

Minutes of the 53th Meeting of the Tarrawonga Coal Mine Community Consultative Committee (TCCC)

Meeting Held	29 th August 2018 between 10:00AM- 11:05AM		
Venue	Tarrawonga Coal Mine (TCM), training room		
Agenda Item	Discussion and Description	Action and Accountability	Status/ Date

1. Present and Apologies	<p><u>Present:</u> Mr David Ross (DR)- Independent Chairman, Mrs Colleen Fuller (CF)- Community Representative, Ms Ann Luke (AL), Gunnedah Shire council Representative, Mr Cameron Staines (CS), Narrabri Shire council Representative, Mr John Hamson (JHa), Production Superintendent-TCM, Mr Sebastien Moreno (SM)- Environmental Superintendent- TCM, Mr Andrew Wright (AW), Group Biodiversity Specialist- WHC,</p>	SM- to add Cameron Staines to the CCC members distribution list	
	<p><u>Apologies:</u> Mr Blair Meyers (BM)- Operations Manager/ MME- TMC, Mr Tim Muldoon (TM)- Group Manager Community Relations and Pty, Mrs Cath Collyer (CC)- Community Representative, Mrs Julie Heiler (JH)- Community Representative,</p>		

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	Mrs Anne McMahon, Narrabri Shire council Representative, Mrs Rebecca Ryan (RR)- Community Representative, Mr Andrew Johns (AJ), Gunnedah Shire council Representative,			
2. Declaration of Pecuniary or Non-Pecuniary Interests	DR- declared that he is paid a fee for participation as Independent Chairman			
3. Previous Minutes Actions	NSC representative attending the CCC meeting	DR to ask Narrabri Council if they will continue to join the TCCC meeting.	Complete.	
	JH -asked to include the SWL graphs for the groundwater bores in Quarterly report	SM to include SWL Graph in next Quarterly report.	Complete. Graphs added in Appendix	
	TM- regarding water issues and access by the RFS. Significant progress has been made to standardise fittings and pipping with the RFS. Canyon site water has been used by the Council for road works.	TM- Report on progress at next CCC meeting		
	DR- Regarding TCM staff (ERT members) volunteering with RFS outside the mine.	BM- check with insurance if any restriction.	Complete. JHa – Volunteers will not be covered by the mine insurance	

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			and will have to take leave without pay to join RFS.
	DR - about Rural Fire Service issues in lead up to Joint CCC	DR- to consult with Cameron Staines	
	BM, TM- not possible to separately quantify all the sources at this stage, but there is a calculation formulae developed by a hydrogeologist that can give an estimate.	TCM- Hydrogeologist or similar to provide a figure/ volume estimate and to explain how much water is coming from the void	Complete. SM - Used GW and SW models data to estimate the volume of water recharging the pit. Summary table attached to these minutes.
4. Business Arising	AW- BCM and MCCM organised access to several water point for RFS.		
	JHa: TCM have desilted dams on Goonbri road (Templemore) available for the council and RFS.		
5. Mine Progress Report	JHa: - Normal Mining Activity, - Actual production above target, - Rehabilitation on-going at the Northern and Southern dumps - On-going usage of “Dust A Side” product. First results have been very successful.		

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	- CCC members- satisfied with that initiative to mitigate dust.		
6. Environmental Monitoring report	SM- - Read and explained the Quarterly Environmental Report results -Provided update on Noise, Blast, Water and Air Draft Management Plan due for re-submission to DPE		
	AW- Provided details on Draft Biodiversity Management Plan. A copy was sent to CCC members for comments in June 2018.		
	CF- on behalf of CCC members' congratulation to TCM team for their continuous efforts to implement environmental initiatives, to improve management practices and communicate to the community.		

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7. General business	CCC members - Requested for local procurement strategy to be presented	BM- to present and discuss at the next meeting the mine procurement strategy and support to local business.	
	SM- EPA have requested to start an investigation on PFAS at all the WHC mines (except MCCM). Soil, GW and SW samples have been taken by a consultant.		
	SM- an ecologist has inspected the tree line along Goonbri Road in preparation for clearing and to start reshaping of the Southern emplacement facility (pending further discussion and approval by DPE)		
	DR- awaiting Chair Annual report template, CCC members to provide feedbacks (i.e.: what could be done better).		
8.Complaints	SM- No Complaint received since last CCC meeting.		

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9. Next Meeting and Other Comments	DR- next TCCC meetings 2018 will be held on 7 th November.		
	DR- Environmental Trust meeting held at the Boggabri Golf Club on November 8 at 12:30pm followed by the BTM CCC meeting at 2:00pm.		

Using Ground water balance model + Surface balance model as at 29/08/2018

	Mine Pit Catchment Runoff Volume (ML)	TCM Dams Catchment Runoff Volume (ML)	Total Surface Water (SW) Runoff Volume (ML)	Ground Water (GW) inflow (ML)	Total SW+GW (ML)
1 Jan 2017 – 31 Dec 2017	253	255	508	179	686.9
1 Jan 2018 – 1 July 2018	42	60	102	83	184.8

Tarrawonga Coal Mine Community Consultative Committee Meeting #53

Environmental Monitoring Report 1 May 2018 – 31 July 2018

This report has been prepared for the Community Consultative Committee (CCC) Meeting to show Environmental monitoring performance at Tarrawonga Coal Mine (TCM) for the reporting period from May 1 to July 31 2018. Maps with all the monitoring locations are available in *Appendix A*.

Noise Monitoring

Attended noise monitoring was undertaken at the “Bungalow” (TN4), “Barbers Lagoon” (TN3) and “Matong” (TN2) properties from 20th to 24th June 2018. The noise criterion for the mine is 35dB(A) Leq (15 min) for all operating times.

The results in *Appendix B* show that noise emissions from the mine did not exceed the operational noise criterion at the “Barbers Lagoon”, “Bungalow” or “Matong” monitoring locations during the monitoring event.

Noise from the mine must not exceed 45 dB(A) L1 (1 min) between 10 pm and 7 am. This is to minimise the potential for sleep disturbance as a result of individual loud noises from the mine. The results of the sleep disturbance monitoring show that the measured L1 (1 min) noise level did not exceed the sleep disturbance criterion.

The real time noise monitor located on the “Coomalgah” property remains a management tool so the noise criteria are not applicable at that site. Level of noise recorded at that location is managed according to the noise management plan and trigger action response plan.

Blast Monitoring

Blasting Results

Since 2006, there have been 823 blasts (until 30/07/2018) at TCM.

There has been no exceedance of criteria since the last meeting for ground vibration or overpressure.

Since the last CCC meeting, the highest result obtained for blasting overpressure was **107.8 dB** at the Tarrawonga monitoring station on 18/07/18 and the highest result for ground vibration was **1.12 mm/s** recorded at the Coomalgah station.

Table- 4: Max Peak Overpressure and Ground Pressure for the Quarter

Monitor Location	Date	Max. Peak Overpressure (dB)	Criterion (dB)	Max. Peak Ground Pressure (mm/s)	Criterion (mm/s)
Tarrawonga	18/07/18	107.8	N/A	0.82	N/A
Coomalgah	26/06/18	104.2	115	1.12	10

Air Quality

Dust Deposition Results

Table 5 shows that four monitoring locations exceeded the limit of **4g/m²/month** (annual average). These monitors are located on mine-owned land; as such compliance criteria do not apply. Although the weather conditions have been relatively dry, overall deposited dust levels are better than results recorded for December 2017, January and February 2018.

Table 5 – Deposited Dust Gauge Results [g/m²/month]

MONTH	TEMPLEMORE (EB-4)	BOLLOL CREEK STN (EB-5)	AMBARDO (EB-6)	TARRAWONGA (EB-7)	THUIN (EB-8)	PINE GROVE (EB-9)	TARRAWONGA MINE (EB-10)	TARRAWONGA MINE (EB-11)	TARRAWONGA MINE (EB-14)	TARRAWONGA MINE (EB-15)	JERALONG NORTH (EB-16)
Jul-17	2.0	2.4	0.9	0.7	2.0	1.0	1.6	3.7	1.2	4.1	0.5
Aug-17	2.9	3.1	0.9	0.9	2.4	1.5	4.2	2.2	1.8	4.9	0.4
Sep-17	12.7	3.5	1.8	0.6	2.0	1.4	3.2	2.0	1.9	-	0.7
Oct-17	6.6	4.2	2.0	1.1	1.1	3.0	2.5	3.3	4.7	8.6	1.8
Nov-17	2.7	4.8	3.8	7.1	-	4.0	2.9	3.1	2.6	4.8	3.6
Dec-17	24.6	2.3	1.8	1.9	3.5	3.0	13.5	7.5	3.1	4.1	71.3
Jan-18	6.7	2.6	10.5	2.1	2.5	3.4	14.4	4.3	1.9	3.4	5.3
Feb-18	1.9	2.5	2.6	1.3	13.3	6.2	3.6	3.2	2	3.1	2.2
Mar-18	6.1	7.5	4.9	1.5	3.9	1.5	7.8	2.8	2.3	3.8	9.4
Apr-18	1.2	3.4	1.2	0.9	3.4	2.4	4.8	4.5	1.9	4	3.3
May-18	2.3	2.7	1	0.9	1.6	1.9	2	6.9	1.7	3.1	2.8
June-18	1.2	2.4	0.9	0.8	2.1	2.4	3.4	3.1	2.1	4.7	0.8
Jul-18	18.4	3.4	0.9	0.6	3.4	1.1	2.2	2	1.8	5	1.1
12 MONTH ROLLING AVERAGE	7.3	3.5	2.7	1.6	3.6	2.7	5.4	3.7	2.3	4.5	8.6

High Volume Air sampler (PM₁₀) Results

The High Volume Air Sampler (HVAS) installed at Coomalgah property monitors level of Particle Matter under 10 micron (PM₁₀). It operates for 24hr every 6 days. Table 6 shows 24hr average values recorded above the criterion specified in the Project Approval (PA). Investigations show that those exceedances were related to high wind speed (>7m/s) and farming activity Northeast and Southwest of the monitor location during the days of sampling. The rolling Annual average is below the PA criterion.

Table- 6: HVAS PM10 24 hr average levels for the Quarter

Date	24hr averaged PM10 (µg/m ³)	Criterion 24hr average (µg/m ³)	Rolling Annual average (µg/m ³)	Criterion Annual Average (µg/m ³)	Comments
07/05/18	54.4	50	21.1	30	Not Mine related. Windy condition noted in the field sheet by ALS. Windrose from Sentinex shows that prevailing wind came from NE and SW when mine site is located NW of the monitor. Excluded from Annual average.
19/05/2018	57.6		21.3		Not Mine related. Dry and dusty surrounding paddock noted in field sheet by ALS, Farming activity noted in field sheet on the 15/05. Windrose from Sentinex shows that prevailing winds were from S-SE and NE when the mine is located NW of the monitor. Excluded from annual average
06/06/2018	54.5		21.7		Not mine Related. Very Windy with winds above 7.5 m/s recorded during the sampling period. Sentinex weather Station showed prevailing wind were from S-SW. Sheep Grazing noted in the field sheet by ALS. Excluded from annual average.
30/06/18	119		20.5		Not mine Related. Grazing activity noted in the field sheet when filter was changed on 24/06 and Dusty conditions observed. Prevailing wind were from E-NE. Excluded from annual average.
06/07/2018	121		22.4		Not Mine related. Sentinex windrose shows winds predominantly from N-NE during the period. Elevated wind recorded above 6.5m/s. Dry and windy conditions noted on the ALS field sheet. Excluded from the annual average.
18/07/2018	139		22.8		Not Mine related. Sentinex windrose shows winds predominantly from N-NE during the period. Elevated wind recorded above 6.5m/s. Dry conditions and windy noted on the ALS field sheet. Excluded from the annual average.
24/07/2018	248		23.1		Not Mine related. Sentinex windrose shows winds predominantly from N-NE and SW of the monitor during the monitoring period. Elevated wind recorded above 10.5 m/s. Dry conditions and grazing activity noted on the ALS field sheet. Excluded from the annual average

According to the current Air Quality and Greenhouse gas Management Plan, the real time air quality unit (TEOM) installed at the “Flixton” property monitors PM₁₀ levels in ambient air. It is an operation management tool and dust levels nearing or reaching the nominated criteria will trigger actions onsite to assess the source of dust and modify operations if it is determined to be related to Tarrawonga operations.

Water Monitoring

Groundwater

Routine groundwater monitoring was undertaken in June 2018 (refer to graphs in *Appendix C*).

Table 7- Groundwater results Summary

Site	Date	SWL (mbgl)	pH (units)	Elect. Conduct (µS/cm)
MW1				
Thuin	June 2017	6.74	7.8	3290
	September 2017	6.80*	8.31	3370
	December 2017	6.73	7.7	3280
	February 2018	6.81	7.9	3460
	June 2018	6.91	7.9	3350
MW2				
Thuin	June 2017	3.86	7.0	591
	September 2017	3.64	7.54	533
	December 2017	3.68	7	545
	February 2018	4.23	7.3	519
	June 2018	4.67	7.3	547
MW4				
Tarrawonga	June 2017	9.00	7.4	4370
	September 2017	8.9	7.82	4570
	December 2017	8.95	7.2	4440
	February 2018	9.08	7.4	4610
	June 2018	9.14	7.3	4430
MW5				
Templemore	June 2017	2.54	7.9	1288
	September 2017	2.75	8.19	2640
	December 2017	2.78	7.7	2630
	February 2018	3.12	7.9	2320
	June 2018	3.31	7.9	1413
MW6				
Nagero	June 2017	4.77	7.5	1660
	September 2017	4.57	8.15	1710
	December 2017	4.55	7.6	1738
	February 2018	4.76	7.8	1833
	June 2018	4.75	7.7	1828
MW7				
Tarrawonga Mine	June 2017	104.92	No sample	No sample
	September 2017	104.47	No sample	No sample
	December 2017	104.53	No sample	No sample
	February 2018	104.97	No sample (Grey mud)	No sample
	June 2018	106.21	No sample (Grey mud)	No sample
MW8 Tarrawonga Mine	June 2017	13.07	Casing blocked	Casing blocked
	September 2017	13.04	Casing blocked	Casing blocked
	December 2017	13.12	Casing blocked	Casing blocked
	February 2018	12.52	Casing blocked	Casing blocked
	June 2018	13.33	Casing blocked	Casing blocked

(*SLR consultant (GM) advised that previously SWL was reported as mbtoc instead of mbgl)

Surface Water

No further wet weather monitoring has been undertaken since the last CCC meeting due to no or little rains. Most of the dams and sediment dams are dry.

Estimated volume of water stored onsite as 24th August was approximately 113.5ML.

According to the BTM Complex strategy, water sharing opportunity was discussed between the three mines and approximately 120ML of water was transferred from Maules Creeks Coal Mine to TCM via Boggabri Coal Mine. This water has been used for dust suppression and no water has been withdrawn from the pit since beginning of July.

TCM continue assessing options to source additional water in order to maintain the mine in operation in the long run.

Rehabilitation and Clearing

Rehabilitation

Operations and Environment departments work together to develop and implement a more efficient rehabilitation program. The aim is to enhance the quantity of areas rehabilitated.

In 2018, TCM planted approximately 2,400 trees in the designated rehabilitation areas including Eucalyptus albens, Eucalyptus blakelyi, Eucalyptus crebra, Eucalyptus melliodora, Eucalyptus pilligaensis, Eucalyptus populanea, Eucalyptus macrocarpa, Eucalyptus Melanophloia, Eucalyptus Crebra, Eucalyptus Dealbata and Eucalyptus Dwyeri.

Clearing

No clearing should occur outside the March-April period however TCM have started discussion with agencies to request an authorisation to clear a few trees along Goonbri road outside that window.

The main reason for that clearing is to meet rehabilitation target according to the current MOP. The Southern Dump must be reshaped and moved south toward Goonbri road. Reshaping the dump will require revision of the water management plan and AECOM was engaged to design a new water management network for that South dump. The desired option is still to be approved by regulator but in the meantime TCM have engaged a professional ecologist to inspect the area to clear and to prepare some recommendations in accordance with the Biodiversity Management Plan.

Complaints

Since the last meeting, no complaint was lodged.

Environmental Management Plans

DPE have reviewed some Management plans updated in 2017 against the requirements of the Project Approval. The Environmental Management Strategy Plan and the Traffic Management Plan have recently been approved by the Department.

TCM are currently working with experts to update Management plans that need to be submitted by the end of August 2018 including:

Noise Management Plan

The Noise management Plan is currently being revised by Todoroski Air Science (TAS). The updated version will also be submitted to several agencies for consultation.

Blast Management Plan

The Blast Management Plan is currently being revised by TAS and the updated version will also be submitted to several agencies for consultation.

Air Quality Greenhouse Gas Management Plan

The Air Quality Management Plan is currently being revised by TAS and the updated version will also be submitted to several agencies for consultation.

Water Management Plan

The Water management plan is currently being revised by WRM. The updated version will include a new site water balance, surface water management and groundwater management sections. It will be submitted to several agencies for consultation.

BTM Water Strategy

The Draft BTM Water Strategy was sent to CCC members and agencies for consultations in July 2018.

Biodiversity Management Plan

The Draft Biodiversity Management was sent to CCC members for consultation in June 2018.

Annual and Compliance Reporting

Annual EPBC Compliance statement

The Annual compliance statement for Environment Protection and Biodiversity Conservation was submitted to DoEE mid- June.

Annual Review Report

The Annual Review report was submitted in March 2018 and DP&E recently sent a request for additional information that has to be submitted by end of August.

Environmental Improvement and Initiatives

Dust Management

TCM have engaged the company Dust A Side to provide advice and solution to minimise potential fugitive dust generated by exposed surfaces such as haul roads. Since end of April, TCM have been monitoring the results and trying to improve the spraying and mixing techniques. The product used is totally organic, has no corrosive chloride compounds, and is environmentally friendly and readily biodegradable. Usage of that product on mine haul truck roads is ongoing.

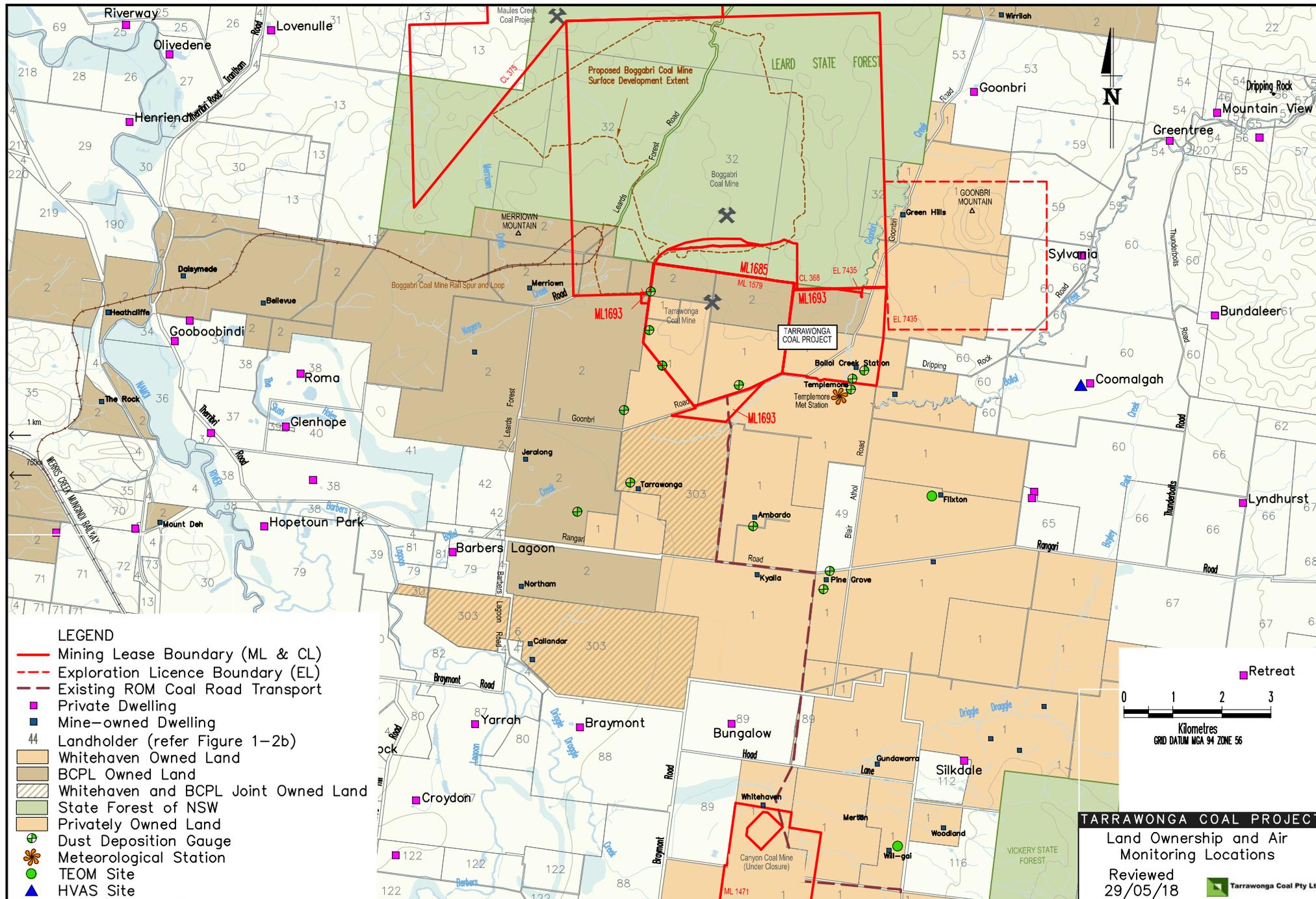
Water Management

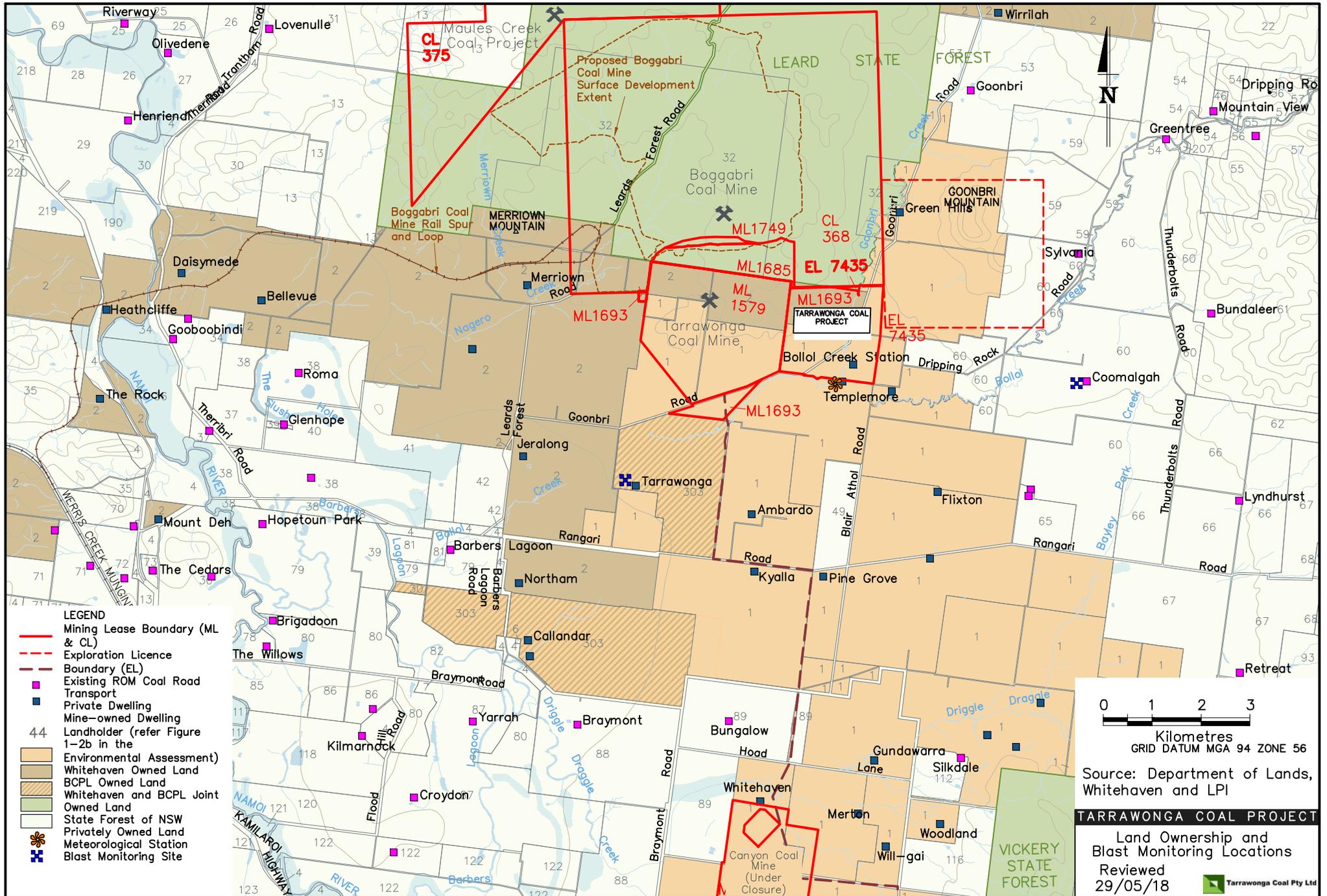
1. Desilting campaign has been completed.
2. TCM have installed marked gauge boards in the authorised discharged dams. This initiative will improve the water management practices and will reduce the time to conduct water storage inventory.

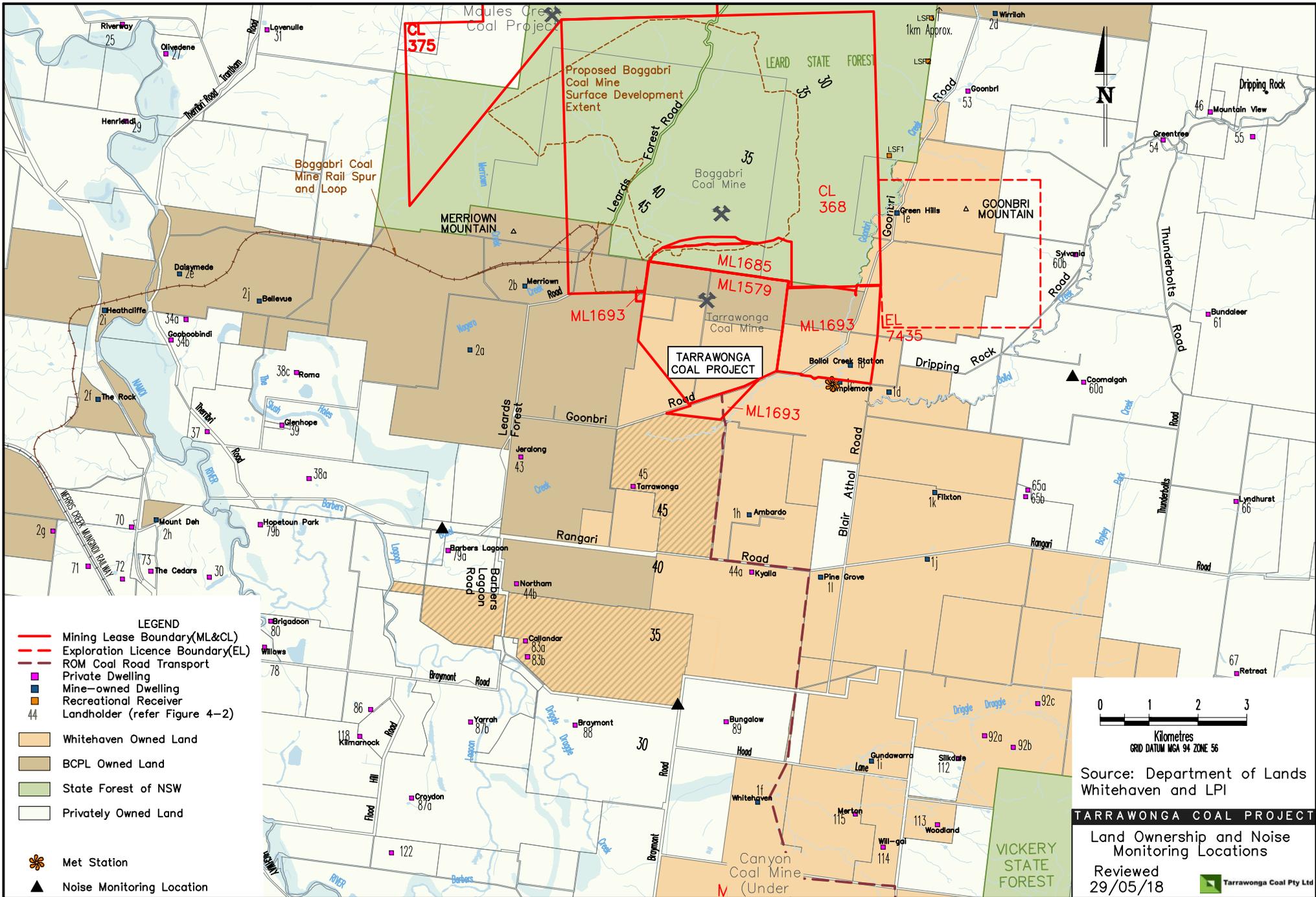
Top Soil Management

3. Top soil from recently cleared area was tested and either gypsum or Lime was added to improve the content. Approximately 32Ha of ameliorated top soil will be stock piled at designated area.
4. Old Top and Subsoil stockpile were tested by the consultant Landloch. They provided recommendation to manage the stockpiles and maintain them in good health for a better rehabilitation outcome.
5. TCM have been developing a register to record soil balance and characteristic. This register will be used for planning purposes and to assess progress of the mine against commitment and conditions of the PA and MOP.

Appendix A







0 1 2 3
Kilometres
GRID DATUM MGA 94 ZONE 56

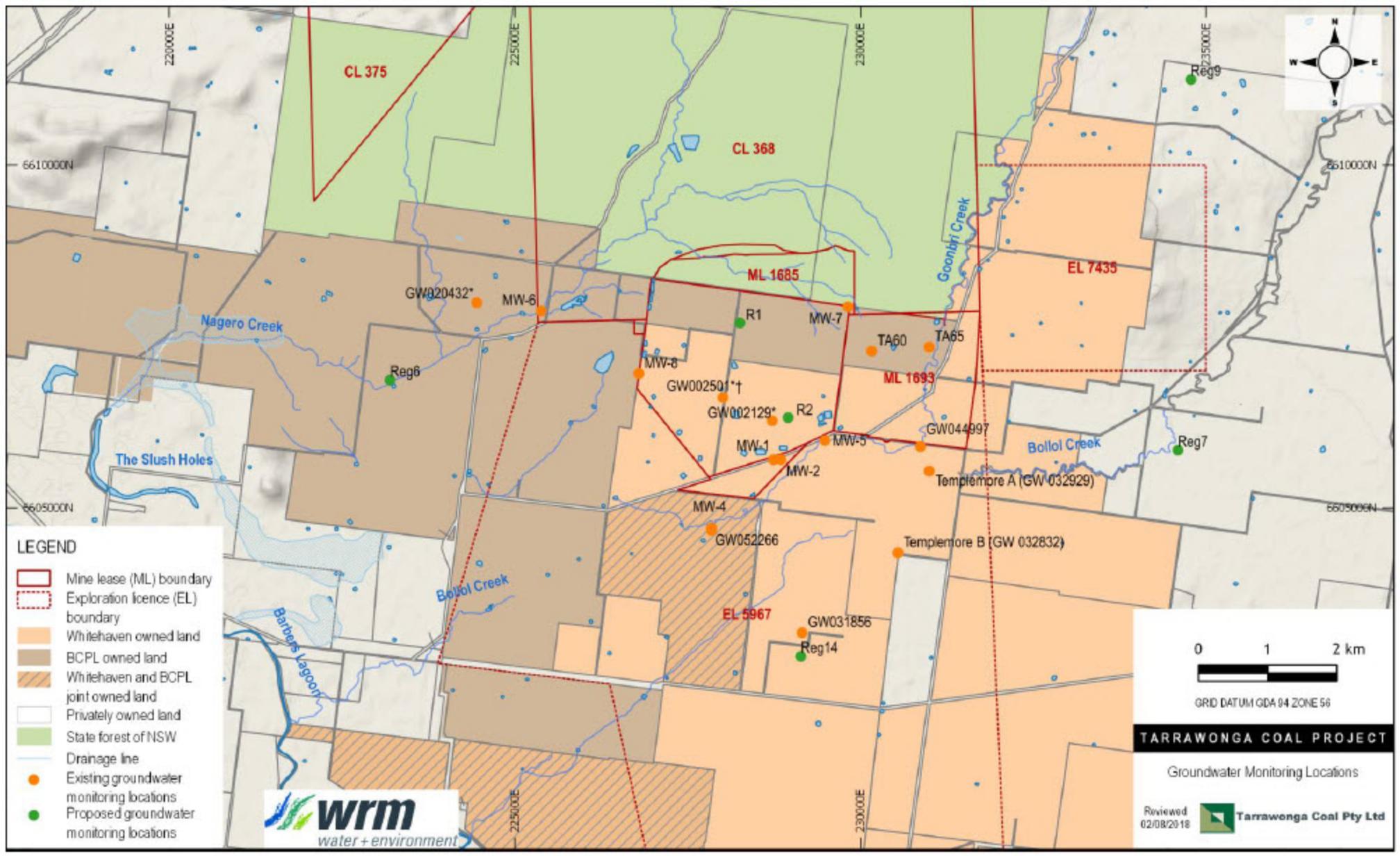
Source: Department of Lands
Whitehaven and LPI

TARRAWONGA COAL PROJECT

Land Ownership and Noise
Monitoring Locations

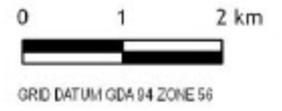
Reviewed
29/05/18

Tarrawonga Coal Pty Ltd



LEGEND

- Mine lease (ML) boundary
- Exploration licence (EL) boundary
- Whitehaven owned land
- BCPL owned land
- Whitehaven and BCPL joint owned land
- Privately owned land
- State forest of NSW
- Drainage line
- Existing groundwater monitoring locations
- Proposed groundwater monitoring locations



TARRAWONGA COAL PROJECT

Groundwater Monitoring Locations

Appendix B

Table 1 Performance Assessment – Operations

EPL ID	Location	Date	Tarrawonga Coal Mine Contribution dBA				Criteria	Measurement Periods	Weather Compliant			Compliant
			LAeq(15minute) Day	LAeq(15minute) Evening	LAeq(15minute) Night	LA1(1minute) Night			Day	Eve	Night	
79a	Barbers Lagoon	20/06/2018	I/A	30	29	31	Day, Evening and Night – 35 dBA LAeq(15minute)	Day - 1.5 hrs Evening - 0.5 hrs Night – 1hrs	N	Y	Y	Y
		21/06/2018	I/A	26	25	33			Y	Y	Y	Y
		22/06/2018	N/M	I/A	30	32			Y	Y	N	Y
		23/06/2018	34	I/A	I/A	I/A			Y	Y	Y	Y
89	Bungalow	20/06/2018	I/A	I/A	I/A	I/A	Night – 45 dBA LA1(1minute)		Y	Y	N	Y
		21/06/2018	I/A	N/M	20	34	Cumulative Day, Evening, Night 40 dBA LAeq(15minute)		N	Y	N	Y
		22/06/2018	I/A	I/A	25	29			Y	Y	Y	Y
		23/06/2018	I/A	I/A	I/A	I/A			Y	Y	Y	Y
60a	Coomalgah/ Matong	20/06/2018	25	19	19	24			N	Y	Y	Y
		21/06/2018	24	N/M	26	30	Y		Y	Y	Y	
		22/06/2018	35	21	31	39	Y		Y	Y	Y	
		23/06/2018	35	I/A	I/A	I/A	Y		Y	Y	Y	

Note:

I/A = Inaudible

N/M = Not Measurable

5.1.1 Operator Attended Noise Survey Results – Barbers Lagoon (79a)

Results of the operator attended noise surveys at R1 are provided in **Table 5** to **Table 8**. Monitoring location 79a represents residential receptors located to the southwest of the site in Barbers Lagoon.

Table 5 Operator Attended Noise Survey Results – 79a – Barbers Lagoon (Day 1)

Period Date/Start Time Weather SLM Details	Criteria	Measurement Number	Stability Category	Primary Noise Descriptor					TCM Contribution (dB)	Description
				LAmx	LA1	LA10	LA90	LAeq		
Day 1 20/06/2018 11:27 2.6 - 5 m/s NE 16 - 17°C 3004635	35 dBA LAeq(15minute)	1	C	72	59	46	35	47	I/A	Site Related Noise Events: Other Noise Events: Birds 40-76 Traffic 33-51 Wind in trees 30-50
		2	C	76	59	46	31	48	I/A	
		3	B	68	58	48	33	46	I/A	
		4	A	58	52	46	36	43	I/A	
		5	B	63	52	48	38	44	I/A	
		6	C	55	50	41	31	39	I/A	
Evening 1 20/06/2018 21:27 1 - 2 m/s SE 9 - 11 °C 3004635	35 dBA LAeq(15minute)	1	F	44	37	34	29	32	31 LAeq	Site Related Noise Events: General drone 30-32 Dozer Clangs 28-30 Other Noise Events: Road traffic 30-36 Sheep 32 Dogs 32-39 Wind in trees28
		2	E	39	33	36	27	30	30 LAeq	
Night 1 20/06/2018 22:08 1 - 2 m/s NE 8 °C 3004635	35 dBA LAeq(15minute) 45 dBA LA1(1minute)	1	E	48	38	32	26	30	29 LAeq 31 LA1	Site Related Noise Events: General drone 24-31 Other Noise Events: Road traffic 31-42 Cattle 44-48 Sheep 30-35 Wind in trees 28
		2	D	42	38	30	22	28	27 LAeq 29 LA1	
		3	D	58	33	29	23	26	25 LAeq 27 LA1	
		4	F	34	30	26	21	24	26 LAeq 28 LA1	

N/M = Not Measurable

I/A = Inaudible

Table 6 Operator Attended Noise Survey Results – 79a – Barbers Lagoon (Day 2)

Period Date/Start Time Weather SLM Details	Criteria	Measurement Number	Stability Category	Primary Noise Descriptor					TCM Contribution	Description
				LAm _{ax}	LA ₁	LA ₁₀	LA ₉₀	LA _{eq}		
Day 2 21/06/2018 12:43 Calm – 2m/s NE 18 °C 3004635	35 dBA LA _{eq} (15minute)	1	A	53	43	37	26	34	I/A	Site Related Noise Events: Inaudible
		2	C	68	51	42	25	41	I/A	
		3	A	54	45	37	24	29	I/A	
		4	A	64	51	38	24	39	I/A	Other Noise Events: Plane 35-40 Sheep 30-45 Traffic 32-46 Birds 34-75
		5	A	68	53	35	23	26	I/A	
		6	A	75	45	36	25	27	I/A	
Evening 2 21/06/2018 21:04 1 m/s NE 5 °C 3011830	35 dBA LA _{eq} (15minute)	1	E	50	45	31	24	31	N/M	Site Related Noise Events: Horn blast 29 General drone 26
		2	E	34	50	28	25	27	26 LA _{eq}	
Night 2 21/06/2018 22:02 0 - 1 m/s N 2 - 3 °C 3011830	35 dBA LA _{eq} (15minute) 45 dBA LA ₁ (1minute)	1	E	53	45	34	25	33	25 LA _{eq} 33 LA ₁	Site Related Noise Events: General drone 24-26 Horn blast 33-34 Dozer clangs 34 Rock dump 33
		2	-	50	46	38	25	35	23 LA _{eq} 25 LA ₁	
		3	-	51	44	35	24	34	22 LA _{eq} 33 LA ₁	
		4	-	41	42	37	25	33	25 LA _{eq} 30 LA ₁	
Other Noise Events: Road traffic 28-53 Sheep 24-33 Dogs 30-41 Helicopter 35-38 Boggabri Coal operations 25-35										

N/M = Not Measurable

I/A = Inaudible

Table 7 Operator Attended Noise Survey Results – 79a – Barbers Lagoon (Day 3)

Period Date/Start Time Weather SLM Details	Criteria	Measurement Number	Stability Category	Primary Noise Descriptor					TCM Contribution (dB)	Description
				LAm _{ax}	LA ₁	LA ₁₀	LA ₉₀	LA _{eq}		
Day 3 22/06/2018 10:15 2 m/s NW 13 - 18°C 3011830	35 dBA LA _{eq} (15minute)	1	C	59	50	39	31	39	N/M	Site Related Noise Events: Not Measurable
		2	B	68	50	44	31	48	N/M	
		3	A	54	45	39	31	36	I/A	
		4	A	57	44	38	30	36	I/A	Other Noise Events: Road traffic 45-68 Sheep 38-43 Birds 38-65 Domestic noise 38 Plane 34-41
		5	A	53	45	39	31	36	N/M	
		6	A	65	52	44	31	42	I/A	
Evening 3 22/06/2018 21:00 1 m/s N 6 °C 3004635	35 dBA LA _{eq} (15minute)	1	E	41	34	21	18	23	I/A	Site Related Noise Events: Inaudible
		2	D	54	51	39	18	37	I/A	
Night 3 22/06/2018 22:02 0 - 1 m/s NW 4 - 8 °C 3004635	35 dBA LA _{eq} (15minute) 45 dBA LA ₁ (1minute)	1	F	55	51	44	20	39	I/A	Site Related Noise Events: Truck noise 22-29 Dozer Clangs 26-32
		2	F	38	32	27	22	25	27 LA _{eq} 29 LA ₁	
		3	-	47	43	30	23	30	25 LA _{eq} 29 LA ₁	
		4	-	37	32	29	25	27	30 LA _{eq} 32 LA ₁	
									Other Noise Events: Road traffic 24-47 Dogs 28-38 Cattle 34	

N/M = Not Measurable

I/A = Inaudible

Table 8 Operator Attended Noise Survey Results – 79a – Barbers Lagoon (Day 4)

Period Date/Start Time Weather SLM Details	Criteria	Measurement Number	Stability Category	Primary Noise Descriptor					TCM Contribution (dB)	Description
				LAm _{ax}	LA ₁	LA ₁₀	LA ₉₀	LA _{eq}		
Day 4 23/06/2018 09:48 2 m/s NW 9 - 15 °C 3004635	35 dBA LA _{eq} (15minute)	1	D	73	55	46	33	44	33 LA _{eq}	Site Related Noise Events: General drone 31-39
		2	C	51	46	40	32	37	34 LA _{eq}	
		3	C	53	46	40	33	37	33 LA _{eq}	
		4	B	64	54	49	33	45	I/A	Other Noise Events: Road traffic 34-45 Birds 38-64 Plane 31-40
		5	C	58	48	40	30	38	I/A	
		6	B	58	49	40	30	38	I/A	
Evening 4 23/06/2018 20:12 2 m/s N 8 - 9 °C 3011830	35 dBA LA _{eq} (15minute)	1	D	75	43	30	21	34	I/A	Site Related Noise Events: Inaudible
		2	D	37	32	30	22	20	I/A	
Night 4 23/06/2018 22:02 1 m/s N 3 - 5 °C 3011830	35 dBA LA _{eq} (15minute) 45 dBA LA ₁ (1minute)	1	D	45	29	22	19	22	I/A	Site Related Noise Events: Inaudible
		2	D	57	51	29	19	37	I/A	
		3	E	54	35	24	19	26	I/A	
		4	D	47	27	21	19	20	I/A	Sheep 24-35 Road traffic 21-57 Dogs 31-45

N/M = Not Measurable

I/A = Inaudible

5.1.2 Operator Attended Noise Survey Results – Bungalow (89)

Results of the operator attended noise surveys at R1 are provided in **Table 9** to **Table 12**. Monitoring location 89 represents residential receptors located to the south of the site in Bungalow.

Table 9 Operator Attended Noise Survey Results – 89 – Bungalow (Day 1)

Period Date/Start Time Weather SLM Details	Criteria	Measurement Number	Stability Category	Primary Noise Descriptor					TCM Contribution	Description		
				LAm _{ax}	LA ₁	LA ₁₀	LA ₉₀	LA _{eq}				
Day 1 20/06/2018 09:07 1 - 3 m/s NE 12 - 15 °C 3011830	35 dBA LA _{eq} (15minute)	1	A	64	50	36	27	40	I/A	Site Related Noise Events: Inaudible		
		2	B	60	54	46	33	43	I/A			
		3	C	69	61	50	34	48	I/A			
				4	C	65	50	44	35	43	I/A	Other Noise Events: Road traffic 28-69 Birds 26-56 Helicopter 45-61 Wind in trees 33-45
				5	C	60	51	43	31	40	I/A	
				6	B	66	61	47	35	47	I/A	
Evening 1 20/06/2018 20:14 1 m/s SE 11 °C 3004635	35 dBA LA _{eq} (15minute)	1	E	46	40	36	29	34	I/A	Site Related Noise Events: Inaudible		
		2	F	54	44	41	36	39	I/A			
Night 1 20/06/2018 23:43 2 - 4m/s NE 6 - 9°C 3004635	35 dBA LA _{eq} (15minute) 45 dBA LA ₁ (1minute)	1	E	36	30	30	24	27	I/A	Site Related Noise Events: Inaudible		
		2	F	41	27	25	19	22	I/A			
		3	E	34	30	28	21	28	I/A	Other Noise Events: Wind in trees 25-30 Road traffic 28-30 Dogs 27-31		
		4	D	33	26	25	21	24	I/A			

N/M = Not Measurable

I/A = Inaudible

Table 10 Operator Attended Noise Survey Results – 89 – Bungalow (Day 2)

Period Date/Start Time Weather SLM Details	Criteria	Measurement Number	Stability Category	Primary Noise Descriptor					TCM Contribution	Description
				LAmx	LA1	LA10	LA90	LAeq		
Day 2 21/06/2018 10:25 1 - 3 m/s SE 15 – 17 °C 3004635	35 dBA LAeq(15minute)	1	C	60	49	43	33	40	I/A	Site Related Noise Events: Inaudible
		2	B	57	45	41	31	38	I/A	
		3	A	57	51	44	29	41	I/A	
		4	C	64	57	39	24	42	I/A	Other Noise Events: Road Traffic 41-58 Wind in trees Birds 38-69 Plane 44-57
		5	C	65	55	39	25	41	I/A	
		6	B	69	55	40	21	42	I/A	
Evening 2 21/06/2018 21:04 1 – 2 m/s NE 5 - 6 °C 3011830	35 dBA LAeq(15minute)	1	E	47	41	34	23	31	N/M	Site Related Noise Events: Not Measurable
		2	E	70	62	34	20	46	I/A	
Night 2 21/06/2018 23:28 1 m/s N 2 °C 3011830	35 dBA LAeq(15minute) 45 dBA LA1(1minute)	1	F	34	26	23	20	31	21 LAeq 23 LA1	Site Related Noise Events: General drone 19-22 Horn blast 26-34
		2	F	34	25	23	20	22	20 LAeq 34 LA1	
		3	F	33	27	25	22	24	23 LAeq 26 LA1	Other Noise Events: Dogs barking 30-34 Sheep 24-27
		4	D	39	28	26	22	25	22 LAeq 24 LA1	

N/M = Not Measurable

I/A = Inaudible

Table 11 Operator Attended Noise Survey Results – 89 – Bungalow (Day 3)

Period Date/Start Time Weather SLM Details	Criteria	Measurement Number	Stability Category	Primary Noise Descriptor					TCM Contribution	Description
				LAm _{ax}	LA ₁	LA ₁₀	LA ₉₀	LA _{eq}		
Day 3 22/06/2018 12:16 2 m/s NW 18 °C 3011830	35 dBA LA _{eq} (15minute)	1	A	58	47	32	24	34	I/A	Site Related Noise Events: Inaudible Other Noise Events: Tractor 26- 29 Birds 38-51 Wind 33-34 Road traffic 49-68
		2	A	59	53	44	23	41	I/A	
		3	A	61	52	42	24	39	I/A	
		4	A	59	51	39	24	38	I/A	
		5	B	68	58	47	25	45	I/A	
		6	A	57	46	33	22	35	I/A	
Evening 3 22/06/2018 20:01 1 - 2 m/s N 6 – 7 °C 3004635	35 dBA LA _{eq} (15minute)	1	D	38	32	27	21	25	I/A	Site Related Noise Events: Inaudible Other Noise Events: Road Traffic 26-42 Birds 28
		2	E	42	36	31	22	29	I/A	
Night 3 22/06/2018 23:42 2 m/s NE 3 - 4 °C 3004635	35 dBA LA _{eq} (15minute) 45 dBA LA ₁ (1minute)	1	E	36	24	21	18	19	I/A	Site Related Noise Events: Truck noise 20-27 Other Noise Events: Road traffic 33-41 Operator (dropped phone) 56
		2	D	56	26	23	19	24	22 LA _{eq} 24 LA ₁	
		3	D	41	28	25	22	24	25 LA _{eq} 27 LA ₁	
		4	D	41	26	23	20	22	23 LA _{eq} 25 LA ₁	

N/M = Not Measurable

I/A = Inaudible

Table 12 Operator Attended Noise Survey Results – 89 – Bungalow (Day 4)

Period Date/Start Time Weather SLM Details	Criteria	Measurement Number	Stability Category	Primary Noise Descriptor					TCM Contribution	Description
				LAm _{ax}	LA ₁	LA ₁₀	LA ₉₀	LA _{eq}		
Day 4 23/06/2018 12:00 2 m/s SE 17 – 18 °C 3004635	35 dBA LA _{eq} (15minute)	1	A	67	36	27	21	40	I/A	Site Related Noise Events: Inaudible Other Noise Events: Tractor operations 22-26 Birds 35-68 Wind in trees 25-30
		2	A	51	39	26	20	27	I/A	
		3	A	47	36	28	21	26	I/A	
		4	A	58	36	27	22	31	I/A	
		5	A	54	39	24	19	28	I/A	
		6	A	68	58	31	19	44	I/A	
Evening 4 23/06/2018 21:19 1 m/s N 3 - 4 °C 3011830	35 dBA LA _{eq} (15minute)	1	E	39	25	21	19	39	I/A	Site Related Noise Events: Inaudible Other Noise Events: Birds 28-31 Distant road traffic 20
		2	E	25	21	20	19	20	I/A	
Night 4 23/06/2018 23:24 1 m/s N 5 °C 3011830	35 dBA LA _{eq} (15minute) 45 dBA LA ₁ (1minute)	1	D	44	23	21	19	20	I/A	Site Related Noise Events: Inaudible Other Noise Events: Operator (shuffling) 33-45 Distant road traffic 20-23
		2	F	33	23	20	19	20	I/A	
		3	E	30	22	20	19	19	I/A	
		4	D	45	22	20	19	20	I/A	

N/M = Not Measurable

I/A = Inaudible

5.1.3 Operator Attended Noise Survey Results – Matong/Coomalgah (60a)

Results of the operator attended noise surveys at R1 are provided in **Table 13** to **Table 16**. Monitoring location 60a represents residential receptors located to the east of the site at the Matong/Coomalgah boundary.

Table 13 Operator Attended Noise Survey Results – 60a – Matong/Coolmalgah (Day 1)

Period Date/Start Time Weather SLM Details	Criteria	Measurement Number	Stability Category	Primary Noise Descriptor					TCM Contribution	Description
				LAmx	LA1	LA10	LA90	LAeq		
Day 1 20/06/2018 11:53 3 - 4 m/s E 17 °C 3011830	35 dBA LAeq(15minute)	1	B	63	45	32	28	36	N/M	Site Related Noise Events: General drone 23-29
		2	A	46	42	37	26	34	N/M	
		3	B	77	55	38	25	49	20 LAeq	
		4	C	53	40	35	26	33	22 LAeq	Other Noise Events: Road traffic 40-77 Wind 30-37 Birds 32-58 Windmill 31
		5	B	58	46	34	24	34	24 LAeq	
		6	A	72	60	49	27	47	25 LAeq	
Evening 1 20/06/2018 20:59 1 m/s E 10 - 11 °C 3011830	35 dBA LAeq(15minute)	1	F	64	29	25	21	30	N/M	Site Related Noise Events: Faint general drone 18-20
		2	E	49	25	22	19	21	19 LAeq	
Night 1 20/06/2018 22:07 2 m/s NE 8 °C 3011830	35 dBA LAeq(15minute) 45 dBA LA1(1minute)	1	E	48	24	20	19	20	19 LAeq 21 LA1	Site Related Noise Events: Faint truck noise 18-20
		2	E	24	24	20	19	19	N/M	
		3	D	36	21	20	19	19	I/A	Other Noise Events: Gunshots 45- 47 Car driving in paddock Sheep 22 Windmill 21- 24 Bat 31
		4	D	47	23	22	19	20	I/A	

N/M = Not Measurable

I/A = Inaudible

Table 14 Operator Attended Noise Survey Results – 60a – Matong/Coolmalgah (Day 2)

Period Date/Start Time Weather SLM Details	Criteria	Measurement Number	Stability Category	Primary Noise Descriptor					TCM Contribution (dB)	Description
				LAmx	LA1	LA10	LA90	LAeq		
Day 2 21/06/2018 09:13 2 – 3 m/s SE 12 – 15 °C 3011830	35 dBA LAeq(15minute)	1	C	73	60	38	27	47	24 LAeq	Site Related Noise Events: Dozer operation
		2	D	72	51	56	27	45	22 LAeq	
		3	C	79	53	38	27	50	23 LAeq	
		4	D	69	54	38	28	41	I/A	Other Noise Events: Road Traffic Birds 29 – 69 Wind 29 - 33 Plane 37 – 43 Boggabri Coal operations 25 - 31
		5	C	49	41	31	27	31	23 LAeq	
		6	A	65	42	32	27	32	I/A	
Evening 2 21/06/2018 21:29 1 m/s NE 4 °C 3004635	35 dBA LAeq(15minute)	1	E	46	29	21	18	21	I/A	Site Related Noise Events: Not Measurable
		2	E	43	23	20	18	20	N/M	
Night 2 21/06/2018 22:05 0 - 1 m/s N 2 - 3 °C 3004635	35 dBA LAeq(15minute)	1	E	40	29	26	19	24	26 LAeq 30 LA1	Site Related Noise Events General truck noise 19-24
		2	E	33	24	22	18	20	20 LAeq 22 LA1	
	45 dBA LA1(1minute)	3	E	40	22	20	18	19	19 LAeq 21 LA1	Other Noise Events: Sheep 28-33 Dog 40
		4	E	29	25	19	17	19	I/A	

N/M = Not Measurable

I/A = Inaudible

Table 15 Operator Attended Noise Survey Results – 60a – Matong/Coolmalgah (Day 3)

Period Date/Start Time Weather SLM Details	Criteria	Measurement Number	Stability Category	Primary Noise Descriptor					TCM Contribution	Description
				L _{Amax}	L _{A1}	L _{A10}	L _{A90}	L _{Aeq}		
Day 3 22/06/2018 09:18 1 – 2 m/s W 9 - 14 °C 3004635	35 dBA L _{Aeq} (15minute)	1	A	65	53	38	32	40	34 L _{Aeq}	Site Related Noise Events: General drone 30-36 Dozer clangs 30-34
		2	A	57	47	38	33	37	35 L _{Aeq}	
		3	A	44	40	37	31	34	35 L _{Aeq}	
		4	A	54	40	36	31	34	34 L _{Aeq}	
		5	C	46	37	34	29	32	33 L _{Aeq}	Other Noise Events: Road traffic 33-40 Birds 34-65 Cows 34-36 Plane 35-42 Boggabri Coal operations 30-42
		6	B	58	42	32	26	32	30 L _{Aeq}	
Evening 3 22/06/2018 20:50 1 m/s N 6 °C 3011830	35 dBA L _{Aeq} (15minute)	1	E	40	24	20	19	20	N/M	Site Related Noise Events: Briefly audible drone 21 Horn blast 26
		2	E	49	25	22	19	21	21 L _{Aeq}	
Night 3 22/06/2018 22:03 0 - 1 m/s N 3 - 8 °C 3011830	35 dBA L _{Aeq} (15minute)	1	E	39	35	29	22	27	27 L _{Aeq} 35 L _{A1}	Site Related Noise Events: General truck noise 28-33 Truck peak noise 36-41
		2	D	38	34	31	23	28	28 L _{Aeq} 34 L _{A1}	
	3	D	41	35	33	25	30	29 L _{Aeq} 39 L _{A1}		
	4	E	46	39	36	28	34	31 L _{Aeq} 39 L _{A1}	Other Noise Events: Boggabri Coal Operations 27-33	

N/M = Not Measurable

I/A = Inaudible

Table 16 Operator Attended Noise Survey Results – 60a – Matong/Coolmalgah (Day 4)

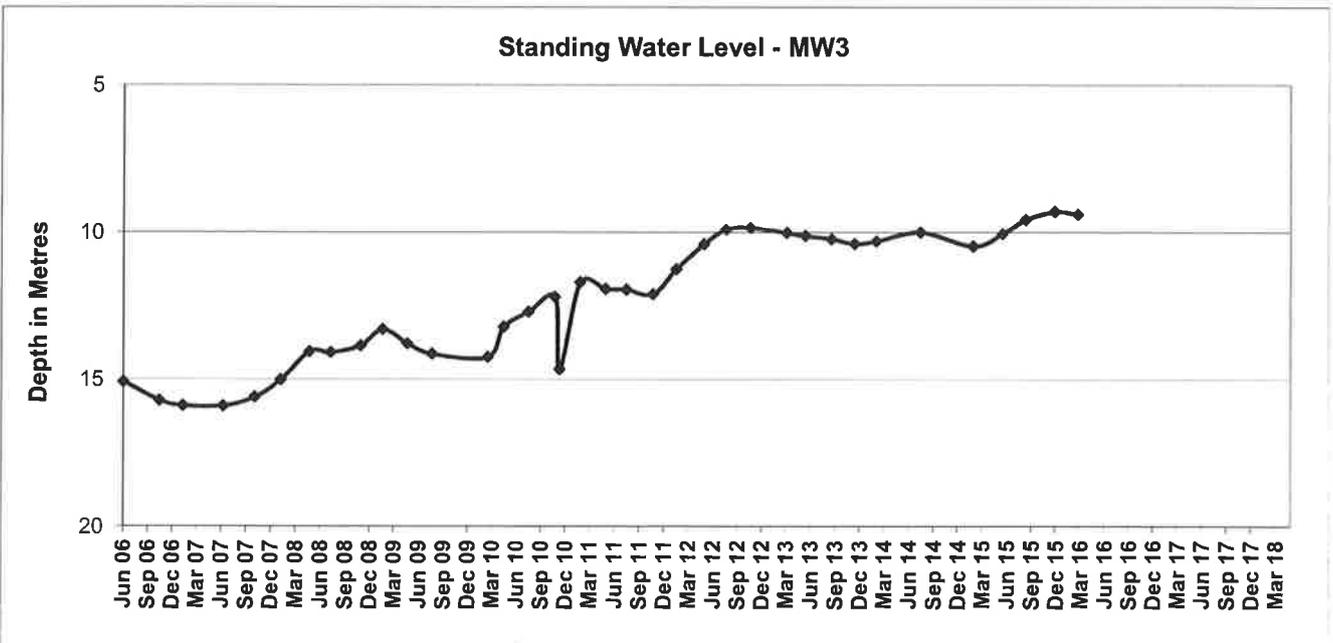
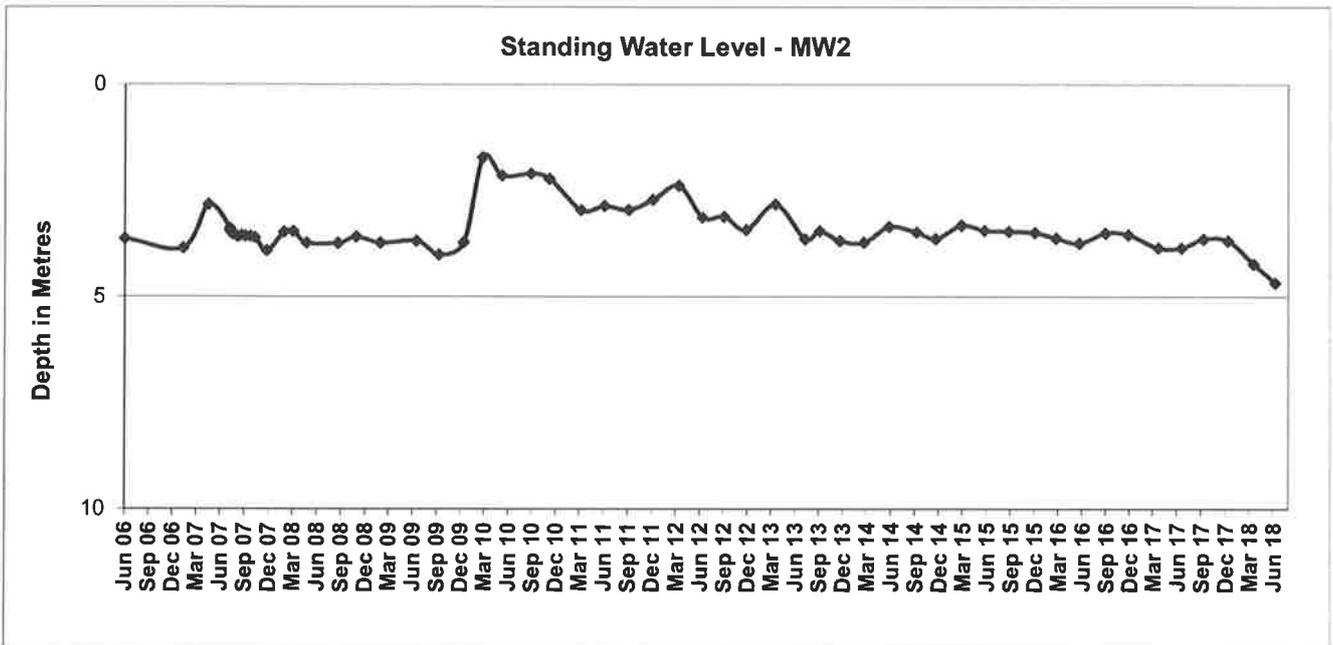
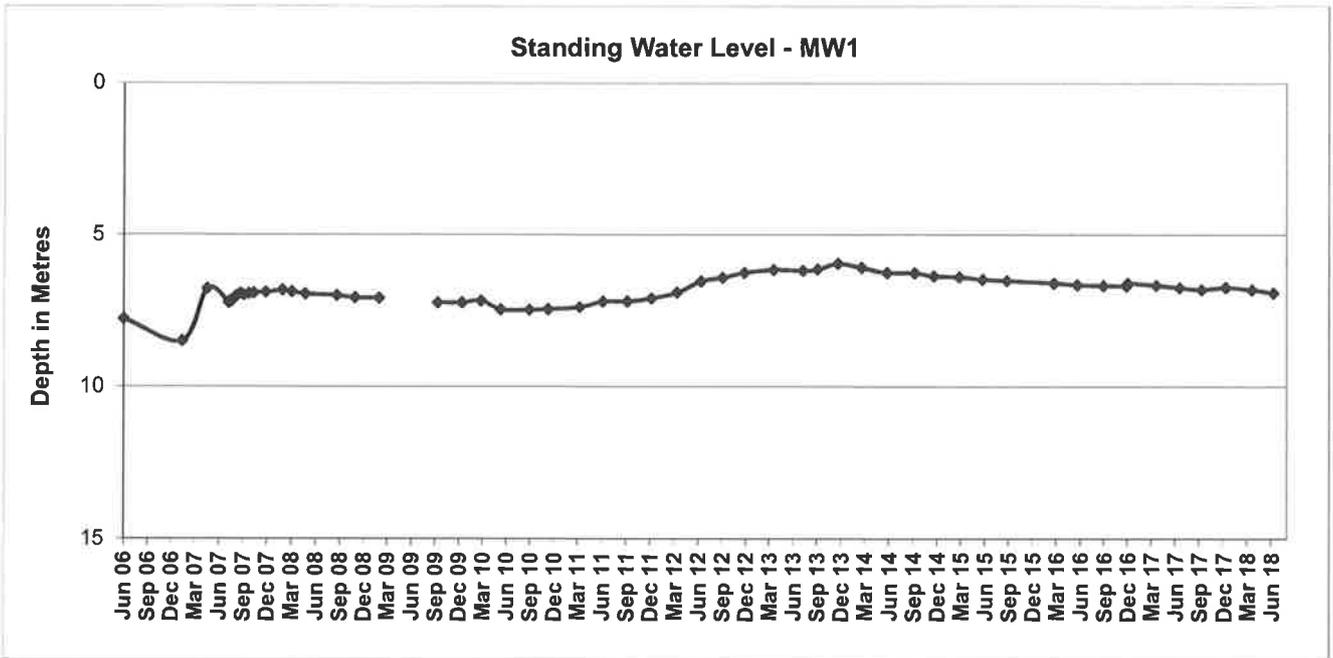
Period Date/Start Time Weather SLM Details	Criteria	Measurement Number	Stability Category	Primary Noise Descriptor					TCM Contribution	Description
				LAmx	LA1	LA10	LA90	LAeq		
Day 4 23/06/2018 08:36 2 m/s NW 5 – 11 °C 3011830	35 dBA LAeq(15minute)	1	D	77	53	44	34	49	35 LAeq	Site Related Noise Events: General drone 30-44
		2	C	51	46	42	33	40	34 LAeq	
		3	C	79	53	40	35	50	33 LAeq	
		4	C	45	41	38	34	36	32 LAeq	Other Noise Events: Road traffic 38-77 Birds 35-56 Boggabri Coal operations 33-48
		5	C	51	44	39	31	37	34 LAeq	
		6	D	53	44	40	31	37	34 LAeq	
Evening 4 23/06/2018 21:20 2 m/s N 9 °C 3004635	35 dBA LAeq(15minute)	1	E	40	29	20	18	20	I/A	Site Related Noise Events: Inaudible
		2	E	36	25	19	18	19	I/A	
Night 4 23/06/2018 22:00 0 - 1 m/s N 1 °C 3004635	35 dBA LAeq(15minute) 45 dBA LA1(1minute)	1	D	33	23	19	18	19	I/A	Site Related Noise Events: Inaudible
		2	E	42	25	19	18	19	I/A	
		3	E	39	24	19	18	19	I/A	Other Noise Events: Distant traffic 19-22
		4	F	37	21	20	18	33	I/A	

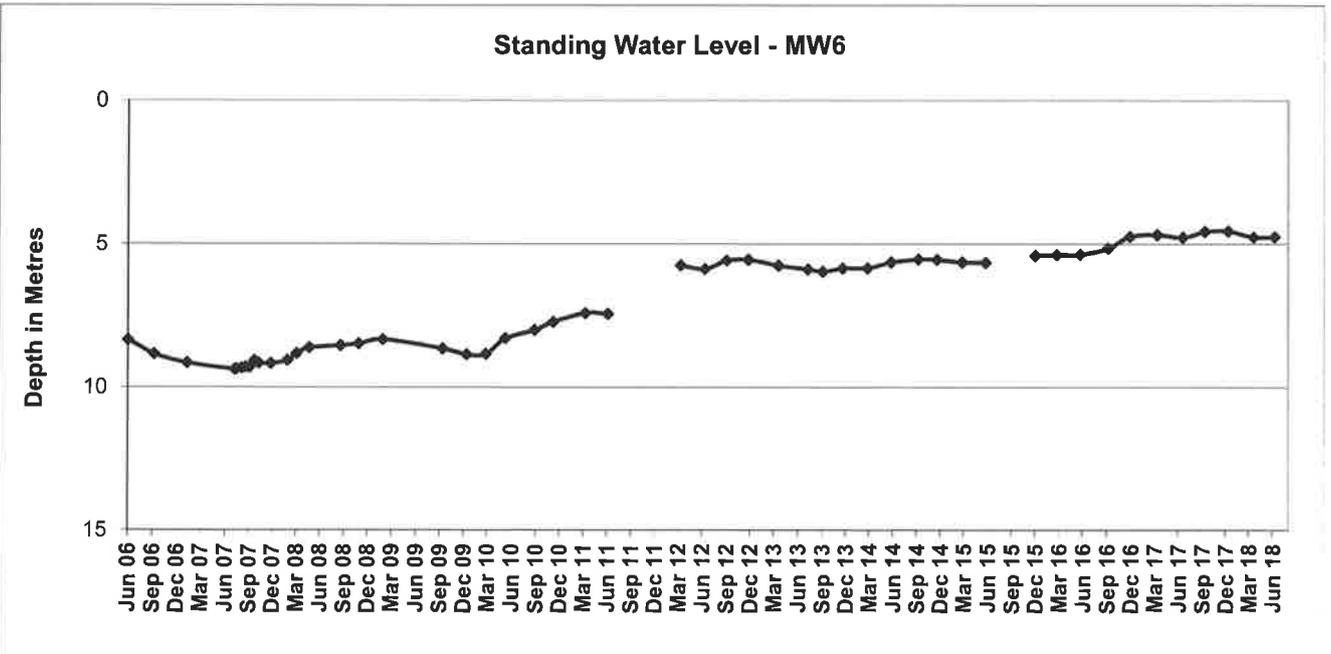
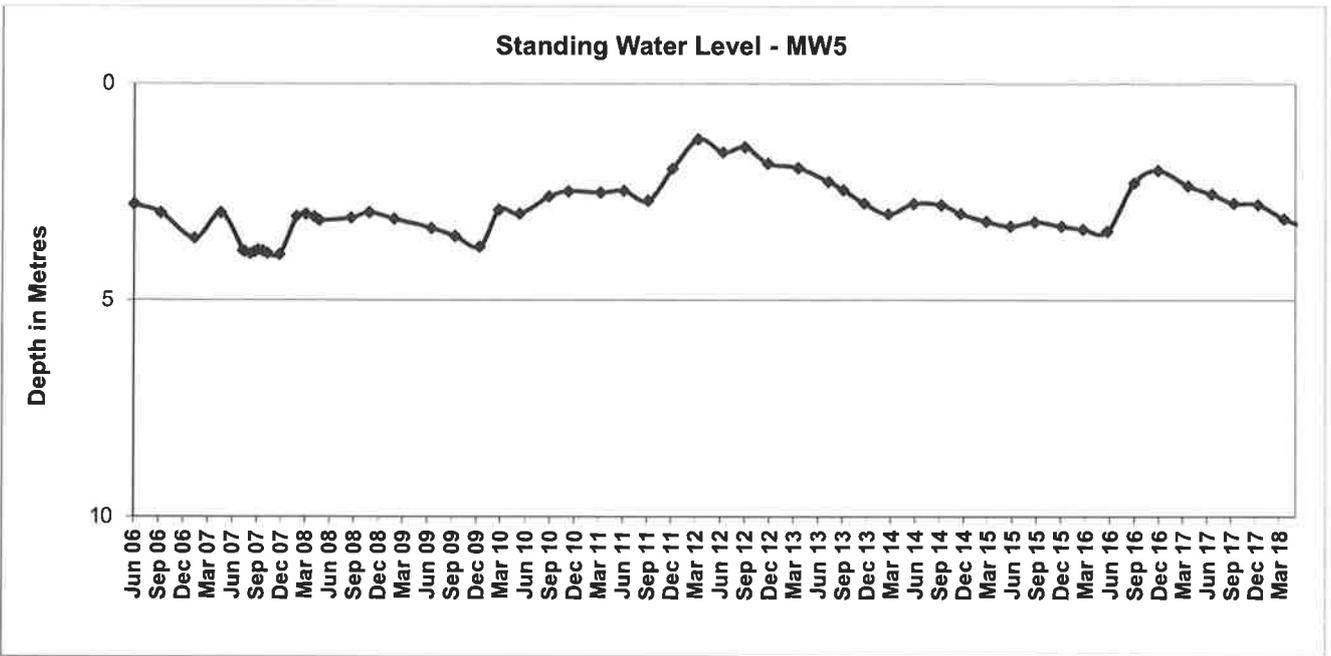
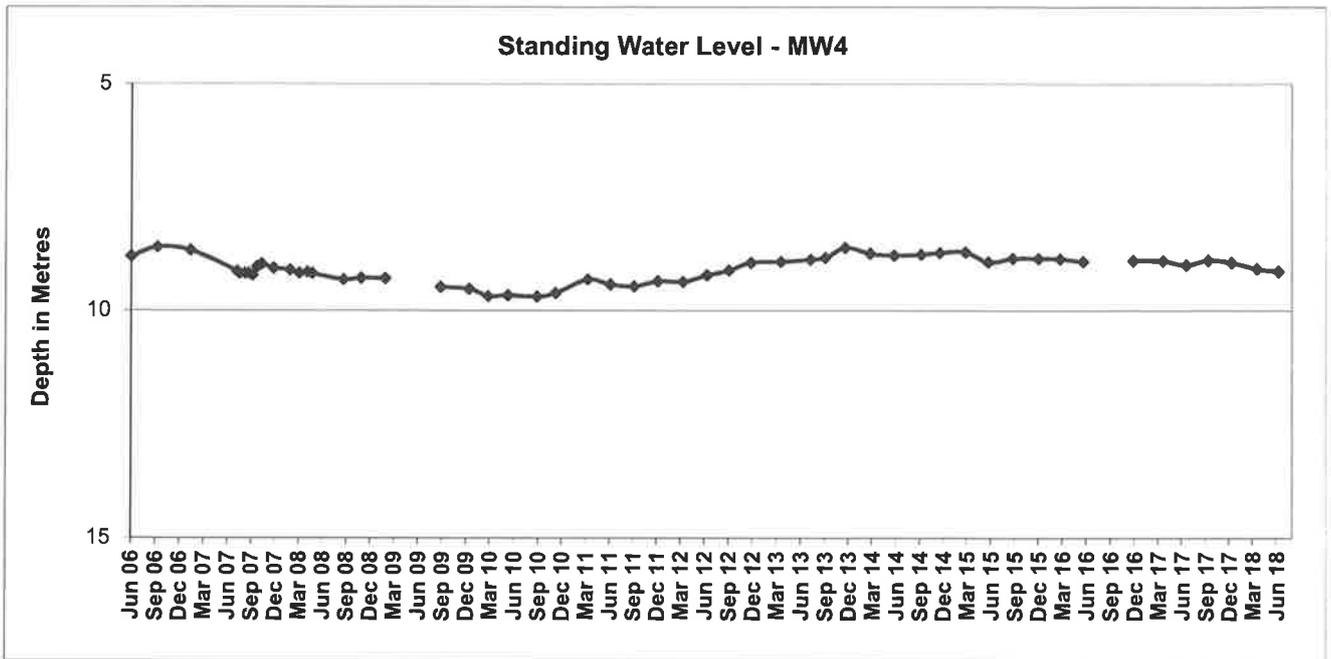
N/M = Not Measurable

I/A = Inaudible

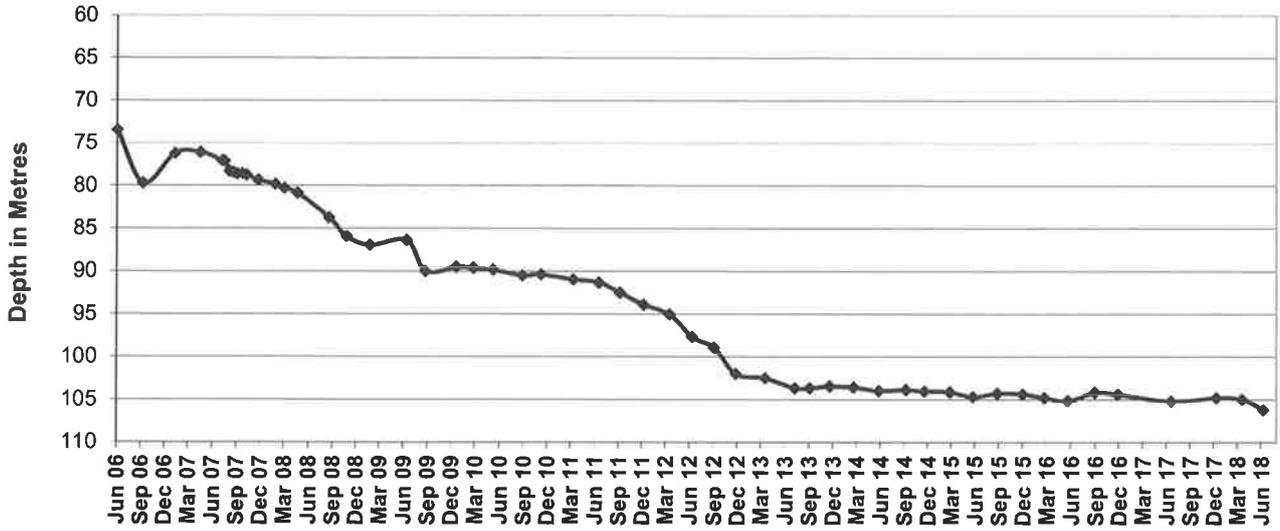
Both TCM and Boggabri Coal operations were audible during the daytime noise monitoring, with both generating similar noise levels. The total noise levels remained below the 40 dBA LAeq(15minute) cumulative noise criteria.

Appendix C

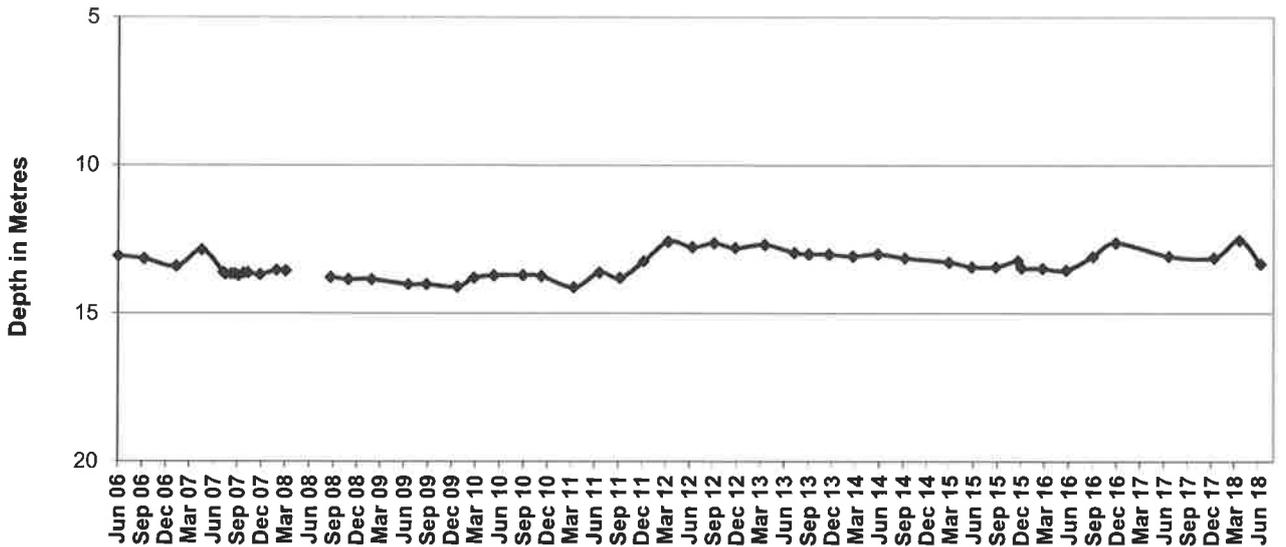




Standing Water Level - MW7



Standing Water Level - MW8



Standing Water Level - GW044997

