

Tarrawonga Coal Mine Community Consultative Committee Meeting #71

Quarterly Environmental Monitoring Report
October, 2022 – December, 2022



Photo taken in February 2023 from our mine entry.

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 October 1 2022 to December 31, 2022. Maps with all the monitoring locations are available in *Appendix A*.

Noise Monitoring

Noise monitoring for this reporting period involved, our quarterly Attended Noise Monitoring, Road Noise monitoring and the annual Sound Power Level Monitoring.

SPL monitoring aims to ensure that the mine's equipment is operating with noise suppression and any increases from the previous year are flagged so that any affected equipment's noise levels can be checked. TCM recorded that no plant items produced excessive noise.

Attended noise monitoring was conducted at the "Bungalow" (TN4), "Barbers Lagoon" (TN3) and "Matong" (TN2) properties from 28th November to the 2nd December 2022. Noise criteria for the mine is 35dB(A) Leq (15 min) for all operating times.

Results below show that noise emissions from the mine did not exceed operational noise criteria at the "Barbers Lagoon", "Bungalow" or "Matong" monitoring locations for any monitoring events during the monitoring period.

(See below summary tables extracted from 20221219 Spectrum Acoustics report 9775 Quarterly Attended Noise Monitoring Tarrawonga Q4 2022)

Table 1 TCM Operational Noise Monitoring Results – 28 November 2022 (evening)				
Location	Time	Total dB(A), Leq (15 min)	Wind speed / direction / PSC ¹	Identified Noise Sources
Matong – TN2	9:28pm	43	1.8 / 269 / G	Insects (43), frogs (29), TCM (<20)
Barbers Lagoon – TN3	8:00pm	42	3.0 / 276 / E	Insects (41), frogs (35), traffic (31), TCM (<20)
Bungalow – TN4	8:40pm	49	2.6 / 267 / F	Insects (49), frogs (31), TCM (<20)

1. Pasquill Stability Class

Table 2 TCM Operational Noise Monitoring Results – 28 – 29 November 2022 (night)				
Location	Time	Total dB(A), Leq (15 min)	Wind speed / direction / PSC	Identified Noise Sources
Matong – TN2	10:00pm	43	0.9 / 254 / F	Insects (43), frogs (24), cows (24), TCM (<20)
Barbers Lagoon – TN3	12:30am	41	0.9 / 087 / E	Insects (40), frogs (33), TCM (<20)
Bungalow – TN4	11:18pm	45	1.1 / 064 / E	Insects (45), frogs (27), TCM (<20)

Table 3 TCM Operational Noise Monitoring Results – 29 November 2022 (day)				
Location	Time	Total dB(A), Leq (15 min)	Wind speed / direction / PSC	Identified Noise Sources
Matong – TN2	2:46pm	39	1.9 / 010 / A	Birds (38), insects (30), TCM (<20)
Barbers Lagoon – TN3	11:17am	44	3.3 / 307 / A	Birds (44), insects (30), TCM (<20)
Bungalow – TN4	12:58pm	36	2.0 / 002 / A	Birds (35), insects (29), TCM (<20)

Table 4 TCM Operational Noise Monitoring Results – 29 November 2022 (evening)				
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Location	Time	Total dB(A), Leq (15 min)	Wind speed / direction / PSC	Identified Noise Sources
Matong – TN2	9:24pm	37	1.5 / 062 / D	Insects (37), frogs (23), TCM (<20)
Barbers Lagoon – TN3	7:56pm	51	1.5 / 181 / E	Insects (48), birds (45), traffic (42), frogs (41), TCM (<20)
Bungalow – TN4	8:36pm	47	1.2 / 048 / E	Insects (47), frogs (34), TCM (<20)

Table 5
TCM Operational Noise Monitoring Results – 29 - 30 November 2022 (night)

Location	Time	Total dB(A), Leq (15 min)	Wind speed / direction / PSC	Identified Noise Sources
Matong – TN2	10:00pm	35	1.7 / 073 / E	Insects (35), dogs (24), TCM (<20)
Barbers Lagoon – TN3	12:29am	46	6.1 / 122 / D	Insects (45), frogs (37), dog (35), TCM (<20)
Bungalow – TN4	11:30pm	47	1.8 / 105 / E	Insects (47), frogs (36), TCM (<20)

Table 6
TCM Operational Noise Monitoring Results – 30 November 2022 (day)

Location	Time	Total dB(A), Leq (15 min)	Wind speed / direction / PSC	Identified Noise Sources
Matong – TN2	2:38pm	40	3.8 / 137 / D	Birds (39), insects (31), TCM (<20)
Barbers Lagoon – TN3	11:10am	50	4.2 / 126 / C	Traffic (50), birds (39), insects (29), TCM (<20)
Bungalow – TN4	12:51pm	36	2.5 / 167 / C	Traffic (35), birds (25), insects (22), TCM (<20)

Table 7
TCM Operational Noise Monitoring Results – 30 November 2022 (evening)

Location	Time	Total dB(A), Leq (15 min)	Wind speed / direction / PSC	Identified Noise Sources
Matong – TN2	9:18pm	48	1.3 / 324 / E	Insects (48), birds (37), frogs (22), TCM (<20)
Barbers Lagoon – TN3	7:48pm	51	1.4 / 095 / F	Traffic (49), birds (46), frogs (36), insects (31), TCM (<20)
Bungalow – TN4	8:28pm	43	1.8 / 040 / F	Insects (43), birds (29), frogs (26), TCM (<20)

Table 8
TCM Operational Noise Monitoring Results – 30 November – 1 December 2022 (night)

Location	Time	Total dB(A), Leq (15 min)	Wind speed / direction / PSC	Identified Noise Sources
Matong – TN2	10:00pm	44	1.6 / 002 / E	Insects (44), TCM (<20)
Barbers Lagoon – TN3	12:29am	48	4.1 / 091 / E	Insects (48), traffic (36), frogs (34), TCM (<20)
Bungalow – TN4	11:18pm	46	2.3 / 169 / E	Insects (46), cows (31), frogs (24), TCM (<20)

Table 9
TCM Operational Noise Monitoring Results – 1 December 2022 (day)

Location	Time	Total dB(A), Leq (15 min)	Wind speed / direction / PSC	Identified Noise Sources
Matong – TN2	2:42pm	51	4.2 / 102 / D	Traffic (51), birds (34), insects (33), TCM (<20)
Barbers Lagoon – TN3	11:16am	58	3.9 / 133 / B	Traffic (58), birds (43), insects (26), TCM (<20)
Bungalow – TN4	12:55pm	45	4.4 / 133 / C	Traffic (45), birds (29), insects (21), TCM (<20)

Table 10 TCM Operational Noise Monitoring Results – 1 December 2022 (evening)				
Location	Time	Total dB(A), Leq (15 min)	Wind speed / direction / PSC	Identified Noise Sources
Matong – TN2	9:28pm	45	2.7 / 140 / D	Insects (42), frogs (42), TCM (<20)
Barbers Lagoon – TN3	7:55pm	41	1.8 / 142 / E	Traffic (37), birds (37), frogs (33), insects (29), TCM (<20)
Bungalow – TN4	8:36pm	45	2.3 / 179 / E	Insects (45), frogs (29), TCM (<20)

Table 11 TCM Operational Noise Monitoring Results – 1 - 2 December 2022 (night)				
Location	Time	Total dB(A), Leq (15 min)	Wind speed / direction / PSC	Identified Noise Sources
Matong – TN2	10:00pm	45	1.3 / 167 / D	Frogs (44), insects (38), TCM (<20)
Barbers Lagoon – TN3	12:31am	38	1.8 / 092 / D	Insects (38), frogs (27), TCM (<20)
Bungalow – TN4	11:18pm	37	2.1 / 165 / E	Insects (37), frogs (21), TCM (<20)

Table 12 TCM Operational Noise Monitoring Results – 2 December 2022 (day)				
Location	Time	Total dB(A), Leq (15 min)	Wind speed / direction / PSC	Identified Noise Sources
Matong – TN2	12:08pm	44	3.5 / 171 / C	Birds (44), insects (33), TCM (<20)
Barbers Lagoon – TN3	9:34am	52	5.8 / 172 / B	Traffic (51), birds (46), insects (29), TCM (<20)
Bungalow – TN4	10:48am	38	4.6 / 179 / B	Birds (38), insects (26), TCM (<20)

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

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

Blast Monitoring

Blasting Results

Since 2006, there have been 1172 blasts (until 31/01/2023) at TCM.

The highest result for Overpressure last quarter was 112.10 dB recorded at the 'Coomalgah' monitor on the 17/12/2022.

The highest result for ground vibration last quarter was 0.36 mm/s recorded at the 'Tarrawonga' monitor on the 06/01/2023.

TCM overpressure and ground vibration for the quarter was compliant and did not exceed the blasting criteria declared in the project approval and Blast Management Plan (BMP).

Table 1 - Max Peak Overpressure and Ground Pressure for the Quarter

Monitor Location	Date	Max. Peak Overpressure (dB)	Criterion (dB)	Date	Max. Peak Ground Pressure (mm/s)	Criterion (mm/s)
Tarrawonga*	17/12/2022	118	N/A	06/01/2023	0.36	N/A
Coomalgah	17/12/2022	112.1	120	06/01/2023	0.68	10

**Limit Not applicable according to EPL and PA11_0047 because project related property.*

During the reporting period, no reportable blast fume events were recorded at TCM.

Air Quality Monitoring

Dust Deposition Results

Standard Australia AS/NZS 3580.10.1:2016, "Methods for sampling and analysis of ambient air – Determination of particulate matter – Deposited matter – Gravimetric Method," classifies deposited dust as insoluble solids. Therefore, TCM tests air quality monthly at mine-owned sites for indicative purposes, to infer compliance, against the limit of 4 g/m²/month.

Table 3 shows deposited dust gauge results over 12 months. All the dust monitors are located on project related or WHC owned land; as such compliance criteria (4g/m²/month) do not apply. While deposited dust trends remain steady during the reporting period (refer graph in *Appendix B*), some monitors are displaying non-mine related particulate matter deposition more regularly than others. Non-mine related particulate matter could be attributed to organic matter (such as leaves, mice, frogs, insects or bird faeces that fall in to the bottles), or they may be in farming locations, so during some months dust levels may be higher due to harvesting. To mitigate contamination from bird faeces, spikes have been added to the top of each dust gauge unit this quarter to deter birds from perching.

Table 2 - Deposited Dust Gauge Results [g/m2/month]

MONTH	TEMPLEMORE (EB-4)	BOLLOL CREEK STN (EB-5)	AMBARD (EB-6)	TARRAWONGA (EB-7)	PINE GROVE (EB-9)	TARRAWONGA MINE (EB-10)	TARRAWONGA MINE (EB-11)	TARRAWONGA MINE (EB-14)	TARRAWONGA MINE (EB-15)	JERALONG NORTH (EB-16)
Jan-22	1.8	9.1#	0.7	0.9	7.1#	17.8#	4.8#	3.7	1.2	3.2
Feb-22	16.4#	7.3#	0.8	0.5	5.5#	10.3#	3.5	2.5	1.5	6.5#
Mar-22	1.9	6.6#	6.2#	0.7	1.2	2.3	3.8	2.6	0.6	2
Apr-22	7.4#	8#	0.1	0.4	1.8	3	2.8	5.6#	0.7	0.9
May-22	2.8	4.8#	1.4	1.1	0.6	13.8#	2.7	2.8	1	1.8
Jun-22	15.3#	12.2#	0.5	0.5	0.6	23.3#	5.2#	4.5#	46.3#	48.2#
Jul-22	3.5	5.3#	0.4	1.9	7.3#	7.4#	3.2	2.6	1.3	0.4
Aug-22	5.1#	3.6	0.4	0.6	0.3	124#	3	3.6	1.6	3.6
Sep-22	0.4	5.6#	0.4	0.4	0.5	24.3#	2.9	6#	2.8	8.3#
Oct-22	28.7#	8.9#	1.1	0.9	2.2	92.8#	6.6#	3.9	2.9	1.7
Nov-22	45.2#	4.7#	0.7	1.1	3.2	16.3#	0.9	3.8	1.9	7#
Dec-22	22.3#	1.9	1.2	1.2	4.1#	11.8#	4.5#	4.2#	2.4	32.3#
12 MONTH ROLLING AVERAGE	2.1	2.8	0.7	0.9	1.3	2.7	2.9	3.2	1.6	1.9

Analysis done on these bottles concluded that they are contaminated, often with low ash/insoluble matter. Often noted on field sheets are bird droppings, insects and plant matter.

+ bottles missing due to replacement after contamination or temporary civil/mining activities in the area.

¹DDG bottle on the fenceline between TCM and BCM ROM.

Red = above the rolling average, but exceedances are not mine-related and are not considered non-compliances.

High Volume Air sampler (PM₁₀) Results

The High Volume Air Sampler (HVAS) installed at Coomalgalah property monitors levels of Particle Matter under 10 micron (PM₁₀). It operates for 24hr every 6 days. **Table 3** shows that all, with the exception of one, 24hr average values recorded for this quarter are below 50µg/m³. The high value recorded on the 6th December 2022 was investigated and results concluded that Tarrawonga did not contribute more than 50 µg/m³. Harvesting was ongoing during the period of the higher PM₁₀ reading and this source of the dust is supported by TCM's investigation.

Table 3 - HVAS PM₁₀ 24 hr average levels for the Quarter

Date	24hr averaged PM ₁₀ (µg/m ³)	Criterion 24hr average (µg/m ³)	Comments
06-11-22	4.2	50	Nil
12-11-22	9.4		
18-11-22	7.7		
24-11-22	8.5		
30-11-22	8.9		
06-12-22	57.3		
12-12-22	11.6		
18-12-22	6.5		
24-12-22	4.5		
30-12-22	10.7		

Real-time Air monitoring (PM₁₀)

A real time air quality unit (TEOM) is located at the “Flixton” property to monitor PM₁₀ levels in ambient air, as per the current Air Quality and Greenhouse gas Management Plan. It is an operational 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.



TEOM installed at Flixton property

Three portable dust (PM₁₀) monitors have been utilised since Nov 2018 to improve the real-time dust monitoring network and assist the operation to mitigate any potential dust generated by the operation.



Portable and real-time dust monitor installed at TCM in November 2018

Water Monitoring

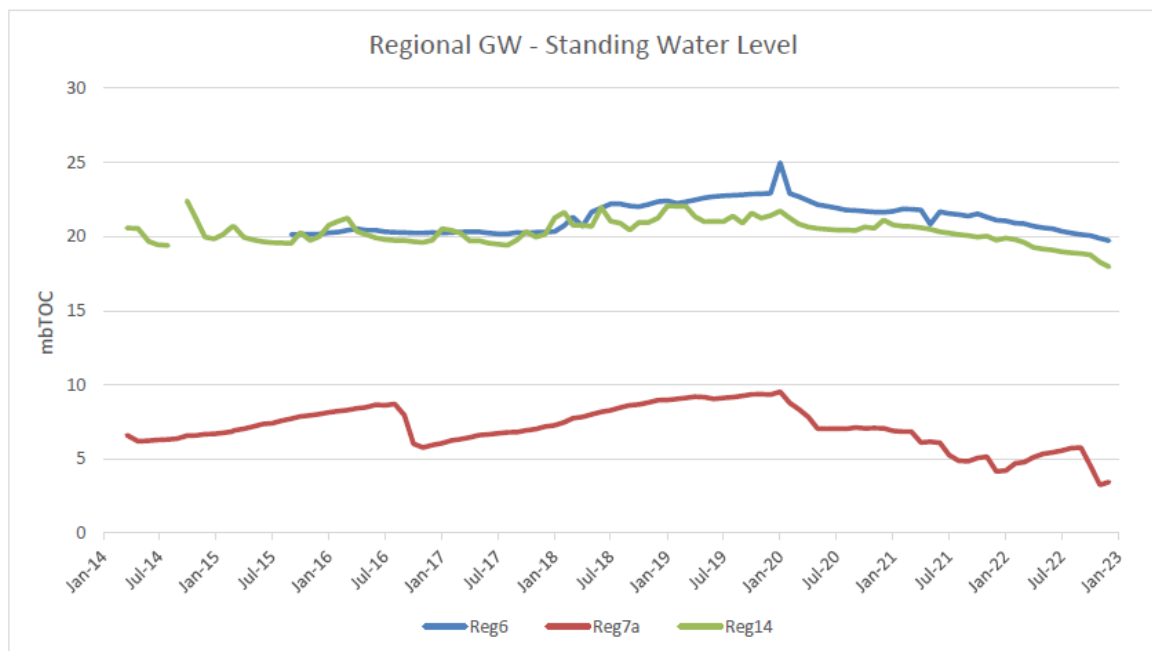
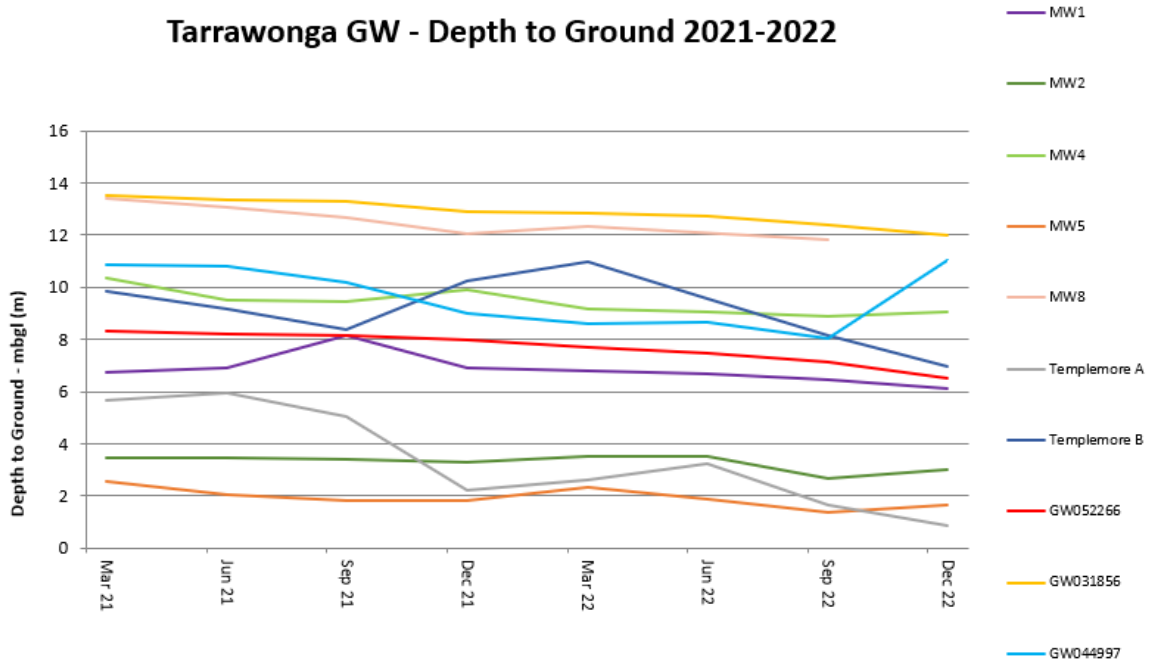
Groundwater

TCM undertakes groundwater monitoring as outlined in the Water Management Plan. Routine groundwater monitoring results undertaken between December 2021 and December 2022 are shown in **Table 4** (refer to graphs in *Appendix C*).

Table 4 - Groundwater results Summary

Site	Date	SWL (mbgl)	pH (units)	Elect. Conductivity (µS/cm)
MW1	December 21	6.93	7.6	7.32
	March 22	6.80	7.47	7.54
	June 22	6.70	7.37	7.52
	September 22	6.46	7.13	7.58
	December 22	6.12	6.79	7.75
MW2	December 21	3.29	4.08	6.74
	March 22	3.51	4.3	6.82
	June 22	3.52	4.31	6.59
	September 22	2.66	3.45	6.69
	December 22	3	3.79	6.91
MW4	March 22	9.18	9.8	7.55
	April 22	9.18	9.8	7.6
	June 22	9.05	9.67	7.45
	September 22	8.9	9.52	7.39
	December 22	9.08	9.7	7.51
MW5	December 21	1.82	2.61	7.7
	March 22	2.35	3.14	8.01
	June 22	1.9	2.69	7.52
	September 22	1.36	2.15	7.66
	December 22	1.67	2.46	7.88
MW8	December 21	12.08	Casing blocked	Casing blocked
	March 22	12.36		
	June 22	-		
	September 22	-		
	December 22	-		

Regional Groundwater monitoring



Surface Water

Water storage onsite is expected to be sufficient for at least the next 12 months. TCM has continued to treat (flocculate) sediment dam SD9 to allow for controlled release from Licence Discharge Point (LDP) 2, and through SD17 (LDP1) in accordance with the Water Management Plan. Approximately 445 ML of suitable quality water (within EPL1265 limits) was discharged in the reporting period.

TCM has recorded 1064.8mm of rain for 2022.

2021	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
Monthly Rain (mm)	58.4	115.4	141.2	22.0	66.6	105	73.8	41.8	18.3	56	240	96.6	1072.8
Cumulative (mm)	58.4	176.8	317.4	339.6	406.2	511.2	585	626.8	683	920.2	976.2	1072.8	
2022	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
Monthly Rain (mm)	106.6	74.4	100	60.8	59	14.4	32.4	116.6	166.2	170.2	129.8	34.4	1064.8
Cumulative (mm)	106.6	181	281	341.8	400.8	415.2	447.6	564.2	730.4	900.6	1030.4	1064.8	

Rehabilitation and Clearing

Rehabilitation

TCM will be submitting a report to the Resources Regulator to report on rehabilitation achieved in 2022 and also submit the planned rehabilitation ('Forward Program') for 2023. These plans have TCM committing to approximately 37Ha of Ecosystem Establishment for the year (tubestock planting and seeding) and approximately 25Ha of land ready for rehabilitation use (Landform establishment/ Growth medium development).

In 2022 TCM spread and seeded approximately 12Ha of topsoil on the Northern Emplacement Area (NEA) and approximately 26Ha of land has been rehabilitated to landform establishment.

Trees on the SOEA continue to successfully establish and grow on our rehabilitation area, as can be seen on the image below.



Figure 1: Photo taken in January 2023 from the Southern Emplacement Area rehabilitated in 2022.

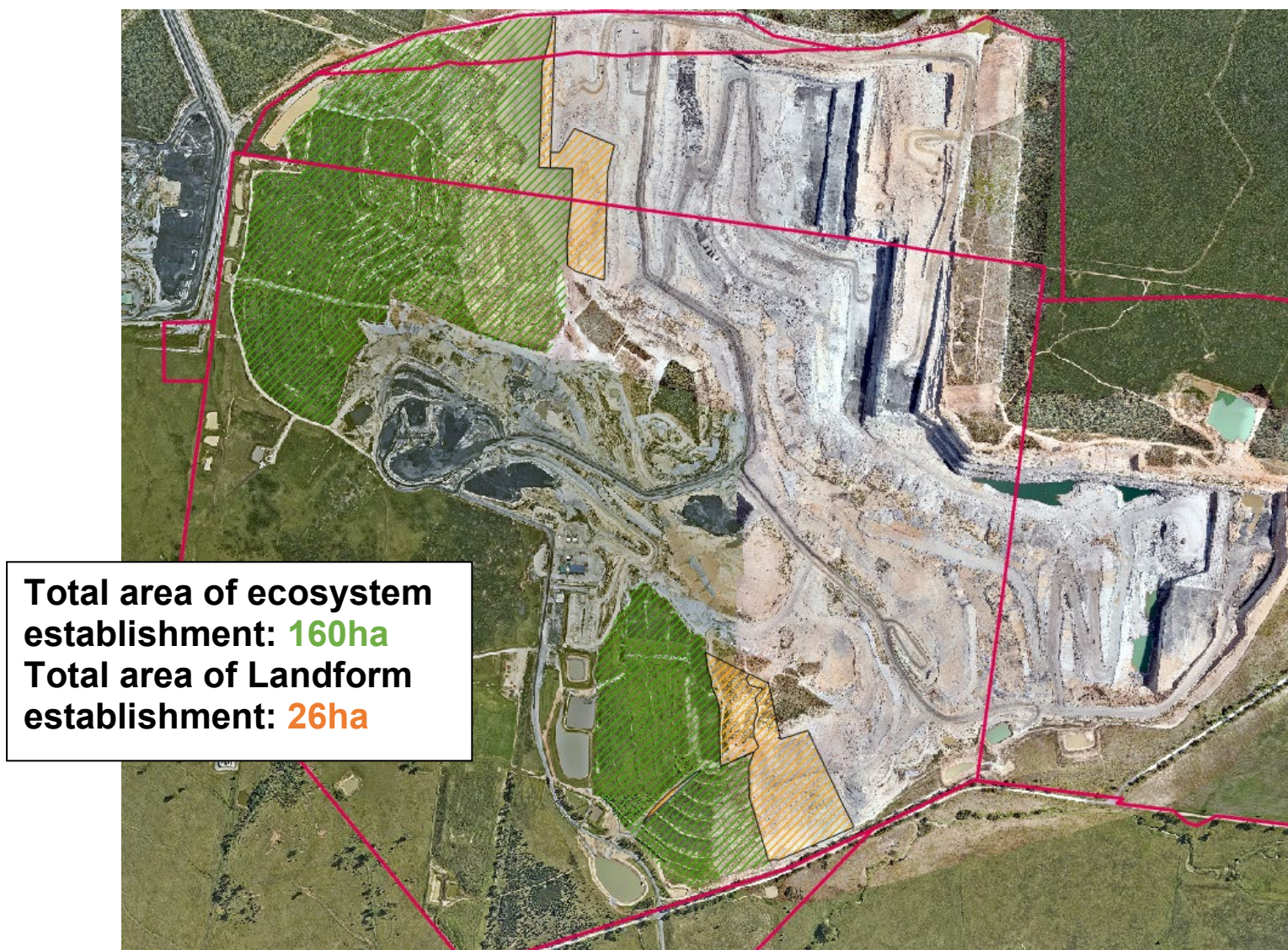


Figure 2: Rehab Status as at end of 2022

Clearing

20Ha of topsoil from 2021 and 2022 clearing has been stripped, with soil awaiting transfer to a prepared area of the NOEA for storage. Once in place it will be shaped to shed rainwater and seeded to encourage native species growth and discourage weeds.

The 2023 clearing campaign at Tarrawonga will begin 27th March 2023.

Complaints

No complaints for the reporting period.

Environmental Management Plans

TAR Management Plans

The Water Management Plan is still under review, but all the approved Management Plans are available on the WHC website.

The Blast Management Plan submitted on the 13th March 2022 was approved by the Department of Planning and Environment in January 2023.

BTM Water Strategy

The BTM mines submitted an updated BTM Groundwater Model. This has now been approved and displayed on our website.

The BTM Noise Management Strategy has also been reviewed and will be submitted by MCCM once finalised.

Annual and Compliance Reporting

Annual Review and Annual Return Reports

The Annual Return and Annual Review are to be submitted in March 2023.

Annual Compliance EPBC statement

The Annual Compliance EPBC statement was submitted to DAWE in June 2022.

Annual National Pollutant Inventory (NPI) and Greenhouse Gas Emission (NGERs) Reports 2021

Information for the TCM NPI and NGERs reports have been collected and submitted to our compliance team. Report was finalised and submitted.

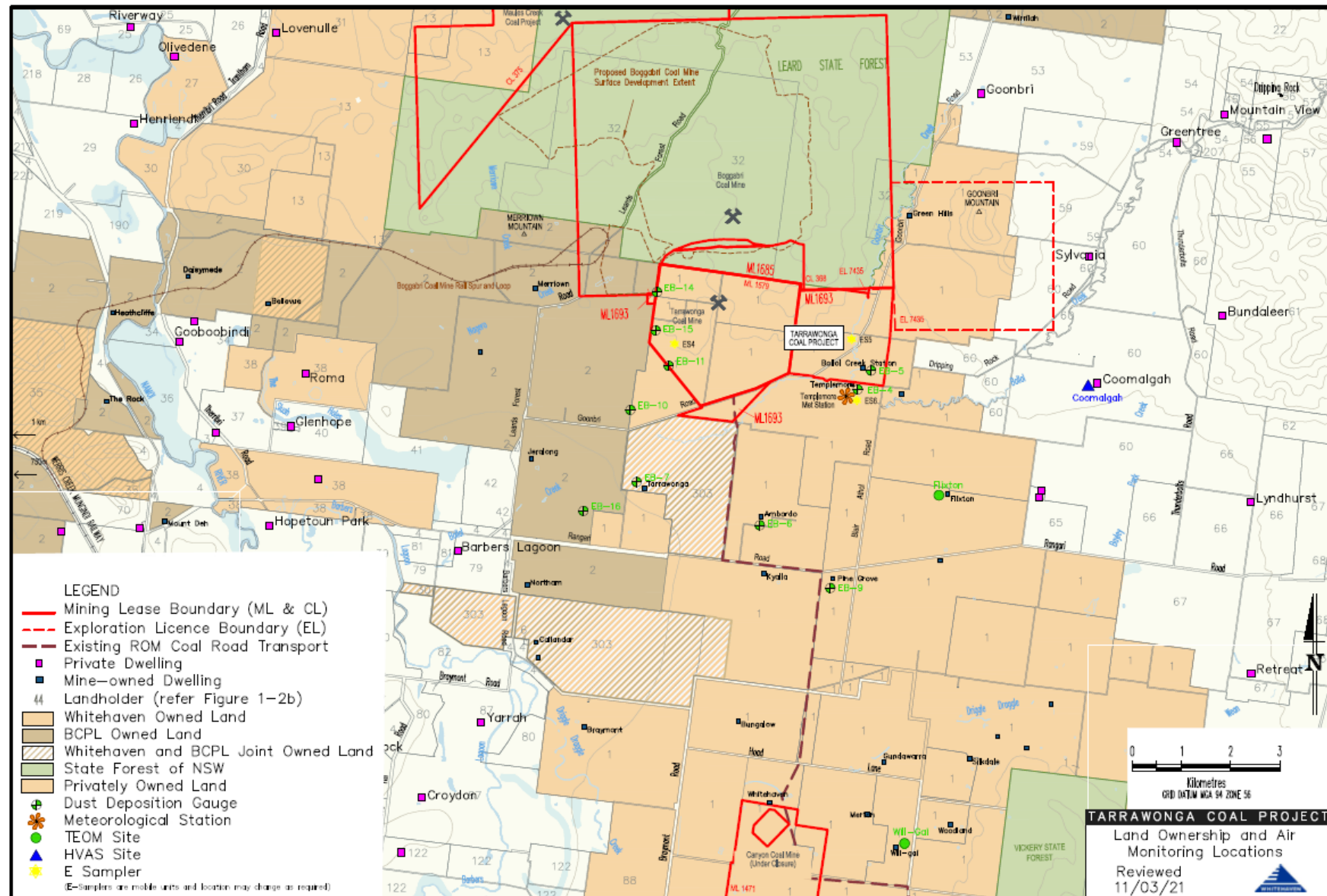
Audits - Compliance

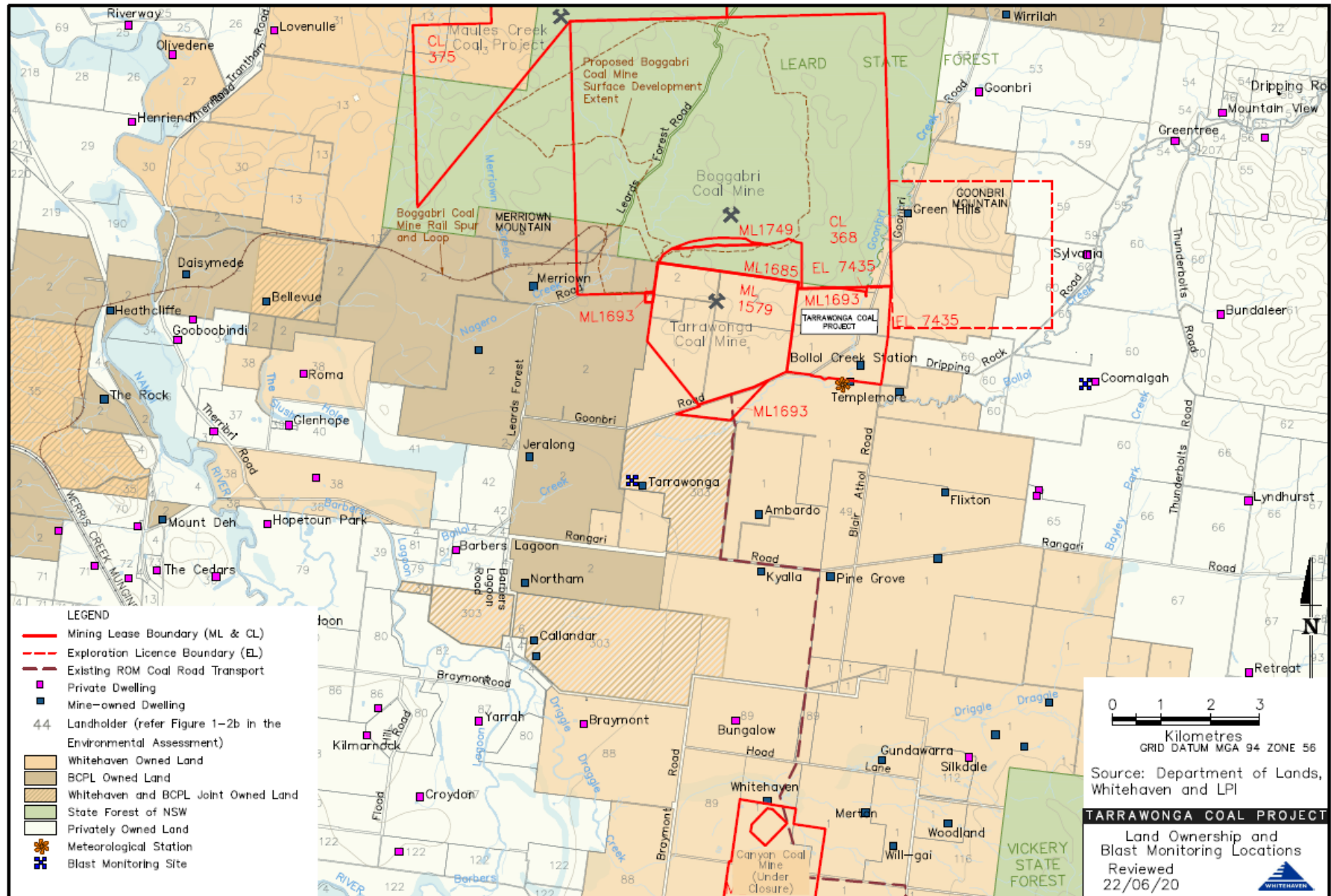
Planning has begun for Tarrawonga's Independent Environmental Audit for later in 2023. This audit is required by the Project Approval PA11_0047.

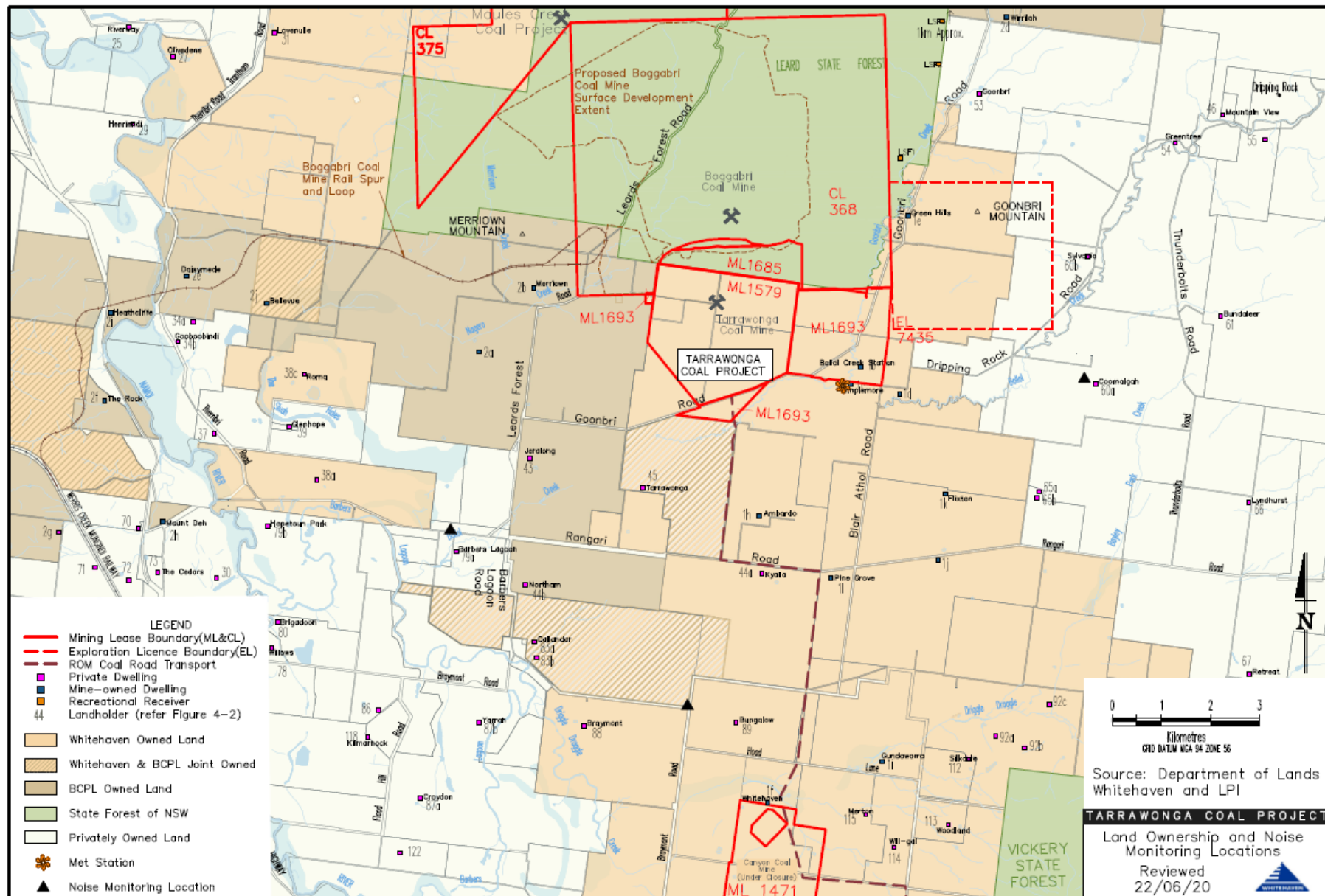
Approvals and Licencing

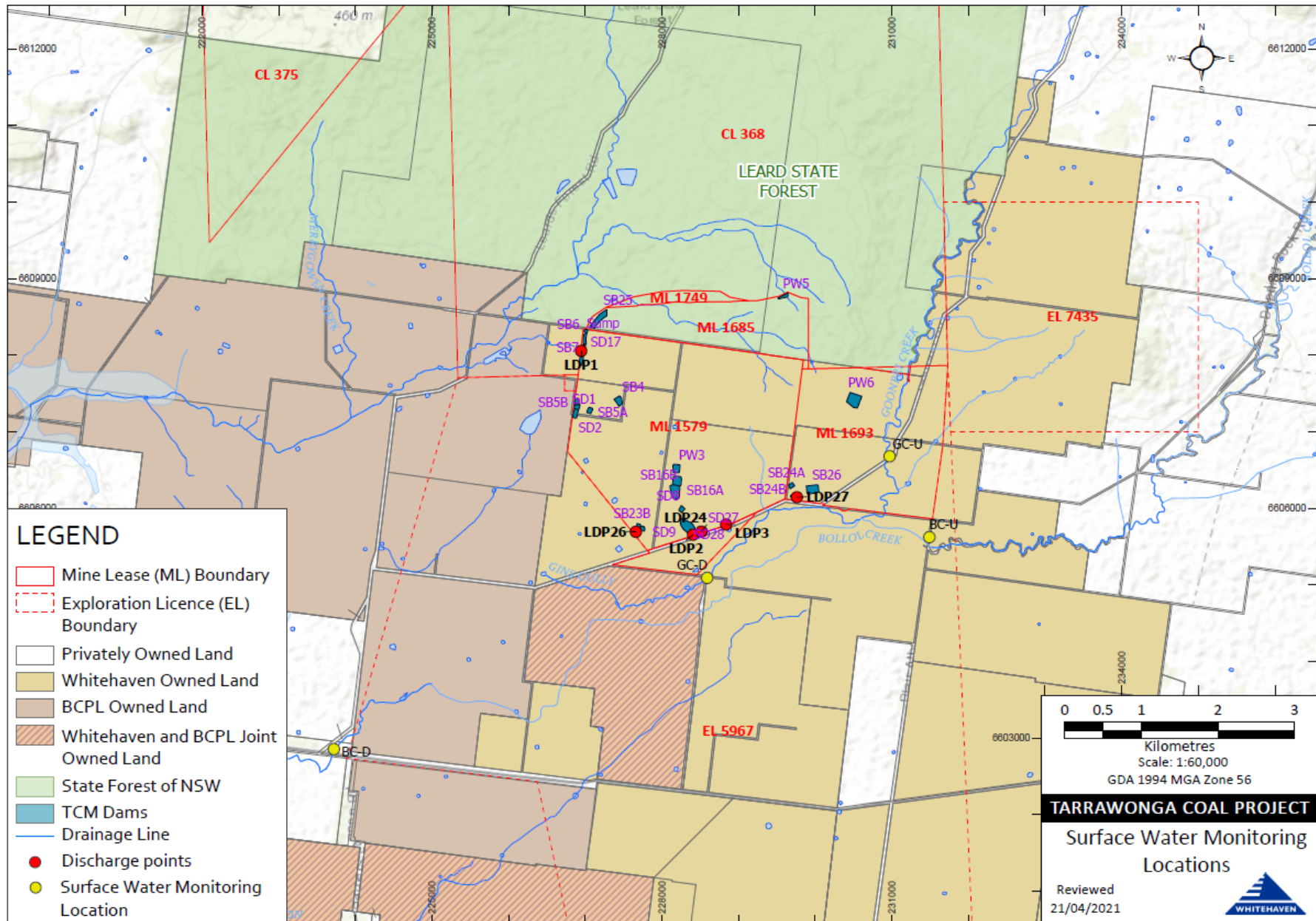
The EPA varied EPL12365 in December 2021. This amended EPL has been uploaded to the website. An updated EPL variation is expected to be issued by the EPA in February 2023.

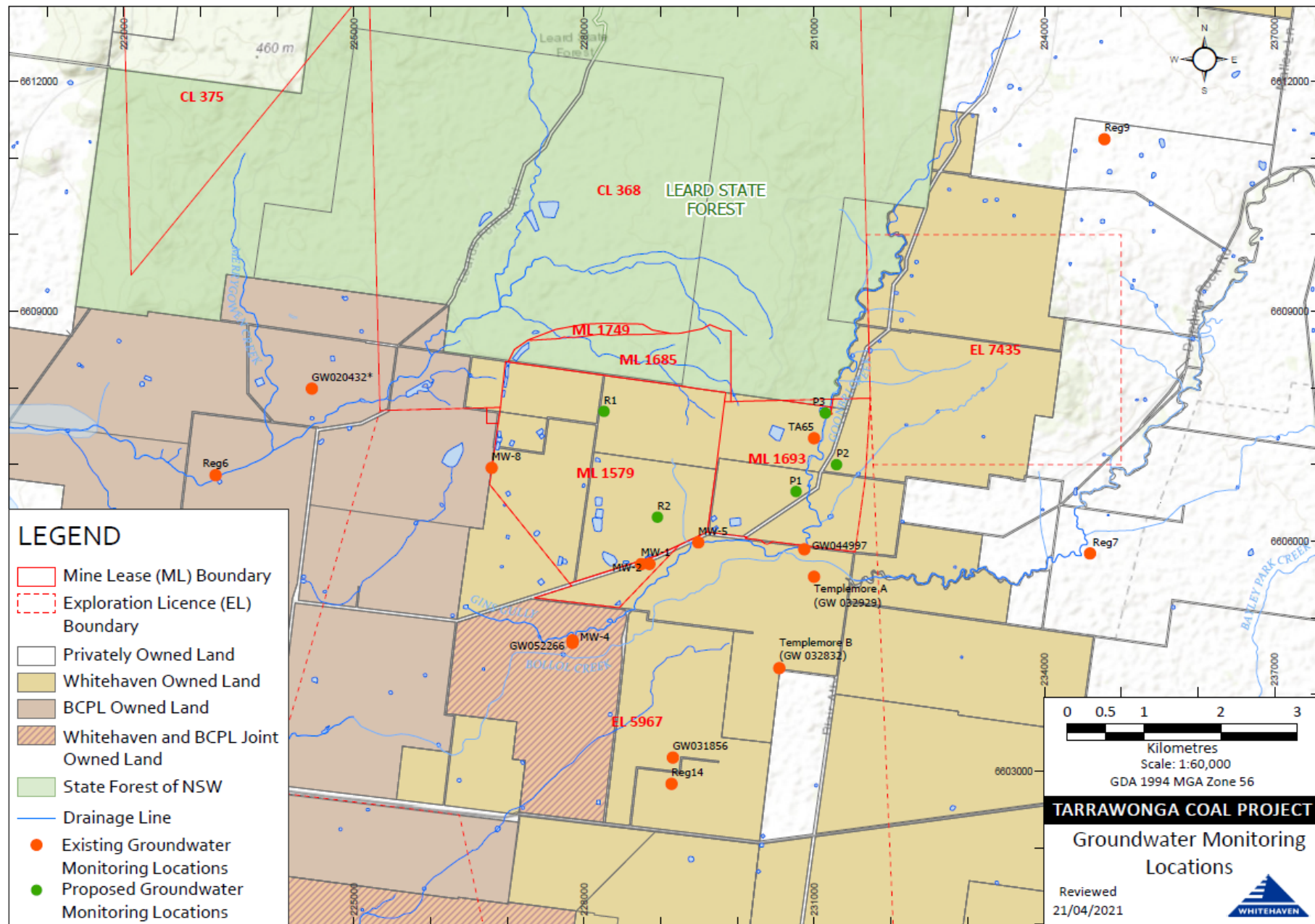
Appendix A





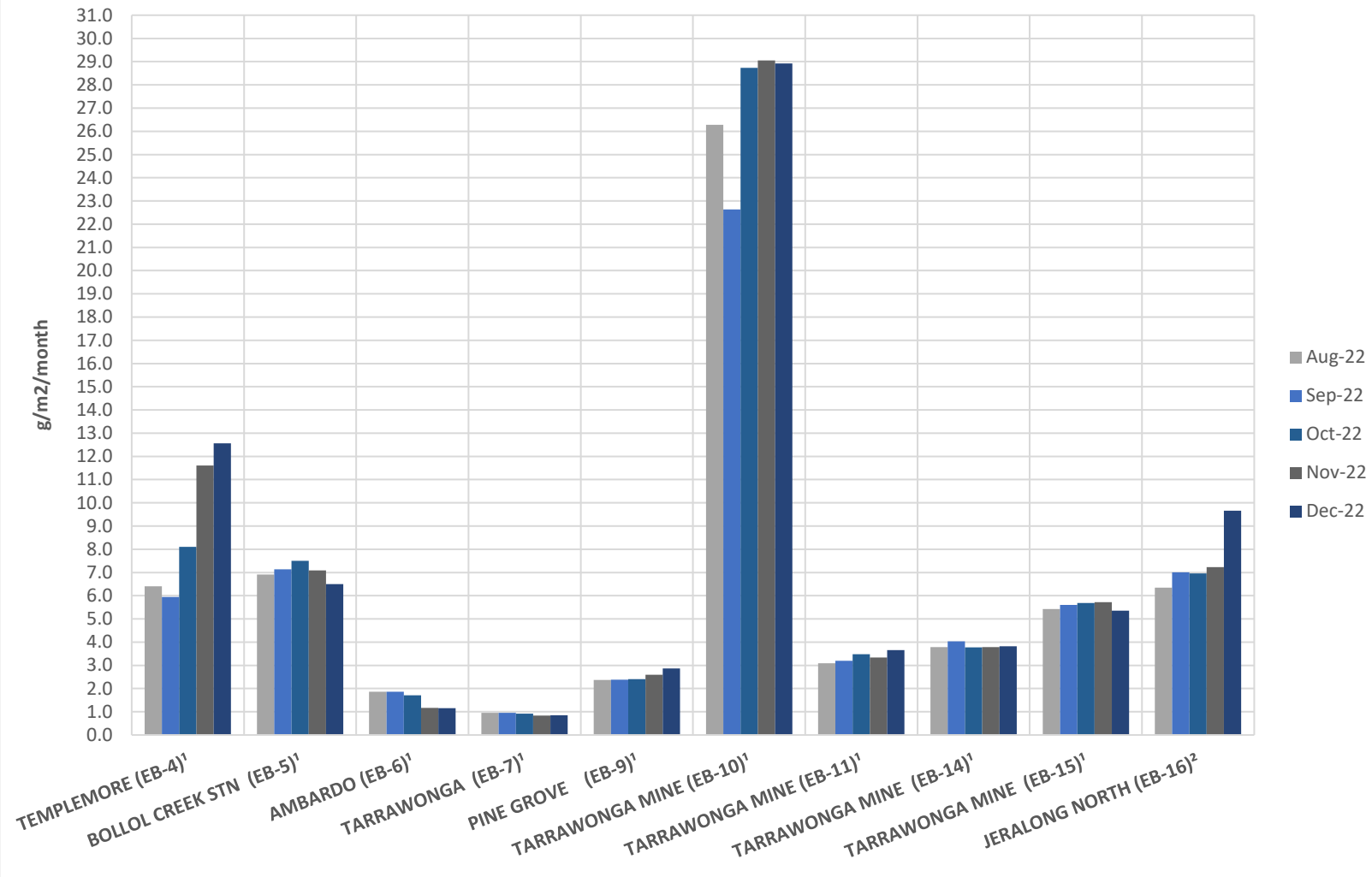




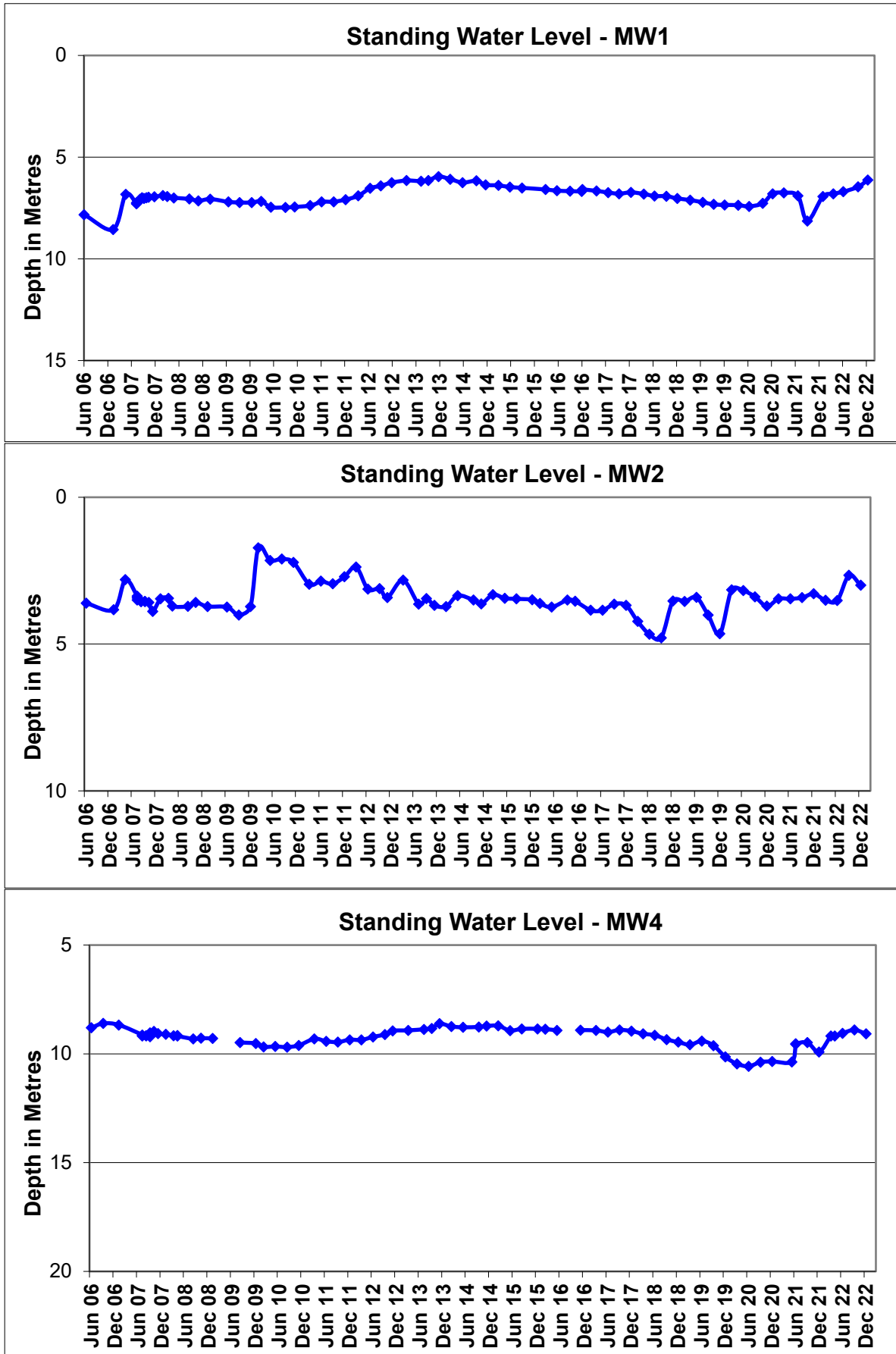


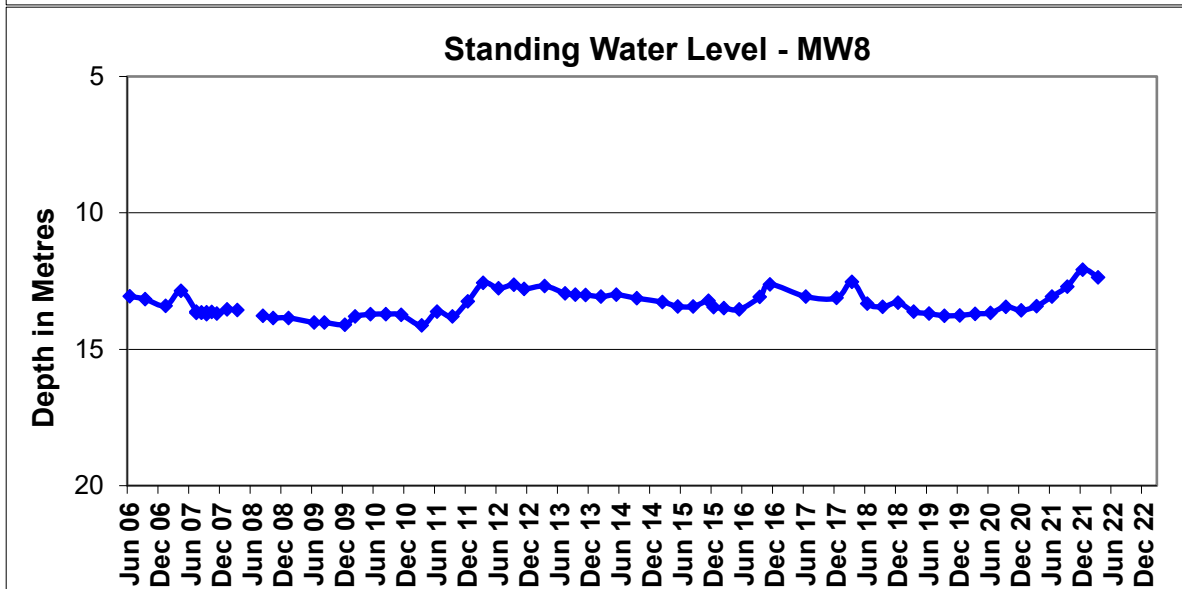
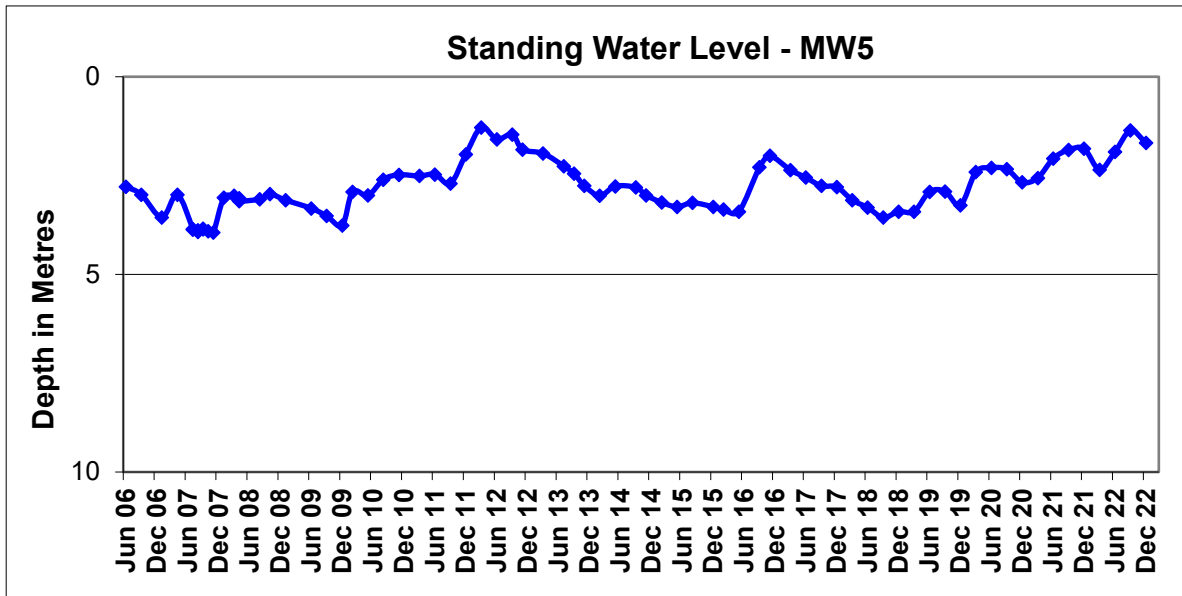
Appendix B

Deposited Dust Gauge Results- Quarterly rolling average [g/m²/month]



Appendix C





Notes: Notes of the 71st Meeting of the Tarrawonga Coal Community Consultative Committee
Held at the Tarrawonga Coal Mine Training Room

Thursday 23 February 2023

Members Present: Alison Quiroz (AQ) – TCM, Cr Darrell Tiemens – Narrabri Shire Council (DT), Cr Rob Hooke – Gunnedah Shire Council (RH), Lloyd Finlay (LF) – Community Representative, Elizabeth O’Hara (EOH) – Community Representative, Lloyd Finlay (LF) – Community Representative, Mark Hathway (MHa) – Community Representative, Megan Martin (MM) – TCM, Michelle Henry (MH) – Narrabri Shire Council

Apologies: Colleen Fuller (CF) – Community Representative, Jackie Scott (JS) – WHC, Wade Hudson (WH) – GSC Representative

Independent Chair: David Ross (DR)

Independent Secretary: Debbie Corlet (DC)

Agenda Items	Who to Present
1. Welcome and Apologies	DR
2. Declaration of pecuniary or other interests	DR
3. Minutes from Previous Meeting	DR
4. Actions from Previous Meeting	DR
5. Mine Progress Report	MM
6. Environmental Monitoring Report	MM & AQ
7. General Business	ALL
8. Next Meeting – Wednesday 24 May 2023	ALL

Agenda Item	Discussion	Action/By Whom
1.	Welcome and Apologies – DR welcomed everyone to the CCC meeting.	
2.	Declaration of pecuniary or other interests – EOH has a small package of WHC shares. LF leases country from WHC. DR is paid a fee as chair as is DC for typing the minutes.	
3.	Minutes from Previous Meeting – Everyone was comfortable that the 23 November 2022 minutes appropriately reflected what was discussed.	
4.	<p>Actions from Previous Meeting – Groundwater slide to be added back in.</p> <p>DR – Revised CCC Guidelines are still being reviewed by the Department. Should be able to discuss at our next CCC meeting in May.</p>	<p>ACTION 1 – MM to add in Groundwater slide.</p> <p>ACTION 2 – DR to provide Revised Guidelines before next meeting.</p>
5.	<p>Mine Progress Report – Operations</p> <p>MM commenced the report by providing members with an update on the mine’s safety statistics before discussing how mining production has progressed. The mine is on track to achieve revised targets.</p> <p>With respect to the mine’s donations and sponsorships, donations for October to December were over \$80,815 in the local community. Sponsorships and Donations information can be found https://whitehavencoal.com.au/sustainability/community/donations-sponsorships/</p> <p>DT – I’m in a local choir and we applied for a grant, and it takes about 10-minutes to complete it. You just need to be specific with what you want.</p>	
6.	<p>Environmental</p> <p>MM provided an update on environmental activities over the past quarter. These included:</p> <ul style="list-style-type: none"> • Topsoil stripping nearly completed. • Sediment dams have been dewatered and desilted in response to lower rainfall. • Rehabilitation of SOEA has started to enable revegetation in 2023. Completion of ecosystem areas on the NOEA. • Blast Management Plan approved by Dept of Planning. Consultation completed on Rehabilitation Management Plan. <p>Monitoring and Compliance</p> <ul style="list-style-type: none"> • Noise and air – Monitoring for the quarter is within TCM’s approval criteria. 	

- **Blasting** – All blasts were within blasting criteria. 1174 blasts up until 16 February at TCM since operations began.

Tyre Disposal Update

- Tyre burial events planned for Q4 2022 and completed on 22 Nov 22 – 319 tonnes of tyres disposed of.
- WHC is compiling the report required (by the EPA) following 2 years of the tyre approval being granted in the EPL. This report must document the efforts made to determine tyre recycling feasibility and is anticipated to be submitted prior to the next CCC meeting.

RH – How deep are the tyres buried, and can you bring them back up for recycling purposes? MM – The dump progresses fairly quickly. Consequently, retrieval of tyres isn't feasible.

EOH – Western Australia has a company that is recycling tyres. You would be encouraged to consider establishing a company recycling project and then lease that out to a community group.

MM – They are doing it in QLD as well now. It's been organised at group level. It's about feasibility. I will be asking if we can provide this report to the CCC. We do reuse tyres as bollards, demarcations in the pit etc. It does cost money. We want to recycle them. It's not as easy to set up yourself due to the costs.

DR – Scott Mitchell will be talking at the Joint CCC in May about this.

Rehabilitation of the Mine Presentation

AQ noted that mine rehabilitation aims to return the mine landform to a safe and stable condition and in a manner consistent with the surrounding landscape. She described the stages of the rehabilitation process:

- **Active Mining** – Associated with active mining operations across the domains.
- **Decommissioning** – Process of removing plant and equipment from active services and rendering the area safe.
- **Landform Establishment** – Process of shaping unformed rock of other sub-stratum material into a desired land surface profile.
- **Growth Medium Development** – Process of establishing and enhancing the physical structure. Spreading soil.
- **Ecosystem Establishment** – Process of seeding, planting, and transplanting species.
- **Ecosystem Development** – Process of applying management techniques to encourage an ecosystem to grow and develop towards a desired and sustainable post mining land use outcome.
- **Ecosystem Establishment** – Completion criteria for rehabilitation are met and the land is determined to be suitable to be relinquished from the mining tenement.

DT – Would that be farmable again one day or back to forest?

This instigated a lengthy discussion.

MHa – It'll be too steep. Nine times the offsets. They have to own all the land to offset it. I own 4,000 hectares and adjacent could run cows but just has to be there as an offset. MHa then expressed his concerns that the government hasn't

	<p>considered the mine being relinquished back to farm land. Instead, it will remain forested land that no one would wish to purchase.</p> <p>DR – I think about 4 years ago we had DPE staff present to share those concerns with.</p> <p>RH – Would be nice to have an update on Biodiversity offsets. What are the actual options. What are the requirements on mining. The number of offsets that are established. The value of those offsets back to the community – what is being achieved.</p> <p>EOH – There is a NSW Government response to the Inquiry Into the Integrity of Biodiversity Offsets Scheme that came down a week ago from NSW Government.</p> <p>RH – When the mine is released from the mining tenement who owns that land. Does it go back to the State? Can it be re-purchased by landholders?</p> <p>AQ – Some get sold. MM – Depends on the project. That period can take a few years and some mines have never been signed off. Once it is, then it can be sold or Crown land.</p> <p>DR – Issues around revegetation and allowing the area to come back to agriculture land. If a private holder wants to purchase that land, do they have to retain it as is (as revegetated land)? There'll be an agreement in place and a covenant on that.</p> <p>MM – Yes, depends on the type of title they take on board as well.</p> <p>MHa – It won't be saleable.</p> <p>DR – If you can purchase the properties once the mine is gone, how long do you have to monitor and maintain the rehabilitation?</p> <p>MM – There is no time. There is a goal post that we have to reach. Every year from now, how is it progressing, and that data builds that picture. That is the completion criteria. No timeframe as such.</p>	<p>ACTION 3 – DR to prepare a Biodiversity Offsets update.</p>
7.	<p>General Business</p> <p>DR then facilitated a discussion with members to ascertain what they believe are the big issues that are coming out of these meetings.</p> <p>RH – The mines are doing the right thing. The conversation should go further. There's labour, training, accommodation, and road issues that need to be considered. Not just for Council but for the mines as well.</p> <p>DT – Agreed regarding consideration of the impact on services. The services, the hospitals, and the roads – nice to know how staff fly in and fly out – impacts more our planning team as well.</p> <p>DR – We need to have a conversation about what to expect at meetings as we only have four per year.</p>	

	<p>MH – Getting the monitoring reports in advance as provided is good so can go through with team members. Council is satisfied with the data that are provided. The tour we did last year was great and can put it in context with the mine's progression.</p> <p>EOH – I get to ask questions and they are open to answering them which is great. The tyres is a big issue– not getting a sense of there being discussion between the mines about cumulative impacts between the mines and want to know a bit more about that.</p> <p>MM – We can give you more information as a company. Scott will present as well. I'll try and get Cory there as well. He's been doing a lot of enquiries into the tyres.</p> <p>LF – Tyres are such a big issue but I read somewhere about 5-6 years ago that recycling is cost neutral. Benefit to the environment. Recycling in general.</p> <p>MH – The problem is getting the tyres to those locations, from here to QLD for example, they are huge, the greenhouse, carbon footprint. The whole process.</p> <p>EOH – Questions that I sent through earlier relate to the complexity of all the decisions being made. Always facing another modification such as Mod 7 which allowed Tarrawonga to avoid building the low permeability barrier between the pit and Goonbri Creek which was in the original DA. Boggabri's Mod 8 (adjacent) raised issues of hydrological connection between alluvium and aquifer and the need to manage High Priority Groundwater Dependent Ecosystems.</p> <p>EOH then read the questions out (Appendix 2).</p> <p>MM – I'm happy to answer your questions in an email, shortly. Original EA – had it mining to the east. The creek was going to be redirected. Consideration had to be given to how are you going to protect the alluvium. Mod 7 describes the impact. The impact to the Upper Nami Alluvium was modelled to be negligible during operations and post mining.</p> <p>MM – We have a lot of mine water from the pit after the last 3 years of rain. Mine water cannot be discharged – we have to evaporate it or use for dust suppression. Can be stored.</p>	<p>ACTION 4 – MM to get Cory to the Joint CCC for tyre discussion.</p> <p>ACTION 5 – DR to find tyre recycling article about cost neutral.</p> <p>ACTION 6 – MM to respond to EOH's questions.</p>
8.	<p>Next meeting date – DR – Discussed the meetings for rest of year:</p> <ul style="list-style-type: none"> • Wednesday 24 May 10:00 am and Joint Thursday 25 May • Wednesday 23 August • Wednesday 25 October and Joint Thursday 26 October <p>DR – Thanked everyone for their time.</p>	

Meeting Closed: 2:43 pm.

Appendix 1: Actions

Page No	Action No	Description	Date Raised
2	1	MM to add in Groundwater slide	23 November 2022
2	2	DR to provide Revised Guidelines before next meeting	23 February 2023
4	3	DR to prepare a Biodiversity Offsets update	23 February 2023
5	4	MM to get Cory to the Joint CCC for tyre discussion	23 February 2023
5	5	DR to find tyre recycling article about cost neutral	23 February 2023
5	6	MM to respond to EOH's questions	23 February 2023

Appendix 2: Elizabeth O'Hara's questions

1. Is Tarawonga having trouble with water in the pit – what is the total inflow into the open cut pit and can it be ascertained whether the water is coming from the 'perched' water and/or from Goonbri Creek? To what extent did that decision (Mod 7) mean extra water is going into the pit and needs to be evaporated out?
2. Is the 'evaporation' still occurring? How much water has been evaporated?
3. What management is in place for the protection of the High Priority Groundwater Dependent Ecosystems against draw down?
4. What attempt, if any, has been made to determine the cumulative effect of drawdown on Goonbri Creek from Tarrawonga and Boggabri Coal?
5. Were the cumulative water impacts/drawdown assessed using the complex-wide groundwater model developed for the Boggabri, Tarrawonga and Maules Creek mines prior to the Mod. 7 – Life of Mine?

13th March 2023

David Ross
Independent Chair of Tarrawonga Coal Mine CCC
Via Email

Dear David

RE: Questions About Water for Tarrawonga CCC 23 February 2023

In response to the questions submitted by CCC member Elizabeth O'Hara on the morning of the 23rd February 2023 Tarrawonga Coal Mine (TCM) provides the following response.

1. *To what extent can the lack of the low permeability barrier (as required in the original DA) account for the need to evaporate all this extra water in the pit?*

TCM response:

The operational requirement to enhance the evaporation of mine water from the open cut pit is a result of the above average rainfall that TCM has experienced since early 2020 not groundwater ingress. It is not related to MOD7 and the, now obsolete, low permeability barrier.

The low permeability barrier formed part of the original project approval for TCM. It was a requirement related to the planned mining of the Upper Namoi Alluvium. Modification 7 (MOD7) to PA11_0047 was submitted in 2019 and approved in 2021. MOD7 reduced the mining footprint so that the Upper Namoi Alluvium was no longer planned to be mined.

Numerical modelling was conducted to assess the potential groundwater impacts under MOD7 without the low permeability barrier. This numerical modelling predicted that inflows from the Upper Namoi alluvium will be negligible during operations and post-mining. TCM's Water Management Plan describes the groundwater monitoring network that includes the Upper Namoi Alluvium.

2. *what is the total inflow into the open cut pit and can it be ascertained whether the water is coming from the 'perched' water and/or from Goonbri Creek*

TCM response:

Please refer to the answer provided for question 1 above.

3. *Is the 'evaporation' still occurring? How much water has been evaporated?*

TCM response:

The evaporation fans are operating as described in the TCM Water Management Plan Addendum. The amount of water able to be evaporated varies according to meteorological conditions and will be modelled in TCM's 2023 Annual Site Water Balance, due to be collated in January/February 2024.

TCM can estimate the amount of water evaporated by applying an average evaporation factor to the amount of water delivered to the evaporator fans. It is conservatively estimated that as at the 23rd February up to 10 ML of water has been evaporated through the enhancement of this process with mechanical evaporation fans.

4. *What management is in place for the protection of the High Priority Groundwater Dependent Ecosystems against draw down.*

TCM response:

Please refer to the answer provided for question 1 above.

5. *What attempt, if any, has been made to determine the cumulative effect of drawdown on Goonbri Creek from Tarawonga and Boggabri Coal*

TCM response:

The cumulative BTM complex groundwater model (AGE, 2022) includes predictions for the cumulative drawdown (mining at Tarawonga, Boggabri and Maules Creek) at the end of mining for the alluvium/regolith that underlies Goonbri Creek.

6. *Were the cumulative water impacts/drawdown assessed using the complex wide groundwater model developed for the Boggabri, Tarawonga and Maules Creek mines prior to the Mod. 7 – Life of Mine?*

TCM response:

Drawdown was assessed using the cumulative BTM model prior to MOD7 and this model is updated every three years. Groundwater modelling was conducted as part of the environmental assessment for MOD7 and incorporated the Maules Creek Coal Mine and Boggabri Coal Mine to the North and also Rocglen Coal Mine to the South.

Yours sincerely

A handwritten signature in black ink that reads "M. Martin". The signature is written in a cursive, flowing style.

Megan Martin
Environmental Superintendent