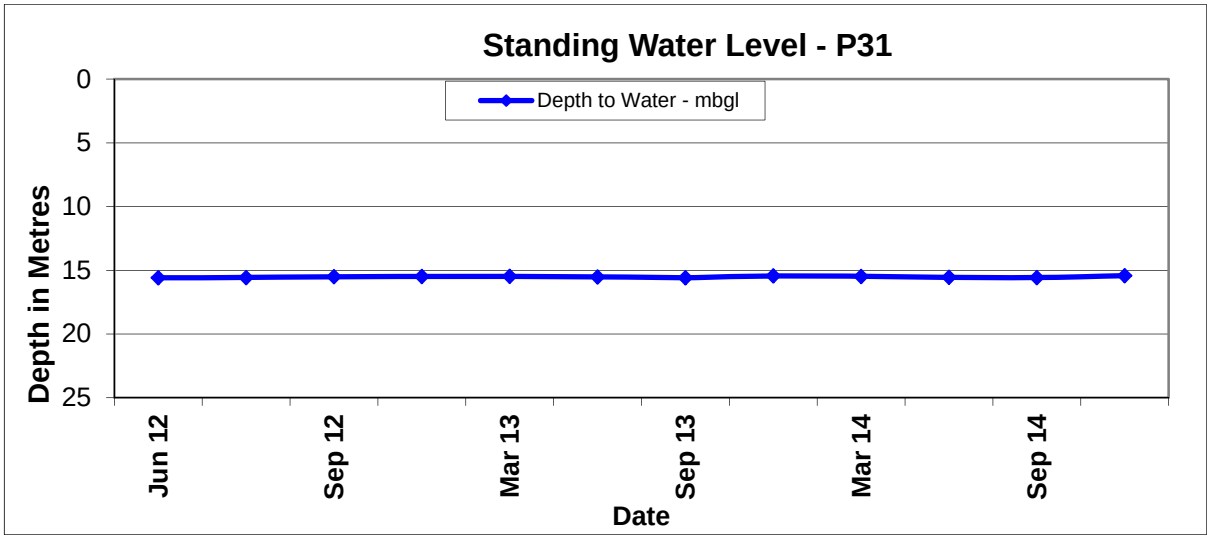
Date


Standing Water Level - P29
Depth to Water - mbgl
Depth in Metres
0
5
10
15
20
25
Jun 12
Sep 12
Mar 13
Sep 13
Mar 14
Sep 14
Date


Standing Water Level - P31
Depth to Water - mbgl
Depth in Metres
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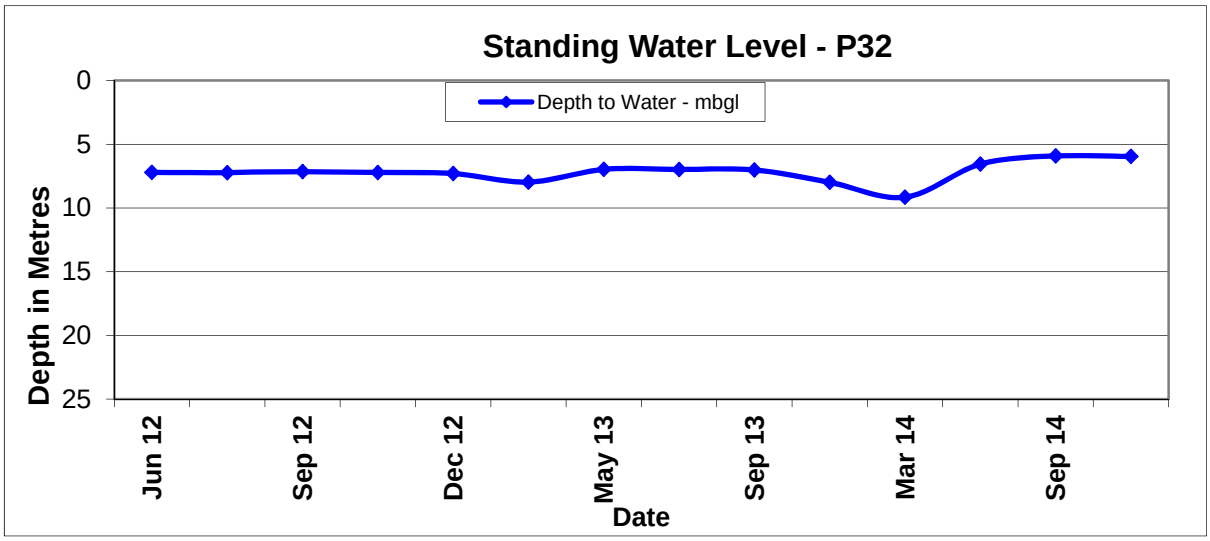
10
15
20
25
Jun 12
Sep 12
Mar 13
Sep 13
Mar 14
Sep 14
Date


Standing Water Level - P32
Depth to Water - mbgl
Depth in Metres
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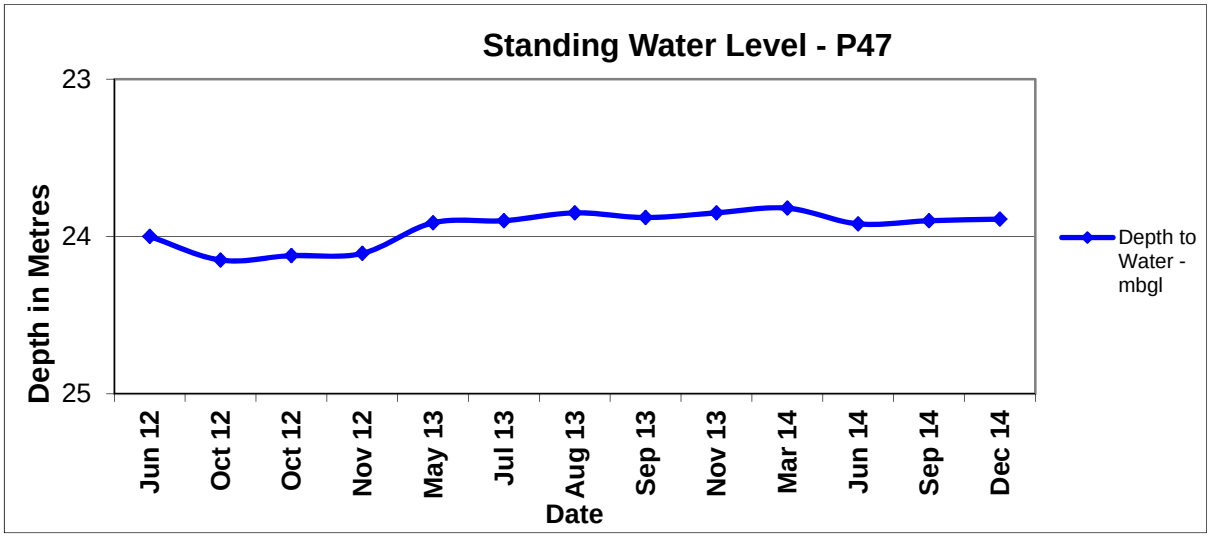
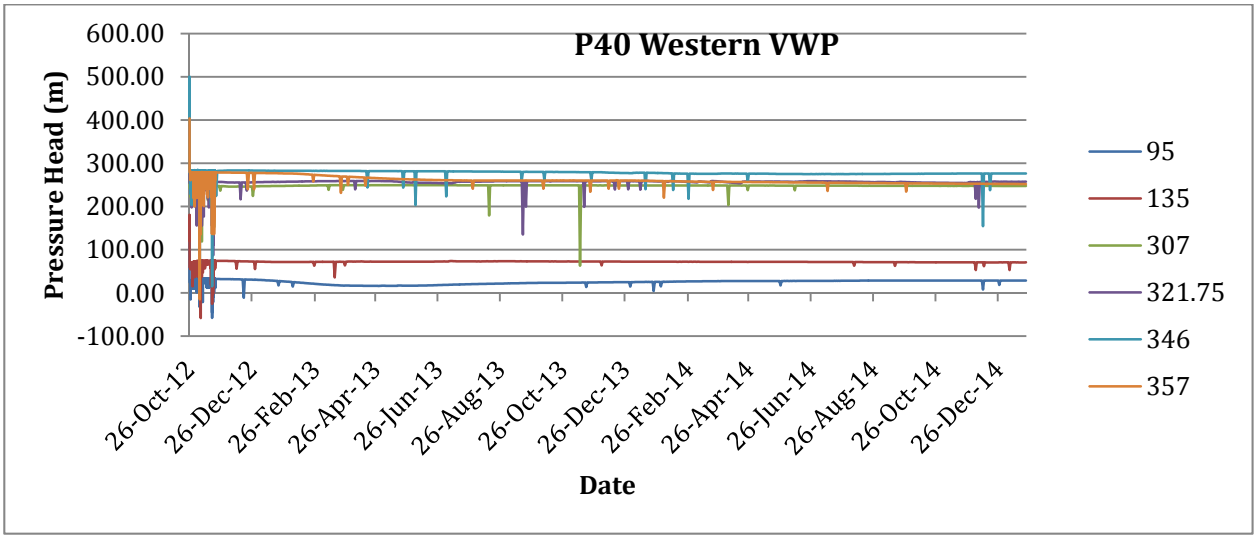
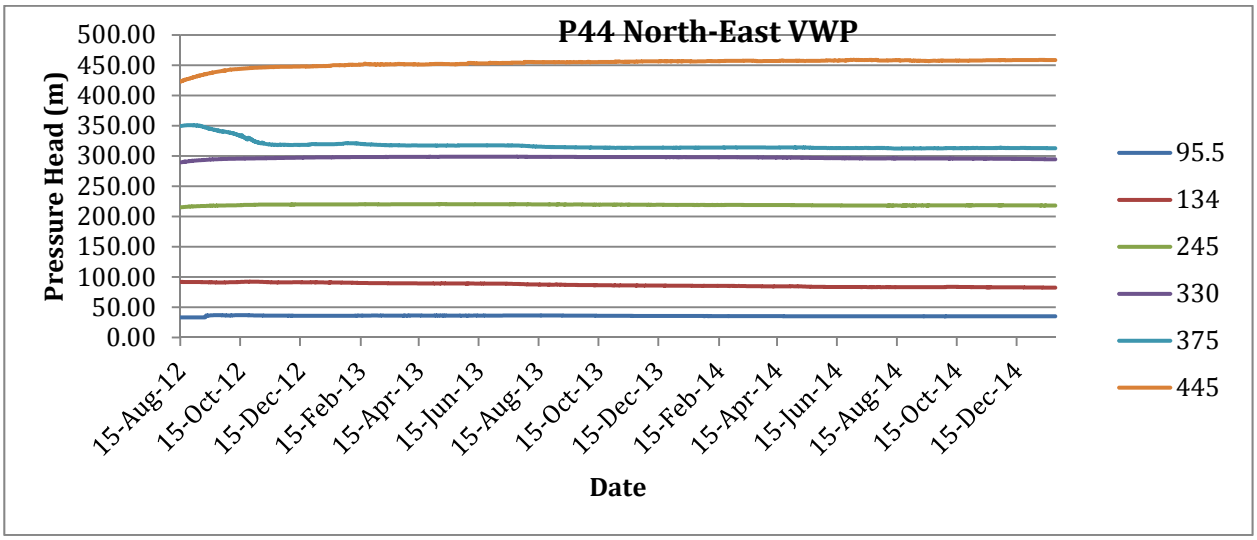
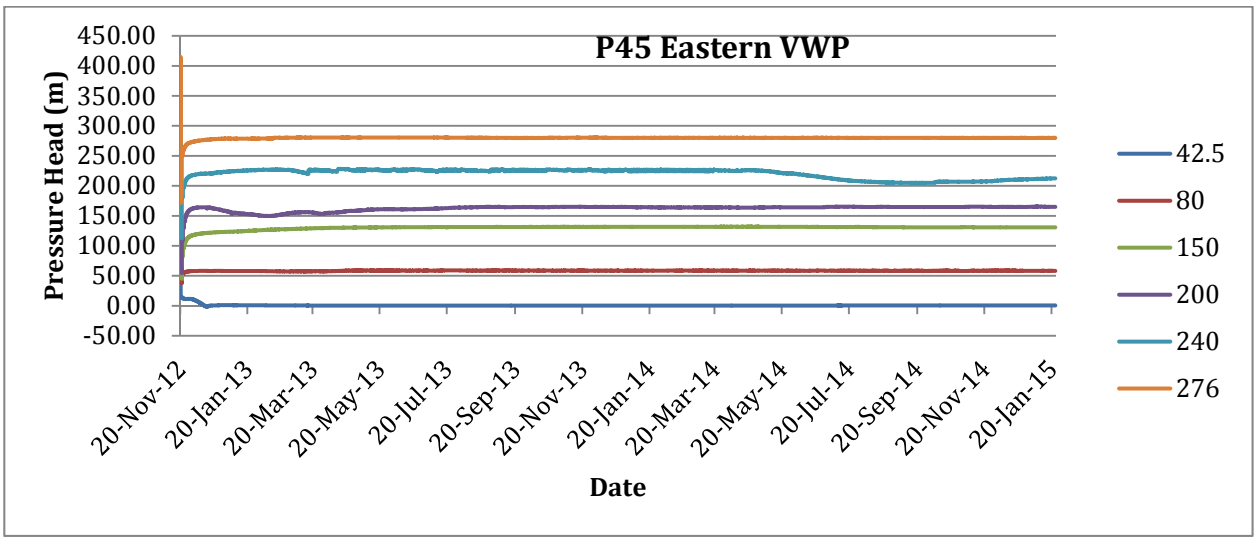
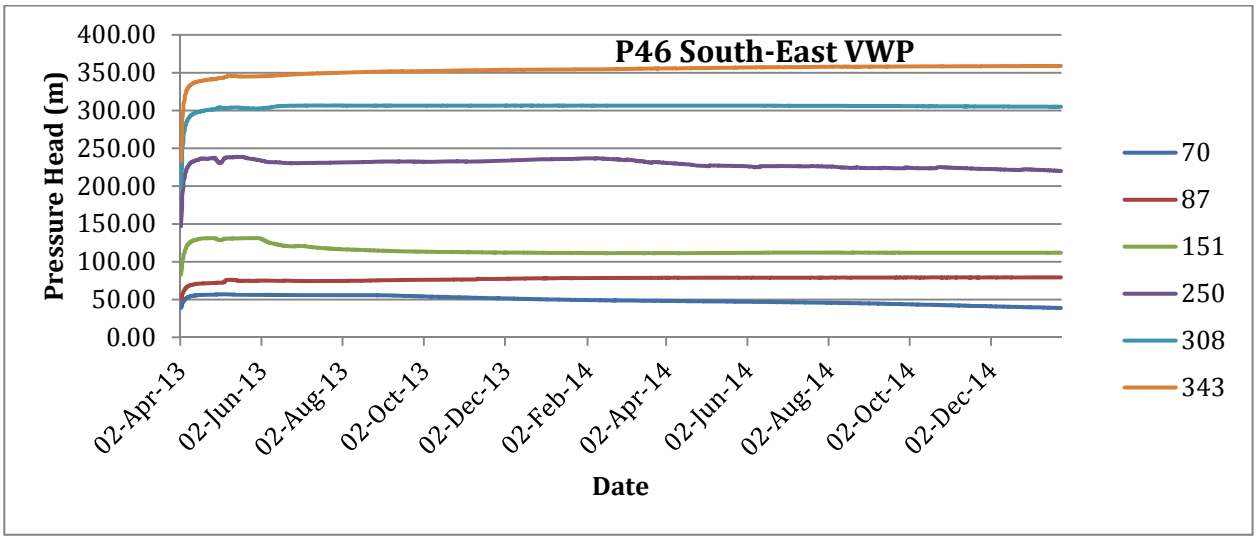
5
10
15
20
25
Jun 12
Sep 12
Dec 12
May 13
Sep 13
Mar 14
Sep 14
Date


Standing Water Level - P47
Depth in Metres
23
24
25
Jun 12
Oct 12
Oct 12
Nov 12
May 13
Jul 13
Aug 13
Sep 13
Nov 13
Mar 14
Jun 14
Sep 14
Dec 14
Date
Depth to Water - mbgl


P40 Western VWP
Pressure Head (m)
600.00
500.00
400.00
300.00
200.00
100.00
0.00
-100.00
26-Oct-12
26-Dec-12
26-Feb-13
26-Apr-13
26-Jun-13
26-Aug-13
26-Oct-13
26-Dec-13
26-Feb-14
26-Apr-14
26-Jun-14
26-Aug-14
26-Oct-14
26-Dec-14
Date
95
135
307
321.75
346
357







Monitroing 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.

Montoring 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.

Surface Water Monitoring

No wet weather discharges from licensed discharge points occurred during December 2014 to February 2015 and no flows were monitored in surrounding creek points during this period.

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	2.665
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	2.448*
Tilt (mm/m)	35	30.3*
Tensile Strain (mm/m)	8 – 16^	9.3*

Longwall Panels (LW) 101 to LW104		
	Maximum Predicted Extraction Plan	Maximum Measured
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	2.590*
Tilt (mm/m)	47	56.3*
Tensile Strain (mm/m)	11 – 22^	17.1*
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	1.012*
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	2.665*
Tilt (mm/m)	41	53.5*
Tensile Strain (mm/m)	10 – 20^	6.6*
Compressive Strain (mm/m)	12 – 24^	11.9*
Line G – Pine Creek Tributary 1 Crossline 3		
Subsidence (m)	2.44	1.120*
Tilt (mm/m)	47	22.2*
Tensile Strain (mm/m)	11 – 22^	8.0*
Compressive Strain (mm/m)	14 – 28^	1.5*
Power Poles		
Pole 2		

Longwall Panels (LW) 101 to LW104		
	Maximum Predicted Extraction Plan	Maximum Measured
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
Pole 3		
Subsidence (m)	2.18	2.085
Dynamic Tilt (mm/m)	30	66.3
Final Tilt (mm/m)	12	50.07
Conductor length change between poles 3 - 4 (m)	0.28	-0.81
Conductor Clearance Loss (m)	1.10	1.38
Pole 4		
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
Pole 5		
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
Pole 6		
Subsidence (m)	1.41	1.540
Dynamic Tilt (mm/m)	1	129.68
Final Tilt (mm/m)	27	-
Conductor Clearance Loss (m)	1.08	-
Pole 7		
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 LW103 (the most recently completed panel) as follows:

- The maximum subsidence measurements for Line 103 – Northern (Line 103 – Southern) were within +/- 10% of the predicted value of 2.44 m (2.44 m) with a maximum measured value of 2.671 m (2.448 m).
- The maximum tilt measurements recorded for LW103 (Line 103 – Northern) exceeded the maximum predicted value of 35 mm/m. However, the exceedances were within 15% of the maximum predicted value, and 96% of all values were within the predicted range.
- The maximum tensile strain measurements for LW103 (Line 103 – Northern) exceeded the range of predicted values of 8 mm/m (smooth profile) and 16 mm/m (discontinuous or crack affected profiles). However, the exceedances were within 18% of the maximum predicted value, and 97% of the recorded values were within the predicted range.
- The maximum compressive strain measurements for LW103 (Line 103 – Northern) exceeded the range of the predicted values of 10 mm/m (smooth profile) and 20 mm/m (discontinuous or crack affected profiles. However, the exceedances were within 17% of the maximum predicted value, and 95% of the recorded values were within the predicted range.

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 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

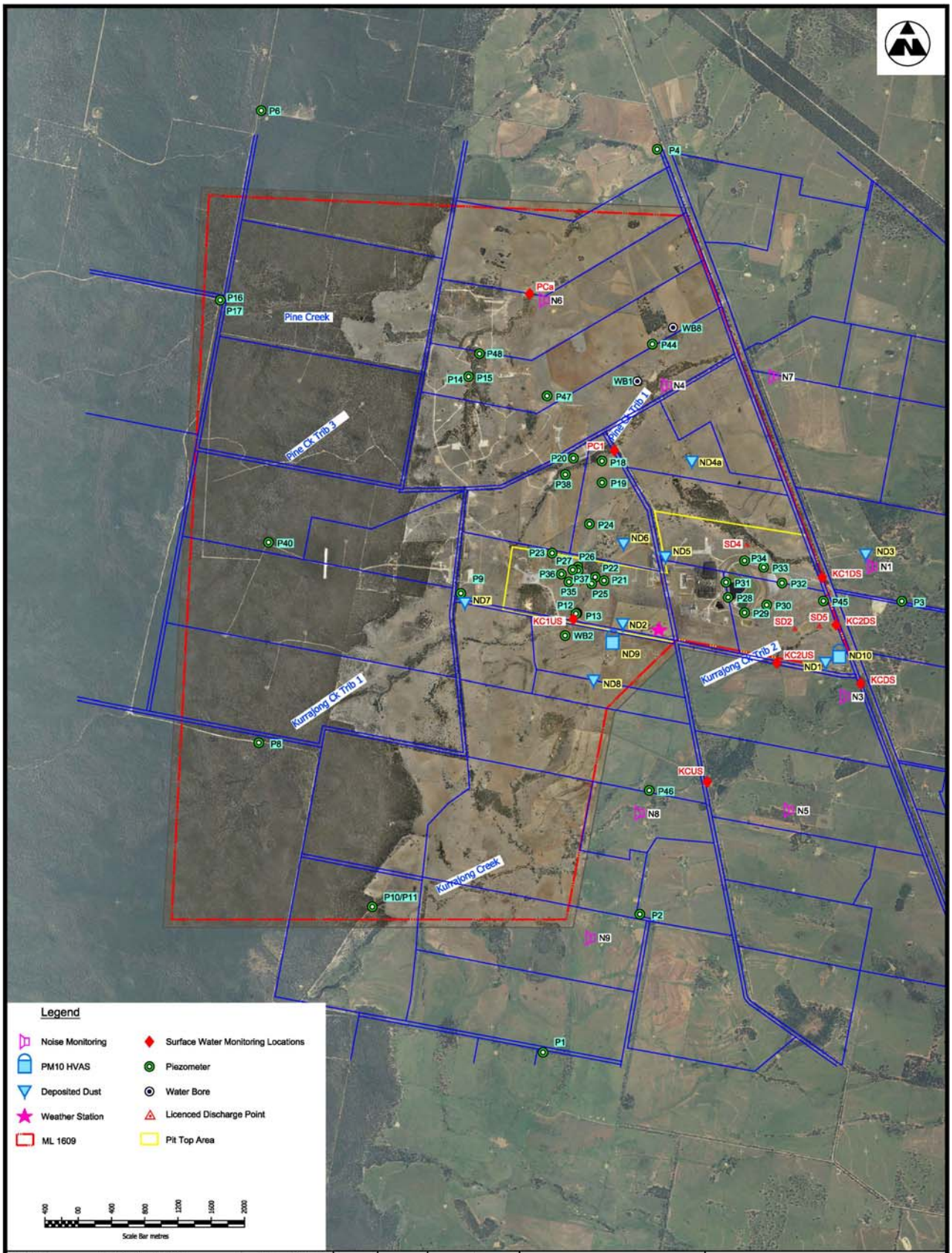
Six formal complaints were received during the period December 2014 to February 2015. Four were in relation to dust and two were in relation to noise.

The four dust complaints were managed at the time of the complaint or investigated where they related to events that occurred prior to the complaint being received. Generally complaints relate to visible dust being generated at the coal processing area. In addition to the TARP developed for the coal processing area, the mine is implementing a permanent spray system around the stockpiles which has been installed is currently undergoing commissioning. This new spray system should allow for more effective control of dust from the stockpiles.

The two noise complaints generally related to dozers working on stockpiles during the night/morning periods. The complainants have requested acquisition of their property which is in progress.

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

WHITEHAVEN COAL

NARRABRI MINE

Narrabri Mine Community Consultative Committee Meeting Minutes

Meeting No: 29

Date: Wednesday 10th June 2015

Time: 4:00pm

Location: Narrabri Mine Site Office

Present: Russell Stewart (RS) – Independent Chairman
James Stieger (JS)
Geoff Hunter (GH) – Alternative for Sally Hunter
Rodney Dunlop (RD)
Peter Webb (PW)
Steve Bow (SB) – Narrabri Mine General Manager
Dave Ellwood (DE) – Narrabri Mine Technical Services Superintendent
Steve Farrar (SF) – Narrabri Mine Environmental Officer

1. APOLOGIES

Mark Foster and Cathy Redding

2. DECLARATION OF PECUNIARY OR OTHER INTERESTS

None.

3. PREVIOUS MINUTES

Moved: GH Seconded: JS

3.1. BUSINESS ARISING FROM PREVIOUS MINUTES

Highway Bins – SF stated that in relation to the Narrabri Shire Council (NSC) clean-up program on the highway, NSC would investigate if notified and would clean the area if warranted. NSC are not contracted to RMS to clean the highway and RMS don't want to put bins along the highway. JS stated he had been onto them a few times for the stop in front of his place. SF stated they would have to setup a proper rest area, which would be off the highway. RS stated the issues for the mine would be to clean up in front of the gate all of the time if parking area setup. SB stated this would attract other issues as well.

Stockpile Expansion Modification – SF ran through presentation providing additional detail on air quality and noise assessments. Five submissions received on modification, three from Government agencies and two public submissions. JS asked if it included additional temporary stockpile volume of 250kt in modification. SF stated the modification totals do include this volume as the mine cannot currently utilise the full 350kt allocated to the product stockpile. GH stated this is an increase of 500kt which SF confirmed. RS asked if the inland rail would help, SB said unlikely as limited port capacity in Brisbane. JS stated that the only port big enough would likely be Gladstone, SB stated that not many rail lines have the ability to move the capacity the mines' need. SF stated moving 200kt per week with trains at almost 8kt each. SB stated current allocation requires around 157kt per week and the stockpile expansion would allow a buffer for when production is above this level. GH asked if it was modelled with no physical dust measurements, SF stated the model is calibrated

using the mines air quality monitoring results. GH asked if the actual data matches the modelled predictions. SF stated that it does in that the mine does not have an issue with air quality compliance. GH stated that he is curious as he has seen the dust come off the stockpiles. SF stated that we haven't had any compliance issues with dust. JS stated that his monitoring base rate was 0.7 and got up to 2.4 and is now back to 0.7. GH stated this is the same as a resident to the south where the mine tested the roof and the results was <1% which was mostly insects but he is suspicious. RD asked if we had installed a first flush system, SF stated we hadn't, JS stated that his first flush system still lets the dust in because it floats. GH asked if we could do something about it and not hide behind the results. GH stated that if the stockpiles get bigger this problem would get worse. SF stated the new stockpile spray system could be expanded for the new stockpiles. JS said dust control has been a lot better than it was. GH stated we should be able to do some simple things to see how much dust is going that way. RD said the mine could do monitoring for a month to see how much is there. JS stated it is like noise when it is only sometimes. SB stated that we have some impacts but then there is acceptable impact and that is where the debate sits. SB also said that some people don't want us here and it is sometime tainted by opinion and not fact. SB then stated he is happy to go over the detail to see what we can do as they are some of our closer neighbours and if the mine is having an impact above acceptable limits then we will take action. SF stated that noise is predicted to be above the limits at 'Belah Park', which the mine is in negotiations with for purchase and 'Bow Hills' where a private agreement is in place. GH asked if we get any complaints about noise and SF stated that we do which is usually related to dozers. RD asked if any new monitoring proposed for the modification. SF stated no and we have actually dropped a couple off, as these properties are now mine-owned (in relation to noise monitoring).

4. GENERAL BUSINESS

4.1. OPERATIONS PROGRESS REPORT

The operations update was provided as follows:

Mine Progress Report (to 31 May 2015)

Coal produced (t):	May 2015	941,731
	FY-to-date	6,734,106
Coal Railed (t):	May 2015	829,466
	FY-to-date	6,307,525
Average workforce numbers (May 2015):		
	NCO	Waged – 173
		Salary – 103
		Total – 276
	Contractors	Total – 80
Safety Update (FY to May 2015):		
	Lost Time Injury (LTI)	1
	Total Recordable Injuries:	20
	Planned Task Observations:	6,474
	Take 5 Assessments:	101,438
	Work Hours (Feb-15):	86,094

Days LTI Free: 281

SB stated safety better than state average but still hurting people and the mine hasn't improved on the previous year. Workforce numbers are largely stable and the mine no longer has a contract with the CIVEO camp. RS stated that he wanted the camp to be around for a while to keep rent prices down. Santos may have people in the camp in the next 6-12 months. SB stated that the mines' long-term contractors are now required to house people locally. SB stated the operating costs are largely fixed so it is all about production. Coal price running around the $60-$65/tonne and the mine is happy for the aussie dollar to drop as it is all bought in US dollars. SB also stated that the coal produced is good quality so it helps keep the mine going. GH asked if we wash the coal, SB stated we do a partial wash and produce around 25% coal for steel making and the rest is a thermal product with around 3-4% reject material. RD stated that at a previous mine they are now reprocessing there reject which SB stated we will not do at this mine. GH asked if the water for washing is from the river. SF stated that the water used is from the mine but we do bring some up to supplement supply as we can use water from the river in the operation. SB stated that most of the water is from the bore and that the bulk of the water is recycled. SF also stated that the mine will, at some stage, export treated water to the river or to local landowners. JS asked about the western extension, DE stated that we haven't done any exploration to the west so there is more work to do. DE also stated the depth-of-cover increases, which is where the problems start but it would likely be only a couple more panels. JS stated all rain falling on the east of the Gorman Range goes through his property and this has been his concern from the start as two inches of rain out there is two inches of runoff. SB stated that the current lease is what we have but ideally we would continue to mine to the west as per the current plan. SB said we have another 20-25 years and then the southern lease as well which would be about the same.

4.2. ENVIRONMENTAL OVERVIEW

The environmental monitoring report was provided to the CCC members and SF went through the report.

SF said we had one noise exceedance in May 2015 at a location where exceedances have not been recorded before. SF stated monitoring would continue to be undertaken to confirm noise levels. GH asked what results are the mine and SF explained the tables in the report and how the monitoring is undertaken, i.e. attended.

SF stated the deposited dust gauge averages and high volume air samplers are below the relevant criteria. RD explained that the HVAS cycles every 6 days to sample every day of the week.

SF stated that groundwater monitoring undertaken in March 2015, one lower but is considered to be affected by a nearby production bore. SF also stated that the groundwater model had been calibrated and that the groundwater level drawdown and mine dewatering levels were good when compared with the predicted levels. SF stated that no surface water discharges from licenced discharge points has occurred but local creeks were sampled during April 2015.

SF went through the subsidence results to date. JS asked if the next panel would be 300m wide and SF confirmed it would be 300m for the fifth and sixth panels. SF also stated that the Extraction Plan is currently being updated to include the sixth longwall panel.

JS left the meeting at ~5:00pm.

SF stated that the mine had received eight formal complaints since the last meeting: six in relation to noise; one in relation to dust; and one in relation to lights. SF went through the complaints. SF also outlined that no environmental incidents occurred during the period.

RS spoke about a recent magazine article relating to return on property value in Narrabri Shire, which was in the top five. RS suggested this occurred during a time when the town was losing people and in recent times when the town has gained people. RS explained he thinks this is due to the Narrabri Shire never being a boom/bust town and the variety of operation. He also stated that

the agriculture industry has been and will always be number one, but the variety, which includes the mining industry, has kept it going.

5. NEW BUSINESS

SF went through a presentation on the proposed modification for longwall width and production limit increases. SB stated that longwall's 400m wide are not uncommon and that we buy additional equipment to fit the existing longwall. GH asked why the increase in coal, SB stated that daily production only slightly increases however we will have periods of 12 months of full production, e.g. if we produce 800kt for 10 months that's 8Mt/yr but for 12 months that would 9.6Mt/yr. DE also stated that we currently produce for 10 months of the year but with the wider panels we would produce for 12 months with no longwall change out. GH asked if conveyor belts need to be upgraded. SB stated that the drift belt will need to be sped but the majority of belts are fine. SF stated that other longwall upgrades are happening but for the face widening all that is required are additional chocks and maybe a gearbox. RD asked what impacts that would have on subsidence, SB stated it doesn't change the subsidence it is just the footprint locations that would change and SF stated that subsidence is already supercritical so we won't have any more but you will have a wider trough which effects things like water ponding. SF went through the proposed increase to trains and explained that the currently approved average of 4-5/day will remain although we currently utilise larger trains. GH asked if this was new technology, SB stated some of this is new technology but the chain conveyor in front of the longwall and the engineering capacity of that conveyor is the limiting factor. DE explained to drag that chain 300m full of coal takes a lot of torque and it comes down to the ability of the engines and gearbox to move the chain. GH pointed out some people could see this as something the mine always intended on doing, SB stated that the original plan was to use top coal caving and explained what that was, to optimise the mine, which the mine is not pursuing due to geological constraints. SB stated there are always plans to improve and optimise the mine and in ten years' time new plans for optimising productivity may be around and this is a logical step and still requires approval from the Government. SB stated the biggest impact people will see would be an extra half a train a day. SF went through the continuation of pre-conditioning and explained what that is and why it is undertaken. SF went through the requirement for a marginal increase of 60m to the west but stated this is still within our mining lease boundary. GH asked is this because of the wider panels, which SF confirmed. DE stated that impacts shouldn't change. SF stated ponding may increase with the wider subsidence trough. SF went through the process moving forward including consultation. SF also said that as the other studies had just begun there was not more information to be given at this point. GH said the only aspect that may be an issue are the increased trains but even that may be splitting hairs. RD said we are just getting it out of the ground quicker and within the same area, which SF confirmed.

6. COMPLAINTS AND COMPLAINTS HOTLINE

As per provided report and noted above. Agreed to remove this section from the minutes as it is within the environment report.

7. NEXT MEETING

Wednesday 16th September 2015 at 4:00pm.

8. CLOSURE OF MEETING

Meeting closed at 5:30pm.

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.

Table 1: NM Operational Noise Monitoring Results – 17 March 2015 (day)

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

Table 2: NM Operational Noise Monitoring Results – 17 March 2015 (evening)

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

Table 3: NM Operational Noise Monitoring Results – 17/18 March 2015 (Night)

Location	Time	Total dB(A), Leq (15 min)	Wind speed/ direction	Temp Grad (oC/100m)	Identified Noise Sources
N1 Bow Hills	11:07 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

Table 4: NM Operational Noise Monitoring Results – 18 March 2015 (day)

Location	Time	Total dB(A), Leq (15 min)	Wind speed/ direction	Temp Grad (oC/100m)	Identified Noise Sources
N1 Bow Hills	9:40 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

Table 4: NM Operational Noise Monitoring Results – 18 March 2015 (day)					
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

Table 5: NM Operational Noise Monitoring Results – 18 March 2015 (evening)					
Location	Time	Total dB(A), Leq (15 min)	Wind speed/ direction	Temp Grad (oC/100m)	Identified Noise Sources
N1 Bow Hills	8:33 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

Table 6: NM Operational Noise Monitoring Results – 18/19 March 2015 (night)					
Location	Time	Total dB(A), Leq (15 min)	Wind speed/ direction	Temp Grad (oC/100m)	Identified Noise Sources
N1 Bow Hills	11:09 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)

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
Ardmona	6:56 pm	50	1.7 / 156	+3.0	Traffic (50), NCM (24)

*Noise from vent fan

Table 15: NCM Noise Monitoring Results – 26/27 May 2015 (Night)					
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

Table 16: L1 (1 min) – 26/27 May 2015 (Night)		
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

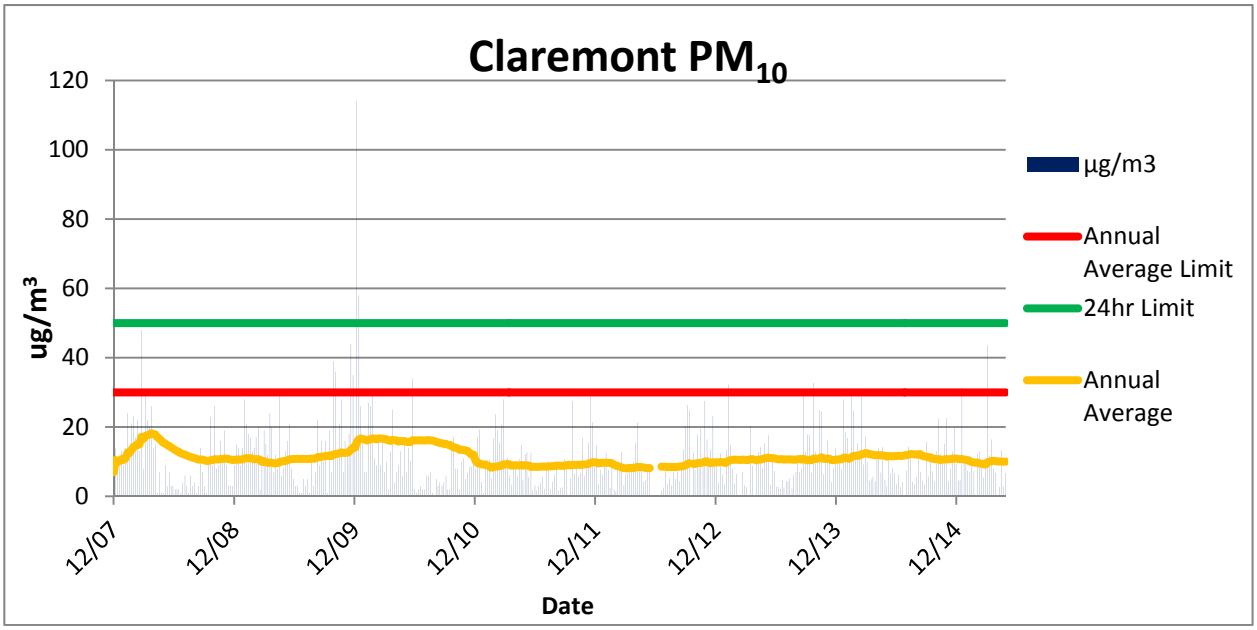
Month	ND1 Turrabaa	ND2 Claremont	ND3 Bow Hills	ND4a Matoppo	ND5 Claremont	ND6 Willarah	ND7 Claremont	ND8 Claremont	ND11 Oakleigh	ND12 Merriman
Jun-14	4.2	0.8	0.2	0.1	0.3	0.5	0.7	0.1	0.3	0.1
Jul-14	2.9	1.4	0.1	0.1	1.0	0.2	0.2	0.1	0.5	0.1
Aug-14	10.3	1.0	1.2	0.1	1.1	0.3	3.4	2.4	1.3	0.2
Sep-14	3.6	1.7	1.2	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

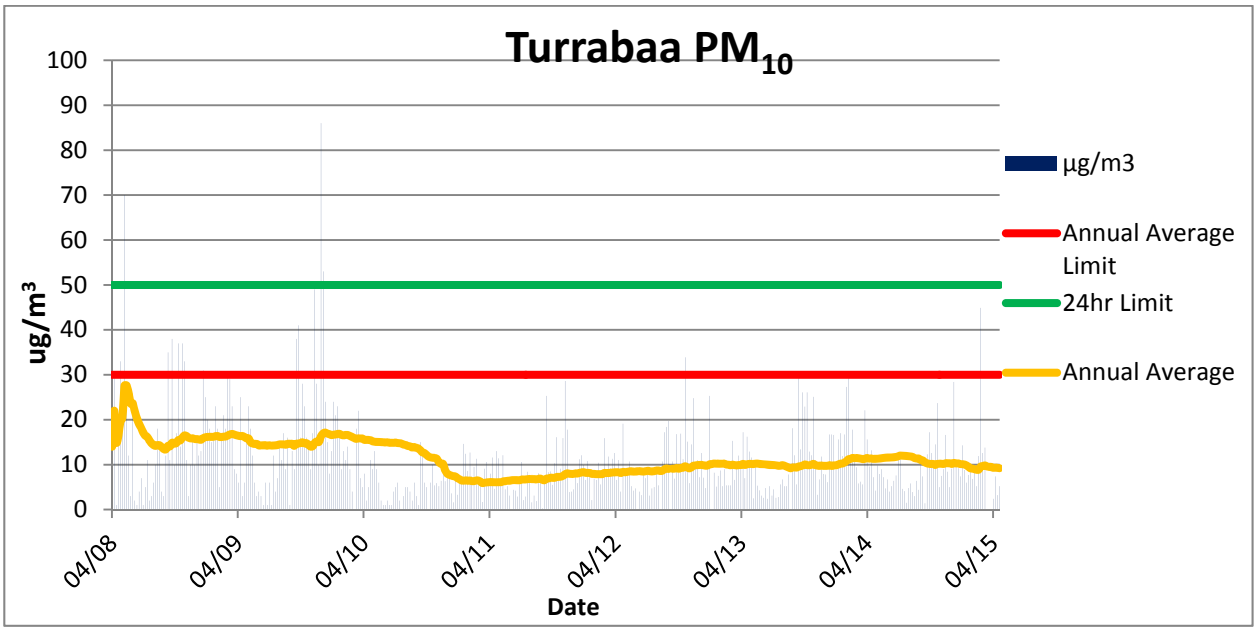
Deposited dust levels have remained at relatively low levels since the last meeting. All dust deposition annual averages are within compliance limits.

High Volume Air Sampling (PM_{10})

PM_{10} 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/m^3 which is well below the annual average limit of 30 µg/m^3.



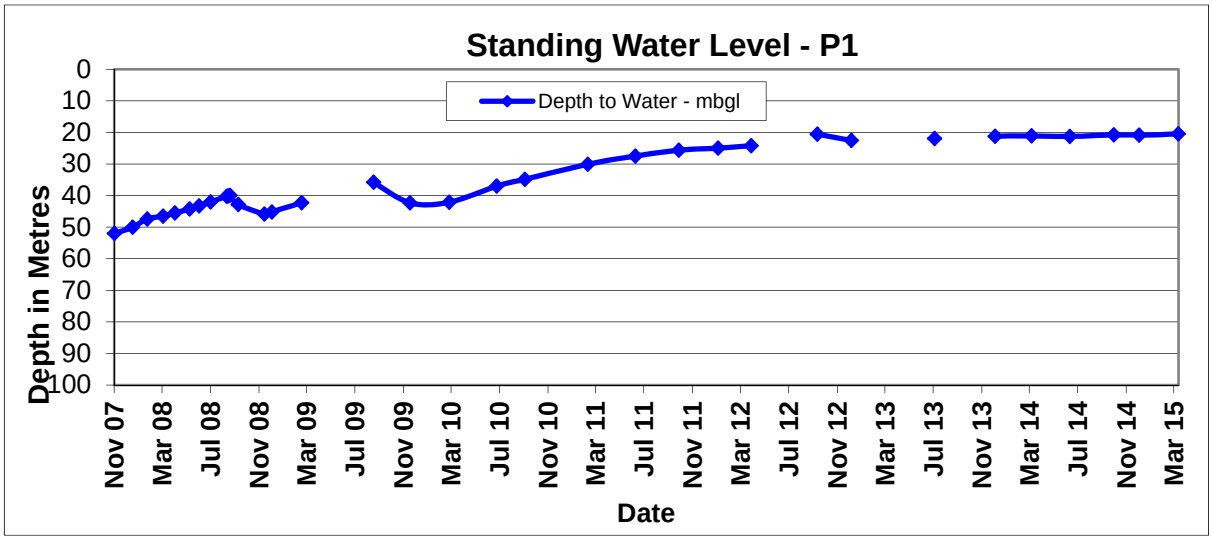
PM_{10} measurements taken to the end of April 2015 for the "Turrabaa" High Volume Air Sampler are returning a running annual average of 9.21 µg/m^3 which is also well below the annual average limit of 30 µg/m^3.

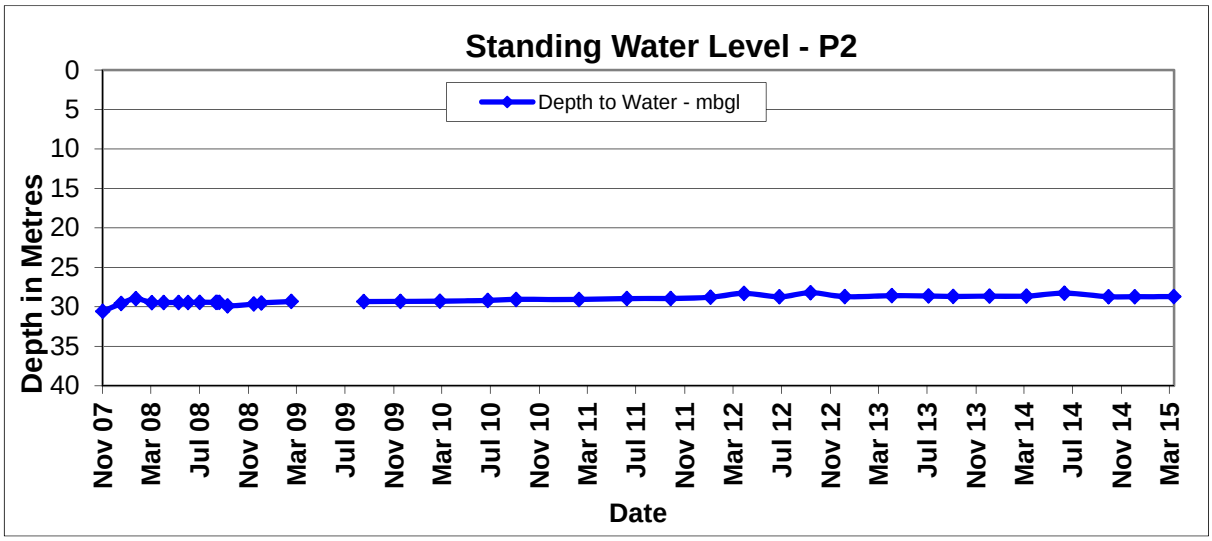


PM_{10} levels have remained compliant since the last meeting.

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.




Standing Water Level - P2
Depth to Water - mbgl
Depth in Metres
0
5
10
15
20
25
30
35
40
Nov 07
Mar 08
Jul 08
Nov 08
Mar 09
Jul 09
Nov 09
Mar 10
Jul 10
Nov 10
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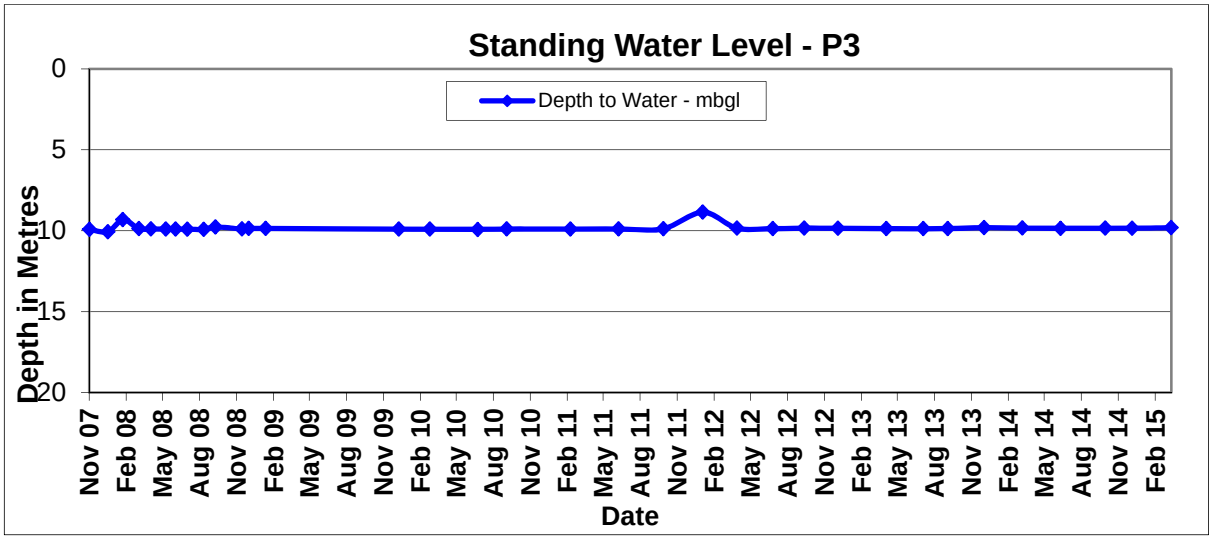
Jul 13
Nov 13
Mar 14
Jul 14
Nov 14
Mar 15
Date


Standing Water Level - P3
Depth to Water - mbgl
Depth in Metres
0
5
10
15
20
Nov 07
Feb 08
May 08
Aug 08
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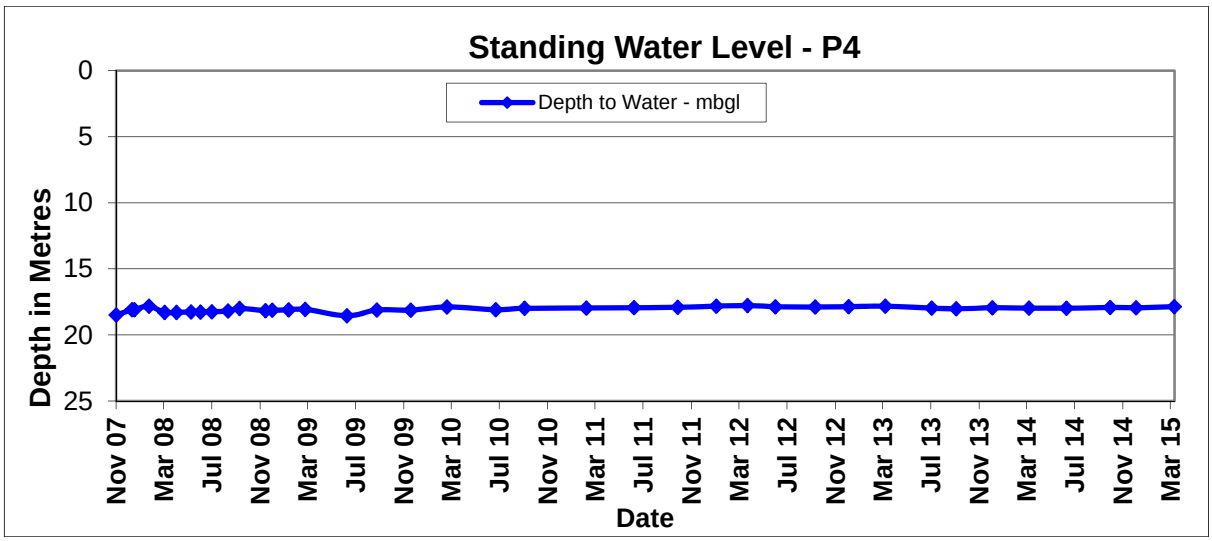
Nov 14
Feb 15
Date


Standing Water Level - P4
Depth to Water - mbgl
Depth in Metres
0
5
10
15
20
25
Nov 07
Mar 08
Jul 08
Nov 08
Mar 09
Jul 09
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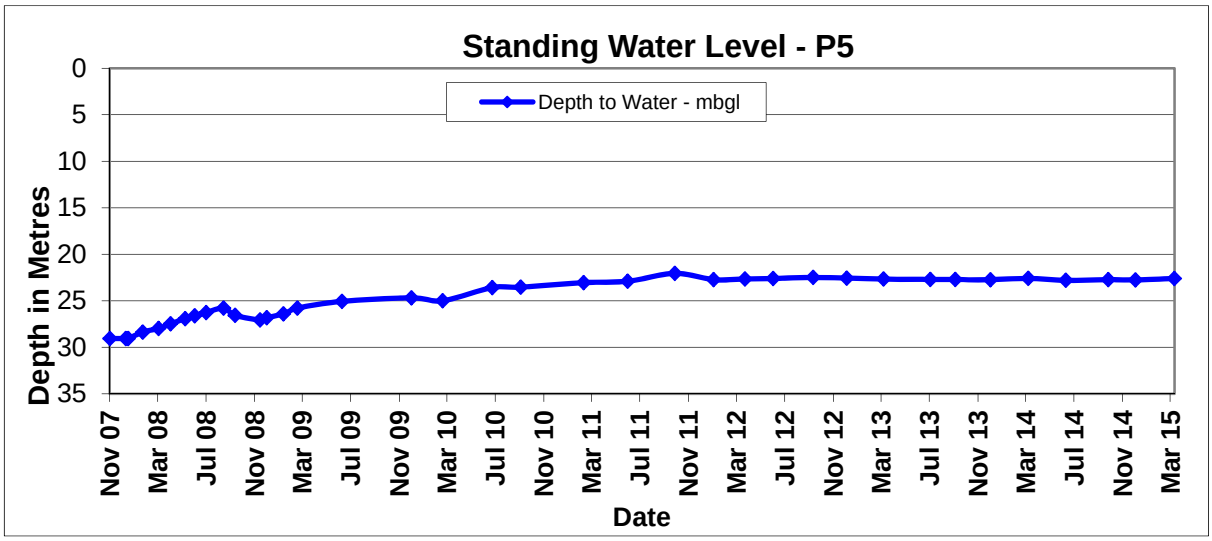
Nov 14
Mar 15
Date


Standing Water Level - P5
Depth to Water - mbgl
Depth in Metres
0
5
10
15
20
25
30
35
Nov 07
Mar 08
Jul 08
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Mar 09
Jul 09
Nov 09
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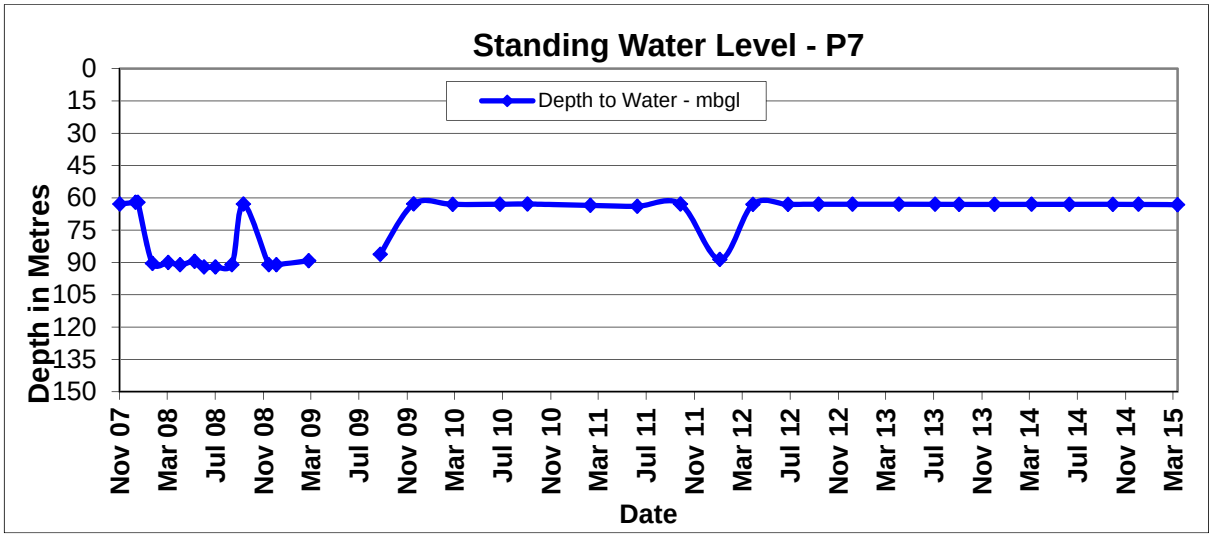
Nov 14
Mar 15
Date


Standing Water Level - P7
Depth to Water - mbgl
Depth in Metres
0
15
30
45
60
75
90
105
120
135
150
Nov 07
Mar 08
Jul 08
Nov 08
Mar 09
Jul 09
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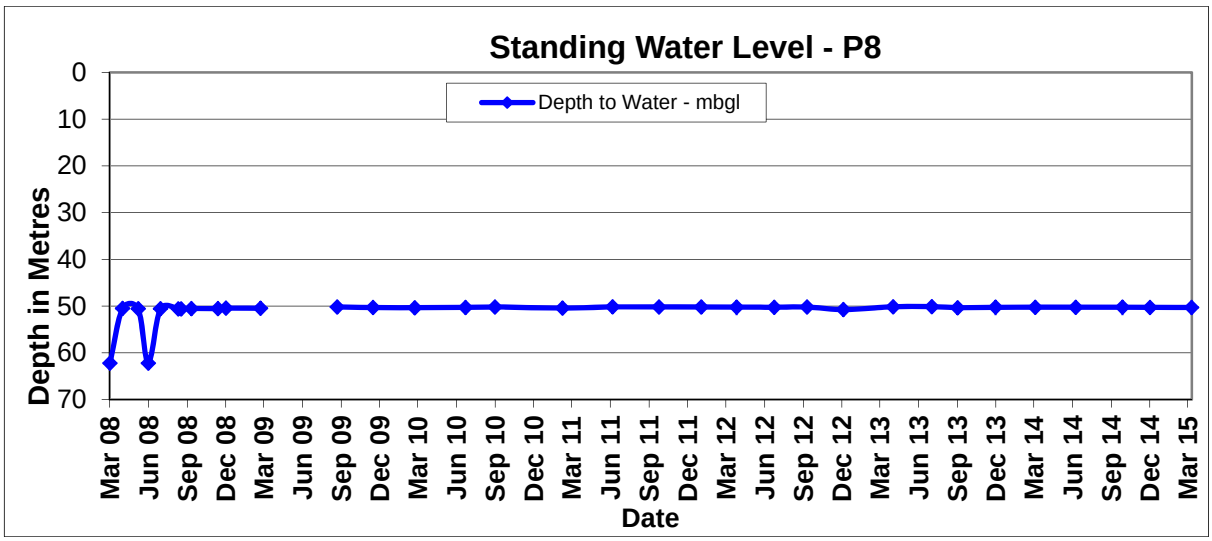
Nov 14
Mar 15
Date


Standing Water Level - P8
Depth to Water - mbgl
Depth in Metres
0
10
20
30
40
50
60
70
Mar 08
Jun 08
Sep 08
Dec 08
Mar 09
Jun 09
Sep 09
Dec 09
Mar 10
Jun 10
Sep 10
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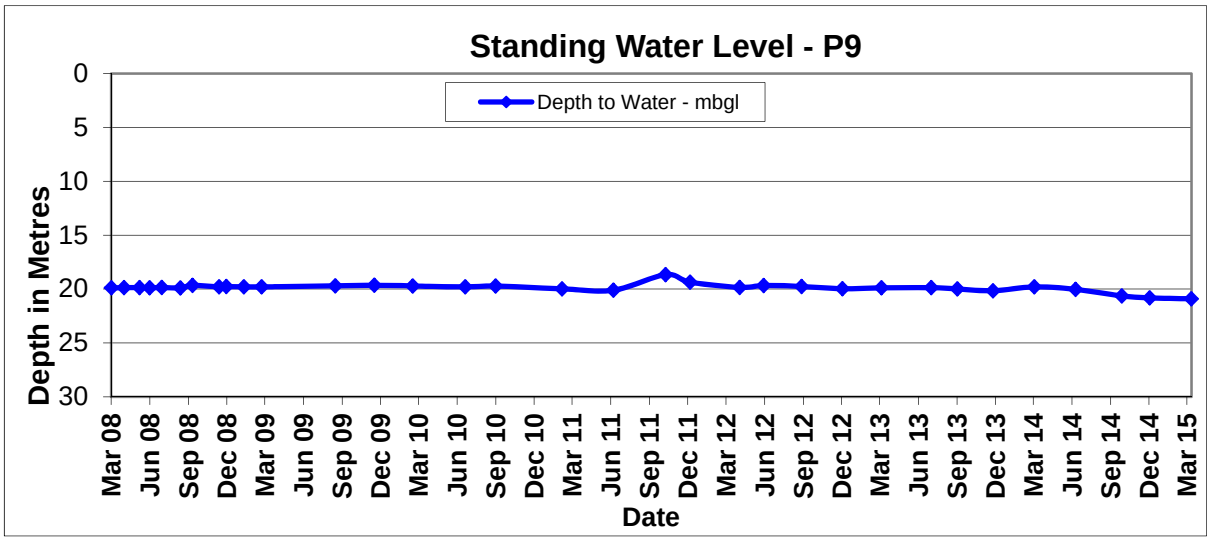
Dec 14
Mar 15
Date


Standing Water Level - P9
Depth to Water - mbgl
Depth in Metres
0
5
10
15
20
25
30
Mar 08
Jun 08
Sep 08
Dec 08
Mar 09
Jun 09
Sep 09
Dec 09
Mar 10
Jun 10
Sep 10
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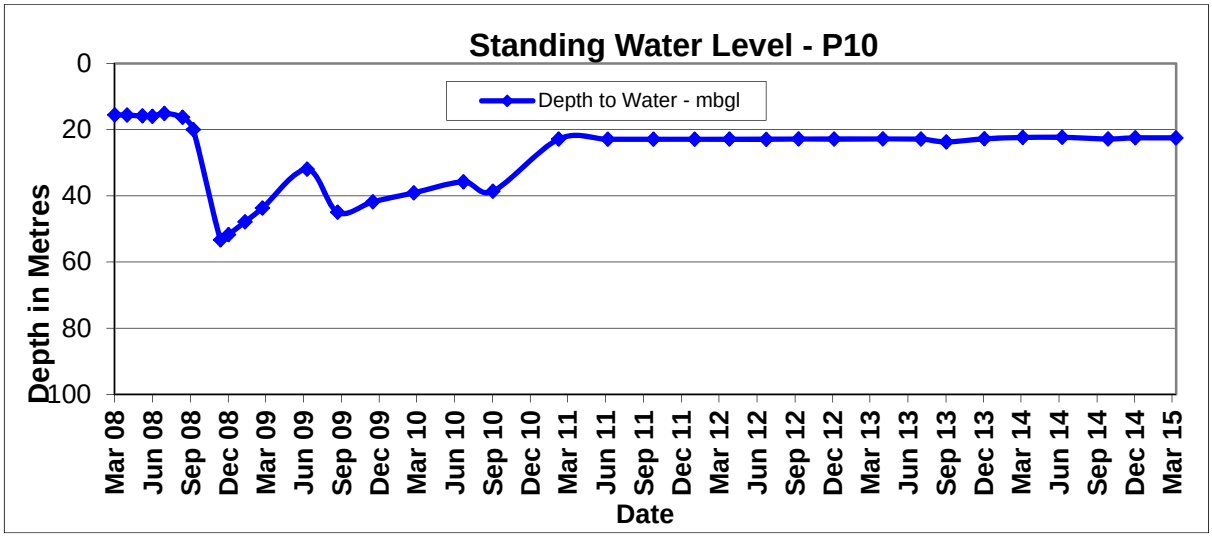
Mar 15
Date


Standing Water Level - P10
Depth to Water - mbgl
Depth in Metres
0
20
40
60
80
100
Mar 08
Jun 08
Sep 08
Dec 08
Mar 09
Jun 09
Sep 09
Dec 09
Mar 10
Jun 10
Sep 10
Dec 10
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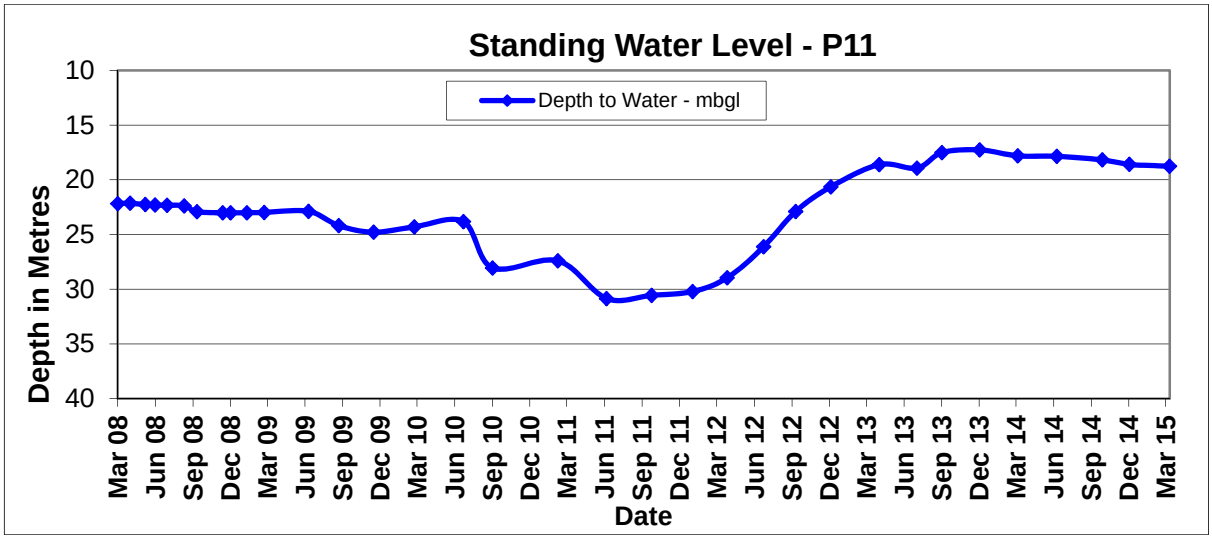
Mar 15
Date


Standing Water Level - P11
Depth to Water - mbgl
Depth in Metres
10
15
20
25
30
35
40
Mar 08
Jun 08
Sep 08
Dec 08
Mar 09
Jun 09
Sep 09
Dec 09
Mar 10
Jun 10
Sep 10
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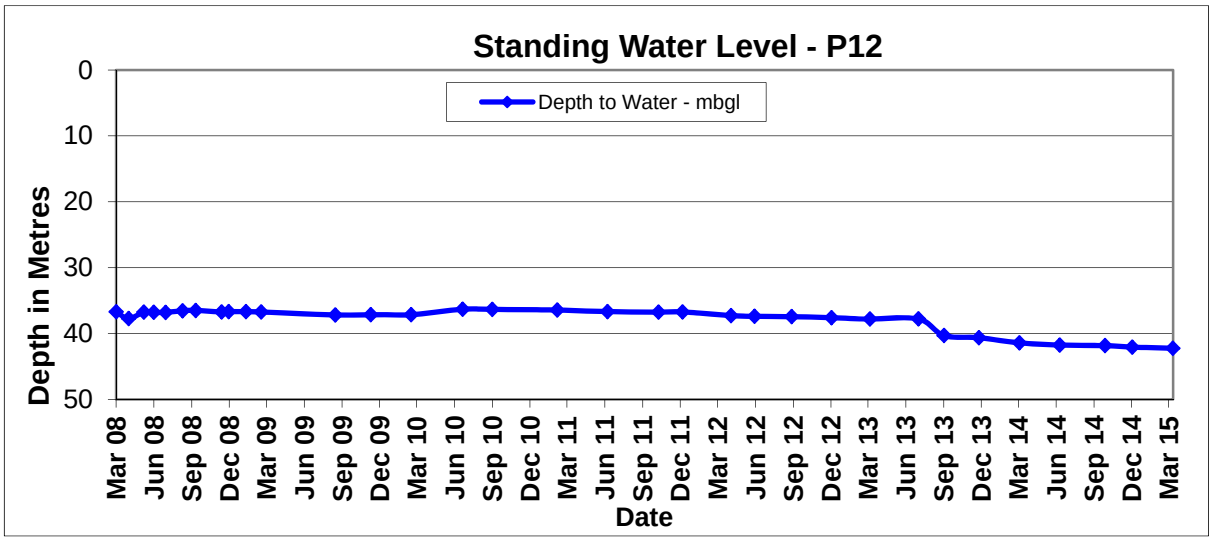
Date


Standing Water Level - P12
Depth to Water - mbgl
Depth in Metres
0
10
20
30
40
50
Mar 08
Jun 08
Sep 08
Dec 08
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Jun 09
Sep 09
Dec 09
Mar 10
Jun 10
Sep 10
Dec 10
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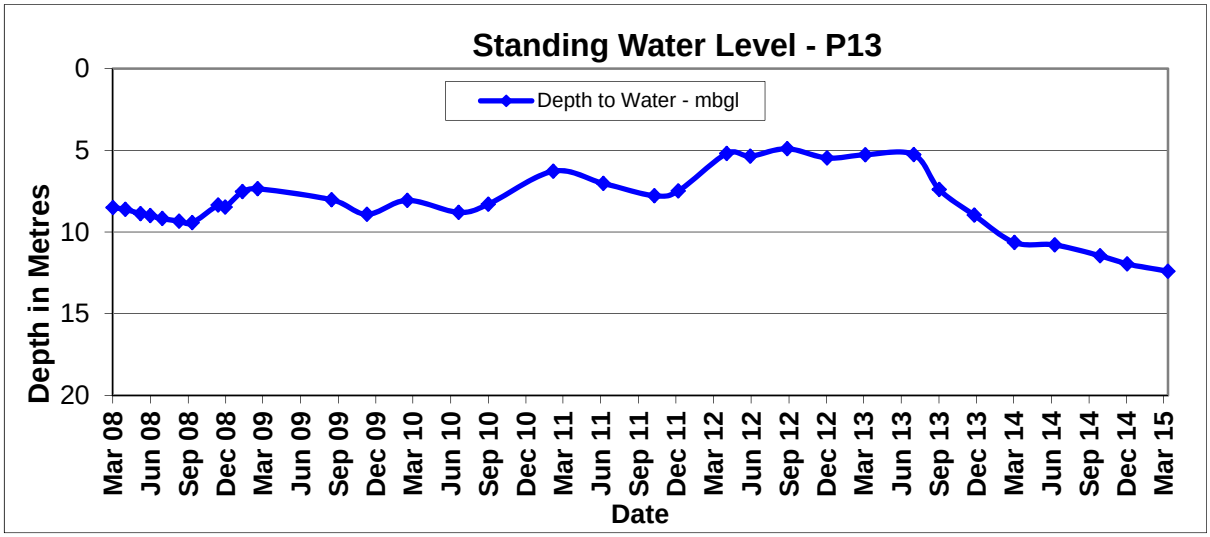
Mar 15
Date


Standing Water Level - P13
Depth to Water - mbgl
Depth in Metres
0
5
10
15
20
Mar 08
Jun 08
Sep 08
Dec 08
Mar 09
Jun 09
Sep 09
Dec 09
Mar 10
Jun 10
Sep 10
Dec 10
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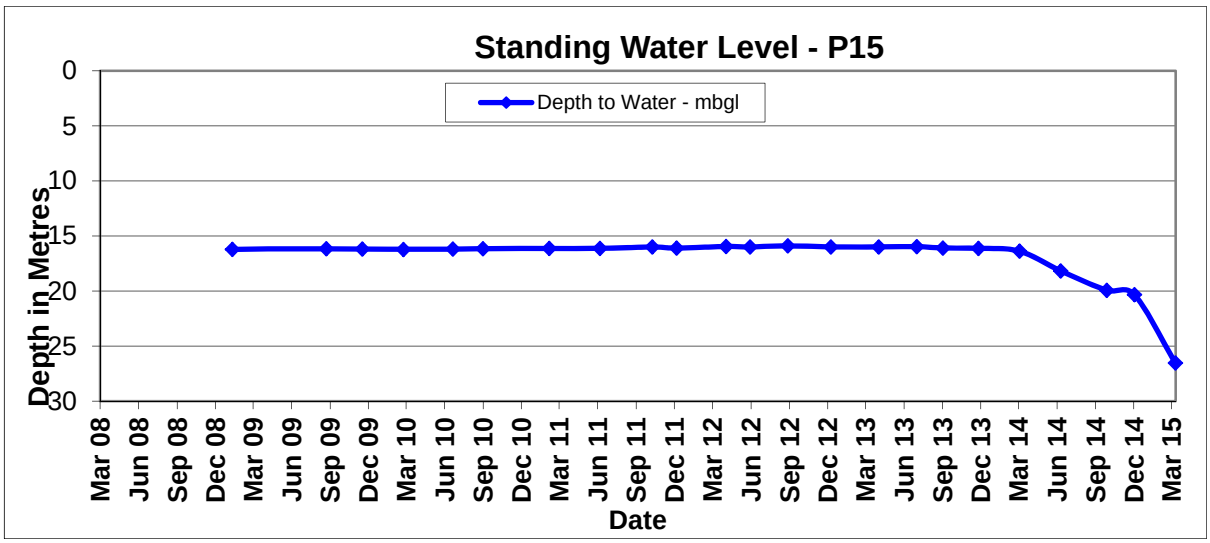
Dec 14
Mar 15
Date


Standing Water Level - P15
Depth to Water - mbgl
Depth in Metres
0
5
10
15
20
25
30
Mar 08
Jun 08
Sep 08
Dec 08
Mar 09
Jun 09
Sep 09
Dec 09
Mar 10
Jun 10
Sep 10
Dec 10
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Jun 14
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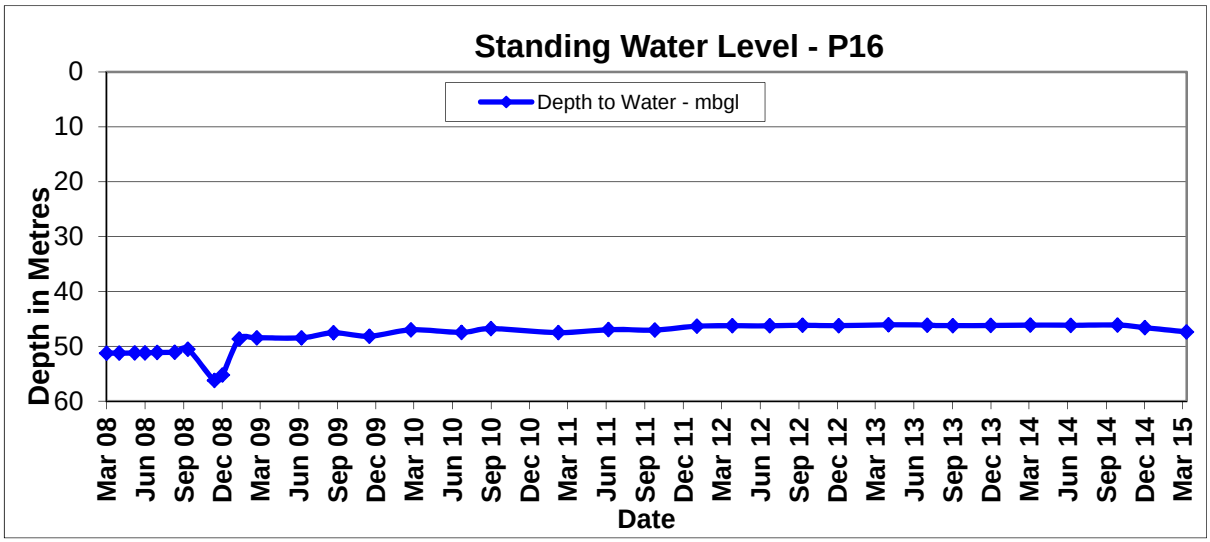
Dec 14
Mar 15
Date


Standing Water Level - P16
Depth to Water - mbgl
Depth in Metres
0
10
20
30
40
50
60
Mar 08
Jun 08
Sep 08
Dec 08
Mar 09
Jun 09
Sep 09
Dec 09
Mar 10
Jun 10
Sep 10
Dec 10
Mar 11
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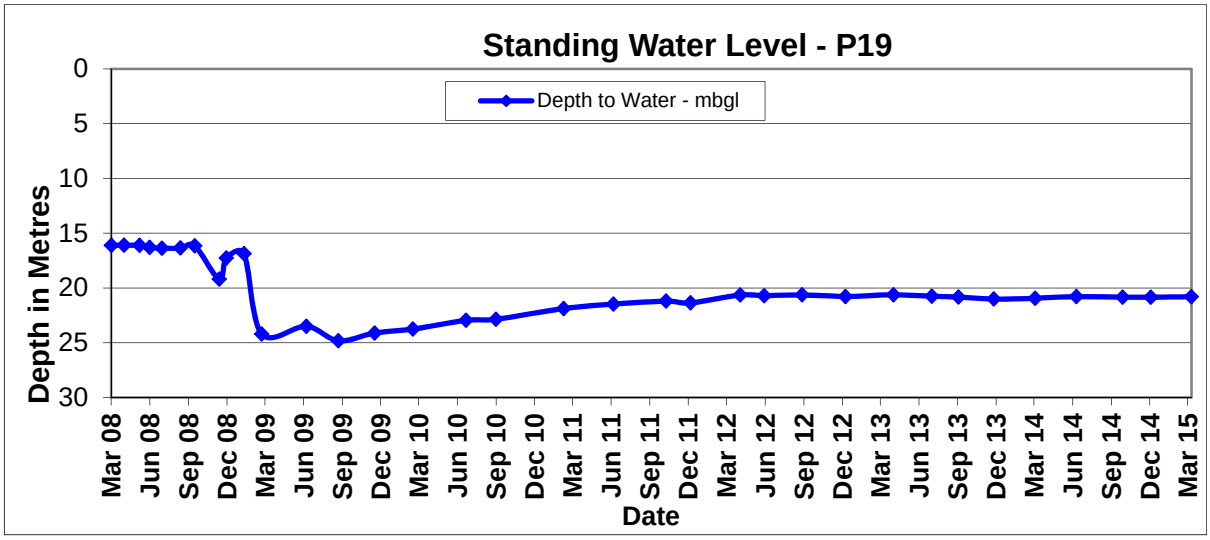
Dec 14
Mar 15
Date


Standing Water Level - P19
Depth to Water - mbgl
Depth in Metres
0
5
10
15
20
25
30
Mar 08
Jun 08
Sep 08
Dec 08
Mar 09
Jun 09
Sep 09
Dec 09
Mar 10
Jun 10
Sep 10
Dec 10
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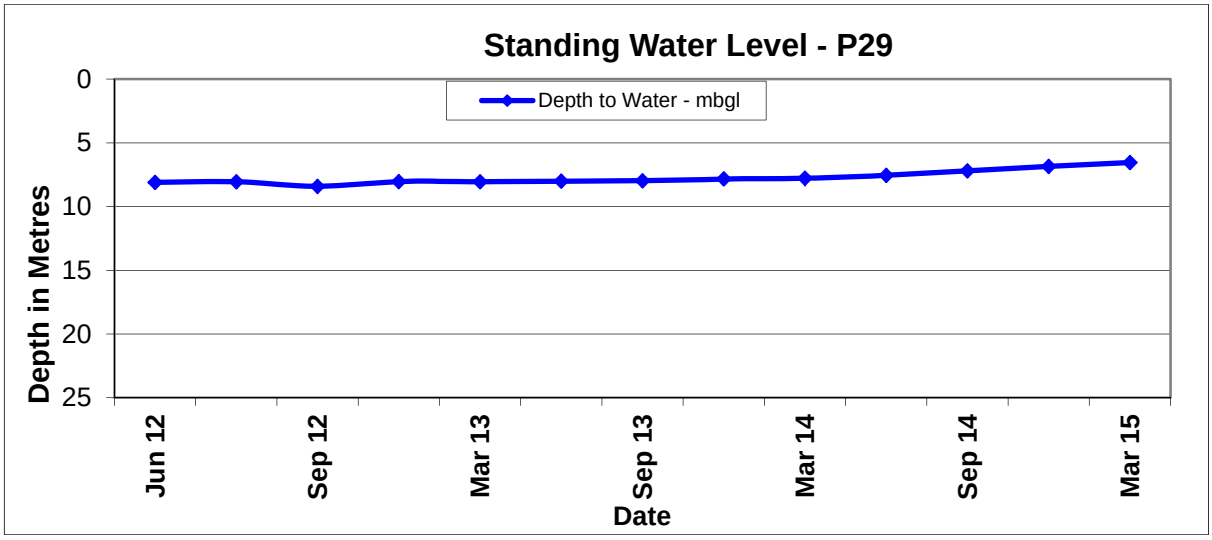
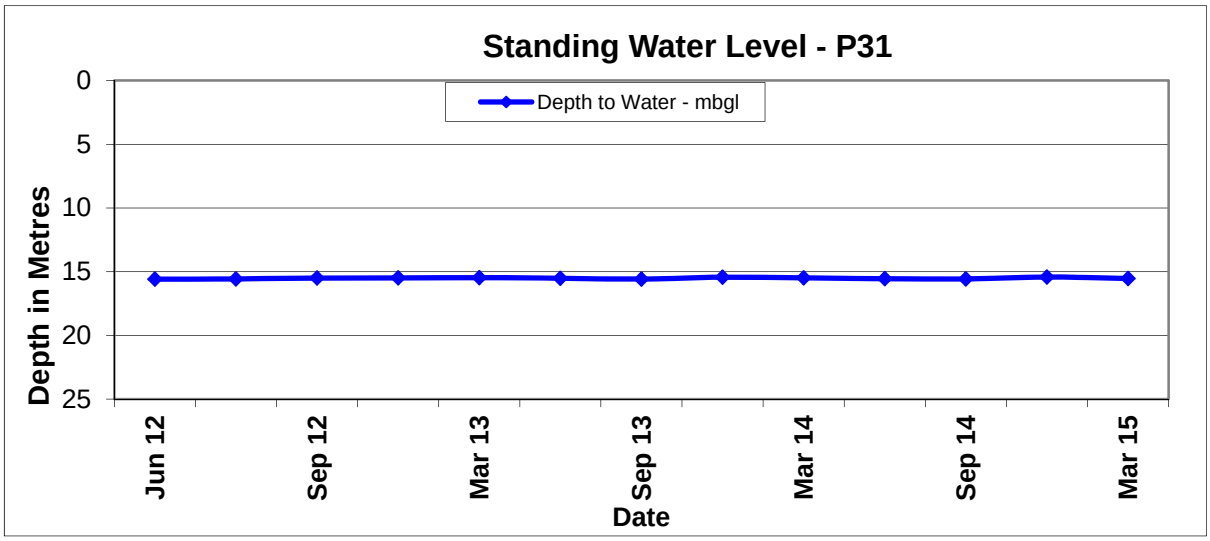
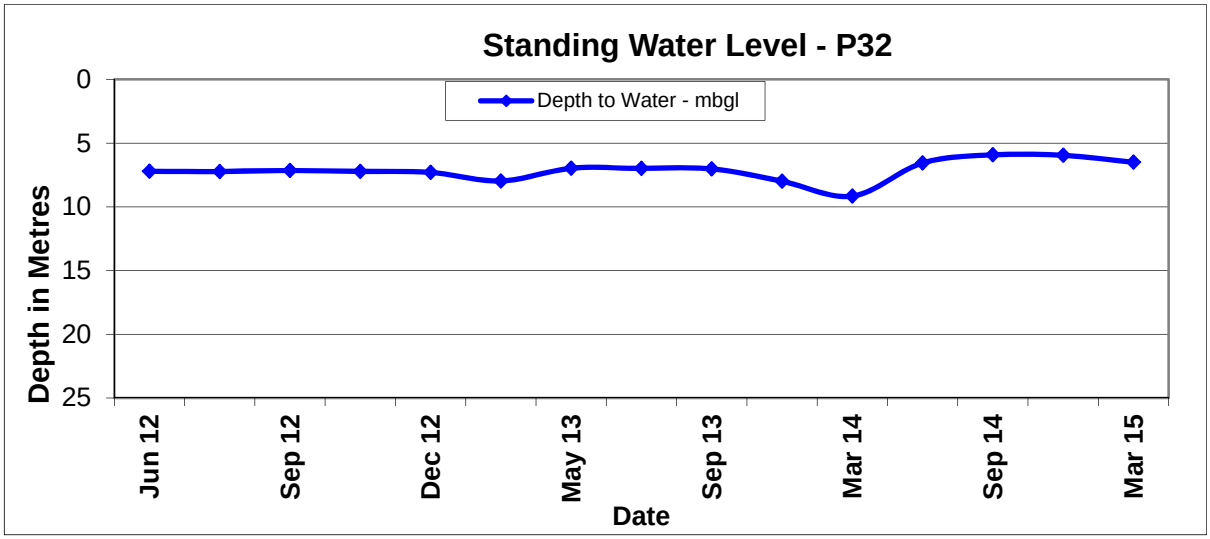
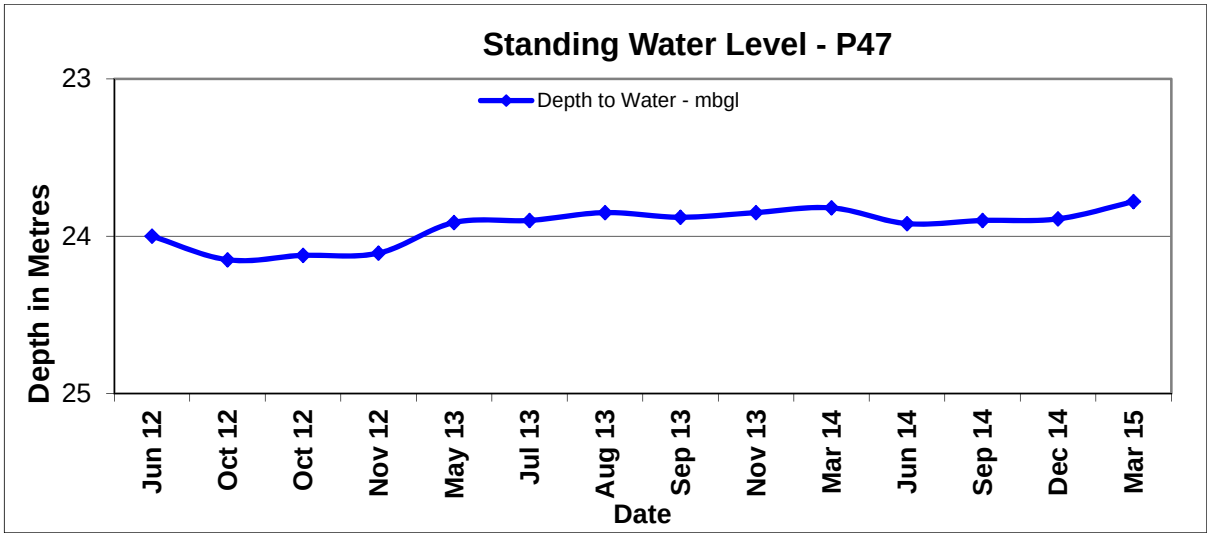
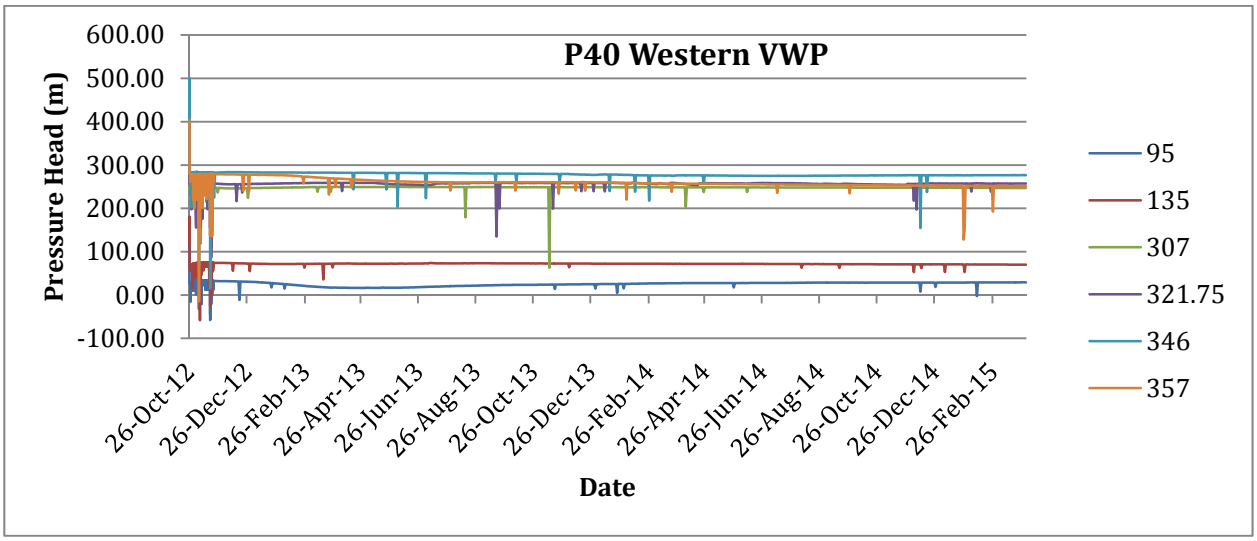
Jun 14
Sep 14
Dec 14
Mar 15
Date

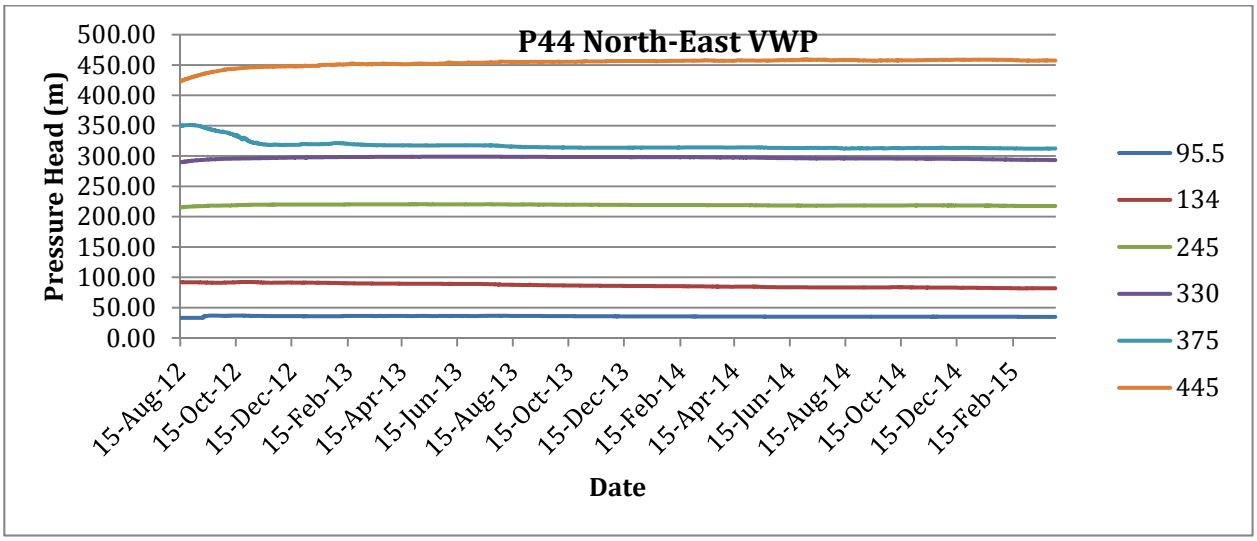

Standing Water Level - P29
Depth to Water - mbgl
Depth in Metres
0
5
10
15
20
25
Jun 12
Sep 12
Mar 13
Sep 13
Mar 14
Sep 14
Mar 15
Date

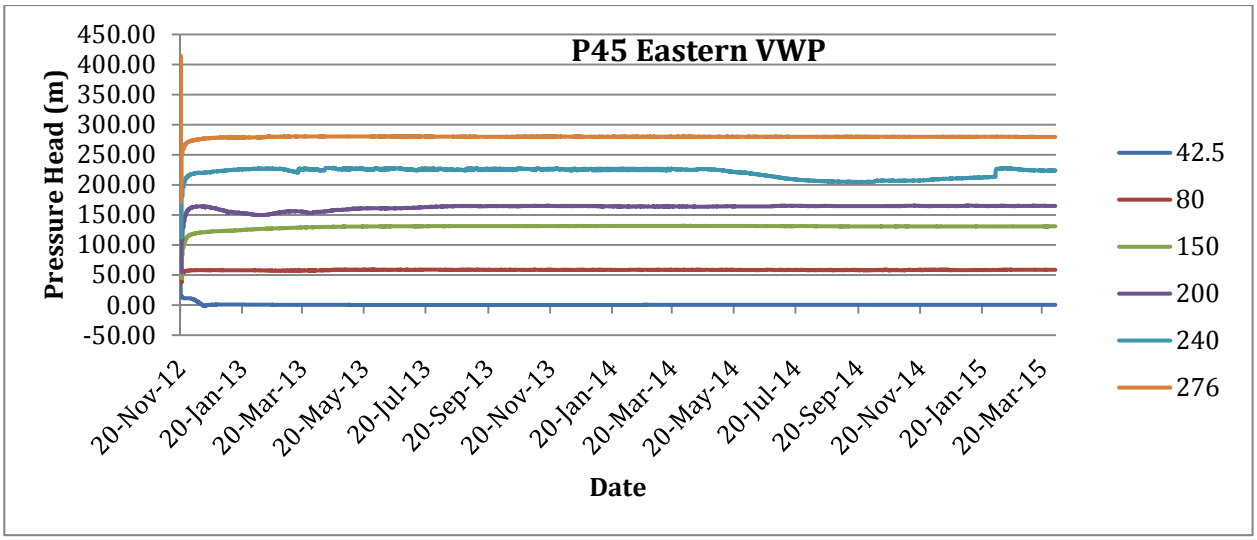

Standing Water Level - P31
Depth to Water - mbgl
Depth in Metres
0
5
10
15
20
25
Jun 12
Sep 12
Mar 13
Sep 13
Mar 14
Sep 14
Mar 15
Date


Standing Water Level - P32
Depth to Water - mbgl
Depth in Metres
0
5
10
15
20
25
Jun 12
Sep 12
Dec 12
May 13
Sep 13
Mar 14
Sep 14
Mar 15
Date


Standing Water Level - P47
Depth to Water - mbgl
Depth in Metres
23
24
25
Jun 12
Oct 12
Oct 12
Nov 12
May 13
Jul 13
Aug 13
Sep 13
Nov 13
Mar 14
Jun 14
Sep 14
Dec 14
Mar 15
Date


P40 Western VWP
Pressure Head (m)
600.00
500.00
400.00
300.00
200.00
100.00
0.00
-100.00
26-Oct-12
26-Dec-12
26-Feb-13
26-Apr-13
26-Jun-13
26-Aug-13
26-Oct-13
26-Dec-13
26-Feb-14
26-Apr-14
26-Jun-14
26-Aug-14
26-Oct-14
26-Dec-14
26-Feb-15
Date
95
135
307
321.75
346
357


P44 North-East VWP
Pressure Head (m)
500.00
450.00
400.00
350.00
300.00
250.00
200.00
150.00
100.00
50.00
0.00
15-Aug-12
15-Oct-12
15-Dec-12
15-Feb-13
15-Apr-13
15-Jun-13
15-Aug-13
15-Oct-13
15-Dec-13
15-Feb-14
15-Apr-14
15-Jun-14
15-Aug-14
15-Oct-14
15-Dec-14
15-Feb-15
Date
95.5
134
245
330
375
445


P45 Eastern VWP
Pressure Head (m)
450.00
400.00
350.00
300.00
250.00
200.00
150.00
100.00
50.00
0.00
-50.00
20-Nov-12
20-Jan-13
20-Mar-13
20-May-13
20-Jul-13
20-Sep-13
20-Nov-13
20-Jan-14
20-Mar-14
20-May-14
20-Jul-14
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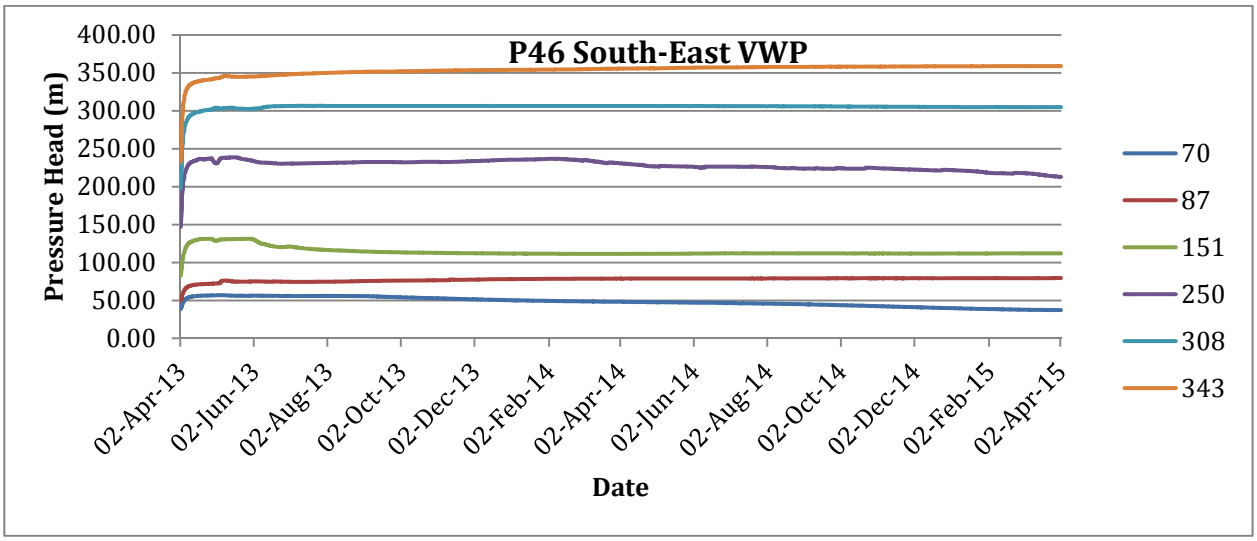
20-Nov-14
20-Jan-15
20-Mar-15
Date
42.5
80
150
200
240
276



Monitroing 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.

Montoring 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 too 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		
Pole 2		
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
Pole 3		
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
Pole 4		
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
Pole 5		
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
Pole 6		
Subsidence (m)	1.41	1.540
Dynamic Tilt (mm/m)	1	129.68
Final Tilt (mm/m)	27	-
Conductor Clearance Loss (m)	1.08	-
Pole 7		
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.

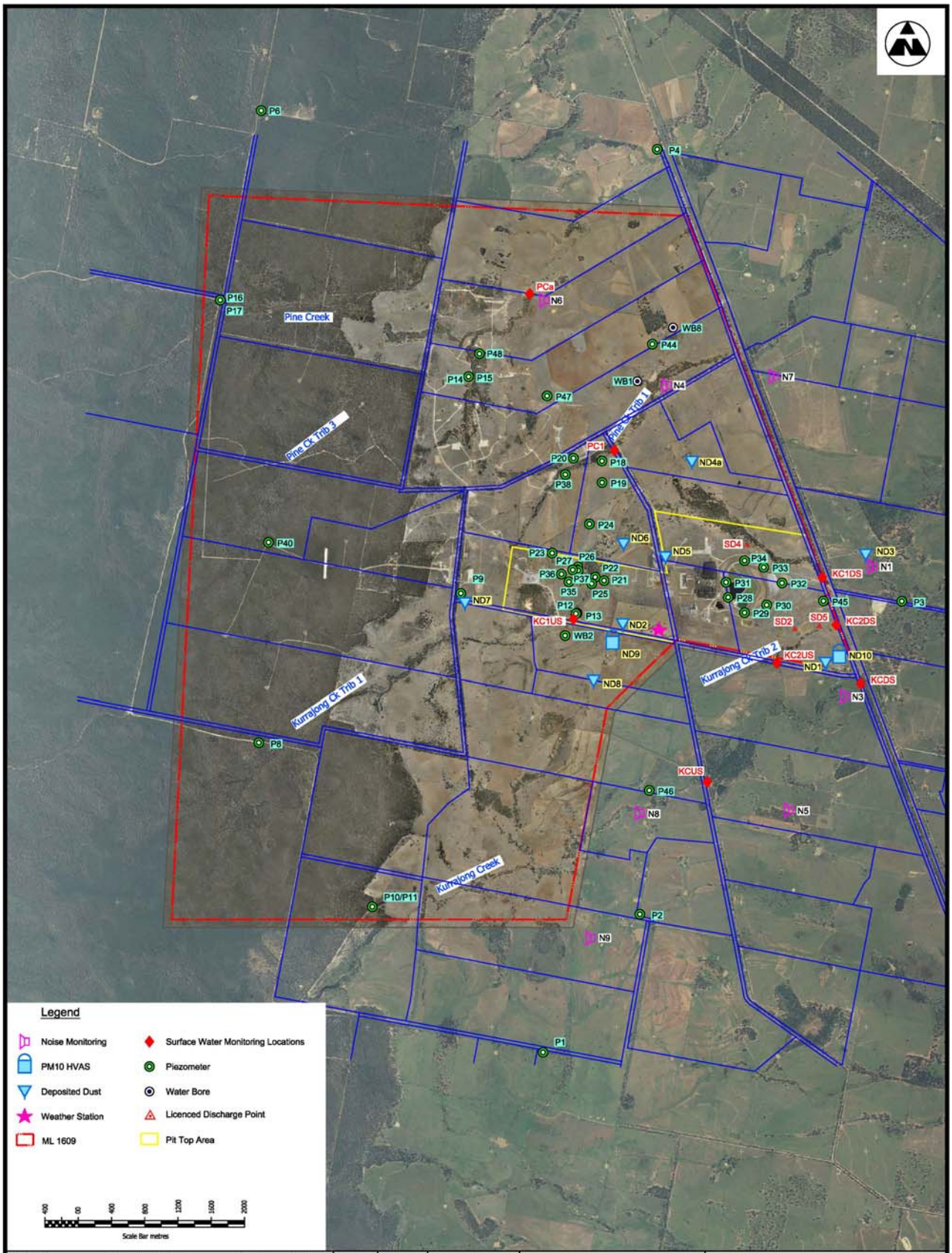
Complaints

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

WHITEHAVEN COAL

NARRABRI MINE

Narrabri Mine Community Consultative Committee Meeting Minutes

Meeting No: 30

Date: Wednesday 16th September 2015

Time: 4:00pm

Location: Narrabri Mine Site Office

Present: Russell Stewart (RS) – Independent Chairman
James Stieger (JS)
Geoff Hunter (GH) – Alternative for Sally Hunter
Rodney Dunlop (RD)
Peter Webb (PW)
Catherine Redding (CR) – Narrabri Shire Council Delegate
Steve Bow (SB) – Narrabri Mine General Manager
Dave Ellwood (DE) – Narrabri Mine Technical Services Superintendent
Steve Farrar (SF) – Narrabri Mine Environmental Officer

1. APOLOGIES

Mark Foster and Lexie Frankham

2. DECLARATION OF PECUNIARY OR OTHER INTERESTS

None.

3. PREVIOUS MINUTES

Moved: GH Seconded: SB

3.1. BUSINESS ARISING FROM PREVIOUS MINUTES

Face Widening/Production Limit Increase Modification Update – SF gave an update on the modification. Submitted a draft document to Department of Planning and Environment (DP&E) for their review and they were satisfied with it. However, as the Stockpile Modification is still being processed the DP&E wanted this one sorted out before the new modification goes on public exhibition. RS asked if this was the increase [stockpiles] modification, which SF confirmed. SF stated that the stockpile modification was on the DP&E website and formal approval was expected the following Tuesday, i.e. 22nd September. Likely to be another week after the approval is received before the face widening/production limit increase modification would go on public exhibition. GH asked about the new watering system would be upgraded to keep the dust down and SF stated that the one that is in place is designed so we can add to it so when the stockpiles are expanded the spray system would also be expanded as part of the works program.

"Pineview" – SF stated that the mine had attempted to meet with the owners of "Pineview" and had contacted them a couple of times but have not been able to pin down a time to meet as yet but hopefully will be next week. GH asked if we had any ideas on it and if the PM_{10} data was more relevant to dust on the rooftop and what the possible solutions may be? SF stated we could certainly look at things like the first-flush systems mentioned previously but not sure what the

owners of “Pineview” are thinking and what would satisfy them. GH said he wasn’t sure either but this would come out in the meeting with them. GH said if there were exceedances on one particular day and then that lands on the roof this would then be flushed into the water tank after the next rain period, he could see how you can get dust in some houses but he is not sure how you do anything about this. SB said all we can do is engage with them and try and understand the issue and extent. RS summarised by saying the mine tried to contact him, which SF confirmed, and then asked if it was with the owners or the mine and SF stated the mine is to contact the owner again. RS asked GH if he is alright with this which GH confirmed and SF said that GH was also invited along as well.

4. GENERAL BUSINESS

4.1. OPERATIONS PROGRESS REPORT

The operations update was provided as follows:

Mine Progress Report (to 31 August 2015)

Coal produced (t):	August 2015	65,208
	FY-to-date	619,609
Coal Railed (t):	August 2015	500,009
	FY-to-date	1,165,749
Average workforce numbers (August 2015):		
	NCO	Waged – 170
		Salary – 104
		Total – 274
	Contractors	Total – 92
Safety Update (FY to August 2015):		
	Lost Time Injury (LTI)	0
	Days LTI Free:	373
	Total Recordable Injuries:	3
	Planned Task Observations:	1,425
	Take 5 Assessments:	19,675
	Work Hours (Aug-15):	98,716

SB stated that we had a good production year last FY but even though the coal market is sluggish we managed to pay our bills and make our contribution. GH asked what the budget was and SB said we managed to get above the target of ~7Mt. SB said for the year ahead we are just starting longwall 5 and our budget is 6.8Mt which is reduced due to another longwall move in the FY. SB said markets are still looking dim but the mine will keep things as tight as it can and try and make some money. SB stated that the mine doesn’t have any plans in the coming year for employment and the mine is in a steady state which it has been for a couple of years and this not expected change anytime soon. SB said the things we are doing we have already talked about such as upgrading stockpiles and widening the longwall to get our productivity tuned up and our cost profile more secure. JS asked if this would be with the regular staff which SB confirmed. SB stated in terms of activity onsite this is minimal with no real construction phase. SB said safety is always a challenge and last year even though we didn’t hit our targets we rank ourselves relative to our peers

in other underground coal mines in the state and we were certainly one of the better performers. SB then stated that the mine still had 22 injuries where people could not return to work on their next shift, which is a level of injury the mine does not regard as being reasonable. RS asked if that was up from the year before which SB said it was about the same but we were chasing improvement. SB said the only positive was that the mine didn't have any major disabling injuries. RS asked if the injuries were from a common area or common people at the mine? SB stated that most of the injuries are related to manual handling and are distributed around the pit. SB said there wasn't much more for operations apart from Maules Creek, although within Whitehaven, we share infrastructure and as it comes on line the railway will get more congested and this is an issue for the Narrabri Mine. JS asked what happens when Maules Creek gets properly going? SB said he can't imagine it getting any easier especially if we have a good wheat season like this one. RS said this has been raised before and it will be difficult. JS asked what we are doing is it around 100kt/mth and SB said no it is more likely 500kt/mth. RS said wait till mid-December when the wheat storage is running out of room. SB said it is a good problem to have. SF said there was a DA in for a new storage facility north of Narrabri. RS said it is linked in with the inland rail, as it is proposed to go close to that site. RS said the mine could send the coal north then. SB said it would be nice to have options as it currently costs ~$25/t and it would be good to have some competition. JS said the grain can go to Port Kembla but the ports are all operated by GrainCorp, which makes it a little difficult.

RS said it was interesting that at the opening of Maules Creek it was stated that the coal from up here is sought after in Japan as it has 30% less emissions then the coal that they have been using and the coal from this area is part of their agreement to cut emissions. RD stated that acid rain is the problem with coal. SB said it is a good grade of coal and Japan build modern power stations that can get far better results. SB said it is good for the mining industry up here as it is a good blend of coal. RS said it is not something the average person would think about using a different standard of coal to cut emissions.

CR asked if there was anything in that [Modification 4] to increase the dust monitoring. SF stated that modelling was done as part of the process and it showed that increasing the stockpiles with the controls already in place was not going to make a significant difference compared to what we already have so we are not proposing to add any additional controls. SB said our approval conditions were being updated and SF confirmed this was to have the same standard conditions as more recent approvals and relates to the management plan and reporting. SF then said in terms of the face widening/production limit increase modification the mine has met with Stewart Todd (Narrabri Shire Council GM) and Tony Meppem the Monday just gone after previously meeting with Paul Wearne and Hamish McTaggart. The new GM was interested in a site tour and to get the Councillors involved.

4.2. ENVIRONMENTAL OVERVIEW

The environmental monitoring report was provided to the CCC members and SF went through the report.

SF stated that attended noise monitoring was done in June/July/August with three exceedances in June. The mine made the necessary notifications. One of the properties is in negotiations with the mine for purchase. GH asked how far the property was from the mine, which JS said it is next to his place and SF said about 1.5km. Sf said that one exceedance was recorded to the south, which was the first time we had recorded an exceedance with additional monitoring done and at this stage it seems to be a one-off. SF explained the noise monitoring requirements outlined in the EPL. SB explained that was an unusual one as it was in the morning at around 9am when they are usually in the middle of the night. RS asked what way the breeze was going and SF referred him to the table in the report. SF stated more monitoring was planned. July and August also had some exceedances however these were recorded under inversion conditions or during strong winds when the criteria do not apply.

SF went through the deposited dust levels and HVAS results all of which were compliant and daily HVAS criteria had not been exceeded since September 2009 due to a dust storm.

SF went through the groundwater monitoring results completed in June 2015 as it is done every 3 months. Monitoring well P15 had shown a steady decrease however during June it recovered to near background levels. This is located near LW105 which is about to start mining. When the longwall unit gets near P15 it would be expected to drop in level again. GH asked what happens there? SF said he would have to check how deep that one is to confirm where it is installed too as it is not likely in the coal seam otherwise it would have stayed down after development. SF said there is obviously some connectivity there as it dropped but then recovered.

SF went through the surface water monitoring results and noted that the EPL points did not discharge however the creeks around the mine were sampled since the last meeting. SF mentioned one of those was in relation to a storm in which we recorded 2 inches of rain with a peak of 12mm in 5 mins. JS said it was some of the heaviest rain he had seen.

SF went through the subsidence results. SF said updated subsidence results had been used in the face widening/production limit increase modification. GH asked about ponding. SF said we do get ponding but that was predicted to occur and the issues in the first two panels where the large trees died hasn't occurred since. SF said this was related to depth of cover and nowhere on the mine is the depth of cover as shallow as it was for the first two panels so this shouldn't happen again. CR asked if the longwall gets deeper which SB confirmed. GH asked if subsidence would be less but SF said it is predicted to remain the same at around 2.7m. SB said the tree deaths were also related to soils and the deeper you get the subsidence profile gets less savage with lower tilts/strains. GH asked if it will increase over time to which SF replied that once you were around 70m past a given point you will have 95% of the subsidence on the surface. DE added that you may get another 50mm when the next block is mined. RS suggested getting a time-lapse camera to record the fall which would be interesting.

SF went through the complaints. All four complaints received were for noise and all four were from the same complainant with three received in one weekend. SF stated that the complaints were followed up and actioned as required while noting that most complaints are received after the fact. The complaints on the weekend coincided with the longwall move so there was a lot more action on the surface. SF said the complainant is in negotiations with the mine for purchase and SB stated that the negotiations are protracted as the mines joint venture partners require approval from the foreign investment review board. CR asked if it was a 2km radius to the residences from the mine, which SB confirmed. JS stated that it is not noisy all the time but when it is noisy, it is very noisy. RS asked if we advise the neighbours and SB said we do not. RS said you may lead people to complain though and SF stated you would not stop the complaints but the complainant would know what the cause is. GH asked if we would lease the place back to them to manage and SB said it depends what the deal is and they have asked for that. GH stated it is an interesting issue that someone complains about noise but then is happy to stay there afterwards. RD said this is a problem for mining everywhere not just here and JS stated that he looks at it from the point of view of who was there first. SF stated that our development consent requires the mine to compensate for the inconvenience of it all and the negotiations usually sit around what that figure equates too on top of the independent valuer's report. JS stated that it is not a total loss to Whitehaven either as you are purchasing land to which SB replied while it is an asset it ties your money up and Whitehaven are not farmers.

SF went through an environmental event that occurred at the mine in June when a contractor accessed an area demarcated as an Aboriginal site. All relevant parties were notified and no regulatory action was taken as all controls were in place and an appropriate level of disciplinary action was taken with the contractor. SF stated the mine issued a TBT following the incident to remind everyone of their obligations in terms of cultural heritage sites. CR asked if we now had the sites fenced off to which SF replied the site was fenced with signs were on the fence restricting access. GH recalled another incident happening with a contractor recently, which SF confirmed had occurred in October 2014 [reported to the CCC in December 2014]. SB said most of the surface work is contractor based. RD asked if archaeology was part of the induction, which SF confirmed. DE stated that following the incident in October 2014 all the sites in the northern panels were fenced and signs put up. JS asked what he was doing and DE explained he was putting a pump in to pump water from a ponding area.

5. NEW BUSINESS

GH asked about a phone survey that rang him a couple of nights ago. SB asked if it was Newgate as this is the organisation Whitehaven use for public relations. GH said they did not identify themselves as mining related but it was obvious after a few questions that they were and confirmed it was Newgate. SB said they do work for Whitehaven but was not aware of a survey being done. RS said the University of Newcastle would be in the area next week to do a community study and some people may get calls.

CR stated that the three mines in the Maules Creek area have an annual community consultative meeting and one other Narrabri Councillor who attends thinks it would be a good idea for the Narrabri Mine CCC to be involved. CR then said she has since found out that it is part of those mines consents to have the meeting together and she did not think this CCC would be interested and it would require DP&E approval. RS stated that an interesting comment came from the Councillor, which was "you have a good CCC and you may not want to come". CR said she declined on behalf of the group to which the CCC agreed. SB said you would just get caught in matters that really do not apply to the Narrabri Mine.

SF asked RS how the independent chair meeting in Sydney went. RS replied that it appears that, while noting he was the only one there outside Hunter/Sydney/Wollongong, that the other independent chairs were paid. SF stated that the independent chair of the Maules Creek/Tarrawonga CCC's was paid to run the meetings. SB said he has been involved in a number of CCC's and some have paid chair persons and some don't, but usually the contentious mines are the ones that have a paid chair persons to run the CCC's. RS then asked the group at the meeting how is this not a conflict of interest. SB said in his experience it was done through the DP&E and they issue invoices which have to be paid. RS asked the people at the meeting how you make a decision on things that are controversial. RS also said that they spoke about the political aspirations of people on the committees and how this overflows into what goes on in the meetings, which may be why they need a paid person in there. JS said this committee started with a very good chairman in a house in a bare paddock and this has carried on to this day. JS also said the chairman would let people have their say but pull people up if needed and at the end of the meeting everyone would shake hands. RS said that this is the way it should be. JS said if you had a chair that says you have 2 mins then maybe you don't shake hands at the end. RS said that there was a key word in all this and it is 'community'. GH asked what the idea of the meeting was? RS replied that all chairs were invited to Sydney to discuss major issues. RS told them this CCC has no major issues and we have people who are farmers and some who are not happy with the resources industry on our CCC but they ask questions and they get answers with no attacks to which the other people responded we get attacked all of the time. RS then said the other chairs say it goes back to individual characters point scoring and they also have over the top environmentalists as well. RS told the other chairs that maybe you could learn from us. RS also said he is on two CCC's and this one was the most amiable. RS said the problem with the other committees seems to be where they start and who is involved. SB said the DP&E does the picking of the CCC and in the more populous areas you get more applications so DP&E will take a sample and you may get some people who are against mining in general and work hard to undermine the meeting. RS said that he has found that the person sho says no, in the end nobody listens too. RS said the biggest issues in the other CCC's were personalities and the people who are there to further their own careers. SF asked if there was going to be a report or something issued after the meeting? RS said there is no report or minutes. SB asked if they were just seeking feedback, which RS confirmed. RS said if the meeting came up again that he would not bother going. RD said the population density is lower here than the Hunter Valley or Wollongong. JS said in the Hunter Valley it is also about aesthetics. RS said there was a comment from one of the staffers that Narrabri would be gearing up for some big stuff? RS said he asked about prices and if that would determine how it all goes. GH said he is concerned that Narrabri doesn't see the benefit from the production that goes in the shire. RS said he has sent some emails around about this as well on behalf of the business chamber. SB confirmed these emails were around the money spent in businesses in town as opposed to the royalties etc that come from mining.

6. NEXT MEETING

Wednesday 16th December 2015 at 4:00pm. Railway Hotel, Baan Baa.

7. CLOSURE OF MEETING

Meeting closed at 5:20pm.

Narrabri Mine Community Consultative Committee Meeting #30

Environmental Monitoring Report June 2015 – August 2015

Noise Monitoring

Attended noise monitoring was undertaken between Tuesday 23rd and Thursday 25th June 2015 (Tables 1-12), Tuesday 21st July 2015 (Tables 13-16) and Tuesday 11th August 2015 (Tables 17-20) to verify if noise levels were within compliance limits. The results from this monitoring are detailed in the tables below.

Table 1: NM Operational Noise Monitoring Results – 23 June 2015 (day)

Location	Time	Total dB(A), Leq (15 min)	Wind speed/ direction	Temp Grad (oC/100m)	Identified Noise Sources
R4 Oakleigh	1:01 pm	44	3.5/321	n/a	Birds (42), traffic (39), NM (27)
R13 Newhaven	4:27 pm	46	0.8/297	n/a	Birds (31), NM (28*)
R16 Belah Park	2:43 pm	43	2.4/307	n/a	Traffic (42), birds (35), NM (23)

*Noise from vent fan

Table 2: NM Operational Noise Monitoring Results – 23 June 2015 (evening)

Location	Time	Total dB(A), Leq (15 min)	Wind speed/ direction	Temp Grad (oC/100m)1	Identified Noise Sources
R4 Oakleigh	7:42 pm	39	0.9/140	+7.1	Traffic (38), NM (30)
R13 Newhaven	9:13 pm	52	0.9/81	+4.1	NM (34*)
R16 Belah Park	8:30 pm	35	0.4/199	+3.8	Traffic (35), frogs (23) NM (<20)

*Noise from vent fan

Table 3: NM Operational Noise Monitoring Results – 23/24 June 2015 (Night)

Location	Time	Total dB(A), Leq (15 min)	Wind speed/ direction	Temp Grad (oC/100m)	Identified Noise Sources
R4 Oakleigh	10:02 pm	41	1.1/126	+3.0	Traffic (40), NM (35)
R13 Newhaven	12:32 am	51	0.6/187	+3.0	NM (33*)
R16 Belah Park	11:12 pm	35	0.5/129	+3.3	Traffic (32), NM (31), frogs (24)

*Noise from vent fan

Table 4: NM Operational Noise Monitoring Results – 24 June 2015 (day)

Location	Time	Total dB(A), Leq (15 min)	Wind speed/ direction	Temp Grad (oC/100m)	Identified Noise Sources
R1 Bow Hills	11:02 am	38	1.4/113	n/a	Traffic (37), birds (28), NM (25)
R2 Ardmona	10:38 am	46	1.2/114	n/a	Birds (44), traffic (41), NM (27)
R4 Oakleigh	8:58 am	41	2.0/140	n/a	NM (40), birds (31), traffic (28)
R6 Matilda	1:21 pm	35	4.4/346	n/a	NM (33), birds (29), traffic (25)
R13 Newhaven	1:57 pm	47	3.9/335	n/a	NM (29*)
R16 Belah Park	11:25 am	40	1.7/349	n/a	Traffic (37), birds (37), NM (24)

*Noise from vent fan

Table 5: NM Operational Noise Monitoring Results – 24 June 2015 (evening)					
Location	Time	Total dB(A), Leq (15 min)	Wind speed/ direction	Temp Grad (oC/100m)	Identified Noise Sources
R1 Bow Hills	8:41 pm	36	2.0/46	Lapse	Traffic (34), frogs (30), NM (28)
R2 Ardmona	9:32 pm	44	0.5/204	Lapse	Traffic (44), frogs (29), NM (25)
R4 Oakleigh	6:35 pm	44	6.2/241	Lapse	Wind (44), traffic (28), frogs (25), NM (24)
R6 Matilda	9:07 pm	30	2.7/72	Lapse	NM (27), frogs (25), traffic (23)
R13 Newhaven	7:19 pm	44	4.7/221	Lapse	Wind (41), NM (23*)
R16 Belah Park	8:04 pm	43	2.1/260	Lapse	Traffic (41), NM (38)

*Noise from vent fan

Table 6: NM Operational Noise Monitoring Results – 24/25 June 2015 (night)					
Location	Time	Total dB(A), Leq (15 min)	Wind speed/ direction	Temp Grad (oC/100m)	Identified Noise Sources
R1 Bow Hills	12:03 am	40	1.7/165	+3.7	Traffic (37), frogs (36), NM (23)
R2 Ardmona	11:08 pm	45	1.5/157	+2.7	Traffic (45), frogs (27), NM (24)
R4 Oakleigh	10:00 pm	40	0.8/129	0.0	Traffic (40), NM (28), frogs (23)
R6 Matilda	11:36 pm	36	0.8/121	+2.1	NM (35), traffic (26), frogs (23)
R13 Newhaven	1:41 am	48	0.7/156	+3.5	NM (30*)
R16 Belah Park	12:25 am	36	1.2/179	+4.6	Traffic (36), frogs (24), NM (22)

*Noise from vent fan

Table 7: NM Operational Noise Monitoring Results – 25 June 2015 (day)					
Location	Time	Total dB(A), Leq (15 min)	Wind speed/ direction	Temp Grad (oC/100m)	Identified Noise Sources
R4 Oakleigh	10:33 am	37	2.0/134	n/a	Birds (36), traffic (29), NM (22)
R13 Newhaven	2:02 pm	45	2.9/134	n/a	NM (27*), birds (26)
R16 Belah Park	12:15 pm	40	3.1/138	n/a	Traffic (40), birds (26), NM (22)

*Noise from vent fan

Table 8: NM Operational Noise Monitoring Results – 25 June 2015 (evening)					
Location	Time	Total dB(A), Leq (15 min)	Wind speed/ direction	Temp Grad (oC/100m)	Identified Noise Sources
R4 Oakleigh	6:01 pm	29	3.3/187	Lapse	Traffic (27), frogs (25), NM (<20)
R13 Newhaven	6:41 pm	46	3.7/194	+1.2	NM (28*)
R16 Belah Park	7:28 pm	44	3.7/194	+1.9	Traffic (43), NM (37), frogs (27)

*Noise from vent fan

Table 9: NM Operational Noise Monitoring Results – 25/26 June 2015 (night)					
Location	Time	Total dB(A), Leq (15 min)	Wind speed/ direction	Temp Grad (oC/100m)	Identified Noise Sources
R4 Oakleigh	10:40 pm	33	1.6/87	Lapse	Traffic (32), frogs (26), NM (<20)
R13 Newhaven	1:09 am	50	2.6/152	+0.5	NM (32*)
R16 Belah Park	11:51 pm	42	2.6/149	Lapse	NM (40), traffic (38), frogs (26)

*Noise from vent fan

Table 10: NM Sleep Disturbance Monitoring Results – 23/24 June 2015 (night)				
Location	Time	dB(A),L1 (1 min)	Wind speed / direction	Temp Grad(oC/100m)
R4 Oakleigh	10:02 pm	40	1.1/126	+3.0
R13 Newhaven	12:32 am	38*	0.6/187	+3.0
R16 Belah Park	11:12 pm	36	0.5/129	+3.3

*Noise from vent fan

Table 11: NM Sleep Disturbance Monitoring Results – 24/25 June 2015 (night)				
Location	Time	dB(A),L1 (1 min)	Wind speed / direction	Temp Grad(oC/100m)
R1 Bow Hills	12:03 am	28	1.7/165	+3.7
R2 Ardmona	11:08 pm	28	1.5/157	+2.7
R4 Oakleigh	10:00 pm	32	0.8/129	0.0
R6 Matilda	11:36 pm	40	0.8/121	+2.1
R13 Newhaven	1:41 am	35*	0.7/156	+3.5
R16 Belah Park	12:25 am	26	1.2/179	+4.6

*Noise from vent fan

Table 12: NM Sleep Disturbance Monitoring Results – 25/26 June 2015 (night)				
Location	Time	dB(A),L1 (1 min)	Wind speed / direction	Temp Grad(oC/100m)
R4 Oakleigh	10:40 pm	21	1.6/87	Lapse
R13 Newhaven	1:09 am	38*	2.6/152	+0.5
R16 Belah Park	11:51 pm	44	2.6/149	Lapse

*Noise from vent fan

Table 13: NCM Noise Monitoring Results – 21 July 2015 (Day)				
Location	Time	dB(A), Leq(15min)	Wind speed (m/s) / direction	Identified Noise Sources
R1 Bow Hills	1:58 pm	37	0.7 / 134	Traffic (36), domestic construction (27), birds (26), NCM (23)
R2 Ardmona	1:34 pm	44	1.3 / 119	Traffic (44), birds (29), NCM (<20)
R4 Oakleigh	1:10 pm	35	1.5 / 138	Birds (34), traffic (27), NCM (22)
R6 Matilda**	2:30 pm	42	1.1 / 123	Birds (42), traffic (24), NCM (22)
R13 Newhaven	2:59 pm	47	1.3 / 115	NCM (29)*, birds (28)
R16 Belah Park	3:32 pm	35	1.1 / 96	Birds (33), traffic (31), NCM (<20)

*noise from vent fan – see text

**monitoring conducted at front gate of Matilda residence as landowner was absent and gate was locked.

Table 14: NCM Noise Monitoring Results – 21 July 2015 (Evening)					
Location	Time	dB(A), Leq(15min)	Wind speed (m/s) / direction	Temp Grad (oC/100m)	Identified Noise Sources
R1 Bow Hills	8:18 pm	50	1.6 / 158	+5.9	Traffic (50), frogs (34), NCM (<20)
R2 Ardmona	7:26 pm	49	1.5 / 162	+6.9	Traffic (49), NCM (24)
R4 Oakleigh	7:01 pm	41	0.7 / 97	+6.3	Traffic (41), NCM (29)

Table 14: NCM Noise Monitoring Results – 21 July 2015 (Evening)					
Location	Time	dB(A), Leq(15min)	Wind speed (m/s) / direction	Temp Grad (oC/100m)	Identified Noise Sources
R6 Matilda**	7:55 pm	35	1.6 / 168	+5.5	Traffic (34), NCM (28)
R13 Newhaven	9:20 pm	50	0.8 / 170	+4.1	NCM (32)*
R16 Belah Park	8:40 pm	39	1.2 / 225	+2.9	Traffic (39), frogs (27), NCM (<20)

*noise from vent fan – see text

**monitoring conducted at front gate of Matilda residence as landowner was absent and gate was locked.

Table 15: NCM Noise Monitoring Results – 21/22 July 2015 (Night)					
Location	Time	dB(A), Leq(15min)	Wind speed (m/s) / direction	Temp Grad (oC/100m)	Identified Noise Sources
R1 Bow Hills	11:10 pm	46	1.4 / 152	+5.7	Traffic (46), frogs (28), NCM (26)
R2 Ardmona	10:24 pm	44	0.8 / 190	+5.0	Traffic (44), frogs (26), NCM (25)
R4 Oakleigh	10:00 pm	35	0.7 / 134	+5.7	Traffic (34), NCM (29)
R6 Matilda**	10:46 pm	39	1.4 / 154	+6.1	NCM (39), traffic (25), frogs (22)
R13 Newhaven	12:03 am	51	1.9 / 163	+7.0	NCM (33)*
R16 Belah Park	11:32 pm	30	0.6 / 152	+7.5	Traffic (29), frogs (23), NCM (<20)

*noise from vent fan – see text

**monitoring conducted at front gate of Matilda residence as landowner was absent and gate was locked.

Table 16: L1 (1 min) – 21/22 July 2015 (Night)		
Location	Time	dB(A),L1(1 min)
R1 Bow Hills	11:10 pm	32
R2 Ardmona	10:24 pm	29
R4 Oakleigh	10:00 pm	36
R6 Matilda**	10:46 pm	48
R13 Newhaven	12:03 am	38*
R16 Belah Park	11:32 pm	<20

*noise from vent fan – see text

**monitoring conducted at front gate of Matilda residence as landowner was absent and gate was locked.

Table 17: NCM Noise Monitoring Results – 11 August 2015 (Day)				
Location	Time	dB(A), Leq(15min)	Wind speed (m/s) / direction	Identified Noise Sources
R1 Bow Hills	2:44 pm	52	6.8 / 286	Wind (52), traffic (36), NCM (<20)
R2 Ardmona	1:48 pm	51	7.3 / 293	Traffic (49), wind (47), birds (31), NCM (<20)
R4 Oakleigh	1:21 pm	50	6.7 / 309	Wind (50), birds (29), NCM (<20)
R6 Matilda**	2:15 pm	50	6.9 / 296	Wind (50), birds (27), NCM (<20)
R13 Newhaven	3:06 pm	52	7.4 / 283	NCM (34)*
R16 Belah Park	3:35 pm	47	7.4 / 284	Wind (47), traffic (31), birds (28), NCM (<20)

*noise from vent fan – see text

**monitoring conducted at front gate of Matilda residence as landowner was absent and gate was locked.

Table 18: NCM Noise Monitoring Results – 11 August 2015 (Evening)					
Location	Time	dB(A), Leq(15min)	Wind speed (m/s)/ direction	Temp Grad (oC/100m)	Identified Noise Sources
R1 Bow Hills	8:16 pm	40	0.6 / 184	+4.6	NCM (38), traffic (36), frogs (24)
R2 Ardmona	7:26 pm	45	0.9 / 315	+2.5	Traffic (45), NCM (33)
R4 Oakleigh	7:01 pm	38	2.5 / 331	+2.6	Traffic (37), NCM (32)
R6 Matilda**	7:52 pm	31	0.7 / 250	+4.5	NCM (30), traffic (25)
R13 Newhaven	9:18 pm	45	1.6 / 264	+10.8	NCM (27)*
R16 Belah Park	8:42 pm	42	1.2 / 287	+6.1	Traffic (42), NCM (30)

*noise from vent fan – see text

**monitoring conducted at front gate of Matilda residence as landowner was absent and gate was locked.

Table 19: NCM Noise Monitoring Results – 11/12 August 2015 (Night)					
Location	Time	dB(A), Leq(15min)	Wind speed (m/s) / direction°	Temp Grad (oC/100m)	Identified Noise Sources
R1 Bow Hills	11:16 pm	42	1.3 / 288	+13.6	Traffic (41), NCM (33), frogs (25)
R2 Ardmona	10:23 pm	45	2.0 / 283	+11.2	Traffic (45), NCM (31)
R4 Oakleigh	10:49 pm	35	1.7 / 291	+14.5	Traffic (33), NCM (31)
R6 Matilda**	10:00 pm	26	2.0 / 280	+10.9	NCM (23), traffic (23)
R13 Newhaven	12:11 am	51	0.8 / 263	+13.8	NCM (33)*
R16 Belah Park	11:38 pm	38	0.5 / 186	+12.5	Traffic (38), NCM (25)

*noise from vent fan – see text

**monitoring conducted at front gate of Matilda residence as landowner was absent and gate was locked.

Table 20: L1 (1 min) – 11/12 August 2015 (Night)		
Location	Time	dB(A),L1(1 min)
R1 Bow Hills	11:16 pm	36
R2 Ardmona	10:23 pm	36
R4 Oakleigh	10:49 pm	37
R6 Matilda**	10:00 pm	26
R13 Newhaven	12:11 am	37*
R16 Belah Park	11:38 pm	29

*noise from vent fan – see text

**monitoring conducted at front gate of Matilda residence as landowner was absent and gate was locked.

June 2015

During June 2015 two exceedances were recorded at the “Belah Park” property (38 & 40 dB(A)) and one exceedance was recorded at the “Oakleigh” property (40 dB(A)). Relevant notifications were made. The mine is in negotiations for the purchase of “Belah Park”. Additional monitoring has been undertaken at “Oakleigh” on two separate occasions, more planned, with no additional noise exceedances recorded.

July and August 2015

The results for July and August 2015 shows that exceedances did occur but under meteorological conditions outside the range of applicability of the noise criteria and are not exceedances. No additional exceedances were recorded at the "Oakleigh" property.

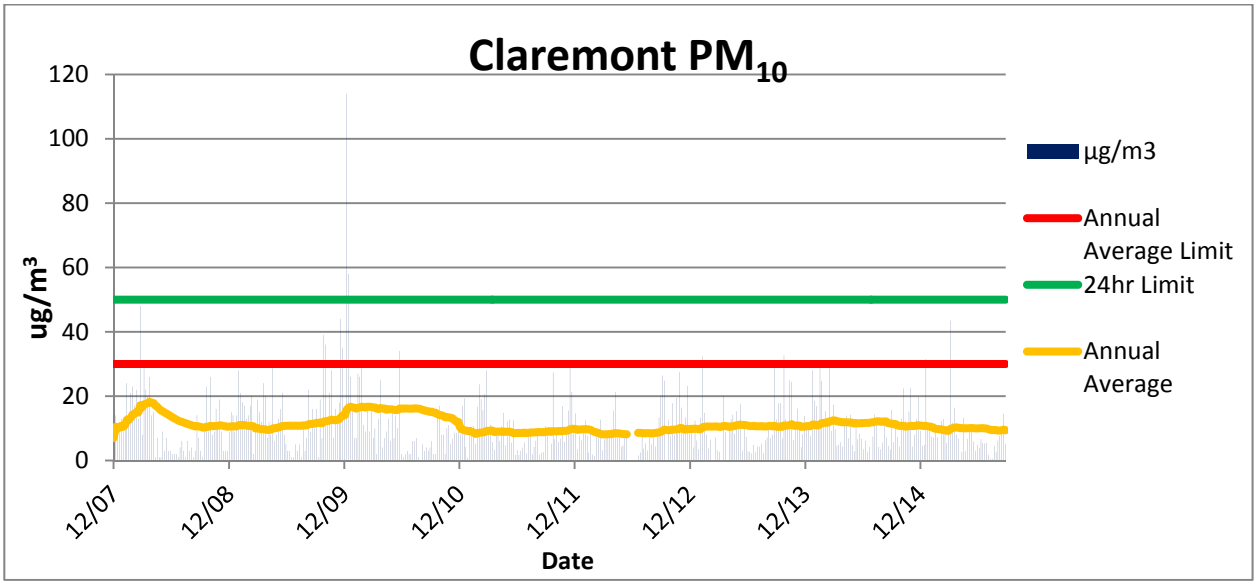
Deposited Dust Monitoring

Month	ND1 Turrabaa	ND2 Claremont	ND3 Bow Hills	ND4a New Matoppo	ND5 Claremont	ND6 Willarah	ND7 Claremont	ND8 Claremont	ND11 Oakleigh	ND12 Merriman
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
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
Jun-15	1.8	1.5	0.3	1.3	1.0	0.3	0.5	0.4	0.6	0.1
Jul-15	3.6	5.7	0.3	0.6	1.9	0.1	0.7	1.6	0.5	0.1
Aug-15	0.6	1.4	0.2	1.0	1.4	0.1	1.0	0.8	0.3	0.1
Annual Average	2.2	1.8	0.6	1.0	1.6	0.5	1.1	0.8	1.1	0.7

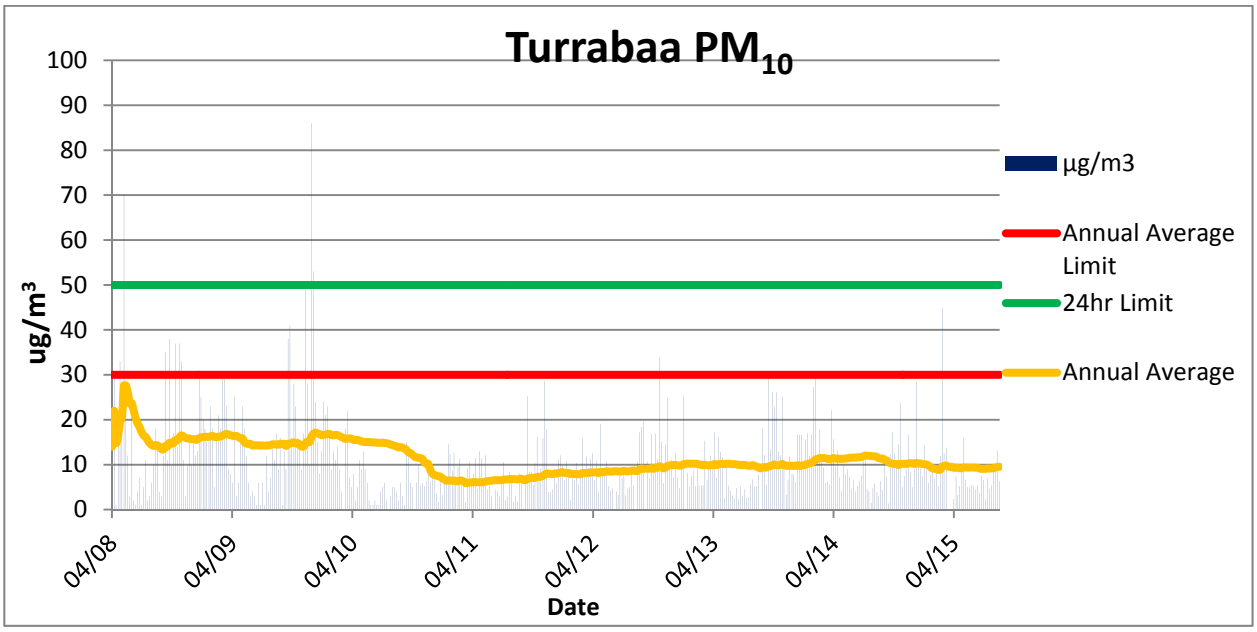
Deposited dust levels have remained at relatively low levels since the last meeting. All dust deposition annual averages are within compliance limits.

High Volume Air Sampling (PM_{10})

PM_{10} measurements taken to the end of August 2015 for the "Claremont" High Volume Air Sampler (HVAS) are returning a running annual average of 9.41 µg/m^3, which is well below the annual average limit of 30 µg/m^3.



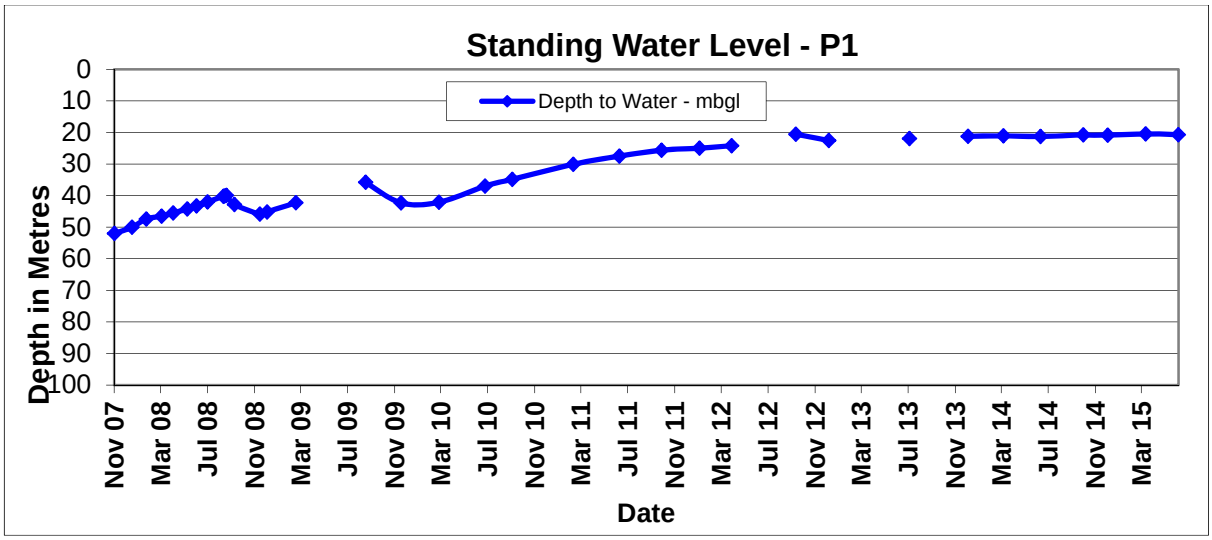
PM_{10} measurements taken to the end of August 2015 for the "Turrabaa" High Volume Air Sampler are returning a running annual average of 9.52 µg/m^3, which is also well below the annual average limit of 30 µg/m^3.

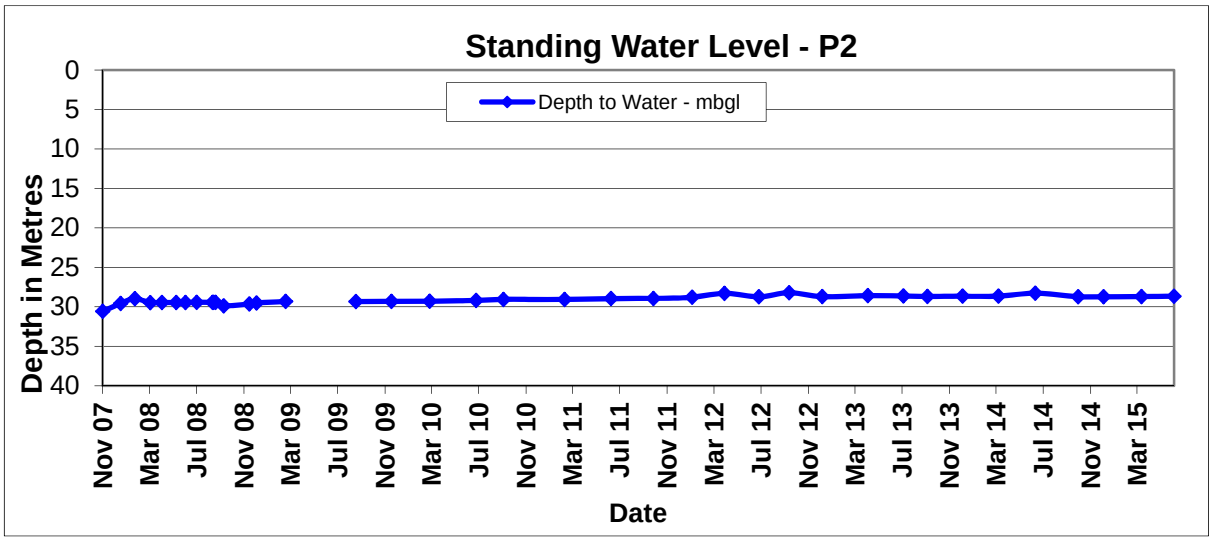


PM_{10} levels have remained compliant since the last meeting.

Groundwater Monitoring

Groundwater monitoring was completed in June 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.




Standing Water Level - P2
Depth to Water - mbgl
Depth in Metres
0
5
10
15
20
25
30
35
40
Nov 07
Mar 08
Jul 08
Nov 08
Mar 09
Jul 09
Nov 09
Mar 10
Jul 10
Nov 10
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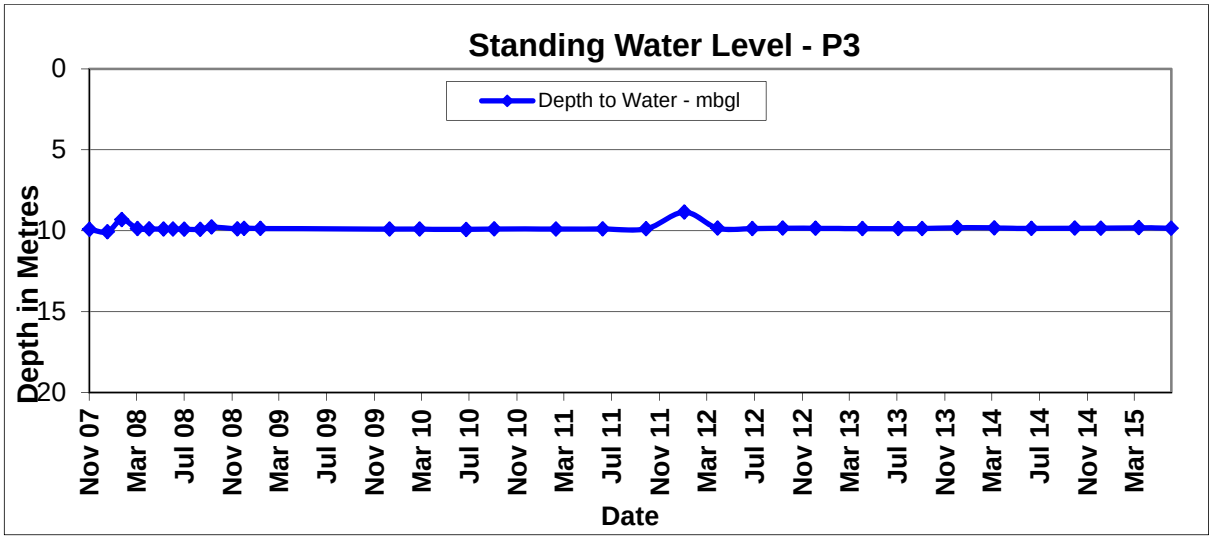
Standing Water Level - P3
Depth to Water - mbgl
Depth in Metres
0
5
10
15
20
Nov 07
Mar 08
Jul 08
Nov 08
Mar 09
Jul 09
Nov 09
Mar 10
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Nov 10
Mar 11
Jul 11
Nov 11
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Nov 12
Mar 13
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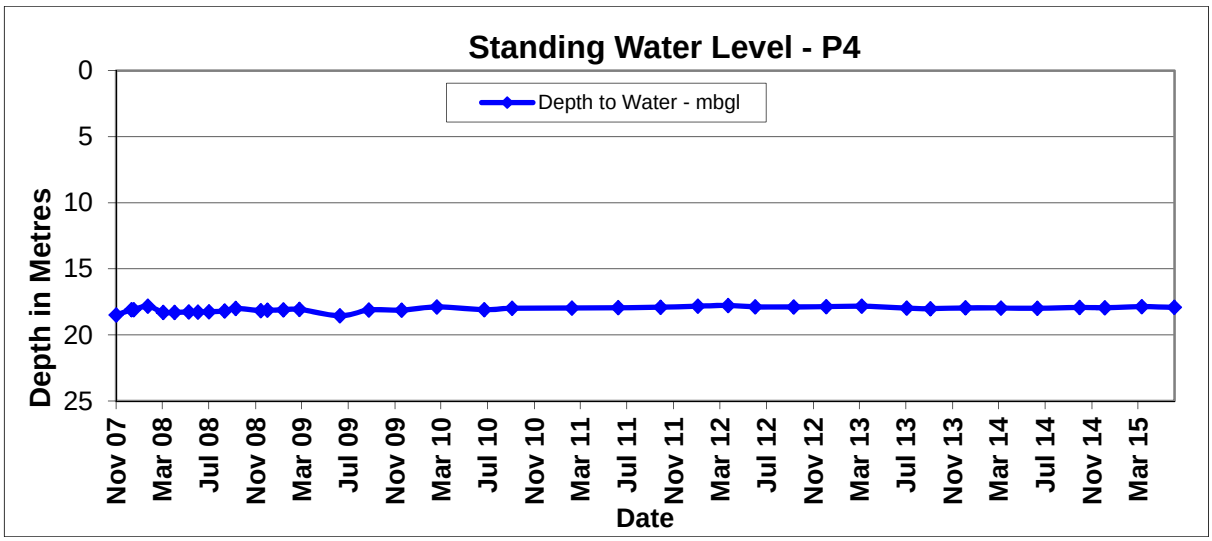
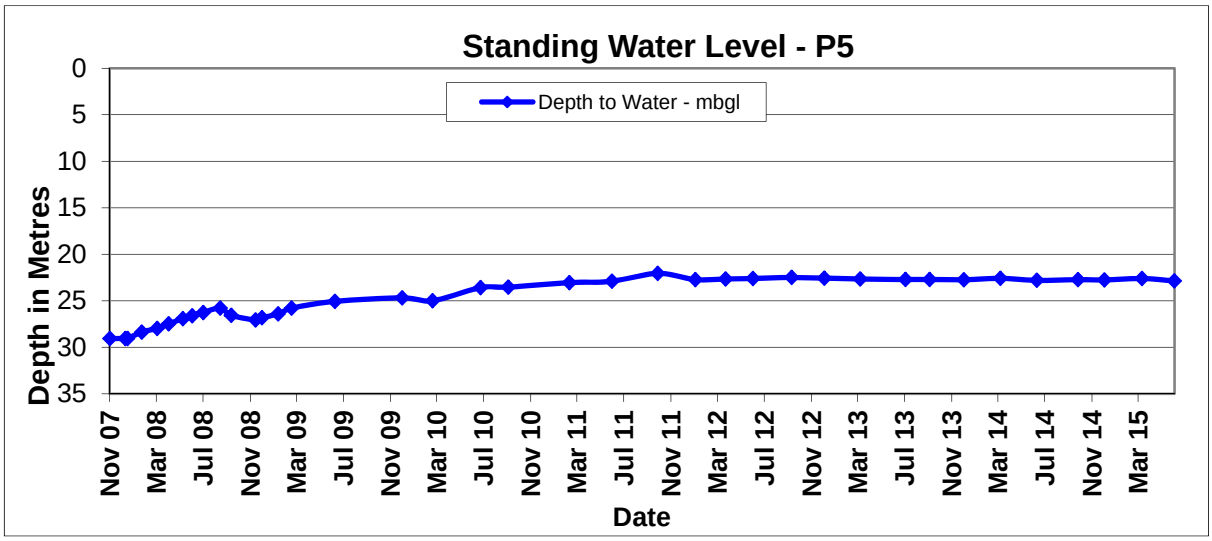
Nov 13
Mar 14
Jul 14
Nov 14
Mar 15
Date


Standing Water Level - P4
Depth to Water - mbgl
Depth in Metres
0
5
10
15
20
25
Nov 07
Mar 08
Jul 08
Nov 08
Mar 09
Jul 09
Nov 09
Mar 10
Jul 10
Nov 10
Mar 11
Jul 11
Nov 11
Mar 12
Jul 12
Nov 12
Mar 13
Jul 13
Nov 13
Mar 14
Jul 14
Nov 14
Mar 15
Date


Standing Water Level - P5
Depth to Water - mbgl
Depth in Metres
0
5
10
15
20
25
30
35
Nov 07
Mar 08
Jul 08
Nov 08
Mar 09
Jul 09
Nov 09
Mar 10
Jul 10
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Mar 11
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Mar 13
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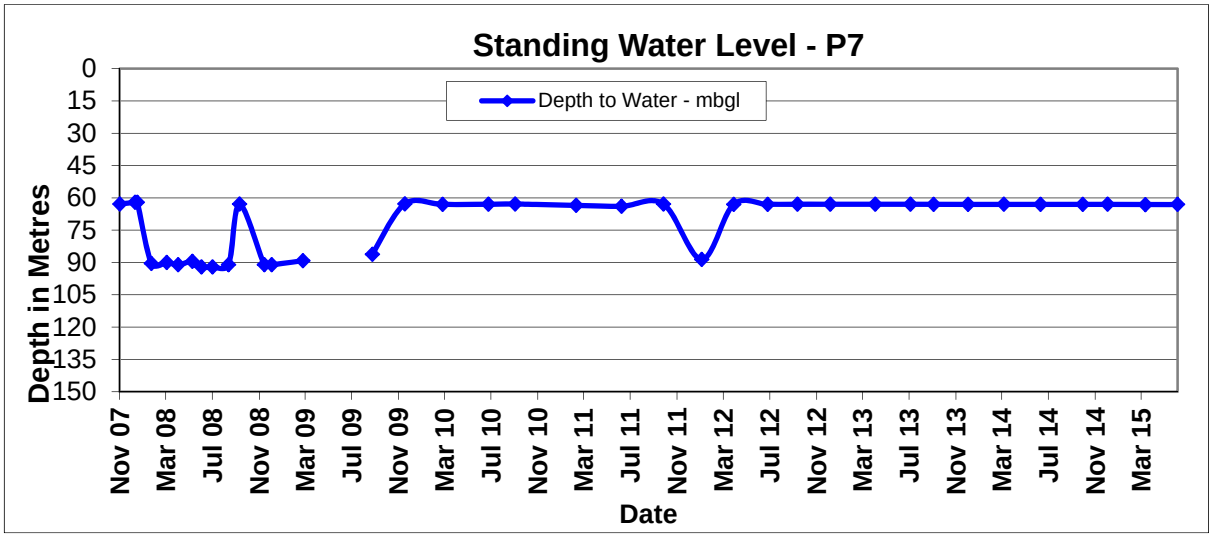
Nov 13
Mar 14
Jul 14
Nov 14
Mar 15
Date


Standing Water Level - P7
Depth to Water - mbgl
Depth in Metres
0
15
30
45
60
75
90
105
120
135
150
Nov 07
Mar 08
Jul 08
Nov 08
Mar 09
Jul 09
Nov 09
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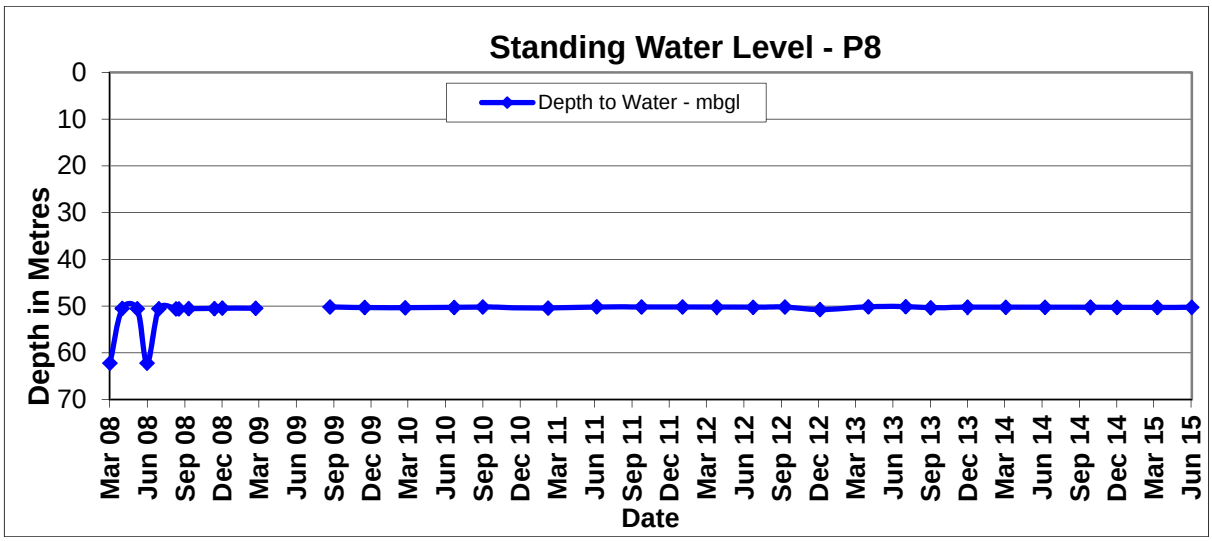
Jul 14
Nov 14
Mar 15
Date


Standing Water Level - P8
Depth to Water - mbgl
Depth in Metres
0
10
20
30
40
50
60
70
Mar 08
Jun 08
Sep 08
Dec 08
Mar 09
Jun 09
Sep 09
Dec 09
Mar 10
Jun 10
Sep 10
Dec 10
Mar 11
Jun 11
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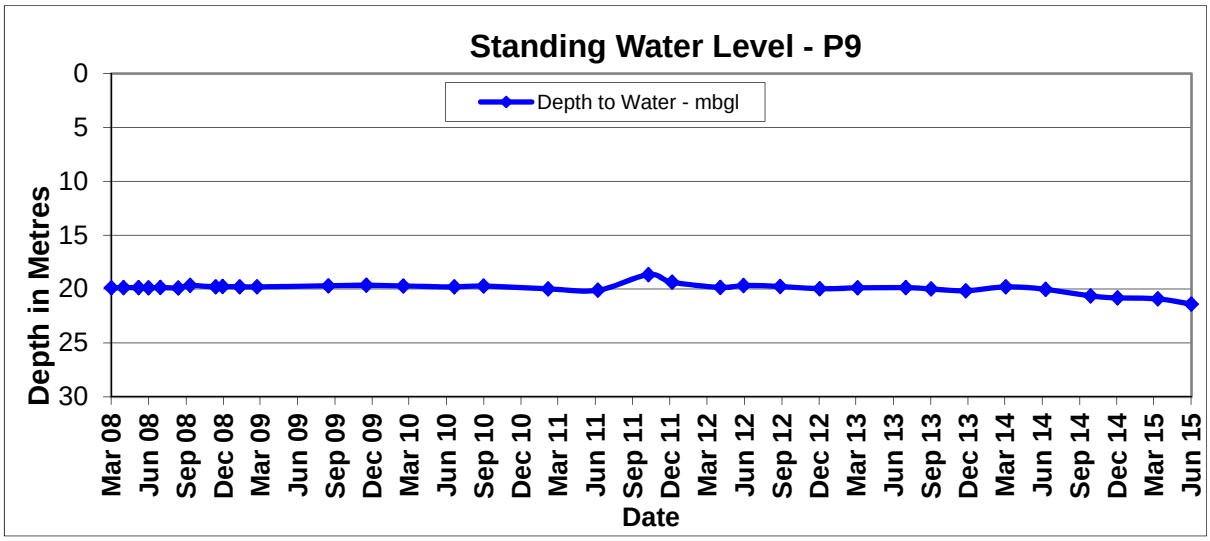
Dec 14
Mar 15
Jun 15
Date


Standing Water Level - P9
Depth to Water - mbgl
Depth in Metres
0
5
10
15
20
25
30
Mar 08
Jun 08
Sep 08
Dec 08
Mar 09
Jun 09
Sep 09
Dec 09
Mar 10
Jun 10
Sep 10
Dec 10
Mar 11
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Dec 11
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Dec 13
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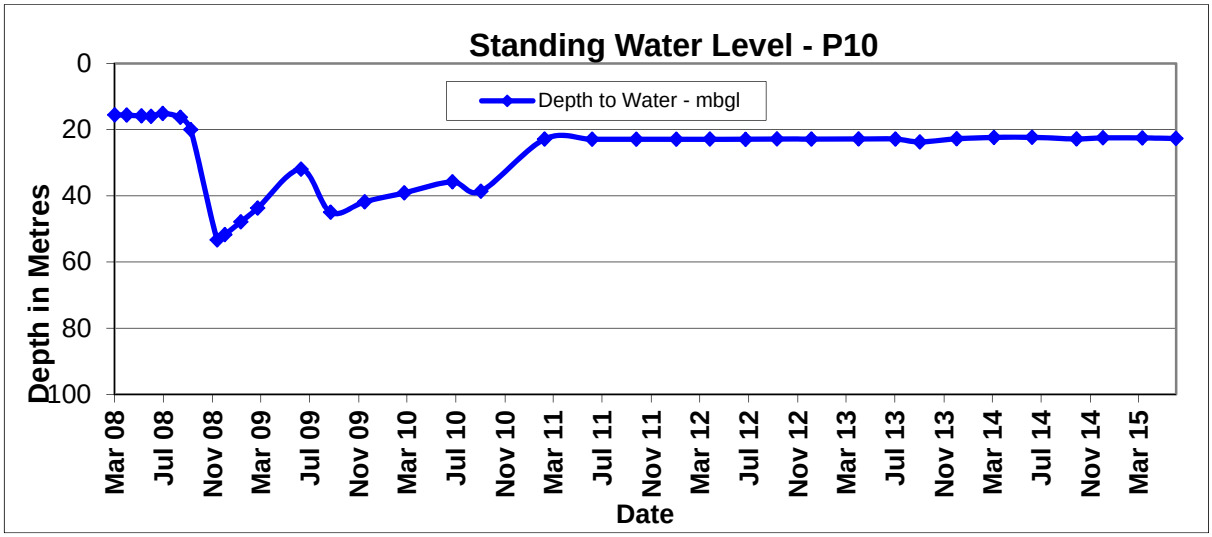
Jun 14
Sep 14
Dec 14
Mar 15
Jun 15
Date


Standing Water Level - P10
Depth to Water - mbgl
Depth in Metres
0
20
40
60
80
100
Mar 08
Jul 08
Nov 08
Mar 09
Jul 09
Nov 09
Mar 10
Jul 10
Nov 10
Mar 11
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Nov 11
Mar 12
Jul 12
Nov 12
Mar 13
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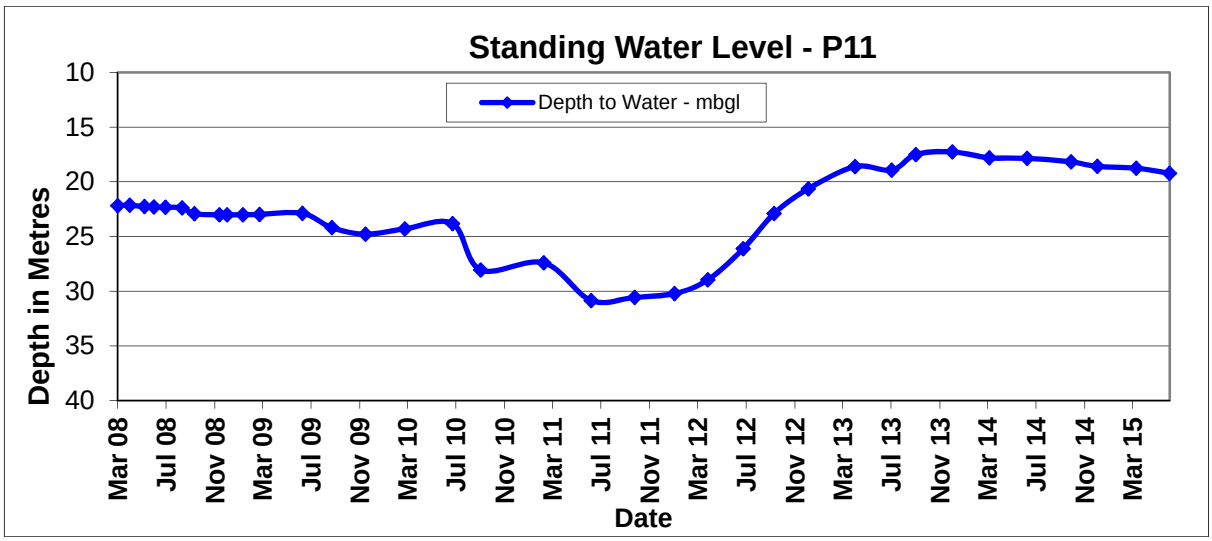
Nov 13
Mar 14
Jul 14
Nov 14
Mar 15
Date


Standing Water Level - P11
Depth to Water - mbgl
Depth in Metres
10
15
20
25
30
35
40
Mar 08
Jul 08
Nov 08
Mar 09
Jul 09
Nov 09
Mar 10
Jul 10
Nov 10
Mar 11
Jul 11
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Mar 12
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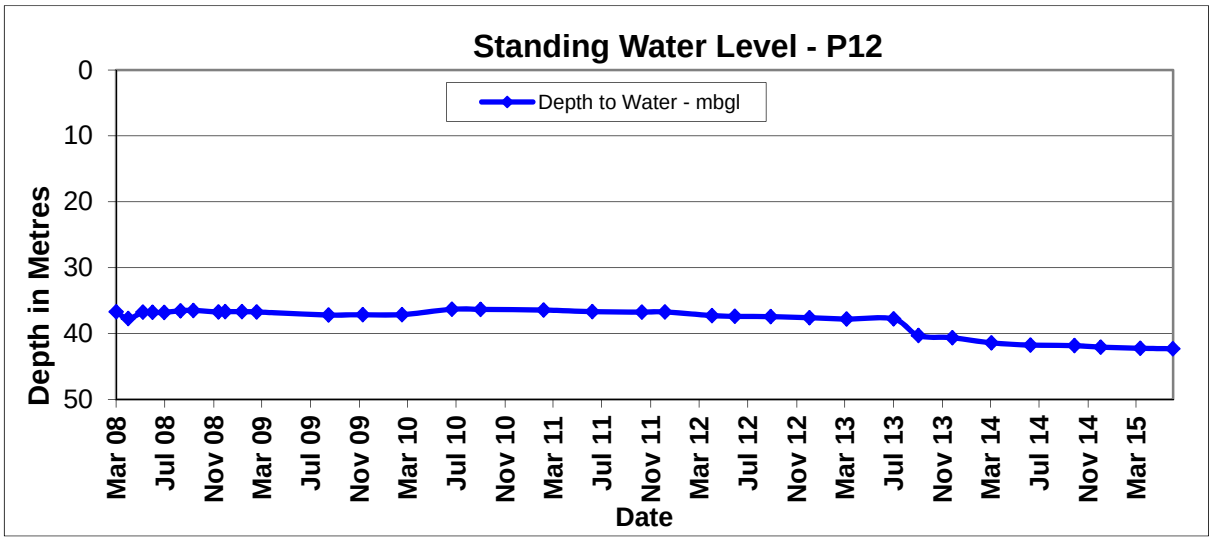
Nov 12
Mar 13
Jul 13
Nov 13
Mar 14
Jul 14
Nov 14
Mar 15
Date


Standing Water Level - P12
Depth to Water - mbgl
Depth in Metres
0
10
20
30
40
50
Mar 08
Jul 08
Nov 08
Mar 09
Jul 09
Nov 09
Mar 10
Jul 10
Nov 10
Mar 11
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Nov 11
Mar 12
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Nov 12
Mar 13
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Nov 13
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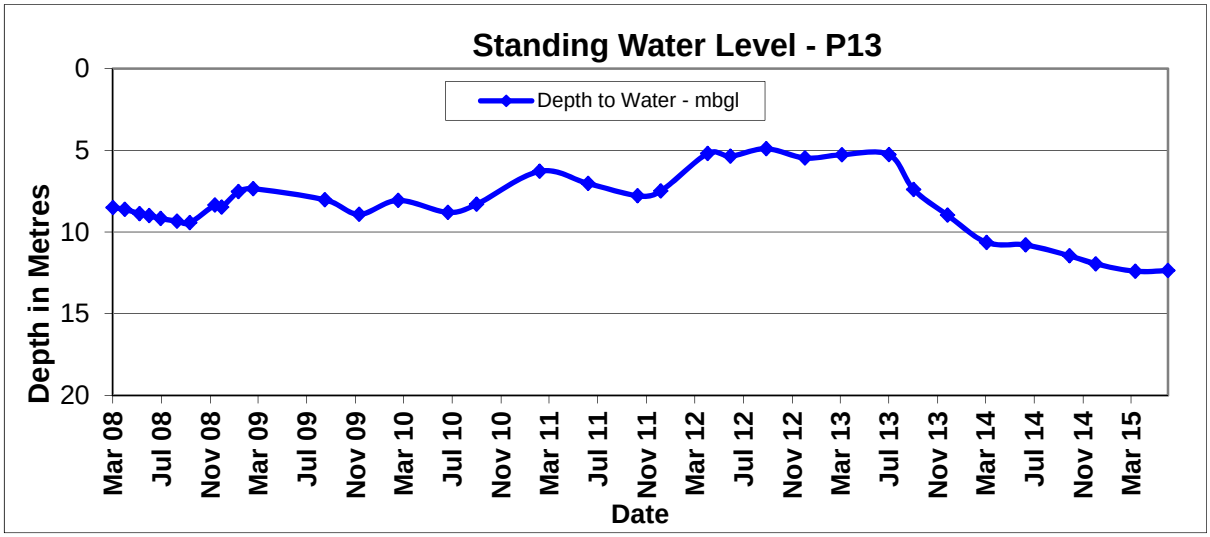
Jul 14
Nov 14
Mar 15
Date


Standing Water Level - P13
Depth to Water - mbgl
Depth in Metres
0
5
10
15
20
Mar 08
Jul 08
Nov 08
Mar 09
Jul 09
Nov 09
Mar 10
Jul 10
Nov 10
Mar 11
Jul 11
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Mar 13
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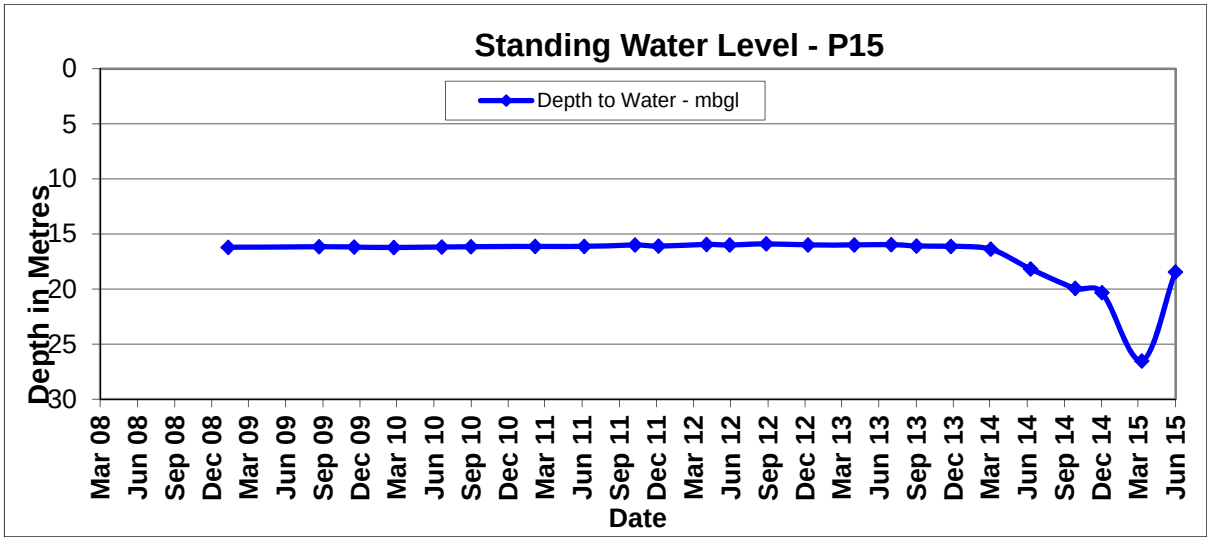
Nov 13
Mar 14
Jul 14
Nov 14
Mar 15
Date


Standing Water Level - P15
Depth to Water - mbgl
Depth in Metres
0
5
10
15
20
25
30
Mar 08
Jun 08
Sep 08
Dec 08
Mar 09
Jun 09
Sep 09
Dec 09
Mar 10
Jun 10
Sep 10
Dec 10
Mar 11
Jun 11
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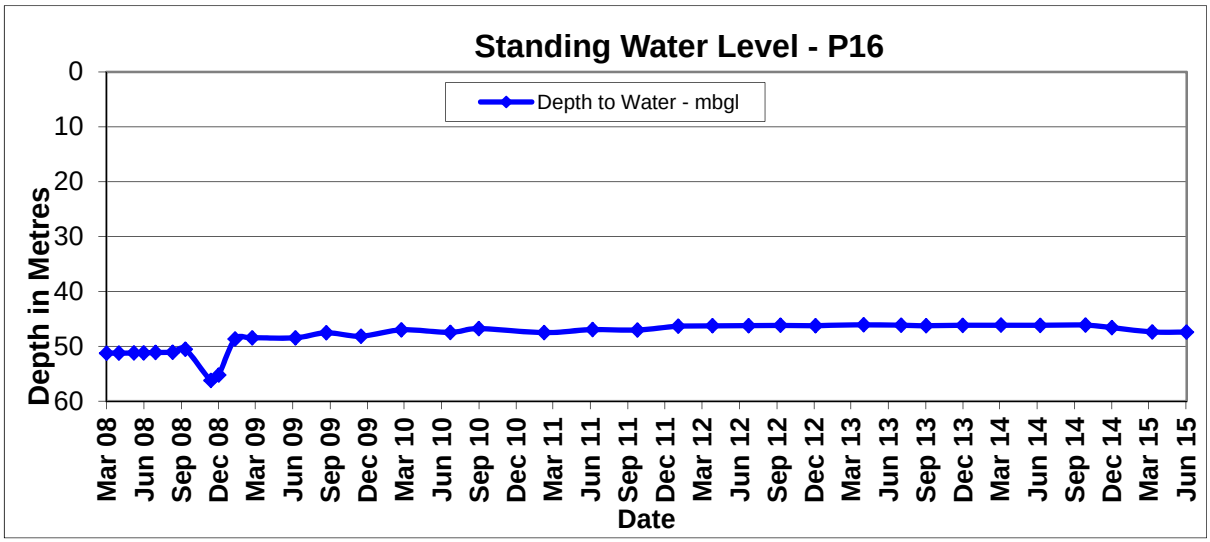
Mar 15
Jun 15
Date


Standing Water Level - P16
Depth to Water - mbgl
Depth in Metres
0
10
20
30
40
50
60
Mar 08
Jun 08
Sep 08
Dec 08
Mar 09
Jun 09
Sep 09
Dec 09
Mar 10
Jun 10
Sep 10
Dec 10
Mar 11
Jun 11
Sep 11
Dec 11
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Jun 14
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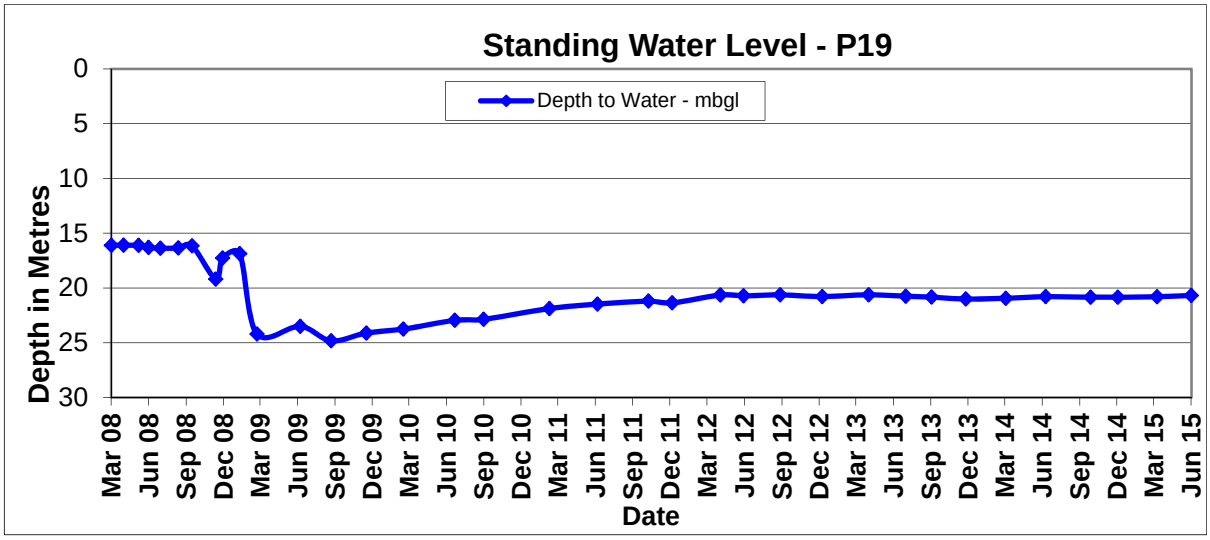
Dec 14
Mar 15
Jun 15
Date


Standing Water Level - P19
Depth to Water - mbgl
Depth in Metres
0
5
10
15
20
25
30
Mar 08
Jun 08
Sep 08
Dec 08
Mar 09
Jun 09
Sep 09
Dec 09
Mar 10
Jun 10
Sep 10
Dec 10
Mar 11
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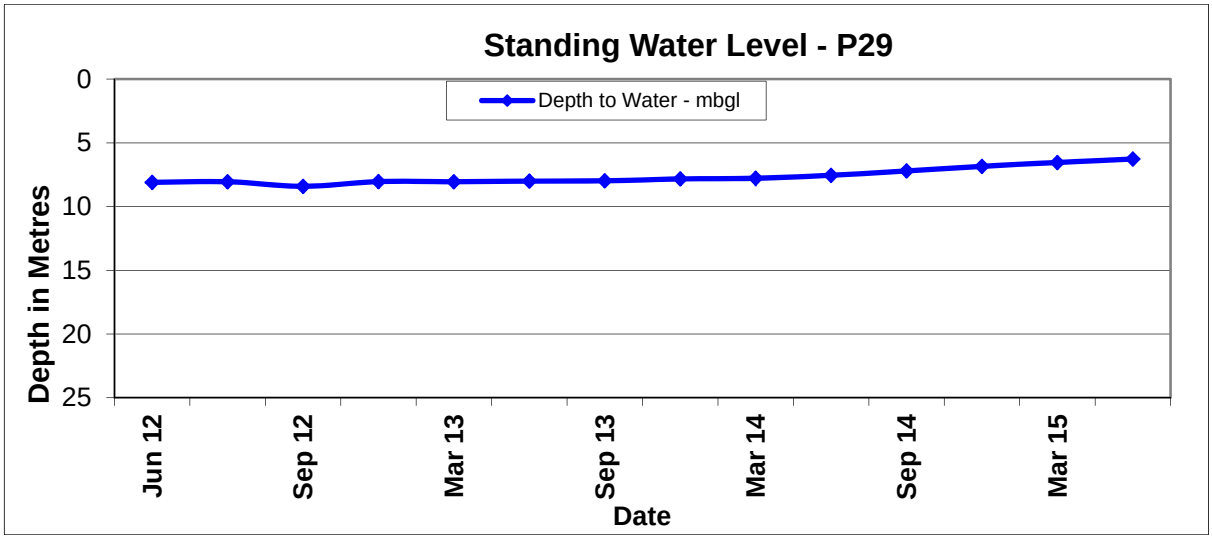
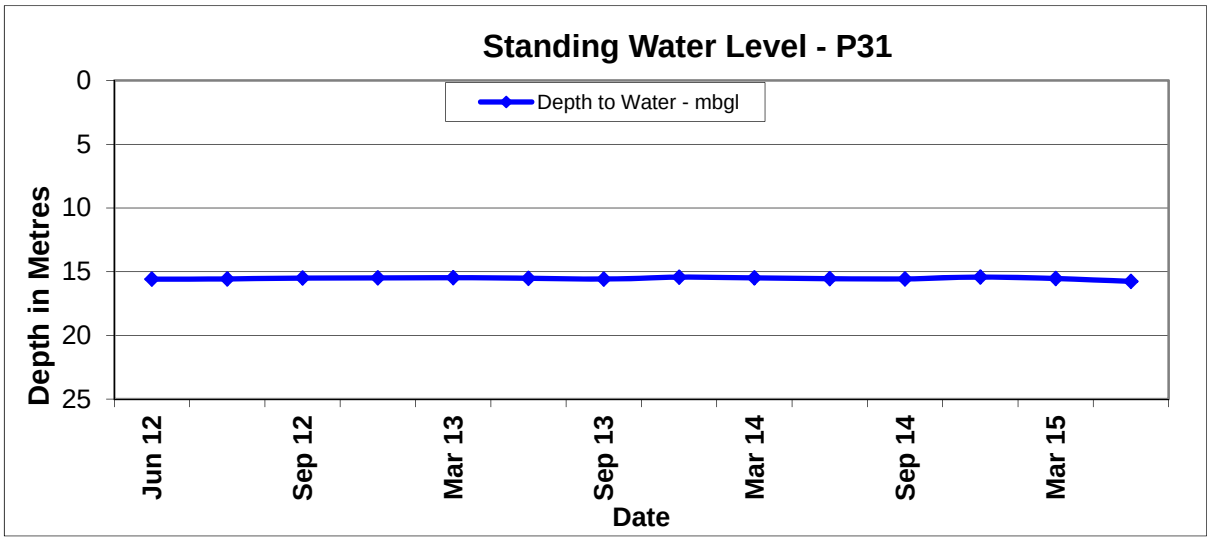
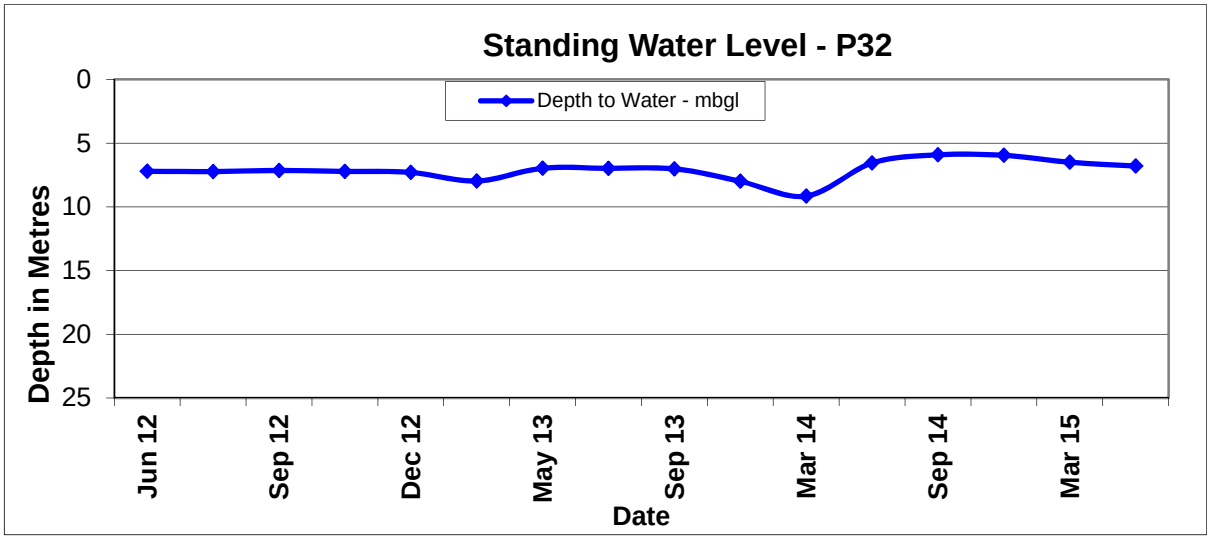
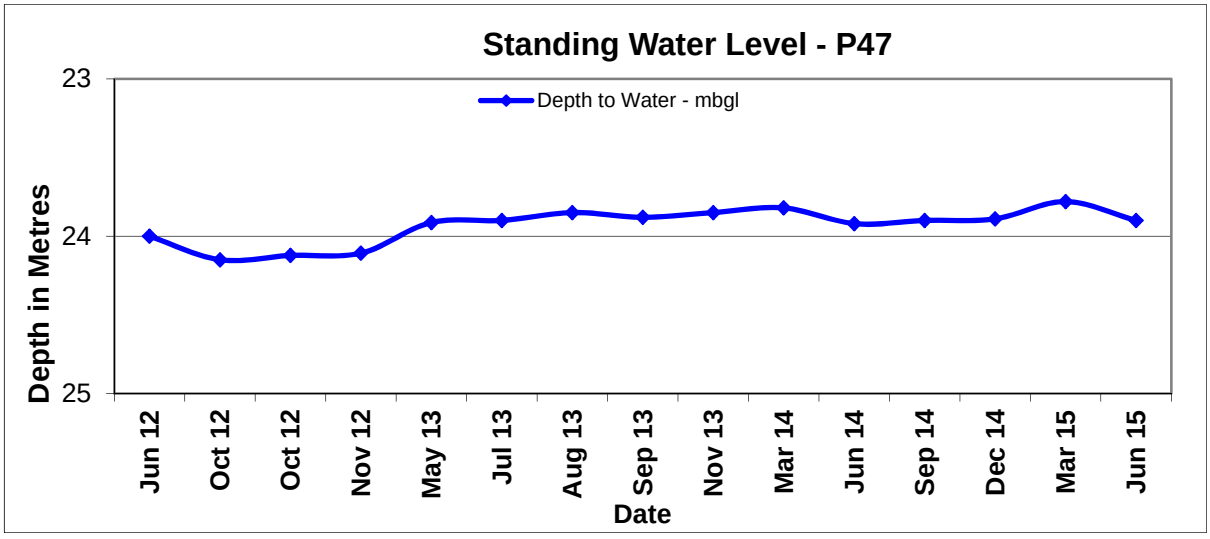
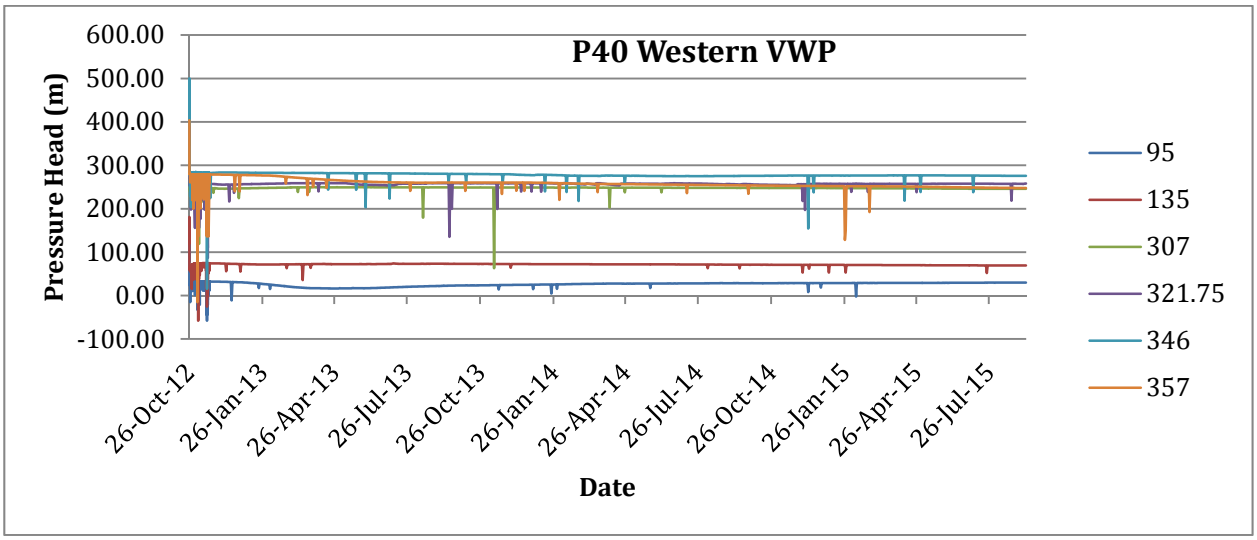
Mar 15
Jun 15
Date

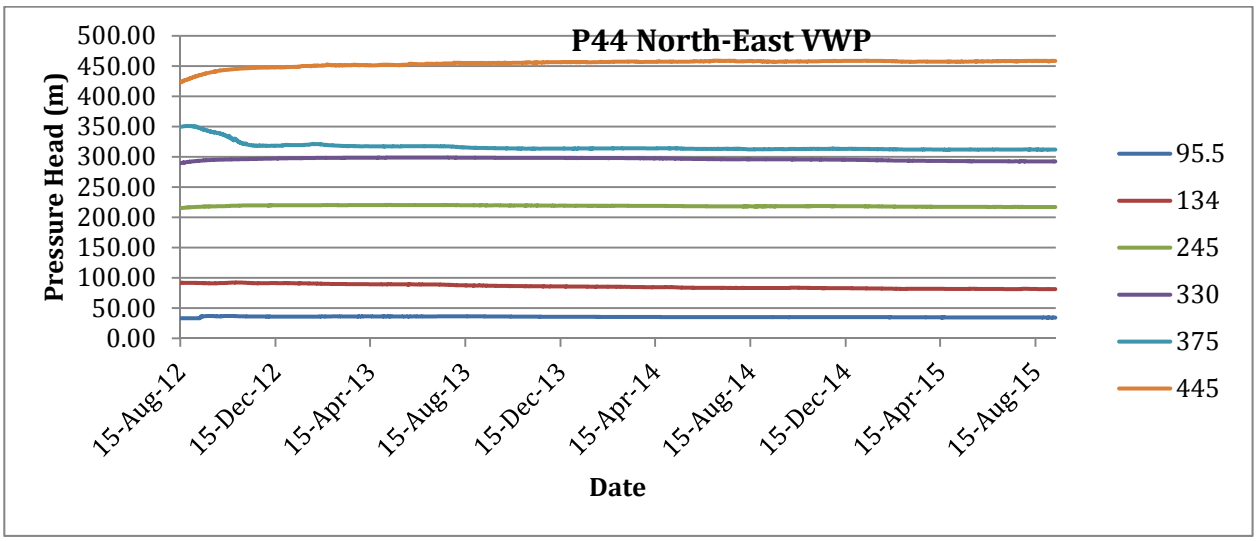

Standing Water Level - P29
Depth to Water - mbgl
Depth in Metres
0
5
10
15
20
25
Jun 12
Sep 12
Mar 13
Sep 13
Mar 14
Sep 14
Mar 15
Date

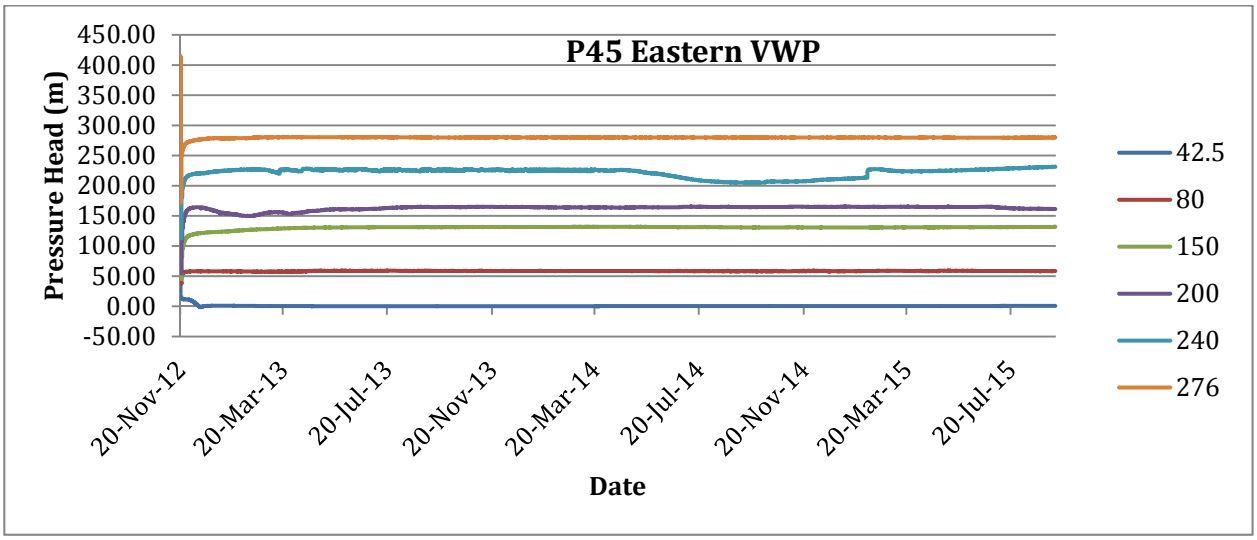

Standing Water Level - P31
Depth to Water - mbgl
Depth in Metres
0
5
10
15
20
25
Jun 12
Sep 12
Mar 13
Sep 13
Mar 14
Sep 14
Mar 15
Date

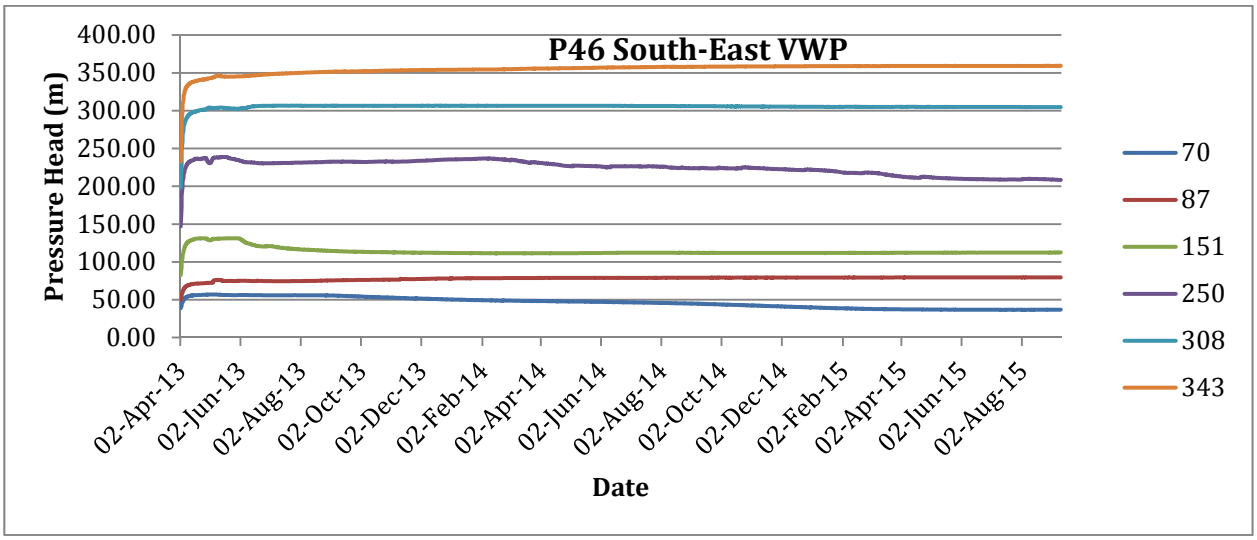

Standing Water Level - P32
Depth to Water - mbgl
Depth in Metres
0
5
10
15
20
25
Jun 12
Sep 12
Dec 12
May 13
Sep 13
Mar 14
Sep 14
Mar 15
Date


Standing Water Level - P47
Depth to Water - mbgl
Depth in Metres
23
24
25
Jun 12
Oct 12
Oct 12
Nov 12
May 13
Jul 13
Aug 13
Sep 13
Nov 13
Mar 14
Jun 14
Sep 14
Dec 14
Mar 15
Jun 15
Date


P40 Western VWP
Pressure Head (m)
600.00
500.00
400.00
300.00
200.00
100.00
0.00
-100.00
26-Oct-12
26-Jan-13
26-Apr-13
26-Jul-13
26-Oct-13
26-Jan-14
26-Apr-14
26-Jul-14
26-Oct-14
26-Jan-15
26-Apr-15
26-Jul-15
Date
95
135
307
321.75
346
357


P44 North-East VWP
Pressure Head (m)
500.00
450.00
400.00
350.00
300.00
250.00
200.00
150.00
100.00
50.00
0.00
15-Aug-12
15-Dec-12
15-Apr-13
15-Aug-13
15-Dec-13
15-Apr-14
15-Aug-14
15-Dec-14
15-Apr-15
15-Aug-15
Date
95.5
134
245
330
375
445


P45 Eastern VWP
Pressure Head (m)
450.00
400.00
350.00
300.00
250.00
200.00
150.00
100.00
50.00
0.00
-50.00
20-Nov-12
20-Mar-13
20-Jul-13
20-Nov-13
20-Mar-14
20-Jul-14
20-Nov-14
20-Mar-15
20-Jul-15
Date
42.5
80
150
200
240
276



Monitroing well P13 has shown a steady decrease in water levels since September 2013 although it now seems to be stabilising. 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.

Montoring well P15 has shown a steady decrease in water level since March 2014, however during the June 2015 monioting it had recovered to near background levels. P15 is located above longwall panel (LW) 105 which has now been developed for extraction and this is the likely cause of the water level drop at the beginning of the year. However the water level in this bore will likely drop agan when LW105 is extracted.

Surface Water Monitoring

No wet weather discharges from licensed discharge points occurred during June to August 2015. For the June to August 2015 period the surrounding creeks were sampled on three occasions on 17th June, 24th and 25 August 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 LW104.

LW101, LW102, LW103 and LW104 Predicted and Measured Subsidence Parameters		
	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		

LW101, LW102, LW103 and LW104 Predicted and Measured Subsidence Parameters		
	Maximum Predicted Extraction Plan	Maximum Measured
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 North – Centre of LW103 Northern End		
Subsidence (m)	2.44	2.688
Tilt (mm/m)	35	40.2
Tensile Strain (mm/m)	8 – 16^	18.8
Compressive Strain (mm/m)	10 – 20^	27.9
Angle of Draw (°, Degrees)	22.5 – 26.5	18.1
Line 103 South – Centre of LW103 Southern End		
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 North – Centre of LW104 Northern End		
Subsidence (m)	2.44	2.756
Tilt (mm/m)	32	48.4
Tensile Strain (mm/m)	7 – 14^	42.6
Compressive Strain (mm/m)	8 – 16^	42.3
Angle of Draw (°, Degrees)	22.5 – 26.5	18.7
Line 104 South – Centre of LW104 Southern End		
Subsidence (m)	2.44	2.601*
Tilt (mm/m)	32	29.3*
Tensile Strain (mm/m)	7 – 14^	7.5*
Compressive Strain (mm/m)	8 – 16^	5.4*
Angle of Draw (°, Degrees)	22.5 – 26.5	13.2*
Line A – Cross Panel Survey Line		
Subsidence (m)	2.44	2.620*
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	24.2*
Line B – Pine Creek Tributary 1		
Subsidence (m)	2.44	2.587*

LW101, LW102, LW103 and LW104 Predicted and Measured Subsidence Parameters		
	Maximum Predicted Extraction Plan	Maximum Measured
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 D – Pine Creek		
Subsidence (m)	2.44	2.616*
Tilt (mm/m)	32	32.8*
Tensile Strain (mm/m)	7 – 14^	10.1*
Compressive Strain (mm/m)	8 – 16^	14.7*
Gradient Change (%)	Up to 6	3.28*
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*
Electricity Transmission Lines – 11kV Power Lines		
Pole 2		
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	0.56
Conductor Clearance Loss (m)	0.77	+0.759
Pole 3		
Subsidence (m)	2.18	2.085
Dynamic Tilt (mm/m)	30	66.3
Final Tilt (mm/m)	12	50.08

LW101, LW102, LW103 and LW104 Predicted and Measured Subsidence Parameters		
	Maximum Predicted Extraction Plan	Maximum Measured
Conductor length change between poles 3 - 4 (m)	0.28	0.53
Conductor Clearance Loss (m)	1.10	-1.377
Pole 4		
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	0.59
Conductor Clearance Loss (m)	0.07	+1.400
Pole 5		
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	0.30
Conductor Clearance Loss (m)	0.30	+2.042
Pole 6		
Subsidence (m)	0.01	1.540
Dynamic Tilt (mm/m)	1	129.68
Final Tilt (mm/m)	1	129.68
Conductor length change between poles 6 - (m)	-	-
Conductor Clearance Loss (m)	-	-

* - subsidence development incomplete.

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

Based on the above table, 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. 97% 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 95% 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. However, 99% (LW102) and 98% (LW104) of the measured compressive strains were within the predicted range.

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.

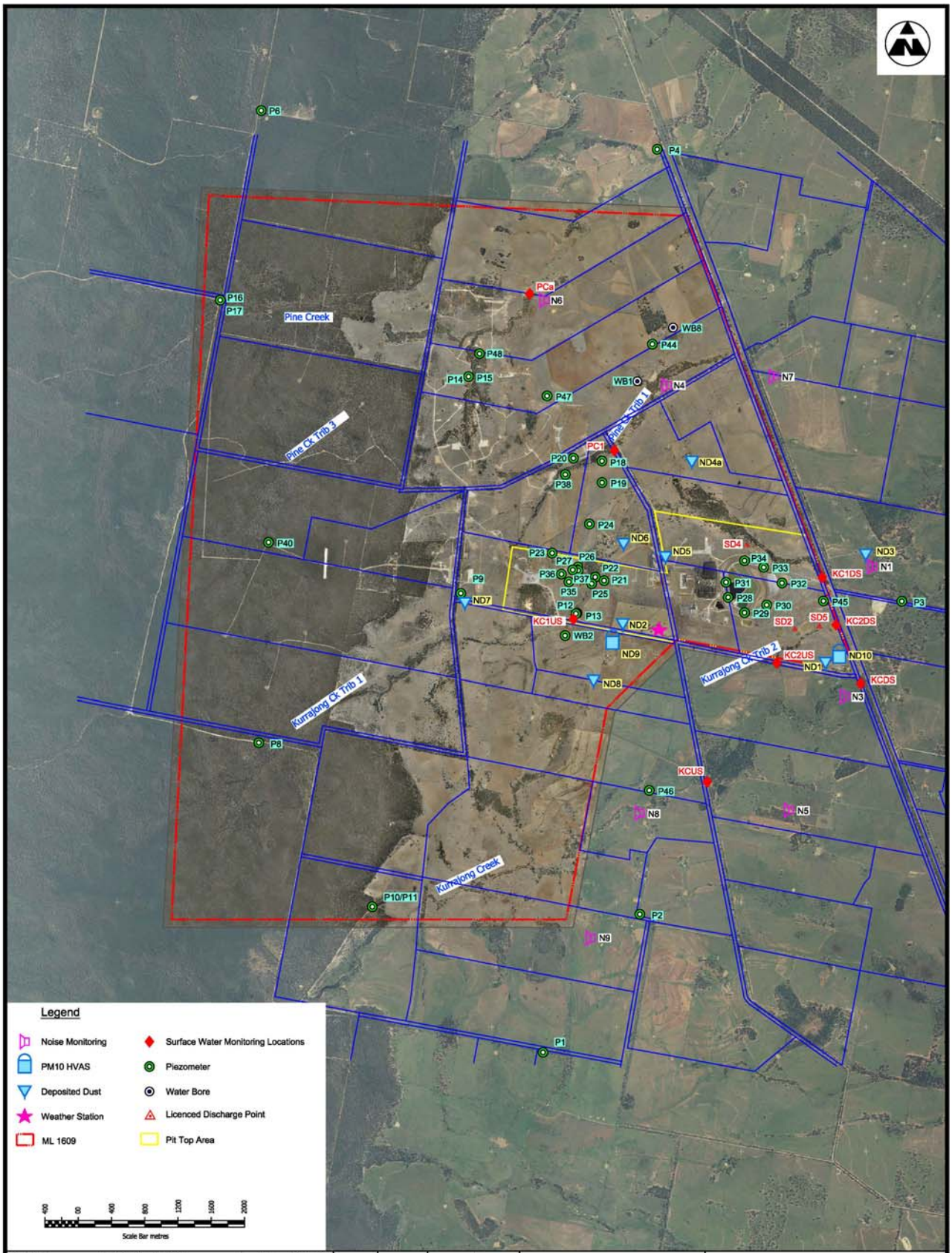
Complaints

Four formal complaints were received during the period June to August 2015. All four were in relation to noise and from the same complainant with three received over one weekend.

The noise complaints were followed up and actioned as required as complaints are usually received post-impact. Work force reminded to be mindful of neighbours when working at night as additional activities occurring on the surface associated with the longwall unit move.

Environmental Incident(s)

One environmental event occurred during June 2015 when a contractor accessed an area demarcated as a cultural heritage site. The Registered Aboriginal Parties (RAPs) inspected the area and confirmed no artefacts were damaged and the Department of Planning and Environment (DP&E) investigated with no regulatory action taken against the mine as all controls required by the sites management plan were in place. Disciplinary action was taken with the contractor in question. The mine issued a Tool-Box-Talk (TBT) to all personnel onsite reminding of their obligations in relation to cultural heritage sites identified at the mine.



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

WHITEHAVEN COAL

NARRABRI MINE

Narrabri Mine Community Consultative Committee Meeting Minutes

Meeting No: 31

Date: Wednesday 16th December 2015

Time: 4:10pm

Location: Railway Hotel, Baan Baa

Present: Russell Stewart (RS) – Independent Chairman
James Stieger (JS)
Rodney Dunlop (RD)
Peter Webb (PW)
Mark Foster (MF)
Ken Flower (KF) – Narrabri Shire Council Delegate
Steve Bow (SB) – Narrabri Mine General Manager
Dave Ellwood (DE) – Narrabri Mine Technical Services Superintendent
Steve Farrar (SF) – Narrabri Mine Environmental Superintendent

1. APOLOGIES

Catherine Redding, Lexie Frankham and Geoff Hunter

2. DECLARATION OF PECUNIARY OR OTHER INTERESTS

None.

3. PREVIOUS MINUTES

Moved: JS Seconded: RD

3.1. BUSINESS ARISING FROM PREVIOUS MINUTES

Face Widening/Production Limit Increase Modification Update – SF gave an update on the modification in that it was approved by the Department of Planning and Environment on the 9th December. RS asked if the fast approval was expected, SF said that the mine was pushing for it as we were approaching our production limit. SB stated that it was a relatively simple approval, which made the process easier. MF asked when the limit applies to which SF stated a calendar year. JS asked with the extra meterage how our water would go onsite. SB explained that it actually doesn't change that much as we still consume about the same but the peak in groundwater inflow, about 3ML/day, occurs sooner. JS asked about the secondary brine ponds to which SB replied that we are hoping to not have to do these as we had to redo the modelling which shows we may not need to do them but we will be increasing the size of the RO. RS asked how big to which SB replied to around 2ML/day capacity as the first step. RS asked if we would put that in an evaporation pond or re-inject. SB replied that we consume about 1.2ML/day and in the next few years we will become water exporters. We could use it for farms or pump to the river but local landholders may get first look. RD stated that Santos are giving RO treated water to landholders. SB said it produces good quality water.

"Pineview" – SF stated that himself and SB met with the owners of "Pineview" on Monday morning and dust was discussed which was the reason for the initial contact but through talking it become clear that the issue is perceived loss in land value because of the mine. SF stated that the owner had contacted his real estate agent who was of the opinion that the property would be hard to sell because the mine is there. SB stated that there were no facts around this but his concerns were loss of land value as the farm is part of his superannuation. MF asked if he has had the place valued to which SF replied we think he has just being talking with a real estate agent. RS asked if it was on the market, which SB said it was not. SB stated that he isn't looking to sell it was more about his super and that it has diminished because it's close to the mine. SB said we would make some enquiries and asked KF if he might know much about it. KF said it could go both ways and the Darling Downs experience was that property values went up. KF also said it wasn't just the value but the volume of sales when operations are buying. JS said that "Bow Hills" would be affected but "Pineview" is further away to which SF stated the owner had no issues with noise/dust but was concerned about the effects on property value. JS said if someone looked at "Bow Hills" with the mine right there it would have to factor in if you were to spend money on it. KF said this was the issue and if Whitehaven closed down then there would be a change in property values and it wouldn't just be in the vicinity of the mine. SB said these were some if his concerns but there would be other market factors affecting the price. SB said we would follow it up.

Newgate Survey – SF stated that as GH raised it previously that he got a call from a PR company who did not identify themselves as working for Whitehaven but it soon became apparent that they were. SF said the company does an annual survey to see how the perception of mining/Whitehaven was tracking in the area and as such he would have been called last year for the baseline survey. SF said if he is concerned the mine could request to have his name removed but if not he will get another call about the same time next year. SF said it is not reported publicly as it is for Whitehaven's internal use. RS said there were a lot of surveys but hasn't seen any results. KF said you hate getting bothered but then you don't get a say.

4. GENERAL BUSINESS

4.1. OPERATIONS PROGRESS REPORT

The operations update was provided as follows:

Mine Progress Report (to 30 November 2015)

Coal produced (t):	November 2015	875,168
	FY-to-date	2,626,154
Coal Railed (t):	November 2015	648,376
	FY-to-date	3,046,632
Average workforce numbers (November 2015):		
	NCO	Waged – 162
		Salary – 108
		Total – 270
	Contractors	Total – 94
Safety Update (FY to November 2015):		
	Lost Time Injury (LTI)	1
	Days LTI Free:	82

Total Recordable Injuries:	5
Planned Task Observations:	3,396
Take 5 Assessments:	49,118
Work Hours (Nov-15):	82,852

SB stated that operations since the last meeting has remained fairly steady and longwall production has been consistent. SB said in safety we have had a few injuries but nothing life threatening with injuries including cuts and a couple of broken thumbs. SB said fortunately they are minor in nature but the mine is working hard to get improvement there. SB said the only change in operation during the last quarter was the stockpile expansion with works well and truly underway with Stage 1 finishing this week and Stage 2 due to be completed by the end of February. SB said next change out should be around May next year and the biggest gripe is still the price of coal. SB said we are making ends meat and paying our bills and getting on with business but most of peers aren't. MF asked what's the cut-off point? SB said we are selling coal for about $75AUD/t to the premium Japanese market and we are lucky in that regards as it is a good quality coal and they're your best customers. SB stated that we are getting it on the boat for about $52/t but then there are Government royalties etc so we are making around $10-15/t and the mine is one of the best underground coal mines in Australia. MF asked what happens if it drops back another $20 to which SB said then everyone is in trouble. MF asked about the coal quality to which SB said the coal at Maules/Tarrawonga is better quality coal as it is semi-soft coal used in steel making and you usually get a bit more for it. MF asked if there production costs would be higher to which SB said they are but they would be making money but only just. SB stated that the Whitehaven mine at Werris Creek is currently losing money. MF asked so where do you draw the line in the sand? SB stated that his boss likely debating what to do, is the price going to pick up? do we try and lower production costs? does it go into care & maintenance. SF stated that in some circumstances it might be easier to run at a small loss then it would be to close a mine. SB said that is what's happening with some of the Hunter Valley mines right now. SB said they are running at a small loss hoping the price will pick up in a year or two. JS said it would be costly just for staff redundancies and KF also mentioned the pre-paid freight. SB said that is correct you would still have to pay those contracts, rail/port etc. SB stated that the Whitehaven target this year is to make $1M profit and it is a tough business right now but we are the pick of a bad bunch. KF asked if the figures were from the 1st of July to the end of November? SF confirmed that they were.

4.2. ENVIRONMENTAL OVERVIEW

The environmental monitoring report was provided to the CCC members and SF went through the report.

KF asked about the high dust result in September. SF said that is from 2009 when there were large dust storms around.

JS asked if P13 was still declining? SF said it did go down but has been stable the last couple of rounds. RD asked if this is where we are mining which SF said no that was P15, which has recovered. RD asked where P13 is located. SF said it is in the middle near the vent shaft along the mains. SF said it is only a shallow one and located near a production bore and is likely affected by that. SF said P15, which we got questions about last time, has recovered from its initial drop due to development and the bore is installed to 30m. SF said it is installed next to P14, which is installed to 78m and has always been dry although the last couple of rounds have detected water in this bore so it is coming back a bit. SF said it would drop again when it is mined.

SF said no wet weather discharges occurred but the surrounding creeks were sampled in November following a storm. SF said we had twice our monthly average rainfall for November but in two storms. JS said one of those storms was the heaviest rainfall he had seen with 45mm falling in under an hour.

SF went through the subsidence results and said he would update the predicted values now that MOD 5 is approved as they are calibrated with actual results. RD asked as the depths of cover increases will the level of subsidence decrease? SF said no it is still predicted to have the same maximum level you just won't have as wide a trough. DE said it wouldn't be as aggressive. KF asked with the initial subsidence what happens with time, do you get anymore? SF stated that once you are about 70m past a given point you will have around 90-95% of the max subsidence and you may get a little more when you mine the adjacent panel. DE said when you come past with the next block you may see it fall but after that it is finished. SF said we are in the 5th panel and we started in 2012 and we are looking to remove the subsidence monitoring in the first two panels as we are satisfied that they are stable. KF asked if we get any spots that don't drop which SF said no. JS said that when we started they thought that some of the hard rock was going to stay up. SB explained that this is a major safety issue for us as and we want it to collapse in a controlled way. KF asked what depth was the conglomerate layer and SB stated it sits on top of the seam. DE explained that as we go deeper it moves away from the seam. DE stated at the start it is about 150m deep and at the end it is about 300m deep. KF asked how thick it was and SB stated 15-17m. KF asked if it bends with mining or if it shatters and SB explained that it shatters/fractures and that we cave that section quite significantly. SB also explained that the strata above around 60+m flexes as opposed to fracturing. SB also explaind that the parting that occurs to lift the conglomerate away from the seam is another geological unit called the Benalabri, which goes from nothing to around 8m thick, and it is a mudstone. SB offered to take KF for site visit over the subsidence area. RS stated that he had not noticed sharp drop offs which is what he expected and said if you don't know the country you wouldn't know it was there. DE said the only way he can pick it is due to the subsidence monitoring lines. RS said he also expected that the trees wouldn't be vertical but they are. SF said the main indication is water ponding in the creek but if that wasn't there you probably wouldn't know. KF said you would pick up vegetation changes. SF said in the first two panels you do and DE said associated with ponding you do.

MF asked if we do noise monitoring at his place anymore? SF said no we don't. MF asked if we cut it back to 3, SF said we still do 6.

JS asked how we were going with "Oakleigh"? SF said we have not had any more discussions around noise. SF said there was a formal complaint lodged through the Department of Planning, which we provided information for but no contact since. SB said it can be hard to engage functionally when lawyers are involved.

5. NEW BUSINESS

RD stated that he had a few people enquire with him the finite nature of coal mining and what are the plans post mining and whether there would be anything in place to minimise the socio-economic impacts to the town as there are 300 people employed at the mine with a range of skills? SF stated that our current mine closure plan allows for the rail loop staying and we would try and on sell that as part of the land as that type of infrastructure would be something someone would want. RD asked if we would have to have a rehabilitation security over that rail loop? SF stated that it would become part of the landscape once the lease is relinquished. RD asked if we have to have the security now to which SF replied we have the security in place now for its removal but aim would be to keep it. RD asked if we could convince Government Departments to keep the loop because it could be sold and then take it off of the rehabilitation security. SF stated that DRE would be happy to take it out if it was conditioned in our approval that it will stay. SF explained that the mine closure plan also states that 5 years out from closure that a social impact assessment is required that would cover things like re-training, opportunities to keep people around, the impact it will have and how you manage that. SF also said that for a longwall operation you don't have everyone there at the end as development finishes a couple of years prior to cessation of mining. SB said you would scale down over a couple of years. RD said then from a community perspective it would be about impacts on housing as you drop 300 people out of the community and high value land and what could be done with the land we own. RS stated that you have the loop in the line, which would be an ideal grain terminal. SF stated that there is also the pipeline to the river, which could be used. JS said it would be good to see it used to create jobs as long as it fits in but you're talking 30 years. SF said current mining approval goes to 2031 but doesn't include the southern exploration area. KF stated that the key resource is

people based on the experience of the snowy-hydro scheme that has turned itself into a successful consultancy.

SB said as part of our new approval we would be upgrading our weather station to include a large tower to measure inversions to help us improve our noise management including dozers on the stockpiles, usually track slap early in the morning. RS stated rather than waiting for the complaint which SB confirmed. SB said we measure things now but it is retrospective whereas this will give us more control. SB also said that we are trialling measures on the CAT dozers such as fibre/grease in the bushings in the track idlers as it is all about dozers. RS asked if there is a difference between drivers and SB said there would be some of that as there certainly is with dust generation. DE said this allows us to track it much better. JS asked with the new stockpiles if we could leave a bund of coal for the dozers to work behind. SB said you can do things to help noise. DE said we can take it back to the CHPP. SF said the only practical issue is the eastern side as we feed the bypass. JS said but if you leave a wall and have the dozers work behind it. SF said that once the new measures are in place then the operators will have some direction on what they can do to manage noise better such as working on another side of the stockpile. SB said if we can do some things to setup the operation to help ourselves then we would look into it.

SB handed out a pamphlet based on Whitehaven's contribution to the Narrabri Shire. SB said Santos do a good job of getting this info out but we get some criticism and people don't understand how much business we bring to the area. RS said it was good info. SB said people underestimate how much we bring to the shire. RS asked if he could have more copies to provide to the members of the chamber as it is a good document. SF said he has some copies for the Council chamber and info centre.

RS said he would like to thank the mine as he is involved in a couple of CCC's that are tough going and he thinks the mine is terrific to deal with as we are on the same level and we provide information when it is requested. RS also said he appreciated the effort made for the 'Meet the Biz' function in Narrabri, which was highly successful. RS said he appreciates the whole committee as it is easy to work with. SB said he appreciates the feedback and JS stated that it has been good. JS thinks the committee could be better with more people, say around 8 local members.

SB thanked everyone for the year and he said there are still some things to sort out but it is a very busy place. JS said the work done with dust has gone well. SB said the water cannons work well.

6. NEXT MEETING

Wednesday 16th March 2016 at 4:00pm. Narrabri Mine Site Office.

7. CLOSURE OF MEETING

Meeting closed at 5:05pm.

Narrabri Mine Community Consultative Committee Meeting #31

Environmental Monitoring Report September 2015 – November 2015

Noise Monitoring

Attended noise monitoring was undertaken between Tuesday 1st and Thursday 3rd September 2015 (Tables 1-12) to verify if noise levels were within compliance limits. The results from this monitoring are detailed in the tables below.

Table 1: NM Operational Noise Monitoring Results – 1 September 2015 (day)					
Location	Time	Total dB(A), Leq (15 min)	Wind speed/ direction	Temp Grad (oC/100m)	Identified Noise Sources
R4 Oakleigh	1:05 pm	36	2.1/349	n/a	Birds (34), traffic (31), NM (26)
R13 Newhaven	4:28 pm	50	2.5/311	n/a	NM (32*)
R16 Belah Park	2:48 pm	40	3.2/305	n/a	Traffic (39), wind (30), birds (29), NM (24)

*Noise from vent fan

Table 2: NM Operational Noise Monitoring Results – 1 September 2015 (evening)					
Location	Time	Total dB(A), Leq (15 min)	Wind speed/ direction	Temp Grad (oC/100m)1	Identified Noise Sources
R4 Oakleigh	7:50 pm	39	1.9/313	+1.6	Traffic (38), NM (28), frogs (24)
R13 Newhaven	9:12 pm	51	2.1/272	+4.2	NM (33*)
R16 Belah Park	8:32 pm	38	1.9/284	+2.1	Traffic (37), NM (31), frogs (26)

*Noise from vent fan

Table 3: NM Operational Noise Monitoring Results – 1/2 September 2015 (Night)					
Location	Time	Total dB(A), Leq (15 min)	Wind speed/ direction	Temp Grad (oC/100m)	Identified Noise Sources
R4 Oakleigh	10:00 pm	39	1.1/176	+1.6	Traffic (39), NM (24), frogs (22)
R13 Newhaven	12:20 am	48	0.7/110	+5.1	NM (30*)
R16 Belah Park	11:08 pm	38	0.1/77	+4.6	Traffic (36), NM (32), frogs (29)

*Noise from vent fan

Table 4: NM Operational Noise Monitoring Results – 2 September 2015 (day)					
Location	Time	Total dB(A), Leq (15 min)	Wind speed/ direction	Temp Grad (oC/100m)	Identified Noise Sources
R4 Oakleigh	9:25 am	42	2.0/119	n/a	Birds (41), NM (33), traffic (30)
R13 Newhaven	2:06 pm	49	4.1/326	n/a	NM (31*)
R16 Belah Park	12:22 pm	32	2.4/13	n/a	Traffic (31), birds (24), NM (21)

*Noise from vent fan

Table 5: NM Operational Noise Monitoring Results – 2 September 2015 (evening)					
Location	Time	Total dB(A), Leq (15 min)	Wind speed/ direction	Temp Grad (oC/100m)	Identified Noise Sources
R4 Oakleigh	6:42 pm	41	2.7/352	Lapse	Traffic (39), frogs (34), NM (33)
R13 Newhaven	9:10 pm	51	5.4/342	Lapse	NM (33*)
R16 Belah Park	8:27 pm	40	2.8/340	+3.5	Traffic (39), frogs (34), NM (22)

*Noise from vent fan

Table 6: NM Operational Noise Monitoring Results – 2/3 September 2015 (night)					
Location	Time	Total dB(A), Leq (15 min)	Wind speed/ direction	Temp Grad (oC/100m)	Identified Noise Sources
R4 Oakleigh	10:30 pm	37	3.2/317	+1.7	Traffic (34), wind (32),frogs (28), NM (25)
R13 Newhaven	1:19 am	52	6.1/269	+0.6	NM (34*)
R16 Belah Park	12:05 am	39	4.8/311	0.0	Traffic (37), wind (34), frogs (28), NM (<20)

*Noise from vent fan

Table 7: NM Operational Noise Monitoring Results – 3 September 2015 (day)					
Location	Time	Total dB(A), Leq (15 min)	Wind speed/ direction	Temp Grad (oC/100m)	Identified Noise Sources
R1 Bow Hills	10:05 am	49	7.4/282	n/a	Traffic (46), wind (46), NM (27)
R2 Ardmona	2:36 pm	50	4.8/280	n/a	Traffic (50), birds (34), wind (30)
R4 Oakleigh	12:28 pm	35	2.5/280	n/a	Wind (32), birds (30), traffic (26), NM (23)
R6 Matilda	2:11 pm	39	4.3/276	n/a	Wind (37), birds (33), traffic (24), NM (22)
R13 Newhaven	3:05 pm	49	5.0/246	n/a	NM (31*)
R16 Belah Park	8:28 am	43	5.9/309	n/a	Traffic (40), birds (39), wind (34), NM (<20)

*Noise from vent fan

Table 8: NM Operational Noise Monitoring Results – 3 September 2015 (evening)					
Location	Time	Total dB(A), Leq (15 min)	Wind speed/ direction	Temp Grad (oC/100m)	Identified Noise Sources
R1 Bow Hills	8:10 pm	47	0.8/282	Lapse	Traffic (46), NM (38), frogs (32)
R2 Ardmona	7:23 pm	45	2.0/230	Lapse	Traffic (44), frogs (37), NM (32)
R4 Oakleigh	6:43 pm	32	2.1/231	Lapse	Traffic (28), frogs (28), NM (25)
R6 Matilda	7:46 pm	27	0.9/238	Lapse	Frogs (27), NM (<20)
R13 Newhaven	9:14 pm	51	1.9/268	Lapse	NM (33*)
R16 Belah Park	8:32 pm	48	1.5/270	Lapse	Traffic (48), NM (34), frogs (30)

*Noise from vent fan

Table 9: NM Operational Noise Monitoring Results – 3/4 September 2015 (night)					
Location	Time	Total dB(A), Leq (15 min)	Wind speed/ direction	Temp Grad (oC/100m)	Identified Noise Sources
R1 Bow Hills	11:59 pm	41	2.2/236	Lapse	NM (39), traffic (34), frogs (32)
R2 Ardmona	10:24 pm	43	2.2/244	Lapse	Traffic (43), frogs (31), NM (27)
R4 Oakleigh	10:50 pm	32	2.2/239	Lapse	NM (31), frogs (25)
R6 Matilda	10:00 pm	28	2.4/259	Lapse	Frogs (28), NM (<20)
R13 Newhaven	1:34 am	48	2.4/204	Lapse	NM (30*)
R16 Belah Park	1:22 am	40	2.1/217	Lapse	Traffic (38), NM (35), frogs (28)

*Noise from vent fan

Table 10: NM Sleep Disturbance Monitoring Results – 1/2 September 2015 (night)				
Location	Time	dB(A),L1 (1 min)	Wind speed / direction	Temp Grad(oC/100m)
R4 Oakleigh	10:00 pm	28	1.1/176	+1.6
R13 Newhaven	12:20 am	36*	0.7/110	+5.1
R16 Belah Park	11:08 pm	37	0.1/77	+4.6

*Noise from vent fan

Table 11: NM Sleep Disturbance Monitoring Results – 2/3 September 2015 (night)				
Location	Time	dB(A),L1 (1 min)	Wind speed / direction	Temp Grad(oC/100m)
R4 Oakleigh	10:30 pm	30	3.2/317	+1.7
R13 Newhaven	1:19 am	39*	6.1/269	+0.6
R16 Belah Park	12:05 am	<20	4.8/311	0.0

*Noise from vent fan

Table 12: NM Sleep Disturbance Monitoring Results – 3/4 September 2015 (night)				
Location	Time	dB(A),L1 (1 min)	Wind speed / direction	Temp Grad(oC/100m)
R1 Bow Hills	11:59 pm	45	2.2/236	Lapse
R2 Ardmona	10:24 pm	32	2.2/244	Lapse
R4 Oakleigh	10:50 pm	37	2.2/239	Lapse
R6 Matilda	10:00 pm	<20	2.4/259	Lapse
R13 Newhaven	1:34 am	34*	2.4/204	Lapse
R16 Belah Park	1:22 am	40	2.1/217	Lapse

*Noise from vent fan

During the September 2015 monitoring, under the operating and meteorological conditions at the times, for the worst case 15 minute compliance measurement periods, the mine noise was compliant at all monitoring locations at all times. Mine noise was measured higher than 35 dB(A) Leq (15min) at the “Bow Hills” monitoring location during the evening and night on September 3, however, there is a private agreement in place and the noise criterion no longer applies at this residence.

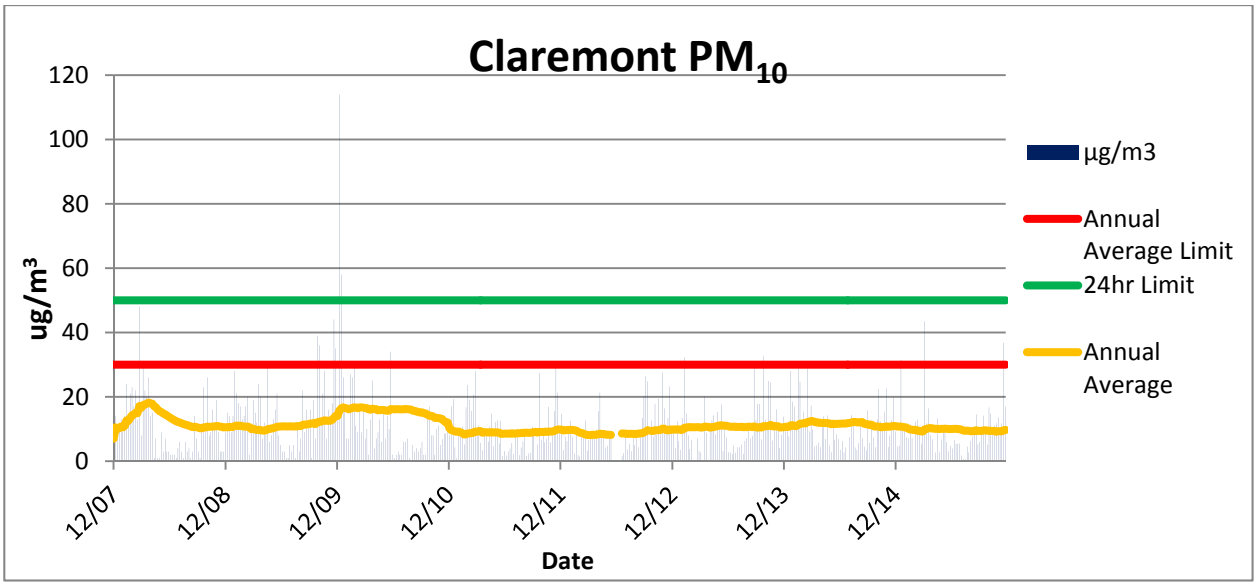
Deposited Dust Monitoring

Month	ND1 Turrabaa	ND2 Claremont	ND3 Bow Hills	ND4a New Matoppo	ND5 Claremont	ND6 Willarah	ND7 Claremont	ND8 Claremont	ND11 Oakleigh	ND12 Merriman
Dec-14	3.7	1.4	1.3	1.2	2.7	0.5	2.1	0.7	3.0	0.8
Jan-15	2.2	2.0	1.3	0.8	2.4	0.7	1.9	1.4	2.3	1.1
Feb-15	0.6	0.3	1.2	0.2	1.1	0.1	0.5	0.4	2.1	0.5
Mar-15	1.7	1.0	0.9	1.0	1.9	1.5	0.9	1.2	1.5	1.1
Apr-15	0.0	2.2	0.6	3.5	0.1	0.8	1.8	1.6	0.6	1.4
May-15	2.2	0.4	1.1	1.3	1.8	0.2	0.7	0.2	1.1	0.2
Jun-15	1.8	1.5	0.6	1.3	1.0	0.3	0.5	0.4	0.6	0.1
Jul-15	3.6	5.7	0.6	0.6	1.9	0.1	0.7	1.6	0.5	0.1
Aug-15	0.6	1.4	0.7	1.0	1.4	0.1	1.0	0.8	0.3	0.1
Sep-15	1.6	2.5	1.4	2.0	3.6	0.4	0.9	0.7	0.6	0.7
Oct-15	2.5	0.9	0.6	0.2	1.3	0.5	0.7	0.9	0.7	0.2
Nov-15	2.0	8.3	0.8	2.4	1.6	0.8	1.6	2.2	3.5	0.3
Annual Average	1.9	2.3	0.9	1.3	1.7	0.5	1.1	1.0	1.4	0.6

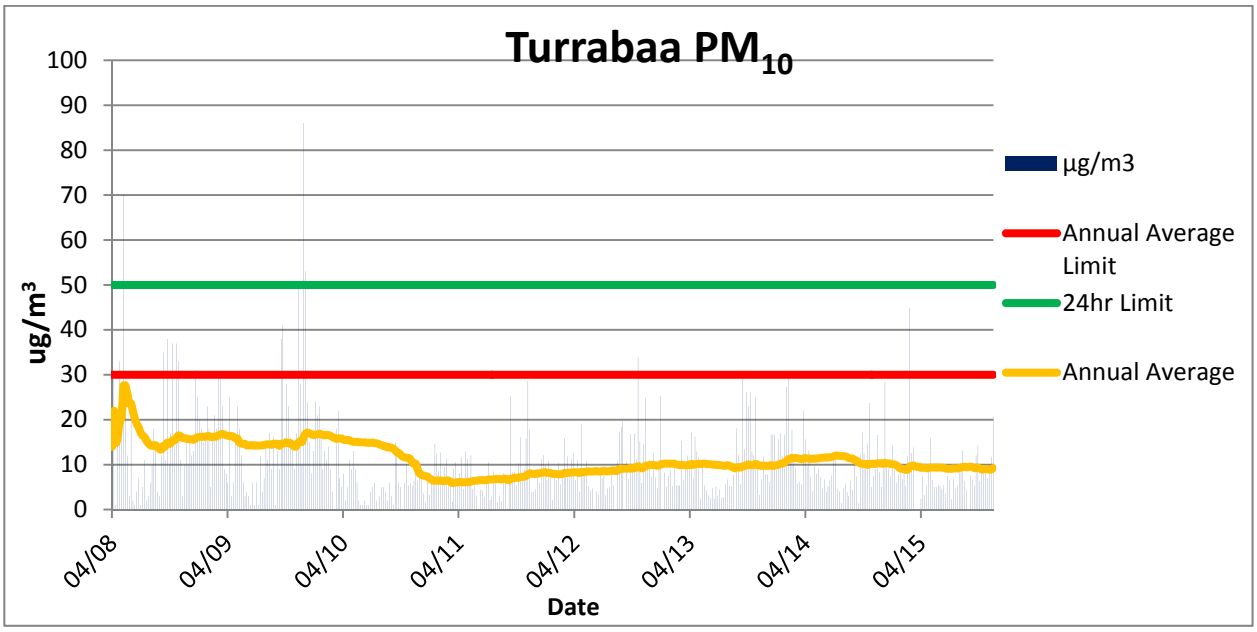
Deposited dust levels have remained at relatively low levels since the last meeting. All dust deposition annual averages are within compliance limits.

High Volume Air Sampling (PM_{10})

PM_{10} measurements taken to the end of November 2015 for the "Claremont" High Volume Air Sampler (HVAS) are returning a running annual average of 9.71 µg/m^3, which is well below the annual average limit of 30 µg/m^3.



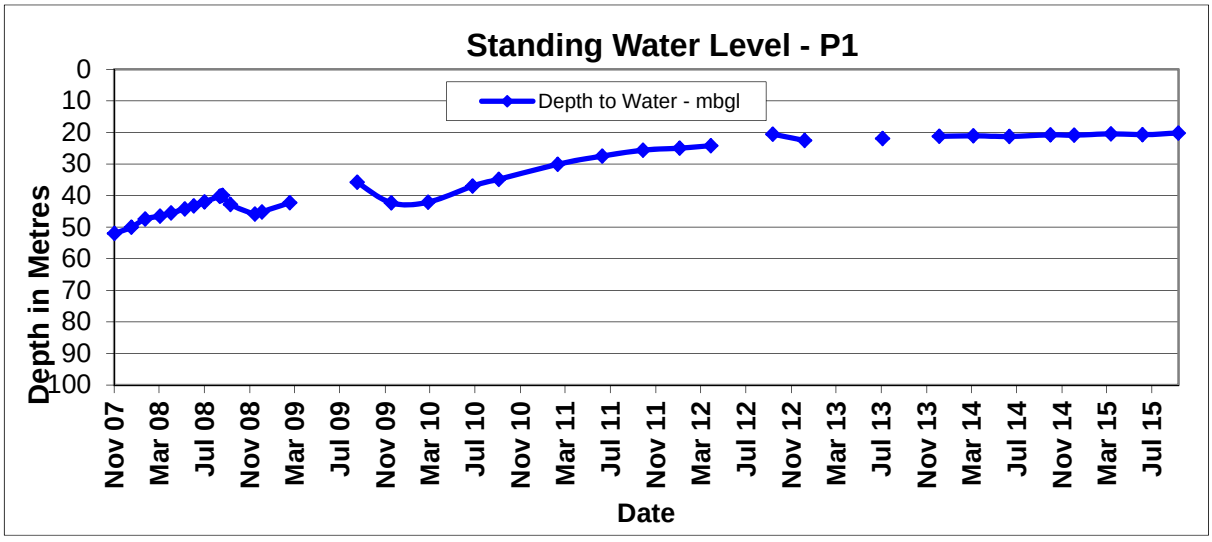
PM_{10} measurements taken to the end of November 2015 for the "Turrabaa" High Volume Air Sampler are returning a running annual average of 9.23 µg/m^3, which is also well below the annual average limit of 30 µg/m^3.

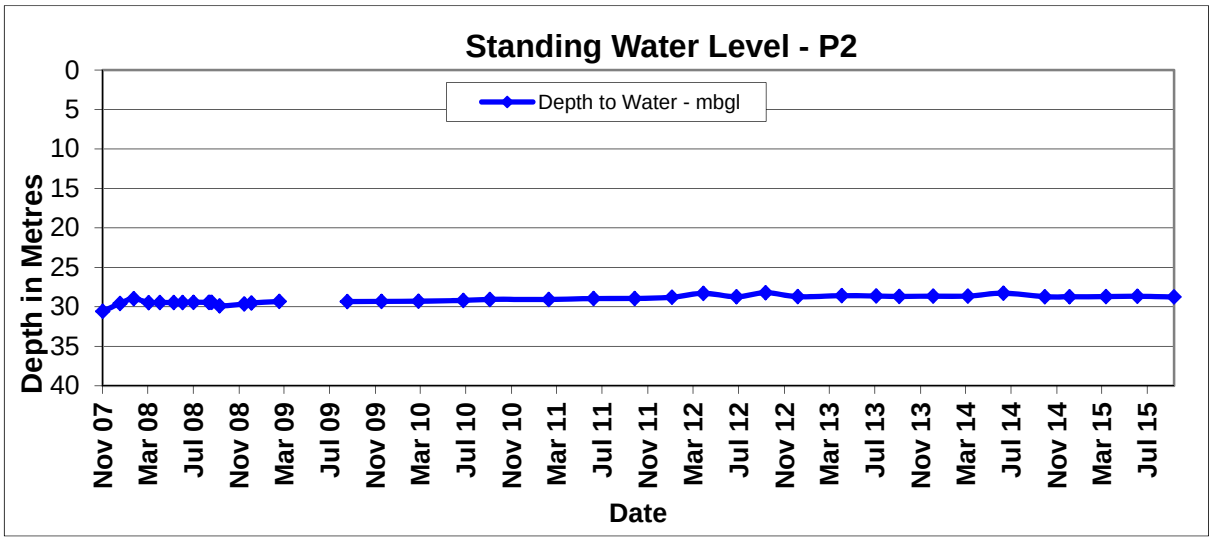


PM_{10} levels have remained compliant since the last meeting.

Groundwater Monitoring

Groundwater monitoring was completed in September 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.




Standing Water Level - P2
Depth to Water - mbgl
Depth in Metres
0
5
10
15
20
25
30
35
40
Nov 07
Mar 08
Jul 08
Nov 08
Mar 09
Jul 09
Nov 09
Mar 10
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Mar 14
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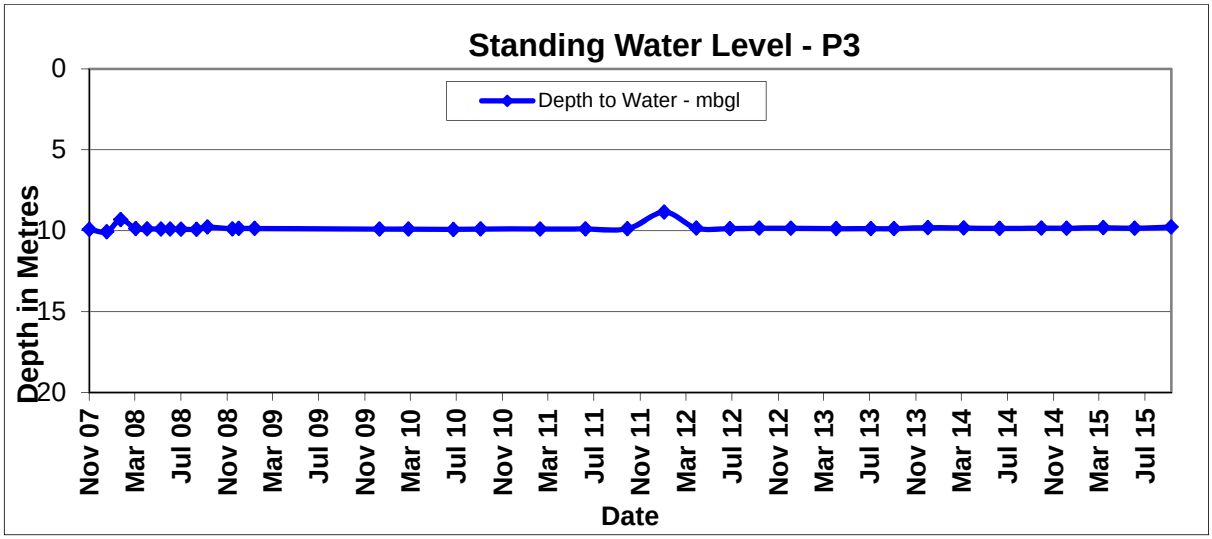
Nov 14
Mar 15
Jul 15
Date


Standing Water Level - P3
Depth to Water - mbgl
Depth in Metres
0
5
10
15
20
Nov 07
Mar 08
Jul 08
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Mar 10
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Mar 14
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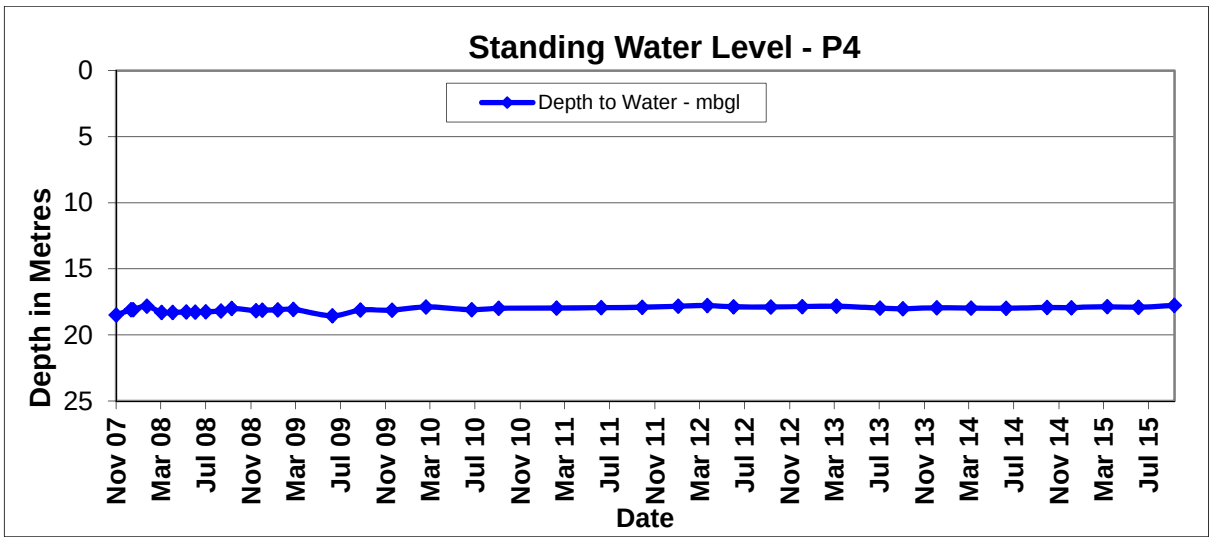
Nov 14
Mar 15
Jul 15
Date


Standing Water Level - P4
Depth to Water - mbgl
Depth in Metres
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10
15
20
25
Nov 07
Mar 08
Jul 08
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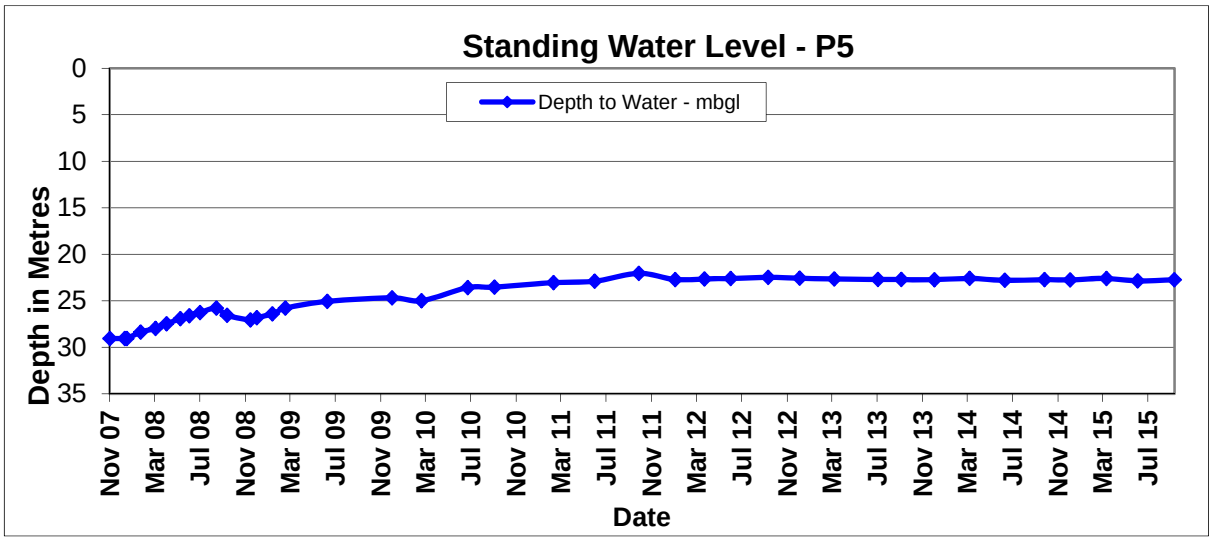
Jul 14
Nov 14
Mar 15
Jul 15
Date


Standing Water Level - P5
Depth to Water - mbgl
Depth in Metres
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20
25
30
35
Nov 07
Mar 08
Jul 08
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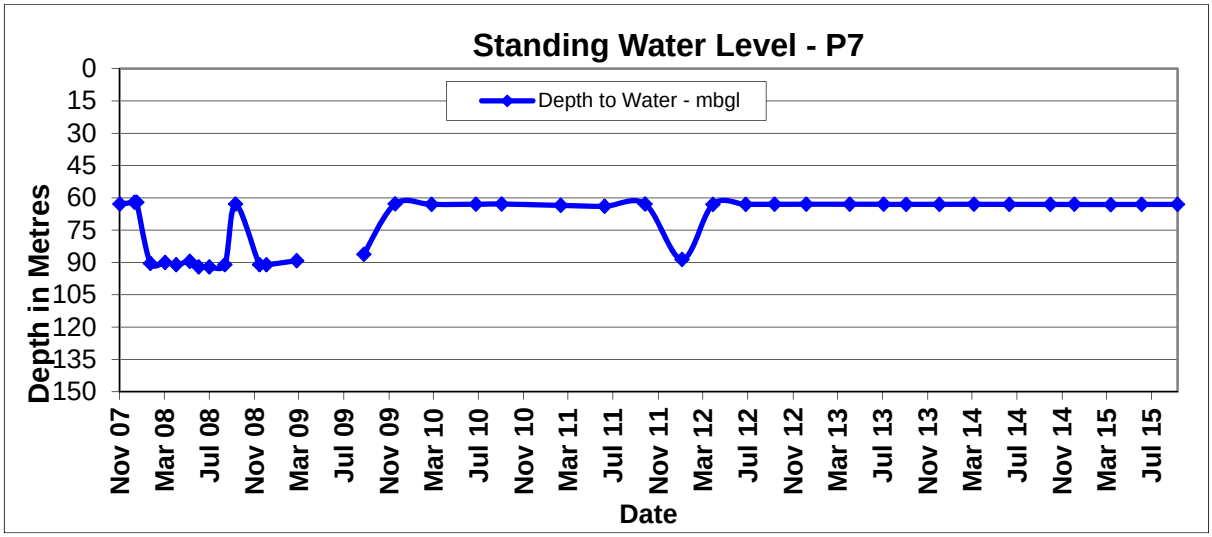
Nov 14
Mar 15
Jul 15
Date


Standing Water Level - P7
Depth to Water - mbgl
Depth in Metres
0
15
30
45
60
75
90
105
120
135
150
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Jul 08
Nov 08
Mar 09
Jul 09
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Mar 10
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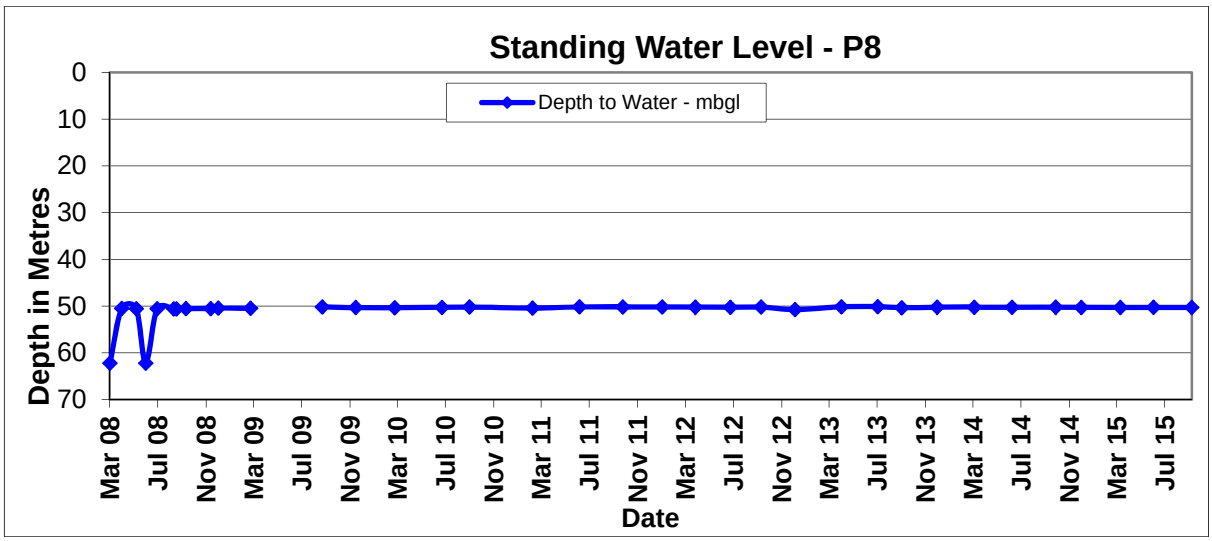
Mar 15
Jul 15
Date


Standing Water Level - P8
Depth to Water - mbgl
Depth in Metres
0
10
20
30
40
50
60
70
Mar 08
Jul 08
Nov 08
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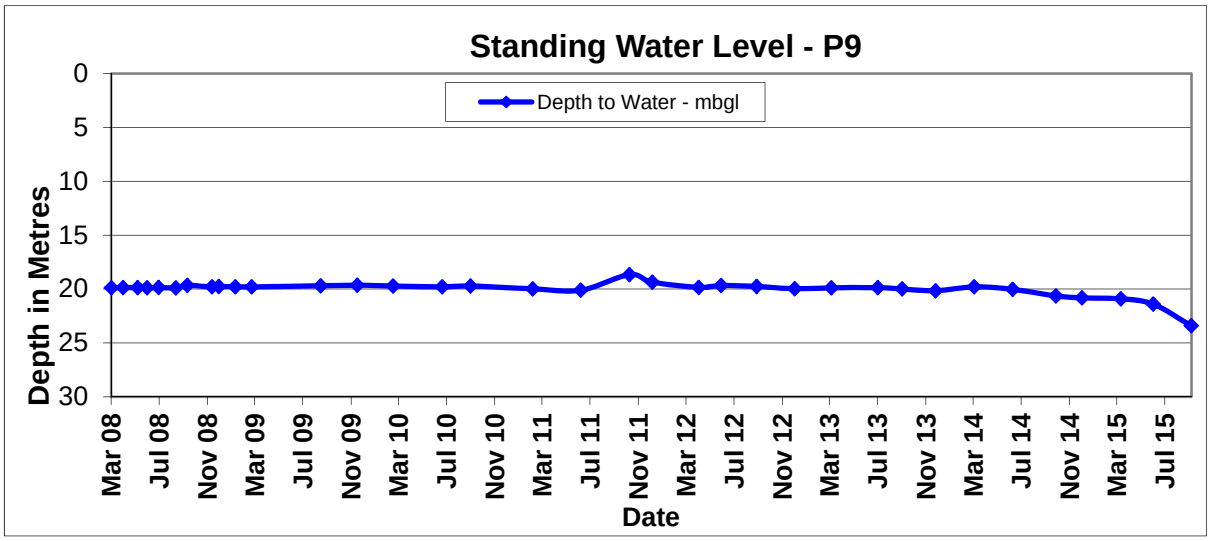
Nov 14
Mar 15
Jul 15
Date


Standing Water Level - P9
Depth to Water - mbgl
Depth in Metres
0
5
10
15
20
25
30
Mar 08
Jul 08
Nov 08
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Mar 10
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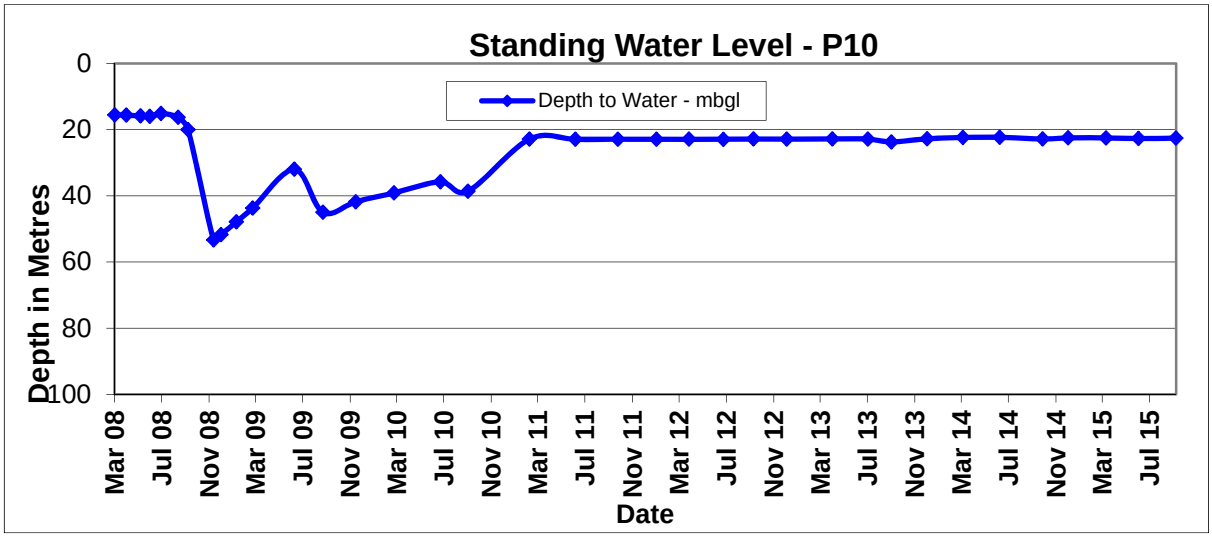
Mar 15
Jul 15
Date


Standing Water Level - P10
Depth to Water - mbgl
Depth in Metres
0
20
40
60
80
100
Mar 08
Jul 08
Nov 08
Mar 09
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Nov 09
Mar 10
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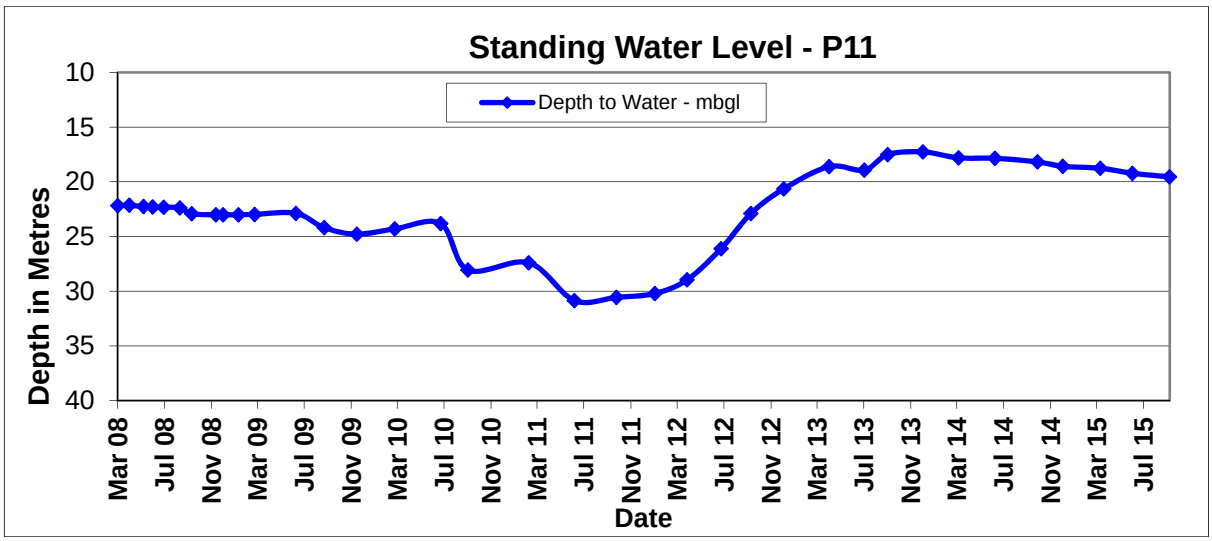
Mar 15
Jul 15
Date


Standing Water Level - P11
Depth to Water - mbgl
Depth in Metres
10
15
20
25
30
35
40
Mar 08
Jul 08
Nov 08
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Nov 09
Mar 10
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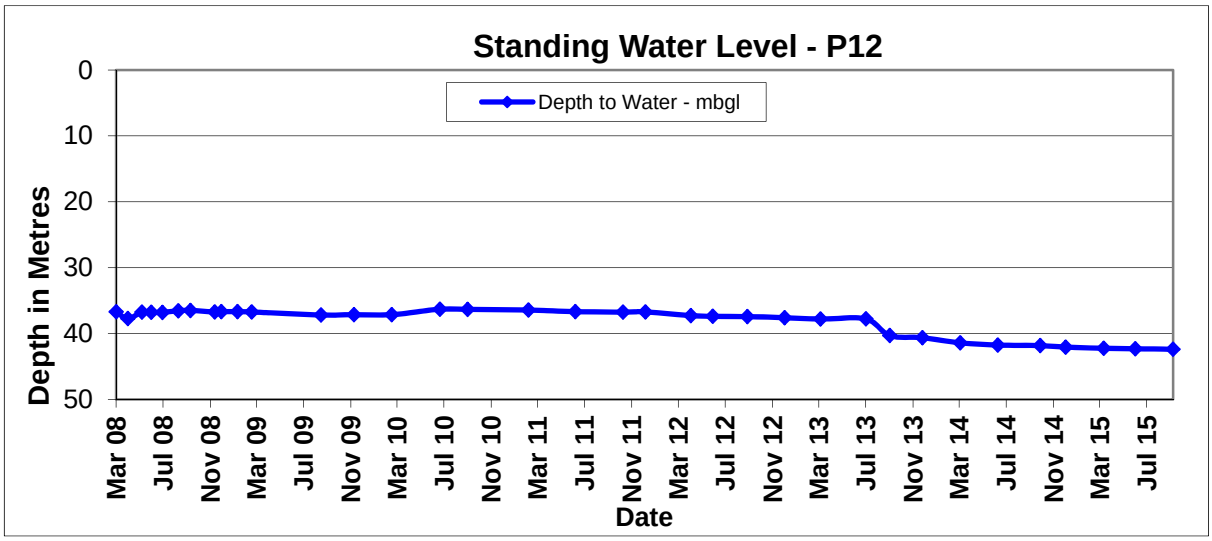
Nov 14
Mar 15
Jul 15
Date


Standing Water Level - P12
Depth to Water - mbgl
Depth in Metres
0
10
20
30
40
50
Mar 08
Jul 08
Nov 08
Mar 09
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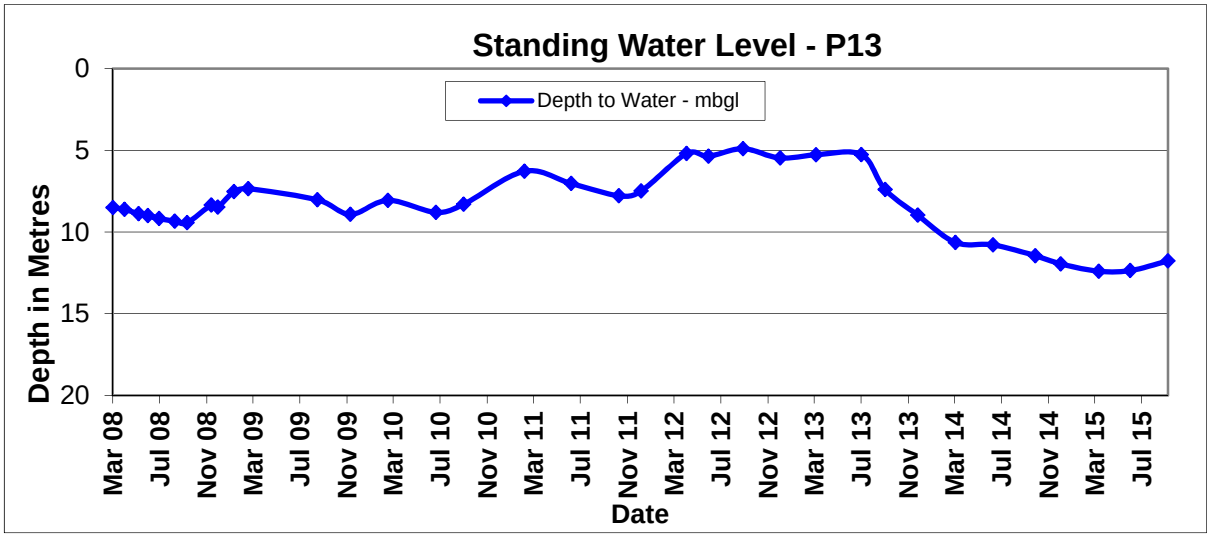
Standing Water Level - P13
Depth to Water - mbgl
Depth in Metres
0
5
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15
20
Mar 08
Jul 08
Nov 08
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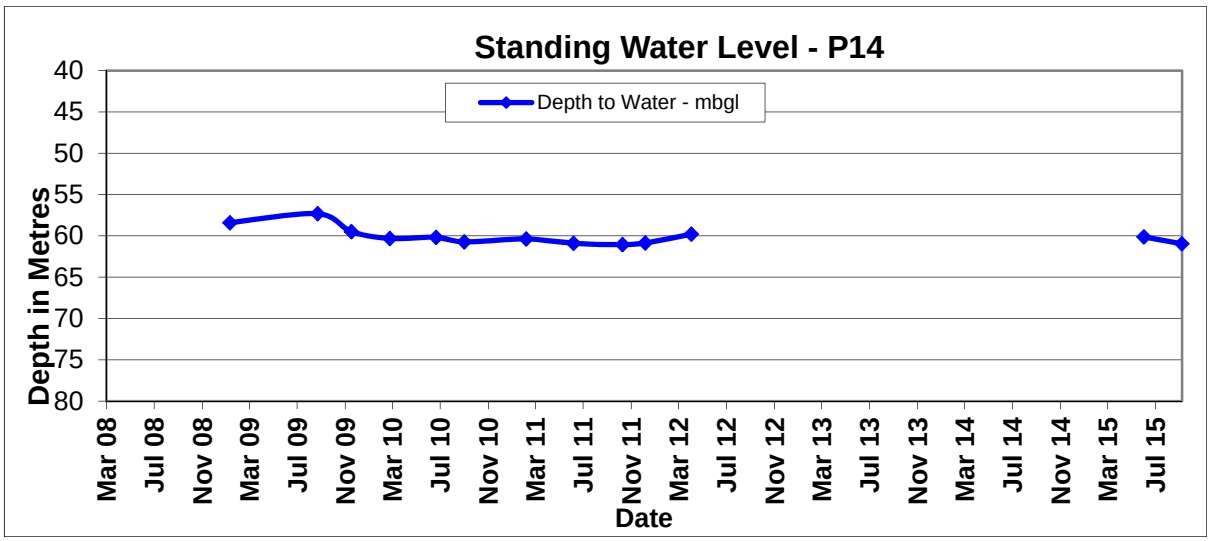
Mar 15
Jul 15
Date


Standing Water Level - P14
Depth to Water - mbgl
Depth in Metres
40
45
50
55
60
65
70
75
80
Mar 08
Jul 08
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Jul 09
Nov 09
Mar 10
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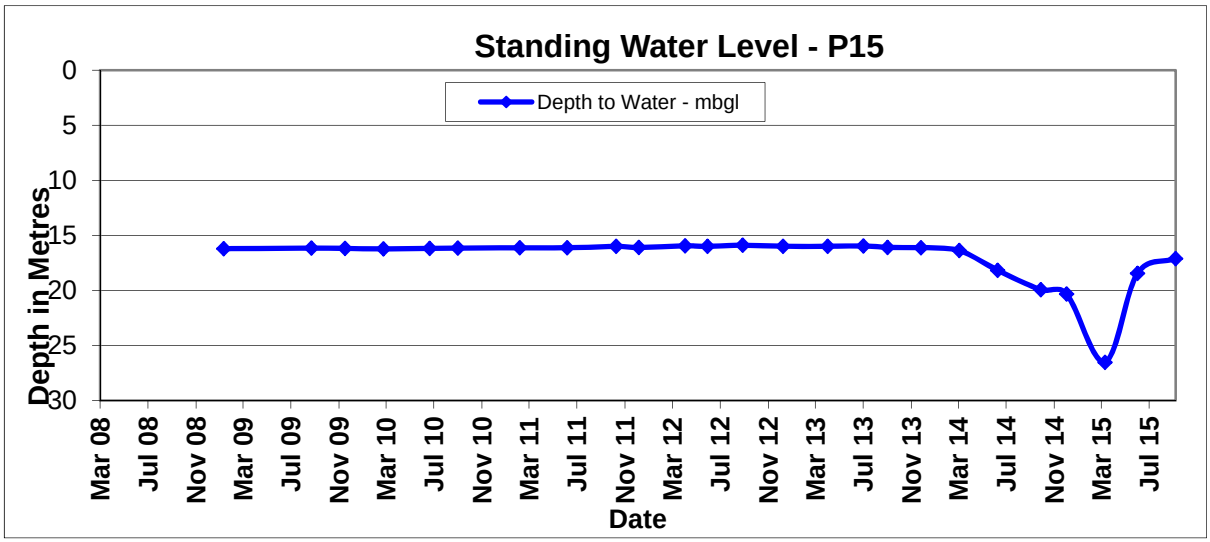
Mar 15
Jul 15
Date


Standing Water Level - P15
Depth to Water - mbgl
Depth in Metres
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10
15
20
25
30
Mar 08
Jul 08
Nov 08
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Nov 09
Mar 10
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Jul 15
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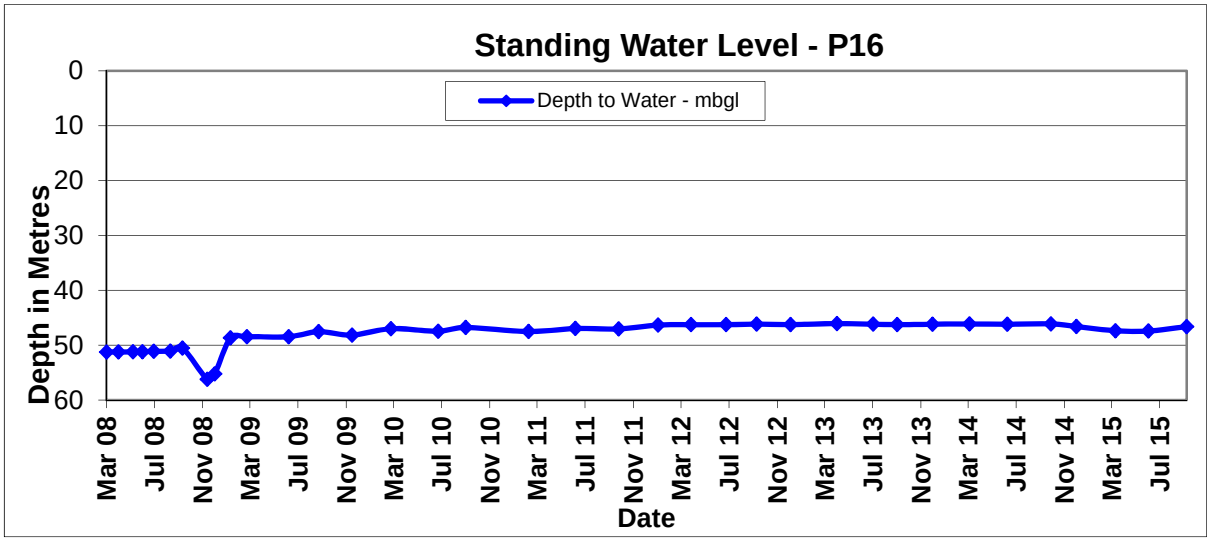
Standing Water Level - P16
Depth to Water - mbgl
Depth in Metres
0
10
20
30
40
50
60
Mar 08
Jul 08
Nov 08
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Nov 09
Mar 10
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Mar 15
Jul 15
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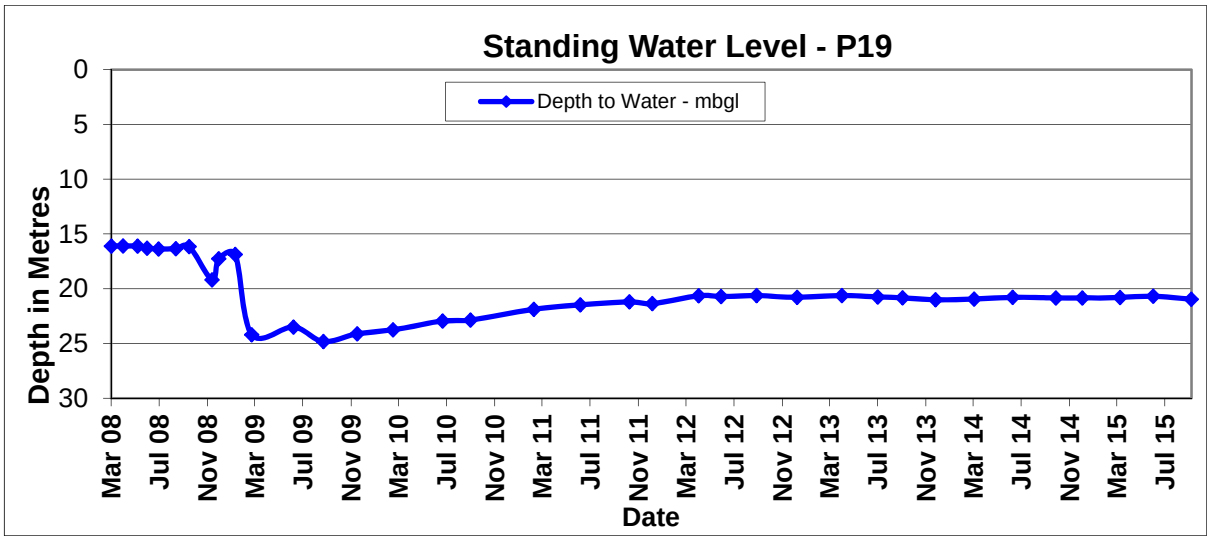
Standing Water Level - P19
Depth to Water - mbgl
Depth in Metres
0
5
10
15
20
25
30
Mar 08
Jul 08
Nov 08
Mar 09
Jul 09
Nov 09
Mar 10
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Nov 10
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Nov 14
Mar 15
Jul 15
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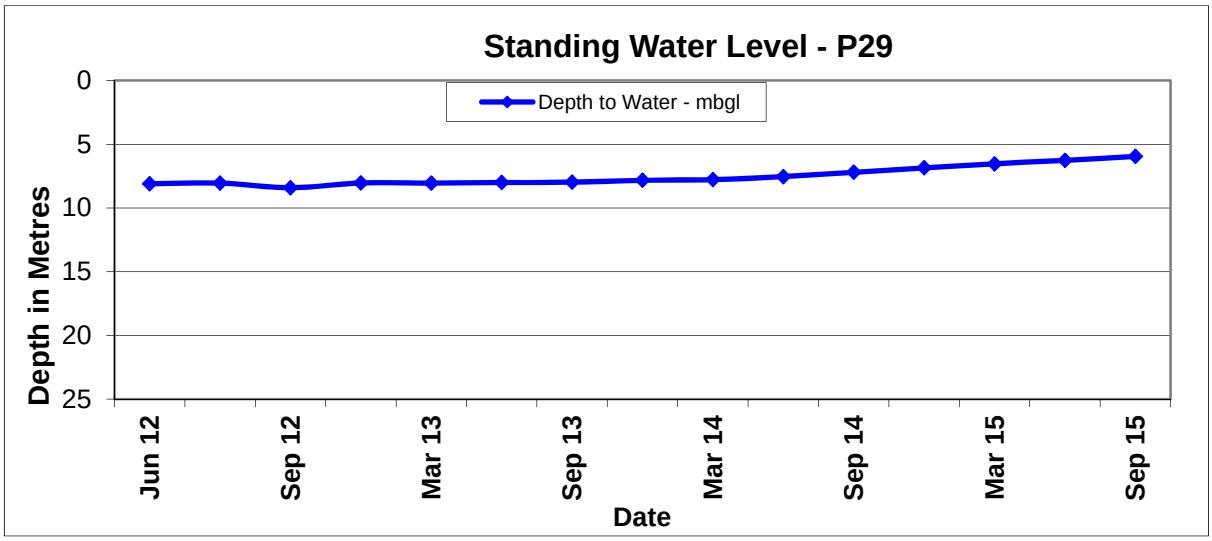
Standing Water Level - P29
Depth to Water - mbgl
Depth in Metres
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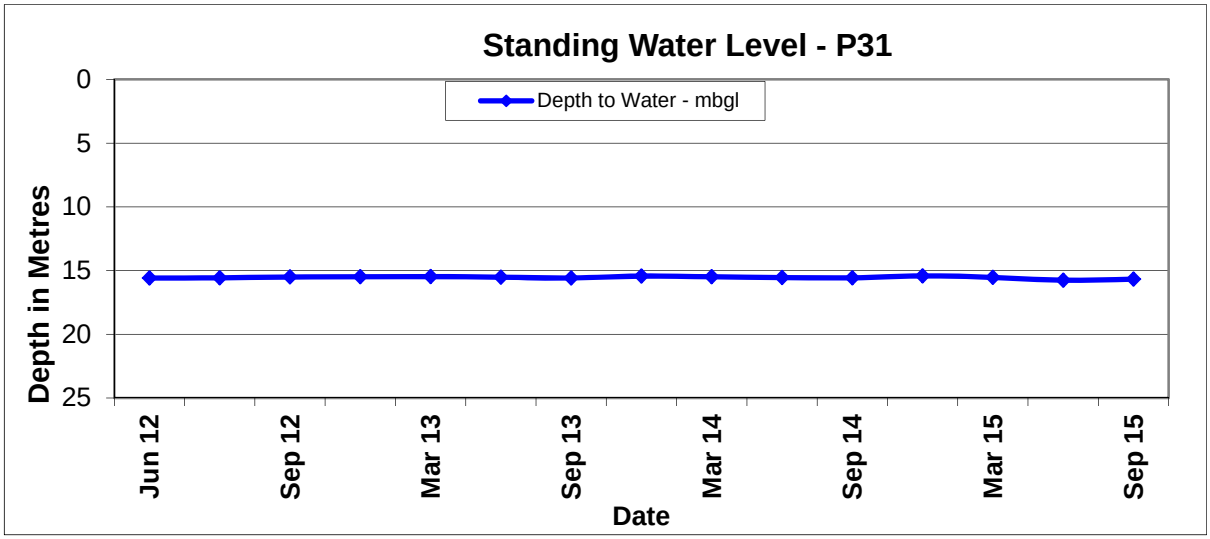
5
10
15
20
25
Jun 12
Sep 12
Mar 13
Sep 13
Mar 14
Sep 14
Mar 15
Sep 15
Date


Standing Water Level - P31
Depth to Water - mbgl
Depth in Metres
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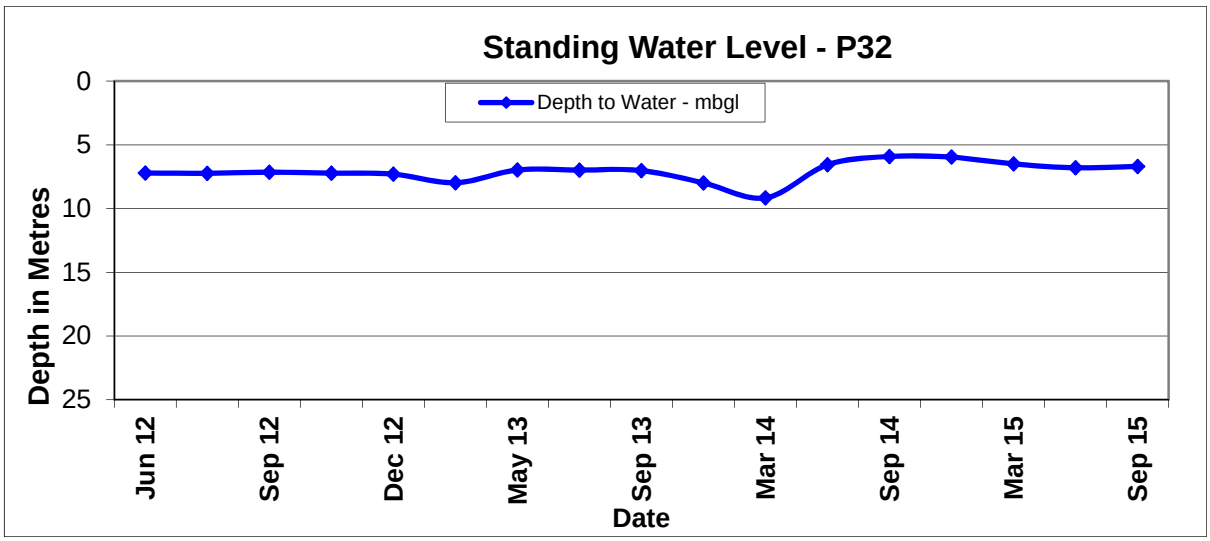
5
10
15
20
25
Jun 12
Sep 12
Mar 13
Sep 13
Mar 14
Sep 14
Mar 15
Sep 15
Date


Standing Water Level - P32
Depth to Water - mbgl
Depth in Metres
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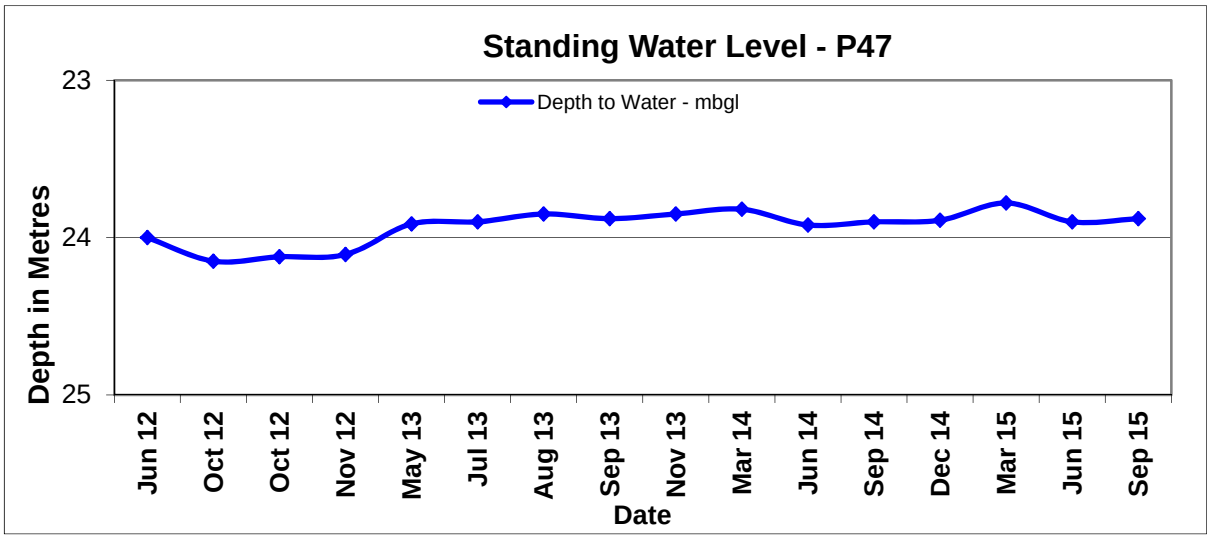
20
25
Jun 12
Sep 12
Dec 12
May 13
Sep 13
Mar 14
Sep 14
Mar 15
Sep 15
Date


Standing Water Level - P47
Depth to Water - mbgl
Depth in Metres
23
24
25
Jun 12
Oct 12
Oct 12
Nov 12
May 13
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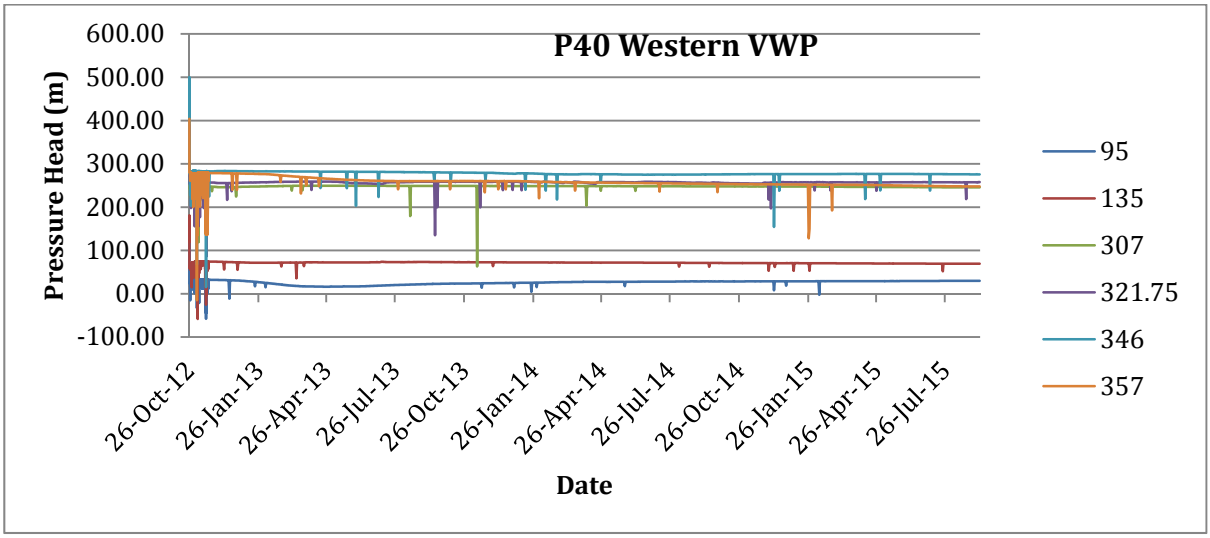
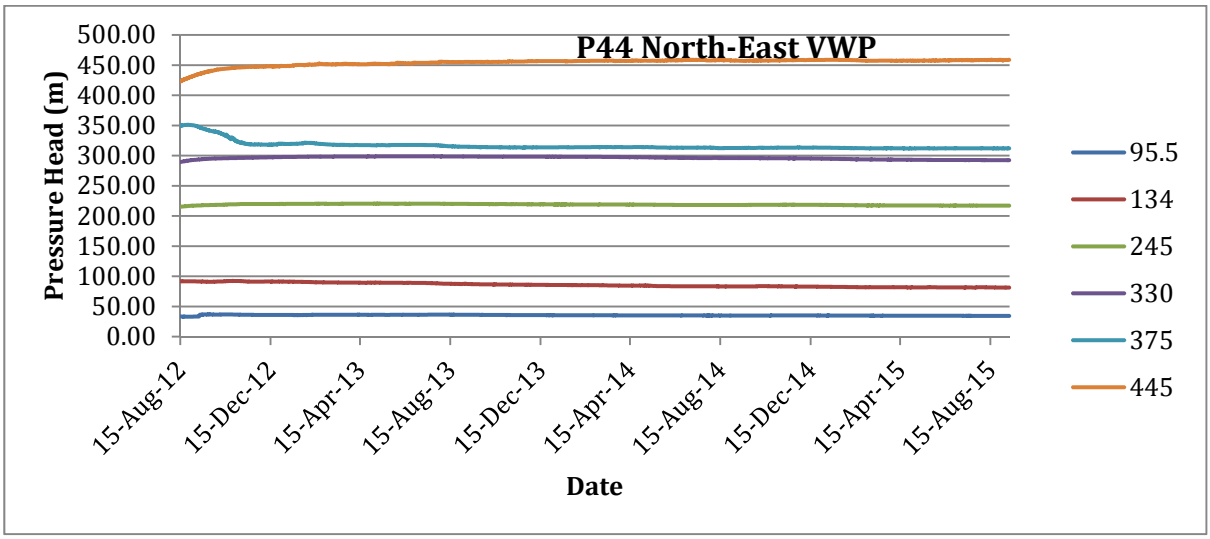
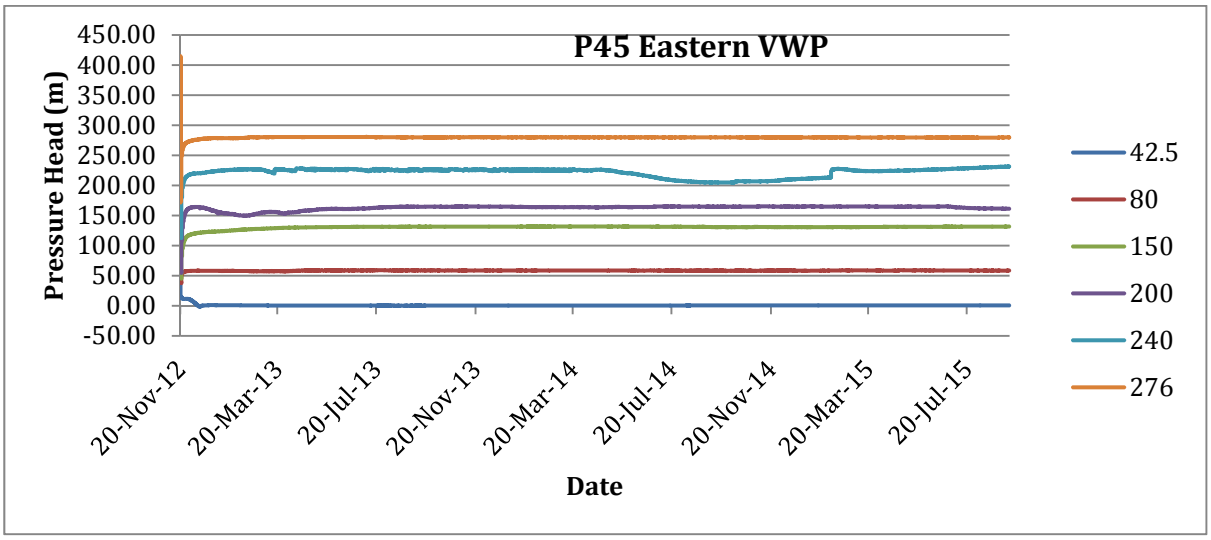
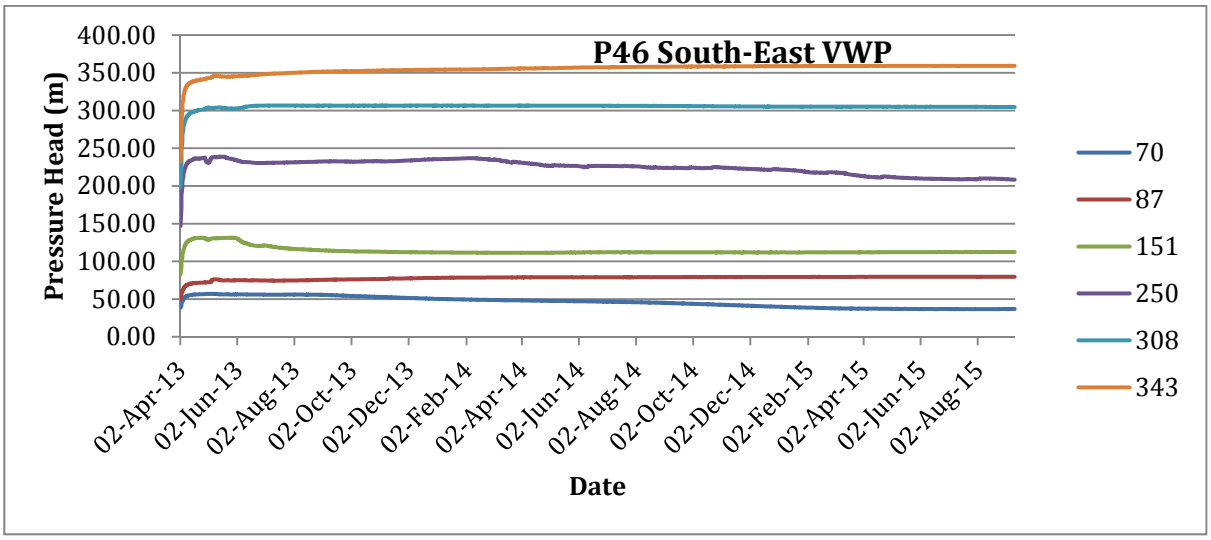
Aug 13
Sep 13
Nov 13
Mar 14
Jun 14
Sep 14
Dec 14
Mar 15
Jun 15
Sep 15
Date


P40 Western VWP
Pressure Head (m)
600.00
500.00
400.00
300.00
200.00
100.00
0.00
-100.00
26-Oct-12
26-Jan-13
26-Apr-13
26-Jul-13
26-Oct-13
26-Jan-14
26-Apr-14
26-Jul-14
26-Oct-14
26-Jan-15
26-Apr-15
26-Jul-15
Date
95
135
307
321.75
346
357


P44 North-East VWP
Pressure Head (m)
500.00
450.00
400.00
350.00
300.00
250.00
200.00
150.00
100.00
50.00
0.00
15-Aug-12
15-Dec-12
15-Apr-13
15-Aug-13
15-Dec-13
15-Apr-14
15-Aug-14
15-Dec-14
15-Apr-15
15-Aug-15
Date
95.5
134
245
330
375
445





Monitoring well P13 water levels have stabilised with levels slightly recovering over the previous two monitoring rounds. 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 and as such the drop in water level in P13 is likely associated with production from WB2.

Montoring well P15 had shown a steady decrease in water level since March 2014, however during the previous two monitrong rounds it has recovered to near background levels. P15 is installed to 30m and is located above longwall panel (LW) 105 which has now been extracted and this is the likely cause of the water level drop at the beginning of the year. P14 is installed at the same location to 78m and it has been intermittently dry which is not attributable to mining, i.e. recorded dry in July 2012 well before development commenced in the area around P14/P15. Given the mine is extracting LW105, the water level in P15 will likely drop again but then recover.

Surface Water Monitoring

No wet weather discharges from licensed discharge points occurred during September to November 2015. For the same period, the surrounding creeks were sampled on one occasion on the 5th November 2015.

Subsidence

Narrabri Mine has monitored the subsidence movement across the surface of LW101 to LW105 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 LW105.

LW101 to LW105 Predicted and Measured Subsidence Parameters		
	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 North – Centre of LW103 Northern End		
Subsidence (m)	2.44	2.688
Tilt (mm/m)	35	40.2
Tensile Strain (mm/m)	8 – 16^	18.8
Compressive Strain (mm/m)	10 – 20^	27.9
Angle of Draw (°, Degrees)	22.5 – 26.5	18.1
Line 103 South – Centre of LW103 Southern End		
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^	8.7
Angle of Draw (°, Degrees)	22.5 – 26.5	20.2
Line 104 North – Centre of LW104 Northern End		
Subsidence (m)	2.44	2.756
Tilt (mm/m)	32	48.4
Tensile Strain (mm/m)	7 – 14^	42.6
Compressive Strain (mm/m)	8 – 16^	42.3
Angle of Draw (°, Degrees)	22.5 – 26.5	18.7
Line 104 South – Centre of LW104 Southern End		

LW101 to LW105 Predicted and Measured Subsidence Parameters		
	Maximum Predicted Extraction Plan	Maximum Measured
Subsidence (m)	2.44	2.614*
Tilt (mm/m)	32	30.3*
Tensile Strain (mm/m)	7 – 14^	7.5*
Compressive Strain (mm/m)	8 – 16^	6.1*
Angle of Draw (°, Degrees)	22.5 – 26.5	13.2*
Line 105 North – Centre of LW104 Northern End		
Subsidence (m)	2.44	2.543*
Tilt (mm/m)	30	45.8*
Tensile Strain (mm/m)	6 – 12	17.7*
Compressive Strain (mm/m)	8 – 16	44.6*
Angle of Draw (°, Degrees)	22.5 – 26.5	15.3*
Line A – Cross Panel Survey Line		
Subsidence (m)	2.44	2.620*
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	24.2*
Line B – Pine Creek Tributary 1		
Subsidence (m)	2.44	2.589*
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 D – Pine Creek		
Subsidence (m)	2.44	2.650*
Tilt (mm/m)	32	32.9*
Tensile Strain (mm/m)	7 – 14^	10.6*
Compressive Strain (mm/m)	8 – 16^	15.0*
Gradient Change (%)	Up to 6	3.29*
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

LW101 to LW105 Predicted and Measured Subsidence Parameters		
	Maximum Predicted Extraction Plan	Maximum Measured
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*
Electricity Transmission Lines – 11kV Power Lines		
Pole 2		
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	0.56
Conductor Clearance Loss (m)	0.77	+0.714
Pole 3		
Subsidence (m)	2.18	2.085
Dynamic Tilt (mm/m)	30	66.3
Final Tilt (mm/m)	12	50.08
Conductor length change between poles 3 - 4 (m)	0.28	-0.81
Conductor Clearance Loss (m)	1.10	-1.517
Pole 4		
Subsidence (m)	2.11	2.063
Dynamic Tilt (mm/m)	25	74.23
Final Tilt (mm/m)	15	31.80
Conductor length change between poles 4 - 5 (m)	0.13	0.48
Conductor Clearance Loss (m)	0.07	+1.200
Pole 5		
Subsidence (m)	0.31	0.238
Dynamic Tilt (mm/m)	2	25.66
Final Tilt (mm/m)	2	19.40
Conductor length change between poles 5 - 6 (m)	0.024	0.97
Conductor Clearance Loss (m)	0.30	+1.842
Pole 6		
Subsidence (m)	1.41	1.645

LW101 to LW105 Predicted and Measured Subsidence Parameters		
	Maximum Predicted Extraction Plan	Maximum Measured
Dynamic Tilt (mm/m)	27	132.483
Final Tilt (mm/m)	27	129.68
Conductor length change between poles 6 – 7 (m)	0.274	-1.029
Conductor Clearance Loss (m)	1.30	1.010
Pole 7		
Subsidence (m)	2.42	2.614
Dynamic Tilt (mm/m)	3	215.912
Final Tilt (mm/m)	3	129.68
Conductor length change between poles 7 – (m)	0.034	-
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, subsidence prediction exceedances have occurred above LW101 to LW105:

- 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. >90% of the measured tilts in LW104 and LW105 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). >90% of the measured tensile strain values in LW104 and LW105 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; LW104, which recorded a maximum compressive strain of 42.3 mm/m; and LW105, which recorded a maximum compressive strain of 44.6 mm/m. However, 99% (LW102), 98% (LW104) and 96% (LW105) of the measured compressive strains were within the predicted range.

The centreline subsidence results for LW101 to LW105 indicate that the Garrawilla Volcanics and Basalt Sill have not reduced subsidence through spanning behaviour.

The maximum subsidence is also considered closer to 63% of the average mining height of 4.3m. The subsidence predictions have been updated as part of the latest modification for the mine and the revised values will be included in a revision to the site's Extraction Plan.

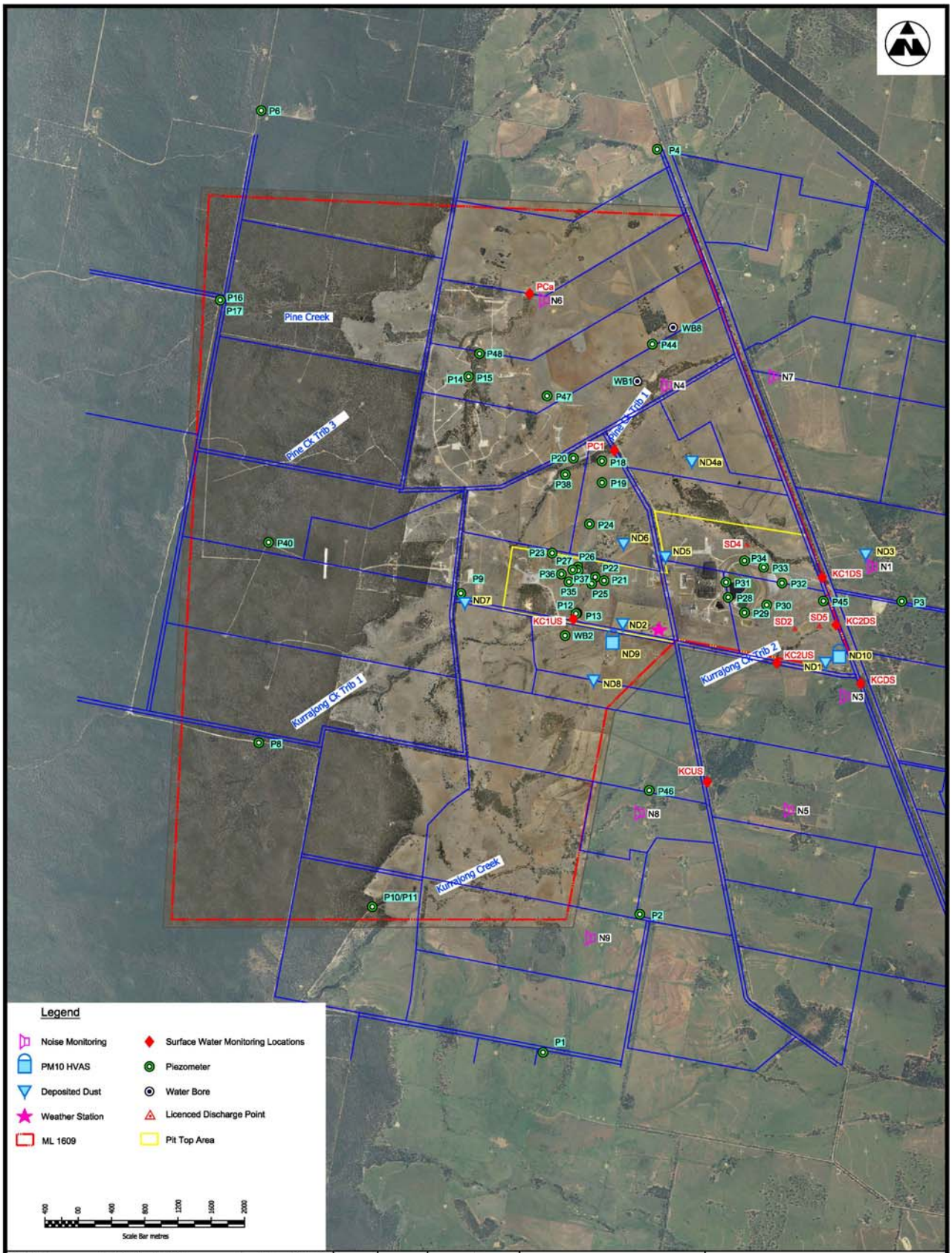
Complaints

Three formal complaints were received during the period September to November 2015. Two were in relation to noise and one was in relation to dust.

The noise complaints were followed up and the necessary actions taken, which included re-orientating a piece of equipment in the field. The dust complaint, relating to dust coming from the coal stockpiles, was actioned at the time of the complaint with additional sprays activated on the ROM stockpile.

Environmental Incident(s)

No environmental incidents occurred during the September to November 2015 period.



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

WHITEHAVEN COAL

NARRABRI MINE