Annual Review 2023

Tarrawonga Coal Mine

Name of operation	Tarrawonga Coal Mine
Name of operator	Whitehaven Coal Mining Pty Ltd
Development consent/project approval number	MP 11_0047
Name of holder of development consent/project approval	Tarrawonga Coal Pty Ltd
Mining lease number	ML 1579, ML 1685, ML 1693, ML1749
Name of holder of mining lease	Tarrawonga Coal Pty Ltd
Water licence number	WAL 31084
Name of holder of water licence	Whitehaven Coal
FWP start date	1/1/23
FWP end date	31/12/23
Annual review start date [1]	1/01/2023
Annual review end date	31/12/2023
I, Daryl Robinson, certify that this audit report is a true and accurate record of the compliance status of the Tarrawonga Coal Mine for the period 1st January 2023 until 31st December 2023, and that I am authorised to make this statement on behalf of Tarrawonga Coal Pty Ltd. *Note. a) The Annual Review is an 'environmental audit' for the purposes of section 122B (2) of the Environmental Planning and Assessment Act 1979. Section 122E provides that a person must not include false or misleading information (or provide information for inclusion in) an audit report produced to the Minister in connection with an environmental audit if the person knows that the information is false or misleading in a material respect. The maximum penalty is, in the case of a corporation, $1 million and for an individual, $250,000. b) The Crimes Act 1900 contains other offences relating to false and misleading information: section 192G (Intention to defraud by false or misleading statement—maximum penalty 5 years imprisonment); sections 307A, 307B and 307C (False or misleading applications/information/documents—maximum penalty 2 years imprisonment or $22,000, or both).*	
Name of authorised reporting officer	[redacted]
Title of authorised reporting officer	Manager Environment and Rehabilitation-Gunnedah Open Cut Operations
Signature of authorised reporting officer	[redacted]
Date	30/3/24

[1] *NSW Annual Review Guideline was released in October 2015*

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1 STATEMENT OF COMPLIANCE

The compliance status of the Tarrawonga Coal Mine (TCM) as at 31st December 2023 is summarised in Table 1-1 and Table 1-2 below.

Table 1-3 notes non-compliances that occurred during the reporting period, and non-compliances from previous reporting periods that still require management action. References to the Environment Protection Licence (EPL) are limited to those that relate to the Project Approval conditions, specifically Schedule 3 Condition 22, 28(c), 33 and 39(c)(ii).

Table 1-1 - Statement of Compliance

Were all conditions of the relevant approval(s) complied with (Yes/No)?	
MP 11_0047	Yes
ML 1579	No
ML 1693	No
ML 1685	No
ML 1749	No
WAL 31084	Yes

Table 1-2- Compliance status key for Non-Compliances

Risk Level	Colour Code	Description
High	Non–compliant	Non-compliance with potential for significant environmental consequences, regardless of the likelihood of occurrence
Medium	Non–compliant	Non-compliance with: • potential for serious environmental consequences, but is unlikely to occur; or • potential for moderate environmental consequences, but is likely to occur
Low	Non–compliant	Non-compliance with: • potential for moderate environmental consequences, but is unlikely to occur; or • potential for low environmental consequences, but is likely to occur
Administrative non-compliance	Non–compliant	Only to be applied where the non-compliance does not result in any risk of environmental harm (e.g. submitting a report to government later than required under approval conditions)

Table 1-3 - Non-Compliance

Relevant Approval	Condition Number	Condition Description (summary)	Compliance status	Comment	Where Addressed in Annual Review
ML 1579	Clause 16(3)(b) Sch 8A *Mining Regulation 2016*	The lease holder is to publish the Annual Rehabilitation Report (ARR) within specified time (within 14 days after it is given to the Secretary)	Non-compliant	On 2 August 2023, Whitehaven Coal Mining Limited self-reported via the Regulator Portal (Portal) that the Annual Rehabilitation Report was not submitted within the specified 14 days timeframe as required under Clause 16(3)(b) of Schedule 8A. As a result of an investigation by the Resources Regulator due to mitigating circumstances, the Resources Regulator did not take any further action.	10.2
ML 1693	Clause 16(3)(b) Sch 8A *Mining Regulation 2016*	The lease holder is to publish the Annual Rehabilitation Report (ARR) within specified time (within 14 days after it is given to the Secretary)	Non-compliant		
ML 1685	Clause 16(3)(b) Sch 8A *Mining Regulation 2016*	The lease holder is to publish the Annual Rehabilitation Report (ARR) within specified time (within 14 days after it is given to the Secretary)	Non-compliant		
ML 1749	Clause 16(3)(b) Sch 8A *Mining Regulation 2016*	The lease holder is to publish the Annual Rehabilitation Report (ARR) within specified time (within 14 days after it is given to the Secretary)	Non-compliant		

2 INTRODUCTION

This Annual Review (AR) for Tarrawonga Coal Mine (TCM) has been prepared in accordance with the NSW Government *Annual Review Guideline* (October 2015) and Condition 4 (Schedule 5) of MP 11_0047.

TCM is located approximately 16km east of Boggabri (Refer Figure 1 - Locality Plan). TCM is owned by Tarrawonga Coal Pty Ltd (TCPL) and operated by Whitehaven Coal Mining Pty Ltd (WCMPL). Biodiversity offset locations are shown in Figure 2 and. Figure 3.

In line with the new standard rehabilitation conditions for all mining leases, TCM has prepared a Rehabilitation Management Plan (RMP) and a Forward Program (FWP) which took effect from 1st January 2023. The AR follows the format required by the NSW Government *Annual Review Guideline* (October 2015). Though primarily covering the period from 1st January 2023 to 31st December 2023 (the reporting period), where relevant the AR provides information on historical aspects of the operations, longer term trends in environmental monitoring results and provides relevant information on activities to be undertaken during the ensuing period, (i.e. from 1st January 2023 to 31st December 2023, or beyond).

2.1 Mine Contacts

The management personnel responsible for operational and environmental performance at the TCM and their relevant contact details are as follows:

- [redacted]

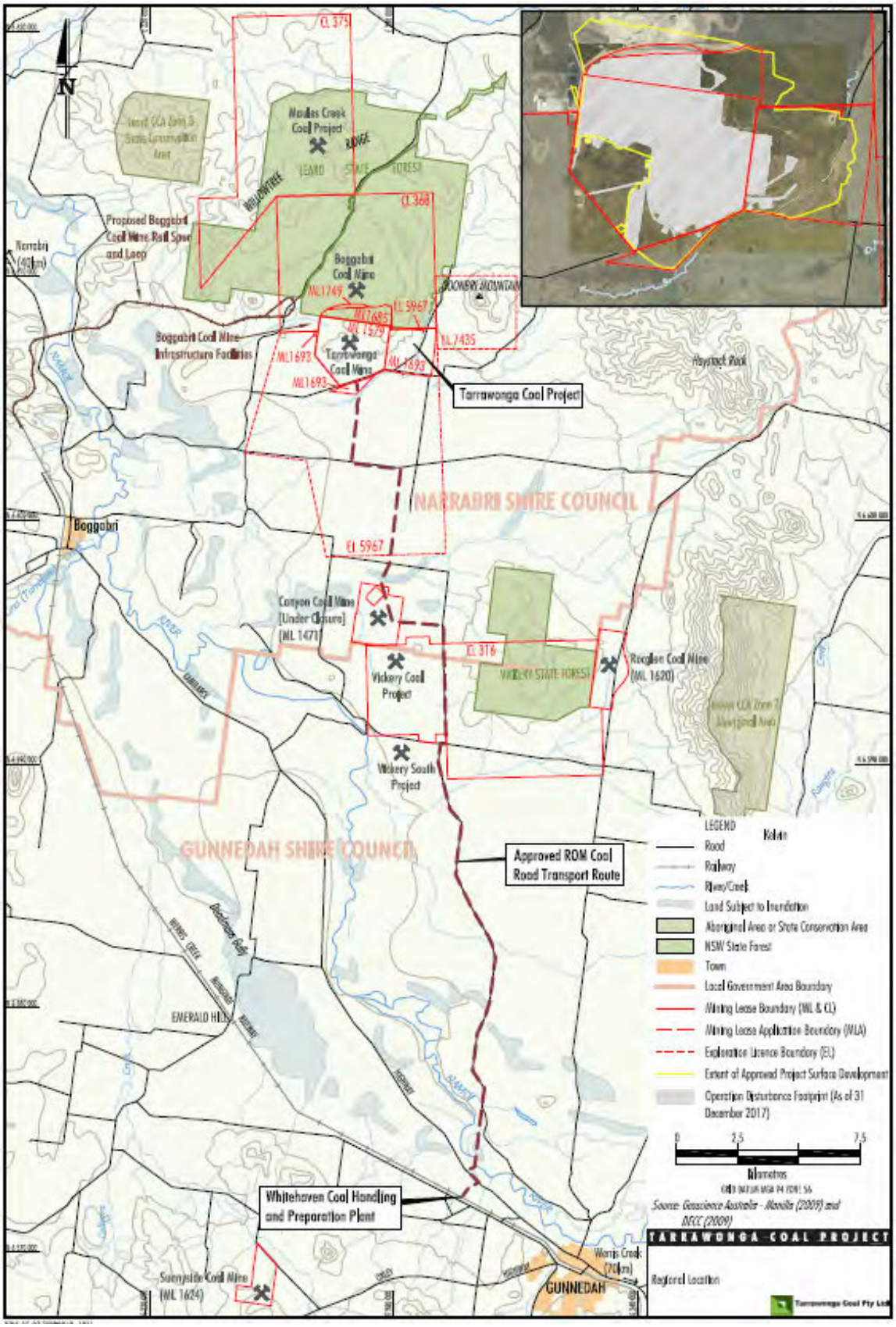
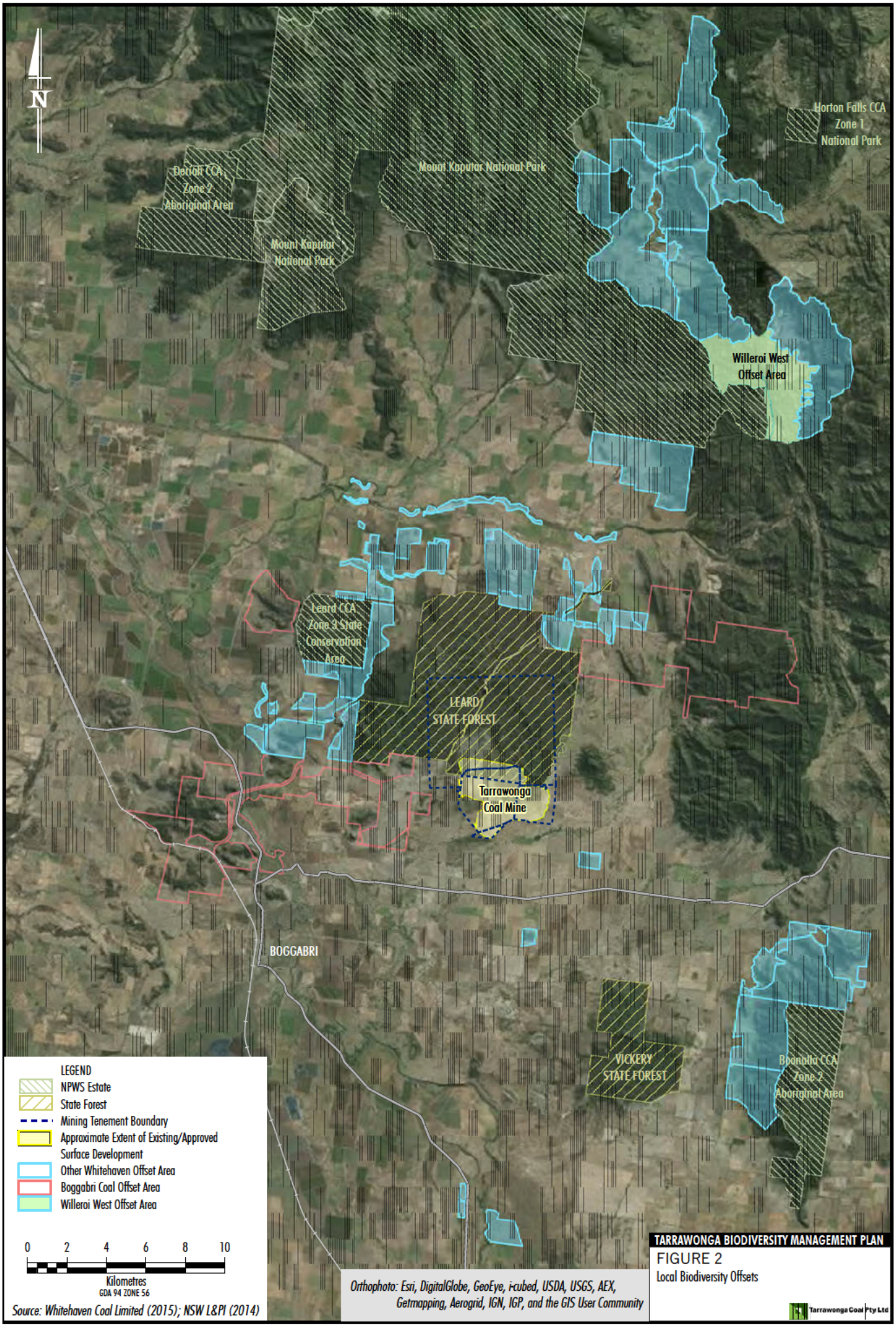


Figure 1 - Locality Plan



TARRAWONGA BIODIVERSITY MANAGEMENT PLAN

FIGURE 2

Local Biodiversity Offsets

Tarrawonga Coal Pty Ltd

WHC-15-31_BMP_202C

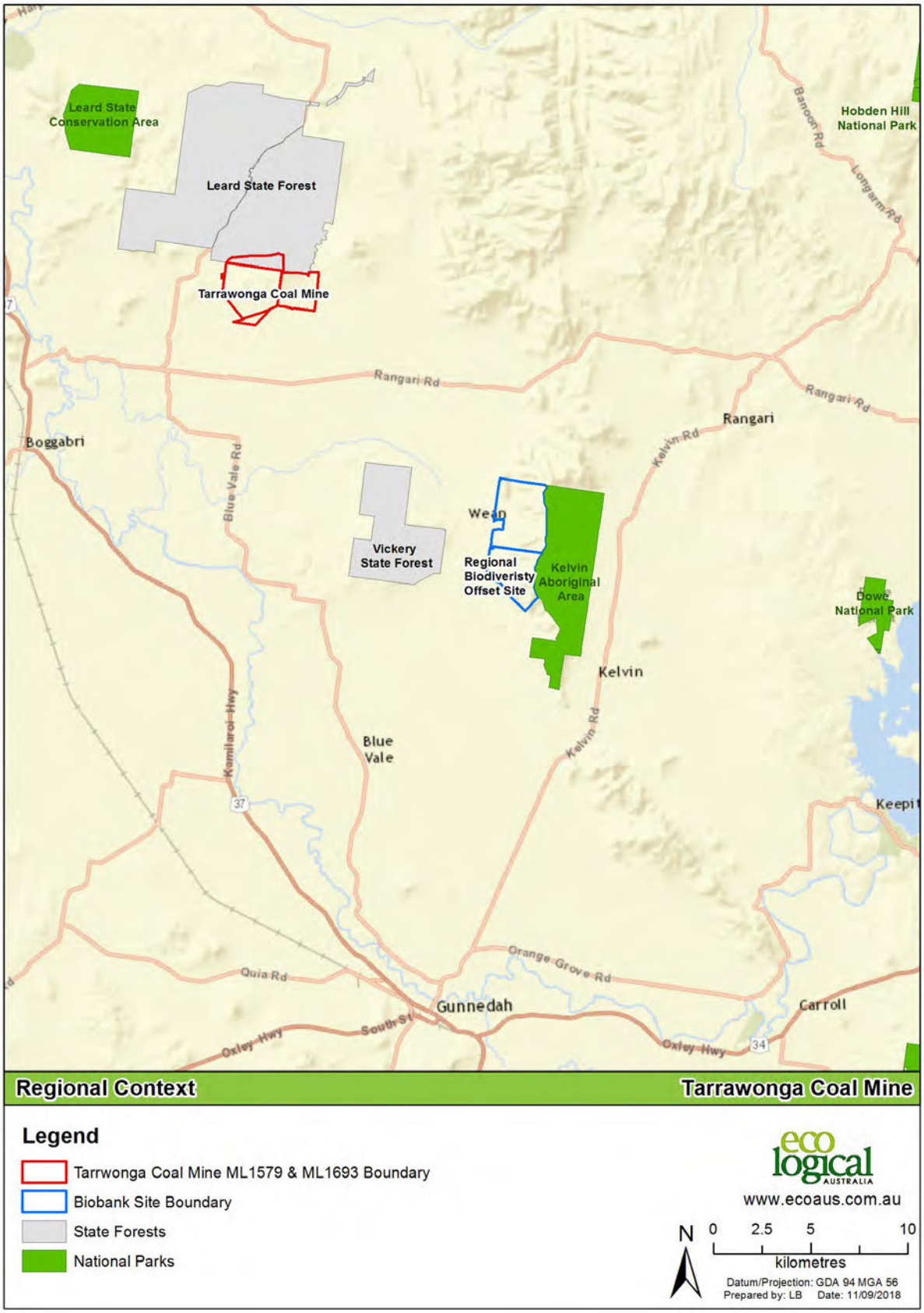


Figure 3 - Regional Location of Biobank Site

3 APPROVALS

3.1 Tenements, Licences and Approvals

Table 3-1 Identifies the approvals in place for the TCM at the end of the reporting period, the issuing/responsible Authority, dates of issue, expiry date and relevant comments.

Table 3-1- Tenements, Licences and Approvals

Issuing / Responsible Authority	Type of Lease, Licence, Approval	Date of Issue	Expiry	Comments
Division of Resources and Energy (DRE)	Exploration Licence (EL 5967)	09/09/2022	24/08/2027	
Environment Protection Authority (EPA)	Environment Protection Licence (EPL) No. 12365	09/01/2006	N/A	EPL12365
Environment Protection Authority (EPA)	Variation- Environment Protection Licence (EPL) No. 12365	13/12/2021	N/A	Variation
NSW Department Primary Industry - Water	90BL253276 90BL253278 90BL253279 90BL253280 90BL254253 90BL254254 90BL254255 90BL254221 90BL254214 90BL255766 WAL31084 WAL29548	18/05/2006 18/05/2006 18/05/2006 18/05/2006 18/05/2006 18/05/2006 24/04/2007 05/04/2007 04/04/2007 19/08/2012 02/08/2013 26/07/2012	Perpetuity Perpetuity Perpetuity Perpetuity Perpetuity Perpetuity Perpetuity Perpetuity Perpetuity Perpetuity Perpetuity Perpetuity	Monitoring bores 250 units 50 units
Department of Planning Infrastructure & Environment (DPIE)	Project Approval MP 11_0047	22/01/2013	31/12/2030	
Department of Planning Infrastructure & Environment (DPIE)	Project Approval MP 11_0047	2014	31/12/2030	MOD1 (continued coal haulage to Gunnedah CHPP)
Department of Planning Infrastructure & Environment (DPIE)	Project Approval MP 11_0047	2016	31/12/2030	MOD2 (allow receipt of all types of coal reject)

Issuing / Responsible Authority	Type of Lease, Licence, Approval	Date of Issue	Expiry	Comments
Department of Planning Infrastructure & Environment (DPIE)	Project Approval MP 11_0047	February 2017	31/12/2030	MOD3 (Traffic Management Plan)
Department of Planning Infrastructure & Environment (DPIE)	Project Approval MP 11_0047	May 2017	31/12/2030	MOD4 (Sound Power Level modification)
Department of Planning Infrastructure & Environment (DPIE)	Project Approval MP 11_0047	August 2017	31/12/2030	MOD5 (Open Cut Augmentation)
Department of Planning Infrastructure & Environment (DPIE)	Project Approval MP 11_0047	October 2018	31/12/2030	MOD6 (Coal Haulage)
Department of Planning Infrastructure & Environment (DPIE)	Project Approval MP 11_0047	June 2020	31/12/2021	MOD8 (Trucking water) for 18 months
Department of Planning Infrastructure & Environment (DPIE)	Project Approval MP 11_0047	February 2021	31/12/2030	MOD7 (Life of Mine)
Department of Planning Infrastructure & Environment (DPIE))	Project Approval MP 11_0047	May 2021	31/12/2030	MOD9 (Disposal of Waste Tyres)
Department of Planning Infrastructure & Environment (DPIE))	Project Approval MP 11_0047	October 2023	31/12/2030	MOD10 (Road Haulage Hours)
Department of Agriculture, Water and Environment (DAWE)	EPBC 2011/5923	11/03/2013	31/12/2053	Conditional Federal Project Approval for LOM Project
Department of Regional NSW – Division of Mining, Exploration and Geoscience (DMEG)	Mining Lease (ML) 1579	03/04/2006	02/04/2027	Expires 21 years from commencement. Varied on 17 October 2022 to include the new standard conditions from *Mining Regulation 2016*, Schedule 8A,

Issuing / Responsible Authority	Type of Lease, Licence, Approval	Date of Issue	Expiry	Comments
				Part 2.
Department of Regional NSW – Division of Mining, Exploration and Geoscience (DMEG)	Mining Lease (ML) 1685	18/07/2013	14/11/2032	Varied on 17 October 2022 to include the new standard conditions from *Mining Regulation 2016*, Schedule 8A, Part 2.
Department of Regional NSW – Division of Mining, Exploration and Geoscience (DMEG)	Mining Lease (ML) 1693	14/10/2013	14/10/2034	Expires 21 years from commencement. Varied on 17 October 2022 to include the new standard conditions from *Mining Regulation 2016*, Schedule 8A, Part 2.
Department of Regional NSW – Division of Mining, Exploration and Geoscience (DMEG)	Mining Lease (ML) 1749	17/11/2017	14/11/2032	Varied on 17 October 2022 to include the new standard conditions from *Mining Regulation 2016*, Schedule 8A, Part 2.
Division of Department of Regional NSW – Division of Mining, Exploration and Geoscience (DMEG)	Forward Program	1/1/23	31/12/23	FWP0001126

4 OPERATIONS SUMMARY

4.1 Mining Operations

Table 4-1 presents the production summary at the end of the reporting period.

Table 4-1 - Production Summary

Material	Approved Limit (Project Approval PA11_0047)	Previous Reporting Period 2022	This Reporting Period 2023 (actual)	Next Reporting Period 2024 (forecast)
Waste Rock/ Overburden (bcm)	***n/a***	20,864,246	20,769,537	22,959,699
ROM Coal/Ore (t)	***3,500,000***	2,418,940	1,949,901	2,023,516
Coarse and Fine Reject (t)	***700,000***	445,200	649,809	632,571
Saleable Product (t)	***n/a***	1,494,329	1,911,735	1,908,449
Gravel Production (m^3)	***90,000***	0	0	90,000

4.1.1 Other Operations

MP 11_0047 permits 24-hour operation of mining activities. Open cut mining activities, including processing of coal, generally occurred between the hours of 6:30 am and 5:00 pm (day shift) and 4:30 pm and 3:00 am (night shift) from Monday to Friday. Processing of coal on day shift also occurs almost every Saturday whereas mining activity on Saturday day shift has only occurred on an occasional basis to meet production deadlines.

4.1.2 Coal Haulage

For the reporting period 2,411,941 tonnes of coal were hauled along the approved haulage route from TCM to the Whitehaven Gunnedah CHPP. During the same period 51,795 tonnes of coal was distributed from TCM to the domestic market. There was no coal haulage from Vickery or Rocglen Coal Mines during the reporting period. The total tonnage of coal rejects received by TCM during 2023 was 649,809 tonnes. Transport of coal from the site or receipt of coal reject from the Whitehaven CHPP by truck has only occurred during the approved hours of:

(a) 6 am to 9.15 pm Monday to Friday;

(b) 7 am to 5.15 pm Saturday; and

(c) at no time on Sundays or public holidays.

The above hours were utilised up to the 12th of December, at which time the new haulage hours approved by Modification 10 were partially utilised. This increased haulage hours to the following:

(a) 4 am to 11.15 pm Monday to Friday;

(b) 5:00 am to 7:15 pm Saturday; and

(c) at no time on Sundays or public holidays

4.1.3 Exploration

Exploration drilling for resource definition and geological investigation purposes was undertaken during the reporting period within the mining footprint. Twenty-seven boreholes were completed between August and December 2023 including 24 open holes and 3 cored holes. Full details of these exploration activities will be included in the Tarrawonga Open Cut Mine group 2024 annual report.

Exploration drilling will continue to be undertaken at the TCM to further assess the coal reserves within the tenements. Exploration license (EL5967) was renewed by the Department of Regional NSW MEG (Exploration and Mining) on the 9th of September, 2022. The current term of this exploration license expires on the 24th of July, 2027.

4.2 Next Reporting Period

4.2.1 Mine operations

The mine production rates planned for 2024 are 2,023,516 tonnes per annum of ROM coal and 22,959,699 bank cubic metres (bcm) of overburden during the next calendar year. TCM may produce gravel up to 90,000m^3 for export off site over the next calendar year.

Vegetation clearing activities in mining areas over the next reporting period will be conducted in accordance with the approved Biodiversity Management Plan (BMP) and the updated Forward Program. The clearing program will be undertaken during the annual twelve week clearing campaign from the 15th February to the 30th April, except under exceptional circumstances and with the approval of the Secretary of the DPHI.

5 ACTIONS REQUIRED FROM PREVIOUS ANNUAL REVIEW

The 2022 Annual Review was considered to satisfy the reporting requirements of the approval and the document was accepted by the Department of Planning and Environment on the 22nd of June 2023.

6 ENVIRONMENTAL PERFORMANCE

The following sub-sections document the implementation and effectiveness of the various control strategies adopted at TCM, together with monitoring data for the reporting period. Life of mine monitoring data is included as Appendices in this AR, where relevant, to allow for discussion on longer-term trends.

6.1 Noise

6.1.1 Criteria

The Project Approval (MP 11_0047) and EPL 12365 describe the noise criteria for site operations and coal haulage as seen in Table 6-1.

Table 6-1- Noise Compliance

Noise Criteria dB(A)			
Location	*Day, Evening & Night LAeq (15 min)*	*Night LAeq (1 min)*	
All other privately-owned residences	35	45	
Road Traffic Noise Criteria dB(A) LAeq (1 hour)			
Location	*Day*	*Evening*	*Night*
Any residence on privately-owned land	60	60	55

Note: Day = 7:00am –6:00pm; Evening = 6:00pm –10:00pm; Night = 10:00pm –7:00am

A number of other specific conditions (i.e. acquisition, monitoring protocols and cumulative impacts) are listed in the PA and EPL 12365.

6.1.2 Environmental Management Measures

In accordance with the Noise Management Plan, a number of operational measures continue to be implemented on site to maintain compliance with limits. These include but are not limited to:

- Real-time noise monitor and web-based interface;
- Automated SMS alarms notifying site personnel of elevated noise levels approaching noise criteria; and
- Modification of operations where required.

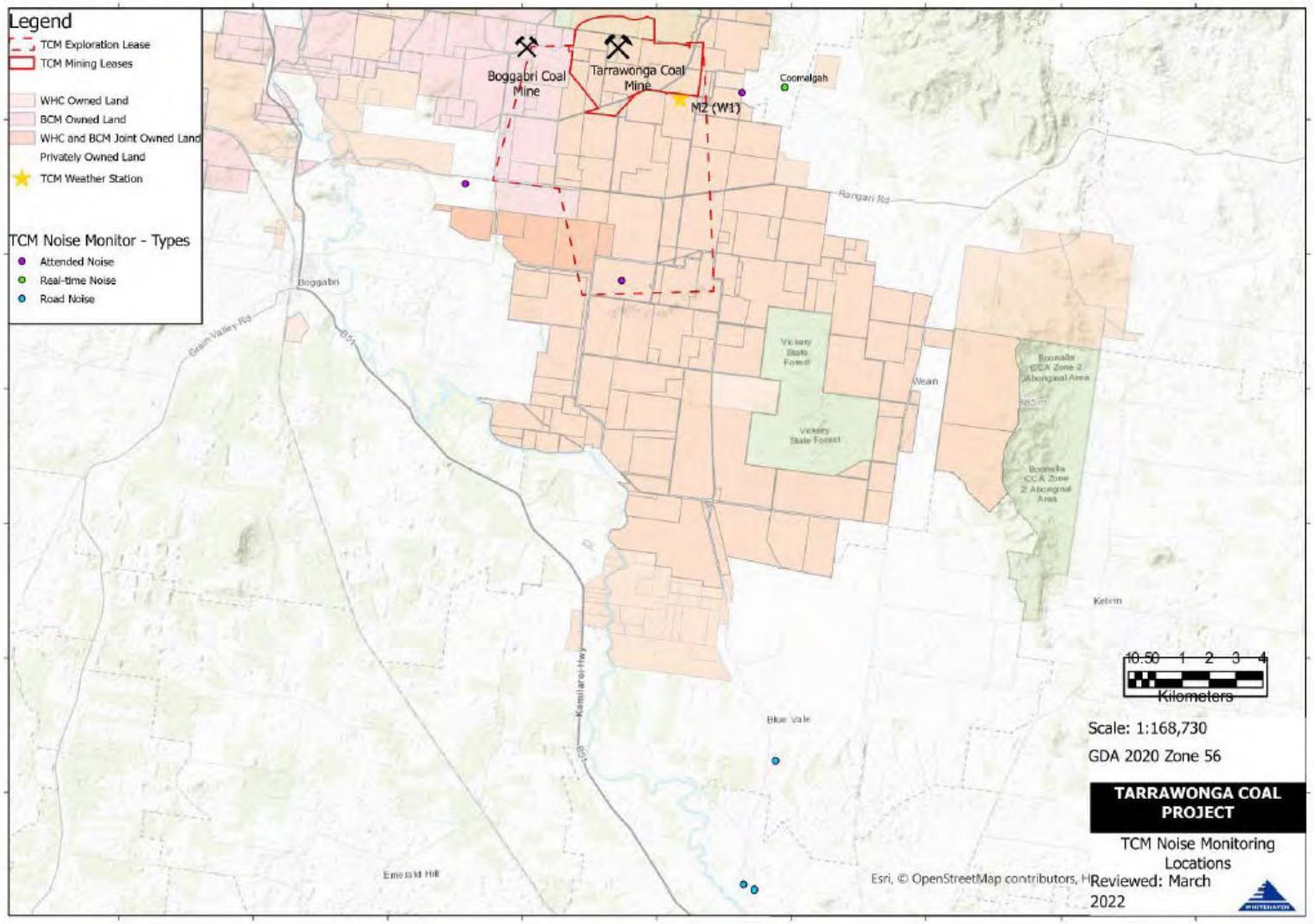


Figure 4 - Noise monitoring locations.

6.1.3 Key Environmental Performance

Attended Noise Monitoring

An independent consultant completed attended noise monitoring programs on a quarterly basis during the reporting period. The noise monitoring sites are identified on Figure 4 and include 3 sites: "Bungalow" (TN4), "Barbers Lagoon" (TN3) and "Matong-Coomalgah" (TN2) properties. Attended noise monitoring results are shown in the table below and show compliance with the criteria specified in the project approval on all occasions during the reporting period.

Table 6-2 - Attended Noise Monitoring results comparison

	TN2 – Coomalgah*			Limits (day/evening/night/night)
	2021	**2022**	**2023**	
Q1	<21 / <27 / <20/IA	<30 / <30 / <30 / <30	<20 / <20 / <20 / <20	**35 / 35 / 35 / 45**
Q2	<18 / <25 / <29/36	<30 / <30 / <30 / <35	<20 / <20 / 23 / <20	
Q3	<26 / <24 / <21/31	<20 / <20 / <20 / <20	<20 / <20 / 24 / 31	**LAeq, 15min/LAeq, 15min/LAeq, 15min/LA1, 1min**
Q4	<21 / <24 / <24/42	<20 / <20 / <20 / <20	21 / 23 / 32 / 36	
	TN3 - Barbers Lagoon			
	2021	**2022**	**2023**	
Q1	<28 / <30 / <30/IA	<30 / <31 / <30 / <30	<20 / <20 / <20 / <20	
Q2	<35 / <30 / <30/37	I/A	<20 / <20 / 22 / 27	
Q3	<24 / <20 / <30/34	<20 / <20 / <21 / 25	<20 / 28 / 26 / 30	
Q4	<35 / <35 / <30/IA	<20 / <20 / <20 / <20	IA / IA / 28 / 32	
	TN4 – Bungalow			
	2021	**2022**	**2023**	
Q1	<40 IA / IA <30 / IA <30 / IA	<35 / <35 / <35 / <35	<20 / <20 / <20 / <20	
Q2	<26 / <30 / <30/29	I/A	<20 / 32 / 30 / 40	
Q3	<21 / <23 / <26/29	<20 / <20 / <23 / 27	<20 / 27 / <20 / <20	
Q4	<35 / <30 / <30/IA	<20 / <20 / <20 / <20	IA / 26 / IA / <20	

Note: Above values are the maximum or only measurements recorded for the indicated period.
Key:
IA = Mine noise inaudible
** = taken at TN2 monitor, 9dB reduction to nearest private property not added. Reading within compliance levels.*

Attended noise monitoring to date indicates that results are generally consistent with previous reporting year's results for all other measurements taken.

Road Noise Monitoring

TCM is required to ensure that the noise generated by road transport along public sections of the coal haulage route was in accordance with the Tarrawonga Noise Management Plan and with Schedule 3 condition 12 of MP 11_0047.

Modification 10 to Project Approval MP 11_0047 has been implemented to incorporate an extension of haulage hours. The revised approved hours for haulage operations are now scheduled from 4:00 am to 11:15 pm, Monday through Friday, and from 5:00 am to 7:15 pm on Saturdays.

Road noise monitoring was undertaken in June and December 2023. The monitoring occurred at the privately owned residences on the "Weroona" property and "Brooklyn" properties located off Blue Vale Road in the June monitoring period. Results showed compliance on this occasion, which is consistent with the predictions of the Whitehaven ROM Coal Haulage Modification Environmental Assessment for the southern section of the approval transport route. In order to ascertain that the extended haulage hours had no adverse effects, and as requested by the DPHI an additional monitoring location was incorporated during the December monitoring. This monitoring site was strategically selected to capture noise levels in comparison to two private residences. The two residences, 'Longlands' and 'Cedarvale' are properties adjacent to the CHPP in Gunnedah, along the Kamilaroi Highway. The Noise Management Plan was updated to reflect these additional locations in January of 2024, and has been submitted for consultation.

Real Time Noise Monitoring

In accordance with the requirements of MP 11_0047 and EPL 12365, TCM continued to undertake real time noise monitoring and managed noise according to the Noise Management Plan during the reporting period.

Annual Sound Power Level Testing

In December 2023, Sound Power Level (SPL) testing of all the operating fixed and mobile plant was undertaken. According to MOD 4 (May 2017) of the MP 11_0047, there is no criteria applicable for SPL and levels identified in the Noise and Blasting Environmental Assessment (EA, 2011) are only used for comparison purposes. Each plant item was assessed for different types of activities (i.e. Dynamic and Stationary).

A comparison of SPL levels in Table 6-3 below indicates that the overall average measured values for the reporting period were generally consistent with the assumed and modelled values in the EA (2011), expected levels for the type of equipment and with previous years.

To ensure that all equipment is tested and that Production is not adversely affected, TCM's annual SPL testing is now conducted so that all heavy plant is measured on a three yearly basis. The first monitoring program to reflect this was in 2022. Table 6-3 reflects this in that some plant was not available for testing.

Table 6-3 - Average Sound Power Levels against EA (2011)

Type	Average Overall - dB(A)			EA (2011) - Guidance Level
	2023	2022	2021	
Haul Truck - CAT 785C Dump Truck	N/A	N/A	*117.7*	*121*
Haul Truck - HITACHI EH4000-AC2	115	115	*111.4*	*116*
Haul Truck - CAT 789 Dump Truck	117.5	117	*112.4*	*121*
Water Carts	114[1]	114[1]	*108.8*	*111*
Dozers	114	116	*110.7*	*116*
Frontend Loaders	112	N/A[2]	*108.0*	*117*
Graders	106.5	N/A	*104.5*	*108*
Drills	N/A	N/A	*116.7*	*117*
Excavator – Hitachi EX5600	113.5	113	*109*	*115*
Crushing Plant	N/A	N/A	*110*	*113*

[1] CAT777D tested. EA SPL is for a CAT773C. Maules Creek EA LwA for CAT777 and CAT773 is 115dB

[2] Note: N/A = Plant was not available for testing.

Acoustic model annual validation

An independent consultant was engaged to assess and validate the noise model prediction developed in 2011 against the monitoring results for 2023. The validation was conducted in accordance with Schedule 3 Condition 12(g) of MP 11_0047 and the Noise Management Plan (NMP) which states:

"In accordance with the requirements of the consent, TCM will seek validation of the tenth percentile methodology used in the noise impact assessment for the Tarrawonga Coal Project. This will be completed on an annual basis by the provision of a report from an appropriately qualified acoustical consultant, utilising the data obtained over a 12-month period from the monitoring program and providing a comparative assessment against the modelled predictions from the tenth percentile methodology."

Attended monitoring data for 2023 was compared against the 90th percentile (tenth percentile exceedance levels, statistically the 90th percentile) predicted noise contours for the worst case night time Year 4 scenario using the Environmental Noise Model software. Table 6-4 shows a comparison of the 2023 90th percentile operator attended measured noise levels against the corresponding 90th percentile predicted noise levels for each location.

Table 6-4 - Comparison of 2023 Attended Noise Monitoring against Year 4 TCM EA Noise Predictions

Location	2023 90th Percentile Measured Noise Level (dBA)	EA (2011) 90th Percentile Predicted Noise Level (dBA)[1]	Criterion (dBA)
Matong/Coomalgah	27	32	35
Bungalow	23	31	35
Barber's Lagoon	23	34	35

Note 1: 90th percentile predicted noise levels refer to the 10th percentile exceedance levels in accordance with the tenth percentile methodology.

As displayed in Table 6-4, all measured levels were below the modelled level, confirming that the model has not under-predicted noise levels at the receiver location.

6.1.4 Proposed Improvements to Environmental Management

The Introduction to Site (ITS) process is utilised to ensure commissioned new plant items are were tested for sound power levels before use and fitted with noise suppressant technology as required.

A revised NMP was approved by the Department in May 2021. TCM reviewed the NMP at the close of 2023 for submission to the Department in early January 2024. This is still in review, but includes updates such as:

- Noise Policy for Industry (2017)
- Additional road noise monitoring locations – Cedarvale and Longlands
- Adaptation to the new WHC Management Plan template

As indicated previously, Sound Power Level testing is now conducted as such to reflect a three yearly monitoring program, in which all plant will be tested on a three-yearly basis.

6.2 Blasting

6.2.1 Criteria

Blasting criteria for the TCM are noted in MP 11_0047, and Condition L5 of EPL 12365.

- Blasting must only be carried out between 9.00 am and 5.00 pm, Monday to Saturday inclusive. Blasting is not allowed on Sundays, public holidays or at any other time without the written approval of the Director-General.
- A maximum of one (1) blast per day, unless an additional blast is required following a blast misfire and a maximum of 4 blasts per week averaged over a calendar year for the project:
- For non-project related residences, the overpressure level from blasting operations must not:
    - Exceed 115dB (Lin Peak) for more than 5% of the total number of blasts over a period of 12 months; or
    - Exceed 120dB (Lin Peak) at any time.
- For non-project related residences, ground vibration peak particle velocity from the blasting operations must not:
    - Exceed 5mm/s for more than 5% of the total number of blasts over a period of 12 months; and
    - Exceed 10mm/s at any time, at any residence on privately owned land.

6.2.2 Key Environmental Performance

During the reporting period, 84 blasts were initiated.

There was one instance where two or more blasts were required to be fired on one day due to safety reasons under Sch 3 Cn 15. These were blasts 1224 and 1225. They were electronic shots and could not be fired together due to potential interference from the electronic signal of the separate blasts. The weather conditions in the area of TCM were not generally favourable for blasting on scheduled days. However, TCM identified a suitable window of weather conditions on Monday, the 4th of September. Approval was sought from the Secretary and the EPA prior to firing the blasts however both blasts were under the 0.5mm/s vibration threshold described in Sch 3 Cn 16.

The maximum ground vibration recorded at the compliance monitor during the reporting period was 1.69mm/s recorded at “Coomalgah” on 29th April 2023 which is below the consent criterion of 5mm/s.

All blasts on non-project related residences during the reporting period were within the ground vibration criteria.

One blast resulted in an overpressure of 116.5dB on the 15th of July 2023 at private residence "Coomalgah". As this was the only event above 115dB during a 12-month rolling period, the rolling average for overpressure for all blasts remained below the compliance level of 115dB and within the allowance that 5% of blasts may exceed 115dB (but not 120dB).

Performance during the reporting period was consistent with the EA prediction for blasting.

The maximum fume rating for the reporting period was classified as a '3B' per the *Australian Explosives Industry And Safety Group Inc. – Code of Practice: Prevention and Management of Blast Generated NOx Gases in Surface Blasting*. No instances of blast fume leaving the premises boundary were recorded during the reporting period.

6.2.3 Proposed Improvements to Environmental Management

TCM updated the Blast Management Plan in October 2022 and will continue to review and update the BMP as required.

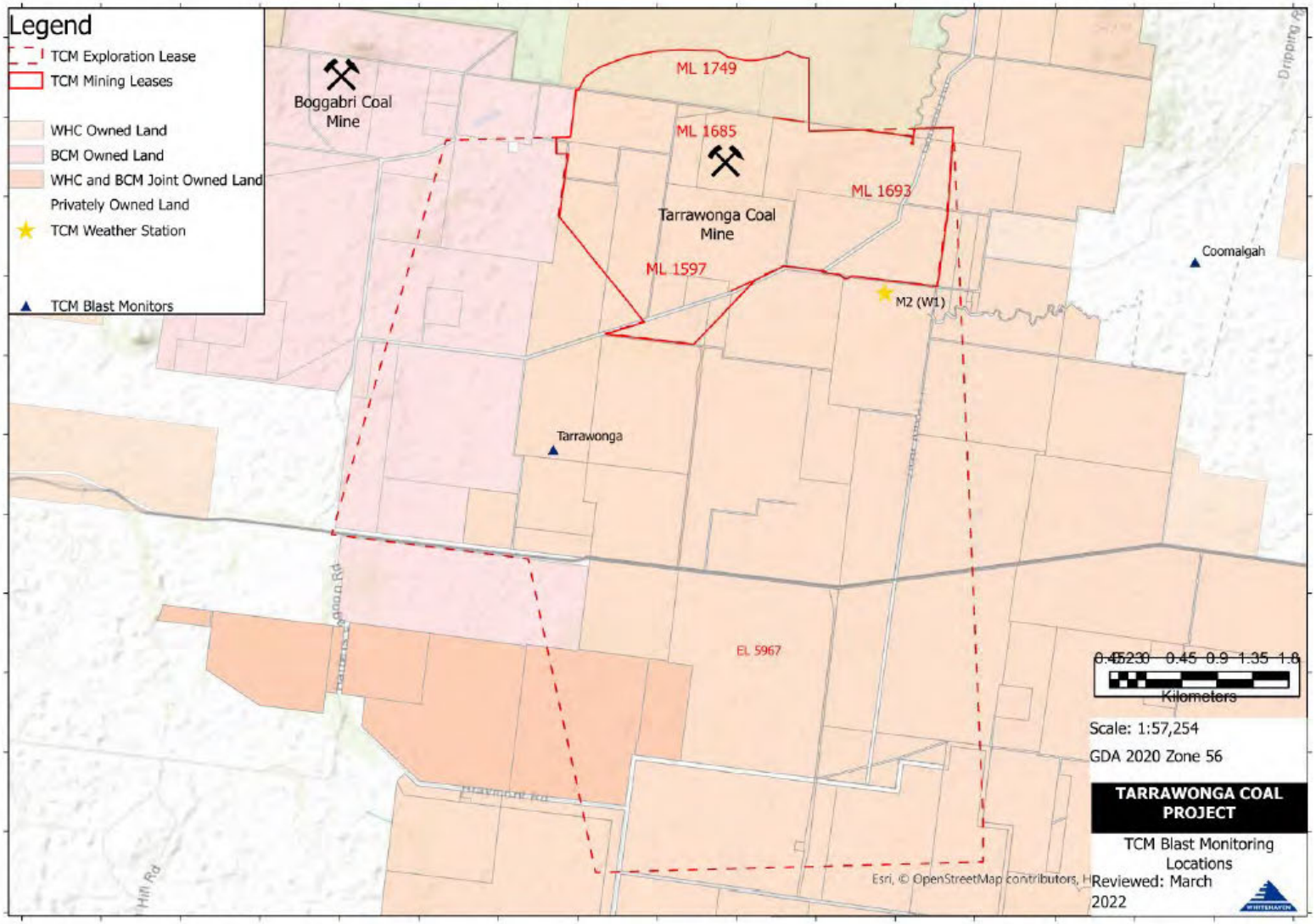


Figure 5 - Blast Monitoring Locations

6.3 Air Quality and Greenhouse Gas

6.3.1 Criteria

The air quality criteria applicable to the TCM are specified in MP 11_0047 Schedule 3. Air quality criteria is summarised below:

- Acceptable mean annual increase in deposited dust – 2g/m^2/month.
- Mean annual dust deposition (all sources) – 4g/m^2/month.
- Mean annual Total Suspended Particles (TSP) (all sources) – 90 µg/m^3.
- Mean annual Particle Matter under 10 microns (PM10) – 30 µg/m^3.
- 24-hour average PM10 particulate level – 50 µg/m^3.

6.3.2 Environmental Management Measures

TCM employs a range of air pollution control measures specified in the Air Quality and Greenhouse Gas Management Plan (AQGGMP), including:

- Maintaining a real time SMS alarming system to key operational personnel of higher trends in PM10 data at Flixton TEOM;
- Using a prediction and dust forecasting system;
- Modification of work practices where required including changing of excavation and dumping strategies;
- Limiting ground cover removal in advance of mining consistent with operational requirements;
- Dust suppression using water and dust suppressant additive products on haul roads and the use of water while drilling and crushing to reduce airborne dust emissions;
- Progressive shaping and rehabilitation of areas once they are no longer required for mining purposes;
- Speed limit restrictions on all vehicles and equipment on the mine site;
- Use of covers on the trays of all product coal trucks. All coal haulage vehicles (road trucks only), including those operated by sub-contractors, are fitted with roll-over tarpaulins.

Figure 6 displays the air quality monitoring locations including the deposited dust gauges (DDG), two Tapered Element Oscillating Micro balance units (TEOM) installed on project related properties (Flixton and Wil-gai), three mobile real-time dust samplers (E-samplers) installed near the mine boundary and one High Volume Air Sampler (HVAS) on privately owned property (Coomalgah) operating and serviced during the reporting period.

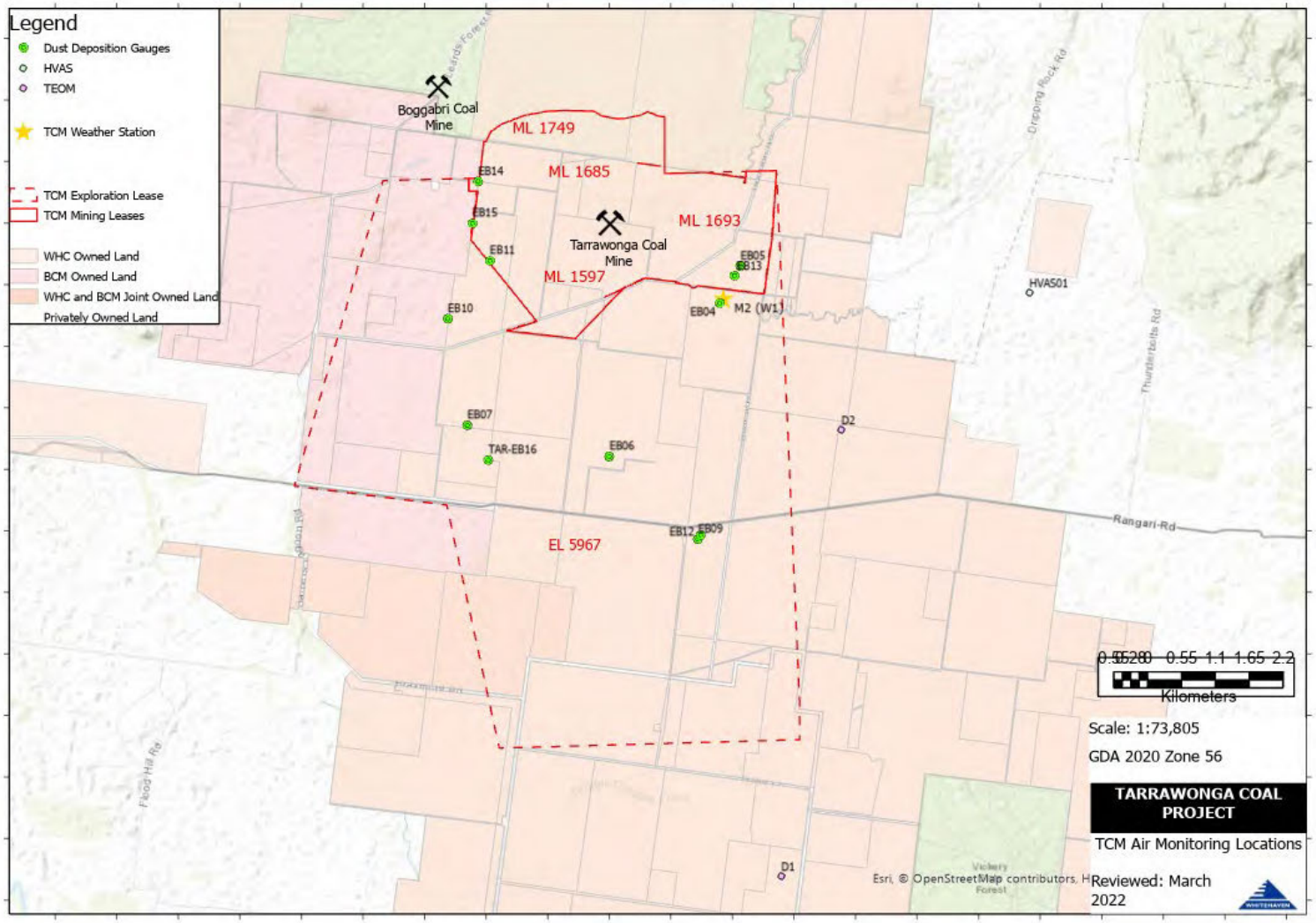


Figure 6 - Air quality monitoring locations

6.3.3 Key Environmental Performance

Greenhouse Gas

GHG emissions are reported through participation in the National Pollutant Inventory (NPI) and as part of the Whitehaven Group in the National Greenhouse and Energy Reporting Scheme (NGERS). The total of Scope 1 and Scope 2 GHG emissions attributed to TCM reported for the NGERS FY2023 reporting year were 73,155 t CO2-e. The FY2023 EA prediction was 197,952 t CO2-e.

Fugitive emissions methodology used in FY23 GHG reporting and EA predictions was not comparable. Method 1 was utilised for estimating EA predictions using a default emissions factor and method 2 was used for FY23 GHG data reporting utilising an operations emissions model which was created by a comprehensive gas sampling program to determine site specific emission factors for each coal seam. Fugitive emissions have been reported using method 2 at TCM since 2016.

To allow for a comparison between total and fugitive emissions, total and scope 1 emissions have been recalculated using method 1. Method 2 and the running of the emissions model is unable to be retrospectively applied to EA predictions due to limitations in data availability.

Table 6-6 shows a comparison of the actual and recalculated total and scope 1 emissions using EA comparable methods against the EA 2021 predictions.

Table 6-5: Comparison of Emissions Compared to Prediction in EA

	Predicted GHG Emissions (EA 2021)	Actual emissions FY23 (Method 2)	Recalculated emissions FY23 (Method 1)
Scope 1	197,952 t CO2-e	73,148 t CO2-e	148,548 t CO2-e
Total Emissions	197,952 t CO2-e	75,155 t CO2-e	148,555 t CO2-e

As displayed in Table 6-5, the actual and recalculated total and scope 1 emissions using an EA comparable method were below EA predictions.

Scope 2 emissions

Approximately 10,115 kWh electricity was purchased by the mine during the FY2023 reporting period equating to 7 t CO2-e GHG emissions. Tarrawonga is not connected to the electricity grid and relies on generators for power generation. The electricity purchased was from TCM owned properties that contain monitoring equipment. From October 2022 WHC offset Scope 2 emissions by purchasing 100% carbon neutral electricity across all sites.

Dust Deposition Gauges:

Table 6-6 details the monthly dust deposition levels measured at 10 dust deposition gauges (DDG). All monitoring locations recorded average dust deposition below 4g/m2/month and within compliance with Sch 3 Cn 24 of MP 11_0047.

Table 6-6 - Deposited Dust monitoring data summary 2023 [g/month/m^2]

MONTH	TEMPLEMORE (EB-4)[1]	BOLLOL CREEK STN (EB-5)[1]	AMBARDO (EB-6)[1]	TARRAWONGA (EB-7)[1]	PINE GROVE (EB-9)[1]	TARRAWONGA MINE (EB-10)[1]	TARRAWONGA MINE (EB-11)[1]	TARRAWONGA MINE (EB-14)[1]	TARRAWONGA MINE (EB-15)[1]	JERALONG NORTH (EB-16)[2]
Jan 23	1.8	6.1c	2	1.3	2.1	3.5	4.2	4.7	2.3	8.1
Feb 23	1	1.9	2.5	0.7	2.2	0.6	2	1.6	1	5.1c
Mar 23	4.8c	1	0.4	1.2	0.5	0.7	1.9	2.2	1	2
Apr 23	0.8	1.8	1.1	0.4	1.3	1.5	2.8	3.3	0.6	0.6
May 23	0.5	7.3	0.7	0.4	1.1	0.7	3.6	3.9	1	5.5c
Jun 23	1.3	1.9	0.6	0.5	0.7	1.3	2.3	5.8	1.4	6.5c
Jul 23	0.6	1.1	0.8	0.3	0.3	0.8	3	3.8	1.1	2.1
Aug 23	4.1c	0.9	1.9	0.3	0.1	0.5	1.3	9.6c	1	0.4
Sep 23	1.1	2.2	0.7	0.6	0.5	1.1	5.1	6.2c	2.5	0.6
Oct 23	0.5	1.3	1.1	1.5	0.5	2.6	3.3	2.2	1.9	2.0
Nov 23	0.3	0.7	0.4	0.6	0.6	0.8	2.0	3.2	1.0	1.2
Dec 23	1.6	1.5	0.7	0.4	1.2	0.8	3.1	4.7	2.9	0.5
2023 Average	1.0	2.0	1.1	0.7	0.9	1.2	2.9	3.5	1.5	1.9

C= Results contaminated by deposits deemed unrelated to mining activities (bird droppings, insects and vegetation).

High Volume Air Sampler (HVAS)

TCM has one HVAS which is located at the privately-owned property "Coomalgah". All the results recorded at the HVAS are summarised in Appendix 2.

The PM_{10} annual average at Coomalgah was 16.4 $\mu g/m^3$, which is below the 30 $\mu g/m^3$ criterion specified in Schedule 3 condition 24.

PM_{10} measurements have been summarised in and Figure 7 shows the trend from 2021 to December 2023 (excluding the values measured during days of "adverse weather").

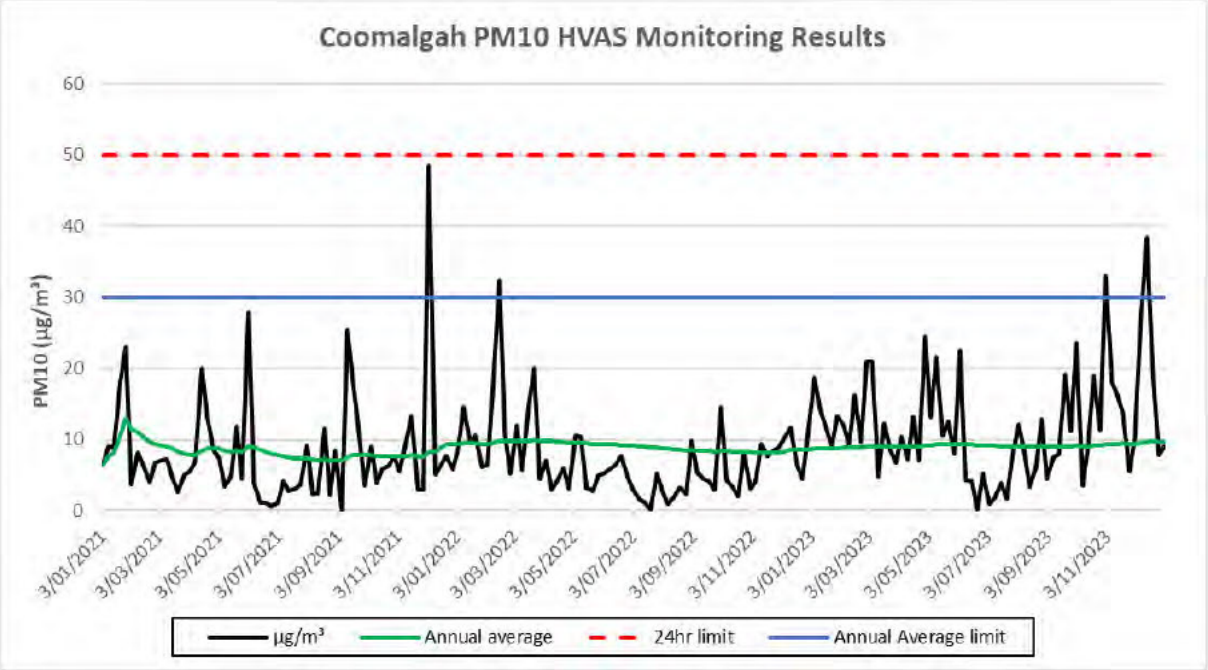


Figure 7 - HVAS-PM_{10} 24hr average monitoring data (2021-2023)

Total Suspended Particulate (TSP) is calculated from the measured PM_{10} data using monitoring conducted at the 'Coomalgah' HVAS. Results indicated the TSP rolling annual average remained below the applicable criteria of 90 µg/m for the reporting period. These are illustrated in Figure 8.

The EA predicted no exceedance of the annual average TSP criterion. TSP results inferred from PM_{10} data were consistent with the EA for the reporting period.

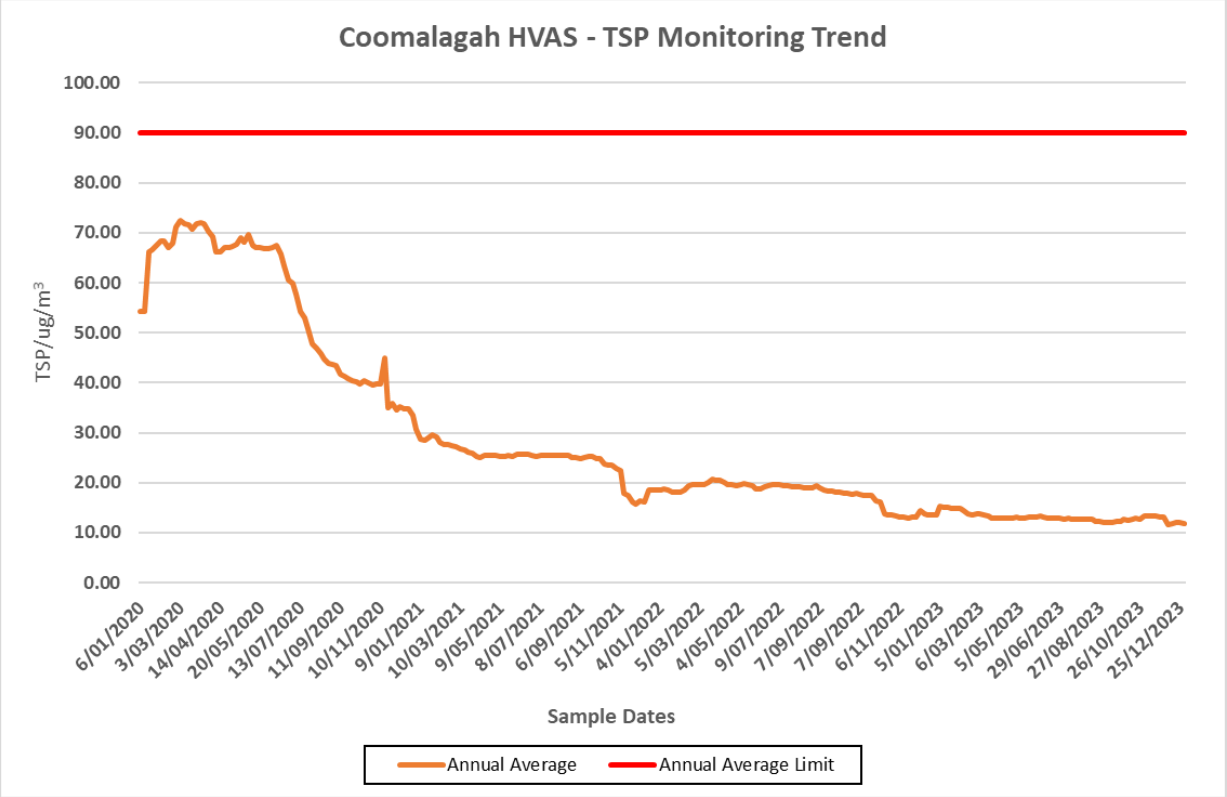


Figure 8 - Coomalgah HVAS- calculated TSP Monitoring Trend (2020 - 2023)

E-samplers

Three (3) E-samplers are installed on mine owned land (no criterion applies) and monitor continuously and real-time PM_{10} levels. The monitors are used as a management tool to facilitate the day to day mine operations and for investigation purposes.

TEOMs

Throughout the reporting period, the TEOM located on a mine owned property 'Flixton' monitored continuously and real-time PM_{10} levels. The monitor is used as a management tool to facilitate the day to day mine operations and therefore there is no criterion applicable at that location.

Results recorded at the $PM_{2.5}$ monitor on the project related property 'Wil-gai' remained generally consistent with those recorded during previous reporting periods for most of the year. The Air Quality Greenhouse Gas Management Plan (AQGHGMP) states that whilst no criteria applies, TCM will compare results against $PM_{2.5}$ annual average target level (no levels stipulated within the project approval) of 8.0 µg/m^3 and target level of 25µg/m^3 for 24hr average. Including all the valid $PM_{2.5}$ 24hr average values measured during the reporting period, the annual average calculated is 4.5/m^3.

An air specialist prepared a report to assess TCM performance against the Key Performance Indicators (KPI's) listed in Table 6-5 of *Tarrawonga Coal Mine – Particulate Matter Control Best Practice Pollution Reduction Program (PRP)*. The assessment of KPI-1, KPI-2 and KPI-4 has shown that:

- KPI – 1 (PM_{10}/ROM (kilograms/tonne))

For 2023, calculated PM_{10} was 758,120kg/year and ROM was 2,211,112t/year giving a PM_{10}/ROM ratio of 0.3 (kg/t) which is a low value and is generally consistent with the baseline required and specified in the PRP.

- KPI – 2 (PM10 Emission Control (%)):

The level of control applied to operations has not changed since the PRP. As the level of dust control applied to activities at TCM has not changed from previous years the KPI-2 value would also be unchanged.

Table 6-7 - KPI – 2 Summary of PM10 control factor (TAS, 2023)

Mining Activity	Current Control Factor	Control Factor with additional best practicable controls.	K2y
Hauling on unsealed roads	75	80	94%
Unloading Coal to hopper	30	79	38%
Wind Erosion and Maintenance – Stockpiles	25	62.5	40%

- KPI – 4 (Water Intensity for Hauling (L/VKT)):

Whilst total kilometres are not precisely measured there has generally been a significant increase in total water applied to haul roads between 2020 and the end of 2022. Since April 2018 a dust suppressant has been used on the haul roads in periods of low rainfall in order to assist with water management on site. As 2022 was a high rainfall year due to a La Nina event, the use of dust suppressant and watercarts dropped accordingly and this can affect the utility of this KPI as it now stands. Since the use of dust suppressant ceased in 2021, during the 2023 reporting period, 781 ML of water has been used on site. Similarly to the 2022 results, the air specialists report shows that sufficient water was utilised in 2023 to maintain the required control level).

6.3.4 Proposed Improvements to Environmental Management

The predictive air dispersion model system will continue to be implemented in accordance with the BTM Air Quality Management Strategy. The Air Quality and Greenhouse Gas Management plan will be reviewed, updated and submitted as necessary.

6.4 Biodiversity and Offsets

The revised Biodiversity Management Plan (WHC, 2022) was approved by former NSW DPE (now DPHI) on 10 August 2022 and by the former Commonwealth DAWE (now DCCEEW) on 24 June 2022. The BMP outlines a Biodiversity Offset Strategy (BOS) for Willeroi West (the approved Offset Area for the Tarrawonga Coal Mine (TCM)) of maintaining and improving 1,660ha of native woodland and forest adjacent to the south eastern boundary of Mount Kaputar National Park that is part of the original Willeroi property and collectively known as the Tarrawonga Biodiversity Management Area (BMA).

6.4.1 Weather Summary of Willeroi Offset Property

Regionally central meteorological station to the BMA is the Gunnedah Pool site (BOM 2023) which has recorded highly variable rainfall over the last 5 years; from the driest on record in 140 years of 237mm in 2019, followed by above average rainfall years in 2020, 2021 and 2022 of 833mm, 990mm and 860mm respectively (resulting in numerous major flooding events of the Namoi River). In 2023, the Gunnedah Pool site recorded 496mm being below annual average rainfall of 615mm. WHC maintains a meteorological station within the Tarrawonga BMA and a summary of weather conditions experienced during the 2023 reporting period being the maximum monthly average temperature was 33°C in January 2023; minimum monthly average temperature was 9°C in June 2023; and annual temperature ranges were 4°C to 38°C in 2023. The total annual rainfall in 2023 was 424mm with the maximum in March (110mm) and minimum in May (1mm).

6.4.2 Infrastructure Management

During the reporting period, a total of 137m repaired fence (fauna friendly) was constructed on the Tarrawonga BMA. Maintenance of signage and gates undertaken as required to continue to restrict unauthorised access and minimise livestock incursion. Also, during the reporting period, 8km of redundant internal fences were deconstructed along the boundary of Mount Kaputar National Park in consultation with NPWS. Any remaining derelict assets/infrastructure items will continue to be assessed, removed and remediated as required prior to potential transfer of Tarrawonga BMA to National Park Estate.

6.4.3 Seed Management

The routine seed assessments for the Tarrawonga BMA aims to identify on a seasonal basis the life cycle stage and development of native plants to identify what, where, when and how to target appropriate resources to collect seed for future revegetation programs. A total of 5 species were collected resulting in 2.2kg of local provident seed from across the Willeroi biodiversity property that was incorporated with other local and regionally provident seed sourced by reputable seed collectors as part of the WHC group wide revegetation planning.

6.4.4 Revegetation Management

The Tarrawonga BMA annual fuel load monitoring was undertaken between September and November 2023 as part of planning and assessment of bushfire hazard and ecological burn program

for 2023; with the results indicating moderate to high overall fuel loads present. During the reporting period there was a bushfire of low to moderate intensity caused by lighting resulting in 129.3ha burnt on the Willeroi West biodiversity property. Other fire management implemented by WHC during the reporting period was fire break track maintenance carried out over 27.9km to a zero-fuel barrier standard across the Tarrawonga BMA. WHC maintains regular communications throughout the reporting period with both the Liverpool Range and Namoi-Gwydir Zone RFS teams around planning of WHC Biodiversity's ecological burn programs as well as maintaining contact points in case of emergency. WHC maintains a specialist fire fighting contractor for an on-call engagement during the fire season to respond in the event of a bushfire on WHC Biodiversity and non-mining lands.

6.4.5 Flora and Fauna Monitoring Program

During the reporting period, the ecological monitoring program of the Tarrawonga BMA included winter bird surveys that were undertaken in July and August 2023; spring flora monitoring of 26 plots across four vegetation zones (VZs) undertaken during October 2023 and annual fauna monitoring at 27 bird survey sites, 13 diurnal herpetofauna survey sites, 4 Harp Trap Sites and 12 echolocation monitoring sites between January and November 2023. During the winter bird surveys, three threatened species (Dusky Woodswallow, Little Lorikeet and Turquoise Parrot) were recorded. During flora monitoring, three VZs were recorded as meeting or exceeding completion criteria for all four biometrics. Native plant species richness (NPS) completion criteria (NPS benchmark for relevant biometric vegetation communities) were met or exceeded at all four VZs. Native overstorey cover (NOS) completion criteria (minimum NOS benchmark for relevant biometric vegetation communities) was met or exceeded at 3 out of 4 VZs. Native midstorey cover (NMS) completion criteria (minimum NMS benchmark for relevant biometric vegetation communities) was met or exceeded at all four VZs. Native ground cover grass (NGCG) completion criteria (minimum NGCG benchmark for relevant biometric vegetation communities) was met or exceeded at all four VZs. Comparison of individual plot data shows that NPS decreased from 26 out of 26 plots last year to 24 out of 25 plots meeting or exceeding completion criteria in 2023. NOS increased from 13 out of 26 plots last year to 18 out of 25 plots meeting or exceeding the completion criteria in 2023. NMS decreased from 21 out of 26 plots last year to 20 out of 25 plots meeting or exceeding the completion criteria in 2023. NGCG increased from 23 out of 26 plots last year to 24 out of 25 plots meeting or exceeding the completion criteria in 2023. Apart of the annual fauna monitoring program were standardised bird surveys across 27 survey sites resulting in 83 bird species were recorded with site level richness ranging from 3 to 25. Bird richness across woodland habitats was 67 (average

19.9; range 13 to 25); 29 species were detected at revegetation sites (average = 9.4; range 4 to 13) and 51 species were recorded at naturally regenerating sites (average 15.3; range 11 to 24). In 2022, 96 bird species were detected, while 81 bird species were detected in 2021. Diurnal herpetofauna surveys of 13 sites identified 19 reptile species during 2023 with site species richness between 0 and 7. Habitat type species richness averaged 13 species detected in woodland (average = 5.33 range 4 to 7); 8 species were detected in naturally regenerating sites (average = 2.75, range 1 – 4) and 3 species were detected in revegetated sites (average 1, range 1 to 1). During echolocation and harp trap surveys, a total of 21 microbat species were detected including five threatened species listed under the BC Act. Habitat type species richness averaged 19 species detected in remnant woodland (9.5, 5 to 14), 19 species in natural regeneration (average 11.6, range 10 to 14) and 8 species in revegetation sites (average, 5.5, 5 to 6).

6.4.6 Habitat Management

During the reporting period, habitat augmentation was undertaken with 30 new nest boxes targeted for Small Gliders, Microbats, Turquoise Parrots and Pale-headed Snakes installed on the Tarrawonga BMA. This brings the total habitat augmentation constructed since 2021 on Tarrawonga BMA to 104 nest boxes.

6.4.7 Feral Animal Management

WHC aims to apply an even and consistent pest animal management effort by routinely scheduling rolling monitoring and control programs across the Tarrawonga BMA. This standardised approach can also be supplemented with periodic targeted programs that focus on specific areas with high pest animal detection, or, on species which have increasing rates of detection. Both the overall management and targeted programs are planned using data collected from grid-based motion detection camera monitoring program, pest animal observations and the results of previous control programs. Monitoring demonstrated that certain animals like Feral Pigs and Goats were highly detectable across the year. All other pest animal species had scarce to low detection levels across 2023. The pest animal monitoring ensures that timely and prioritised pest animal control is undertaken on a seasonal basis identifying what, where, when and how to target appropriate resources across the Tarrawonga BMA for pest animal management. During the reporting period, WHC implemented a pest animal control program across the Tarrawonga BMA with routine 1080 canid pest ejectors as well as Hoggone baits and trapping programs as well as Open Range Shooting undertaken throughout 2023. During the reporting period; there were 47 canid pest ejectors

triggered from 84 deployed and 165 Hoggone baits consumed from 300 presented across the Tarrawonga BMA. A further 20 Feral Pigs were trapped and removed from the Tarrawonga BMA. Night time open range shooting programs were implemented in conjunction with the other pest animal programs resulting in an additional 101 Feral Goats, 2 Wild Dogs, 29 Feral Pigs and 2 Deer being controlled in 2023. Feral Goat mustering continued during the reporting period resulting in 14 Goats being captured with saleable Goats on sold to an abattoir. Only appropriately qualified and experienced feral animal contractors (appropriate feral animal management qualifications, NSW fire arm licence and pesticide accreditation where relevant) were engaged to undertake feral animal control works for WHC.

6.4.8 Grazing Management

Tarrawonga BMA was destocked in 2015 and continued to be destocked with no strategic grazing occurring during the reporting period. There were no instances of stock incursion during the reporting period.

6.4.9 Soil & Erosion Management

Annual inspections were undertaken including unsealed fire break tracks and associated drainage structures across the Tarrawonga BMA to review appropriate erosion and sediment control measures required in accordance with the Blue Book (Managing Urban Stormwater: Soils and Construction Volume 1 (Landcom 2004)). A total of 3 observations were recorded within the Tarrawonga BMA; with two locations requiring targeted additional track maintenance to mitigate further erosion and sedimentation. The remaining tracks/drainage structures are maintained during routine WHC Biodiversity fire break track maintenance program. There are also a number of legacy erosion sites inherited from previous owner's management regimes that are subject to a separate annual inspection process and updates to the WHC erosion register made. During the reporting period, monitoring or remediation actions and investigations commensurate to the risk were undertaken for the erosion sites identified within Tarrawonga BMA.

6.4.10 Weed Management

WHC coordinated routine weed monitoring and inspections undertaken across Tarrawonga BMA in February, June, August and November 2023. The priority weeds identified included legacy weeds inherited from previous owners' management regimes such as African Box Thorn, Prickly Pear, St

Johns' Wort and Coolatai Grass as well as a range of other broadleaf weeds within revegetation areas. The weed monitoring/inspections ensure that timely and prioritised weed control is undertaken on a seasonal basis with the information directly given to spraying contractors to identify what, where, when and how to target appropriate resources across the Tarrawonga BMA for weed control. During the reporting period, WHC implemented a weed control program of the Tarrawonga BMA including 15ha being treated between January and August 2023 targeting primarily broadleaf weeds within revegetation areas and along fire break tracks as well as Coolatai Grass, Sweet Briar, Prickly Pear and St Johns' Wort weed species as required within the Willeroi West biodiversity property. Only appropriately qualified and experienced weed contractors (AQF3 accreditation or higher for use of herbicide) were engaged to undertake weed control works for WHC.

6.4.11 Audits and Reviews

The Tarrawonga Independent Biodiversity Audit was completed by 11 August 2023 and submitted to NSW DPE and accepted on 22 November 2023 as satisfying NSW Project Approval 11_0047 Schedule 3 Condition 50. A summary of this audit can be found in Section 10.1. The next audit will be conducted by September 2026.

6.4.12 Clearing

6.4.12.1 Flora

During the 2023 pre-clearing survey, a qualified ecologist tagged a total of 19 habitat bearing trees, 62 Habitat bearing stags, and 249 fallen logs within the overall area to be cleared (30Ha). The ecologist was present during clearing activities in accordance with the Biodiversity Management Plan (BMP).

6.4.12.2 Fauna

Over the duration of the clearance supervision a total of 69 identified habitat features were cleared. Fauna found and relocated during the survey included a number of the following species: Bearded dragon (*Pogona barbata*), Common thick-tailed gecko (*Underwoodisaurus milii*), Eastern spiny-tailed gecko (*Strophurus williamsi*), Nobbi dragon (*Diporiphora nobbi*), Robust velet gecko (*Nebulifera robusta*) and Tree skink (*Egernia striolata*).

One Brush-tail possum (*Trichosurus vulpecula*) was detected deep in a branch hollow and being unable to be reached it was left to self-relocate. Microbats were also detected deep in a felled tree hollow on the last day of clearing and unable to be reached. Bags were immediately placed over all

openings to protect from predation during the daylight hours. These individuals were found to have escaped the temporary containment when capture was attempted later in the day. Two tree skinks (*Egernia striolata*) were found dead during the clearing supervision.

6.4.13 Key Environmental Performance

TCM successfully registered a Conservation Agreement on 24 June 2021 over the land titles for the Tarrawonga BMA as required by the BOS including Willeroi West Offset Area. The Conservation Agreement was secured under Part 5 Division 3 of the Biodiversity Conservation Act 2016 and thus completing the in perpetuity legal mechanism required by the Commonwealth EPBC Act Approval 2011/5923 Condition 10 and NSW Project Approval 11_0047 Schedule 3 Condition 46. WHC will reengage with NPWS whom have previously shown interest in the Tarrawonga BMA being transferred to National Park Estate.

6.4.14 Proposed Improvements to Environmental Management

The TCM BMP was approved in August 2022 and it will be reviewed as necessary.

6.5 Aboriginal Heritage Management

6.5.1 Environmental Management Measures

During the reporting period, annual heritage inspections were completed on the 13 known heritage (aboriginal archaeological) sites within the Tarrawonga BMA. Heritage sites are maintained with 1.3km of demarcation fencing around the heritage site perimeter and signage to mitigate access and inadvertent disturbance. During the reporting period there were no new heritage sites identified.

6.5.2 Key Environmental Performance

In accordance with the current HMP, a registered archaeologist and RAPs inspected archaeological site fences and salvaged any remaining artefacts located in close proximity of the pit or in areas that were cleared in 2023. The HMP was reviewed in 2021 and will likely be updated to conform to WHC new template during the 2024 calendar year.

6.5.3 Proposed Improvements to Environmental Management

No specific management procedures are required.

6.6 Bushfire Management

6.6.1 Environmental Management Measures

The Tarrawonga BMA annual fuel load monitoring was undertaken between September and November 2023 as part of planning and assessment of bushfire hazard and ecological burn program for 2023; with the results indicating moderate to high overall fuel loads present. During the reporting period there was a bushfire of low to moderate intensity caused by lighting resulting in 129.3ha burnt on the Willeroi West biodiversity property. Other fire management implemented by WHC during the reporting period was fire break track maintenance carried out over 27.9km to a zero-fuel barrier standard across the Tarrawonga BMA. WHC maintains regular communications throughout the reporting period with both the Liverpool Range and Namoi-Gwydir Zone RFS teams around planning of WHC Biodiversity's ecological burn programs as well as maintaining contact points in case of emergency. WHC maintains a specialist firefighting contractor for an oncall engagement during the fire season to respond in the event of a bushfire on WHC Biodiversity and non-mining lands.

6.6.2 Key Environmental Performance

No instances occurred where TCM was required to assist to the RFS team or any other landholder or body.

During the 2023 reporting period, TCM engaged a consultant to undertake a review of the bushfire management system. As a result, a lengthy management plan was drafted. This has been reviewed and installed into the new WHC format, and is likely to be implemented in the 2024 calendar year.

6.6.3 Proposed Improvements to Environmental Management

TCM will continue to engage with the local RFS and with the community via CCC meetings and their members. TCM will continue to conduct mowing and slashing activities along access roads and tracks to keep grass to acceptable levels.

6.7 Meteorological Data

Meteorological monitoring is conducted onsite in accordance with Schedule 3 Condition 30 of the MP 11_0047. Table 6-8 summarises the monthly meteorological conditions at TCM for the 2023 reporting period.

The total annual rainfall for the reporting period was 542.8mm and the maximum monthly rainfall was recorded during March with 169.8 mm.

A minimum temperature of -1.3°C was recorded in July and a maximum temperature of 38.6°C in December.

In 2023, prevailing winds were predominately between the South (S), South East (SE) and South-South Easterly (S-SE) direction for the whole of the year.

Table 6-8 - Templemore weather station monitoring data 2023

Month	2m Temperature (°C)			10m Temperature (°C)			Average Wind Speed (m/s)	Prevailing Wind Direction	Monthly Rainfall (mm)
	Min	Mean	Max	Min	Mean	Max			
January	10.1	23.7	37.5	13.6	25.4	37.1	2.7	168 (SE)	54
February	5.72	23.4	36.4	10.1	25.3	36.6	2.53	157 (SE)	3
March	5.98	22.1	35	9.38	24.1	35.5	2.43	164 (SSE)	169.8
April	2.36	15.2	25.6	7.03	17.5	26.1	2.42	156 (S)	37.2
May	-4.97	9.25	22.3	0.48	12.4	22.8	1.91	149 (SE)	0.8
June	-3.9	8.52	23.3	0	11.4	23.7	1.84	160 (S)	35.8
July	-6.28	8.59	22.6	-1.3	11.5	22.8	1.86	156 (S)	8
August	-3.18	11	24.4	1.63	14	24.6	2.05	164 (S)	11.4
September	-4.25	15	30.9	0.8	17.8	31.4	2.32	158 (S)	2
October	1.1	17.9	34.2	5.8	20.2	33.8	3.07	171 (S)	18.6
November	4.34	21.1	34.3	10.2	22.8	34.3	2.68	172 (S)	122.8
December	9.85	24.1	38.1	14.9	26.1	38.6	2.66	179 (S)	79.4
Total									**542.8**

Regionally central meteorological station to the BMA is the Gunnedah Pool site (BOM 2023) which has recorded highly variable rainfall over the last 5 years; from the driest on record in 140 years of 237mm in 2019, followed by above average rainfall years in 2020, 2021 and 2022 of 833mm, 990mm and 860mm respectively (resulting in numerous major flooding events of the Namoi River). In 2023, the Gunnedah Pool site recorded 496mm being below annual average rainfall of 615mm. WHC maintains a meteorological station within the Willeroi BMA and a summary of weather conditions

experienced during the 2023 reporting period was the maximum monthly average temperature was 33°C in January 2023; minimum monthly average temperature was 9°C in June 2023; annual temperature ranges were 4°C to 38°C in 2023 and the total annual rainfall in 2023 was 424mm with the maximum in March (110mm) and minimum in May (1mm).

6.8 Waste

6.8.1 Environmental Management

During 2023, TCM engaged a contractor (Namoi Waste Corporation) that is responsible for the collection and management of the entire waste streams generated at the mine.

During the reporting period, waste removed from site for disposal or recycling are summarised in Table 6-9.

Table 6-9 - Waste management summary

Waste Stream	Container size	Unit of Measure	2023	2022	2021	2020
General Waste	3m³	Kg	**48,615**	**275,675**	290,485	326,490
Tyres*	n/a	each	**-**	**69**	53	43
Batteries **	As listed	Kg/ each	**-**	**84 Batteries**	12 pallets	2,037 kg
Waste Oil	IBC	L	**263,800**	**209,700**	244,200	312,200
Oil Filters	3m³	Kg	**7.850**	**9,455**	8,170	12,285
Hydraulic Hoses	3m³	Kg	**5,900**	**2,410**	2,535	460
Coolant	IBC	L	**1000**	**0**	7,500	0
Grease	N/A	L	**-**	**1000**	140	-
RimTreat	IBC	L	**8000**	**3000**	6000	-
Scrap Metal* **	15m³	Kg	**19,755**	**33,000**	65,500	54,000
Cardboard	10m³	Kg	**13,620**	**9,485**	5,985	9,390
Timber	15m³	Kg	**2,940**	**1,020**	7,000	28,110

Septic Waste	Pumped out	L	**243,300**	**223,158**	73,300	127,500
Paper/Plastic/ Aluminium Can	240Lts	Kg	**-**	**2,410**	0	115

**Heavy machine Tyres were reused onsite for traffic management, or are in a storage area pending disposal; **Battery Type N200, N150 & N70 donation to Westpac helicopter; ***Major clean-up of the yard; n/a not applicable or data not available; #to be able to assess performance over the years, TCM has extrapolated using values provided by the Waste contractor from August to December 2018. ## coolant is stored onsite in a 10kL tank that is emptied by the waste contractor before it reaches 100% capacity*

TCM added some waste items from the workshop waste stream, such as Grease and RimTreat (a liquid used to prevent corrosion on rims). These have been added to the table above and are recycled via Namoi Waste Corp.

In December 2023, TCM disposed of 116 tyres that had been historically stockpiled on site. TCM disposed of these in pit in accordance with EPL 12365.

6.8.2 Key Environmental Performance

During the reporting period no incidents relating to waste management occurred.

6.8.3 Proposed Improvements to Environmental Management

Tarrawonga aims to reduce waste via a number of initiatives including recycling (oils, greases, scrap steel and domestic recyclables) and increasing tyre life through education and training of machine operators.

During the reporting period, TCM kept all Paper/Plastic/ Aluminium Cans on site, and will research a recycling program that will suit site operations in the next reporting period.

6.9 Environmental Performance Summary

An environmental performance summary for TCM is presented in Table 6-10:

Table 6-10 - Environmental Performance

Aspect	Approval Criteria or EIS/EA Prediction	Performance during the reporting period	Trend / Key Management Implications	Implemented / proposed management actions
Noise	Refer s6.1	Approval criteria met.	Nil	Nil
Blast	Refer s6.2	Approval criteria met.	Nil	Nil
Air Quality	Refer s6.3	Approval criteria met.	Nil	TCM notified the DPE regarding several PM10 24 hour average exceedances at the 'Flixton' TEOM as a result of a significant bushfire in the Pilliga Forest. This TEOM is on mining related property. TCM notified the DPE of the exceedances in conjunction with other mines in the area. The bushfires in late 2023 were declared an extraordinary event by the DPHI and any exceedances were not a result of mining activities.
Biodiversity	Refer s6.4	Approval criteria met.	Nil	Nil
Heritage	Refer s6.5; s6.6	Approval criteria met.	Nil	Nil
Spontaneous Combustion	Refer s6.7	Approval criteria met.	Nil	Nil
Bushfire Management	Refer s6.8	Approval criteria met.	Nil	Nil
Waste Management	Refer s6.10	Approval criteria met	Nil	Nil
Water management	Refer s7	Approval criteria met	Nil	Nil

7 WATER MANAGEMENT

The mine lies within the catchment of the Namoi River. Locally and within proximity of the project site, Goonbri Creek, Bollol Creek and Nagero Creek all provide flows to the Namoi River during runoff events. The design of sediment basins within the disturbed area of the mine aims to limit the opportunity of discharge of runoff from mine-disturbed area, i.e. after appropriate detention time to satisfy licensed discharge criteria.

Detailed Surface Water and Groundwater monitoring results are provided in Appendix 3 and Appendix 4 respectively.

7.1 Surface Water Performance and Management

Sediment basins, storage dams and associated banks and drains have been designed by an engineering consultant in accordance with the Managing Urban Stormwater: Soils and Construction Vol 2E Mines and Quarries (DECC, 2008) in conjunction with the references to Volume 1 (Landcom, 2004). Water within the Project Approval area is nominally classified either as “clean”, “dirty”, “contaminated” or “pit water” depending on the source of the flow and it’s potential for physical or chemical contamination. The definition of these classifications follows:-

- “Clean Water” comprises water that has not come in contact with mine disturbance and does not have potential to contain hydrocarbons.
- “Dirty Water” comprises water that has come into contact with mine disturbance and does not have potential to contain hydrocarbons.
- “Pit Water” comprises water contained within the open cut sump or pumped to the void water dam for containment and use for dust suppression across the site.
- “Contaminated Water” comprises runoff water, which could potentially contain hydrocarbons.

There are five wet weather discharge points nominated in the current EPL12365 (relevant to MP 11_0047 Schedule 3 Conditions 33 and 39). These are SD9 (LDP2), SD28 (LDP3), SD17 (LDP1), SB23B (LDP26) and SB24B (LDP27).

7.1.1 Surface Water Monitoring

TCM has a requirement to undertake surface water monitoring on a quarterly basis in addition to the monitoring of any wet weather discharge event. Historical data is available in Appendix 3. Surface water monitoring locations are shown in Appendix 3.

Whilst there are no criteria or concentration limits specified for the quarterly surface water samples, the results do provide an indication as to the quality of water on-site. The assessment of sediment load, salinity, pH, oil and grease and other monitoring parameters during these quarterly water monitoring events was consistent with previous reporting years and summarised in Appendix 3.

In summary, levels of oil and grease were low overall, with levels below the discharge limits. Level of Total Suspended Solids (TSS) fluctuated between 5 and 1,300 mg/L with approximately 60% of the measurements below the 50mg/L.

Overall pH values showed that water samples were generally between neutral and alkaline. Concentration levels of antimony, arsenic, molybdenum and selenium were monitored throughout the period. Results remained consistently low and below thresholds outlined in the *Australian and New Zealand Guidelines for Fresh and Marine Water Quality* (ANZECC, 2000).

Surface water monitoring results showed generally similar trends with previous reporting periods.

Commitments with regard to the surface water-monitoring program are detailed in the Water Management Plan which was approved in September 2023.

7.1.2 Water Discharges

Throughout the 2023 reporting period, there were 4 wet weather discharges and 1 controlled water release.

In accordance with relevant EPL12365 conditions, water samples were collected after discharge and results can be found in Appendix 3.

Table 7-1 - Discharge Results 2023

LDP	No. of discharges	pH		EC (uS/cm)		TSS (mg/L)		Oil and Grease (mg/L)	
		Average	Max	Average	Max	Average	Max	Average	Max
LDP1	3	7.24	7.97	311	476	33	57	<5	<5
LDP2	2	7.4	7.54	378	422	170	197	<5	<5
LD3	0	-	-	-	-	-	-	-	-
LDP26	0	-	-	-	-	-	-	-	-
LDP27	0	-	-	-	-	-	-	-	-

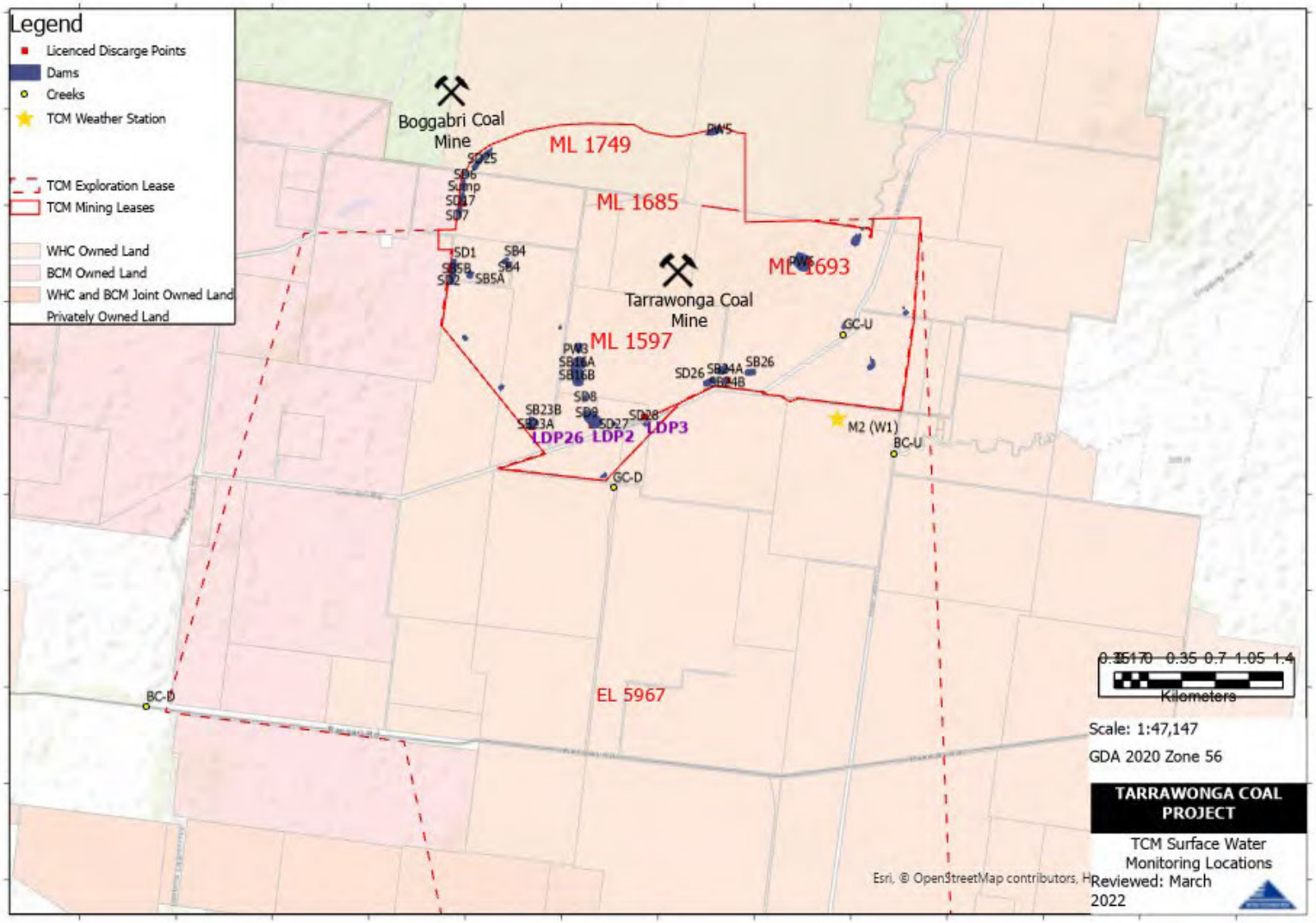


Figure 9 - 2022 Surface water monitoring locations

7.2 Groundwater Management

7.2.1 Environmental Performance and Management

The mine's performance with respect to groundwater performance and management, the prevention of pollution, and the assessment of impacts on groundwater availability to other surrounding users, has been assessed through groundwater level and chemistry monitoring undertaken at a series of piezometers and bores within the Project Area and adjacent properties.

7.2.2 Groundwater Monitoring

Groundwater monitoring was undertaken by a contracted company, accountable for water level measurement, collection of samples and laboratory analysis. Two data loggers monitored water levels at MW1 and MW2 to the South and one Vibrating Wire Piezometers (VWP) sites (TA65) was operating to the East of the mine.

The groundwater monitoring sites are shown in Figure 10. Historical groundwater quality data and standing water level plots are available in Appendix 4.

During 2023, three new alluvium bores were installed on the eastern side of the mining lease. These had groundwater loggers installed. These bores were installed and tested, and will continue to be monitored within TCM's monitoring program.

Groundwater levels

Graphs available in Appendix 4 show that groundwater levels at the majority of nominated monitoring bores maintained a steady trend throughout the reporting period. Most of the bore levels show a significant increase at the beginning of 2020, likely related to rainfall recorded over that year. Sampling and water levels have not been monitored at MW6 since the beginning of 2019, due to a broken casing. This bore is located on Boggabri Coal Mine property. Samples could not be collected at MW8 due to a damaged casing however, water level could regularly be checked at that site.

The 110m intake shows a more responsive water level plot, whilst an overall increased rate of depressurisation is observed in the 97m, 136m and 153m intakes from approximately March 2017. During 2023 depressurisation remained relatively stable in the 30m, 35m, and 47m, ranging from -0.12m in the 30m intake to a maximum of 0.53m in the 35m intake. These results reflect changes consistent with the presence of an open cut mining operation in proximity to TA65.

During 2023, minor repressurisation was seen in two of the intakes (35m and 47m), however a significant depressurisation of some 13.86m was recorded in the 110m. This follows the repressurisation which has been occurring in this intake since 2019.

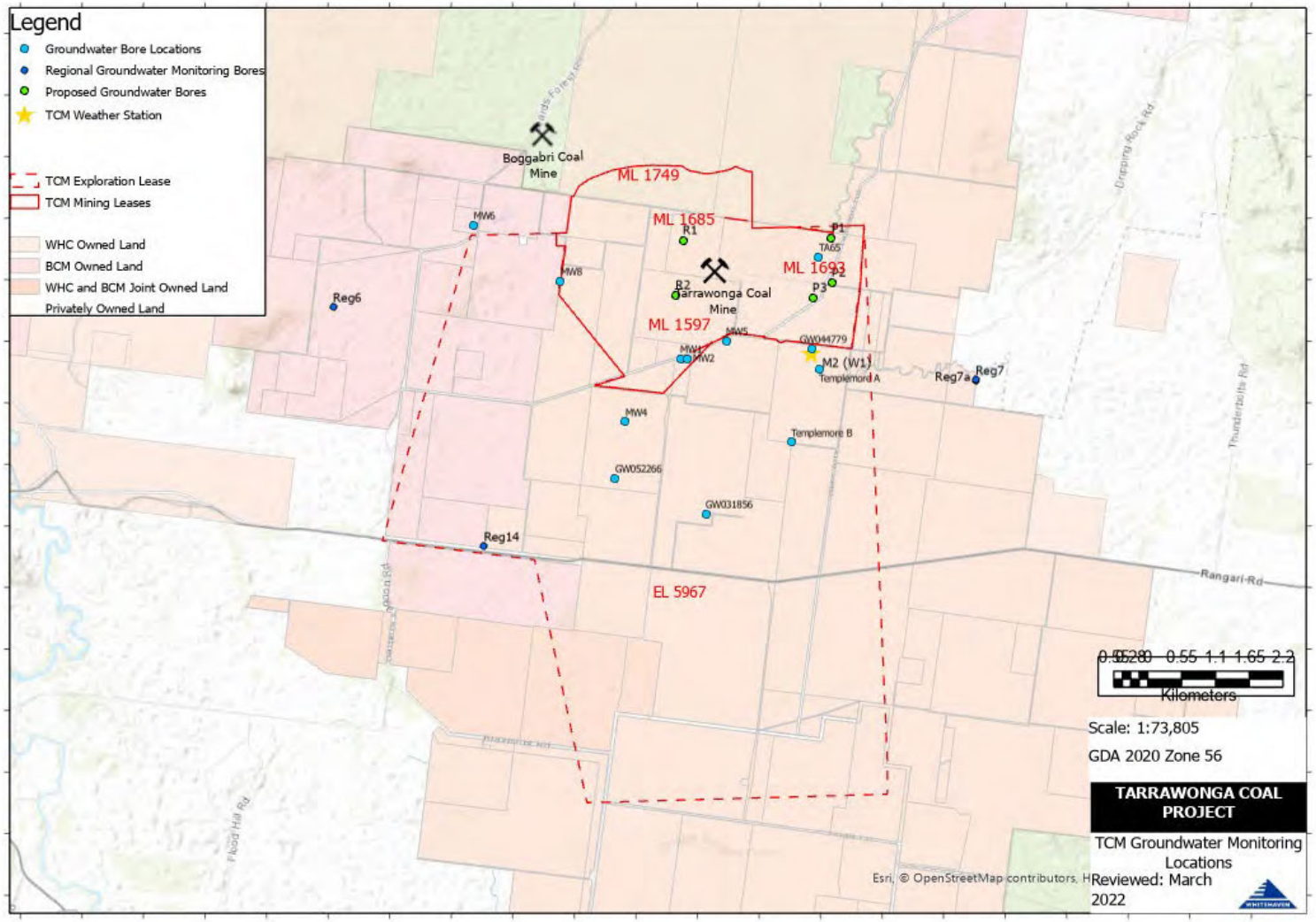


Figure 10 - Groundwater monitoring locations

Groundwater quality

Analysis of samples taken during the reporting period showed that groundwater quality remained generally in line with historical data at all locations monitored. Water quality was compared to the *Australian and New Zealand Guidelines for Fresh and Marine Water Quality* (ANZECC, 2000) guidelines for stock watering (cattle). There were no recorded instances of groundwater quality exceeding the limits prescribed by those guidelines during the reporting period.

Water quality has also been compared to the National Environment Protection Council (NEPC) Agricultural and Livestock Guidelines. The following instances occurred where water quality did not meet the parameters identified in the guidelines:

- Since there are no Iron limits for livestock in the ANZECC, the agricultural irrigation guidelines for iron (0.2mg/L) was used for comparison. Most of the monitoring sites were above the 0.2mg/l limit on at least one occasion during the reporting period. Throughout historical data (back to 2009), iron has been seen to fluctuate with high peaks (up to 47mg/L) at most bores on more than one occasion.
- Almost all bores, except for MW2 and GW052266 were above the agricultural irrigation guideline for TDS (600mg/L) when sampled throughout 2023. No sites were above the 2,400mg/L NEPC livestock guideline limit. No sites measured above the ANZECC guideline for stock drinking water (4,000mg/L) value.

7.2.3 Groundwater Management

Pit water inflow is a result of combination of rainfall and groundwater seepage:

- Direct rainfall runoff and infiltration through the emplaced overburden which flows down-dip to the open cut sump(s); and
- Inflows from the exposed coal seam.

To prevent any potential risk of contamination with chemical and hydrocarbon, TCM implemented control measures such as:

- Vehicle maintenance carried out in designated areas;
- Any spills being cleaned up; and
- Hydrocarbon products being stored within a bunded area, constructed in accordance with AS 1940-2004 and/or EPA requirements.

Monitoring occurs in surrounding groundwater bores on a regular basis to detect and assess any changes in quality or level that may be mine attributed.

The Tarrawonga Coal Project EA identified that there would be a reduction in the potentiometric head in the aquifers of the porous rock systems to the east and the north. In the past, the Vibrating Wire Piezometers installed in TA60 and TA65 have demonstrated depressurisation as predicted as the mine moves toward the east. Due to pit progression, site TA60 was decommissioned in 2019.

Regional Bores (Reg. 6, 7a and 14) maintained a steady trend during the period for all parameters including Electrical conductivity (EC). EC was compared to the performance indicators outlined in TCM's Groundwater Response Plan within the WMP, and none of these bores were above performance indicators (the 95th percentile of historical data) at the time of this report. Water levels at each of the regional bores rose substantially due to above average annual rainfall, and therefore none were below performance indicators (5th percentile of historical data) during the reporting period.

The BTM Complex finalised the updated BTM Ground Water model and submitted and approved by DPE during the 2022 reporting period. This model was prepared in consultation with groundwater experts and regulatory agencies. The BTM Ground Water model is to be updated in 2024.

During the reporting period, no complaints have been received in relation to impacts upon any other groundwater users. This is consistent with the predictions of the EA; that no significant impact would therefore affect beneficial use of groundwater of other groundwater users.

7.2.4 Water Take

During the water year 2023, no water was extracted from the licenced groundwater bores. Instead, TCM used rainfall and runoff captured in the sediment dams and pit to provide operational water requirements. Any water in the pit occurred through passive take and is in accordance with Water licences as listed in Table 7-2 that give units of entitlement per water annum.

In accordance with respective sites approvals and principles of the BTM Water Management Strategy, water sharing opportunities were discussed.

Table 7-2 - Water take

Passive Take Licenses						
Water Licence #	**Water Sharing Plan**	**Water Source and Management Zone**	**Share units (ML)**	**Available Water (ML)**	**Passive take (ML)**	**Take deducted (ML)**
WAL 12716	Upper and Lower Namoi Groundwater Sources 2003	Upper Namoi Zone 4 Namoi Valley (Keepit Dam to Gin's Leap) Groundwater Source	43	86	**33**	17
WAL36548	Upper and Lower Namoi Groundwater Sources 2003	Upper Namoi Zone 4 Namoi Valley (Keepit Dam to Gin's Leap) Groundwater Source	36	72		16
WAL 12491	Upper and Lower Namoi Groundwater Sources	Upper Namoi Zone 11 Maules Creek Groundwater Source	77	153	**1**	1
WAL 29548	NSW Murray Darling Basin Porous Rock Groundwater Sources	Gunnedah - Oxley Basin Mdb Groundwater Source	50	62.5	**255**	25
WAL 31084	NSW Murray Darling Basin Porous Rock Groundwater Sources	Gunnedah - Oxley Basin Mdb Groundwater Source	250	312.5		155
WAL 29461	NSW Murray Darling Basin Porous Rock Groundwater Sources	Gunnedah - Oxley Basin Mdb Groundwater Source	120	150		75

7.3 Site Water Balance

According to the site water balance developed by a water consultant, the water management system for 2023 had the capacity to be operated and meet operational objectives in normal average weather conditions;

- Wet weather releases and controlled water releases occurred on five occasions throughout the beginning of 2023. This allowed excess water release from site and this is discussed in Section 7.1
- Rainfall and runoff captured in the sediment and pit water dams provided for the majority of water demand in the dry, median and wet years;

These predictions were consistent with the actual outcomes observed during this monitoring period. Table 7-3 provides an overview of water stored and used on site during the reporting period.

Table 7-3 - Water Stored and used during the reporting period

					Table 2-3 EA values (2012) (ML)		
	Jan 2023 – Dec 2023 (ML)	Jan 2022 – Dec 2022 (ML)	Jan 2021 – Dec 2021 (ML)	Jan 2020 – Dec 2020 (ML)	Dry Year- 25%-ile (17 years)	Average Year (17 years)	Wet Year -75%ile (17 years)
Total Runoff	488	1,983	2,273	2,036	325	402	480
Groundwater inflow	61	62	58	59	255	255	255
External Source	0	0	0	17	n/a	n/a	n/a
TOTAL INPUT	**549**	**2,045**	**2,544**	**2,112**	**580**	**657**	**735**
Evaporation (from storages)	208	284	241	217	118	130	141
Evaporator fans	55	-	-	-	-	-	-
Crusher Dust suppression	57	35	35	30	8	8	8
Haul Road and ROM pad dust suppression	658	374	378	329	389	394	399
Offsite release/ discharge	32	423	146	279	0	0	0
Water contained in spoil/ Other	n/a	2 (Vehicle Washdown)	900 (Water Contained in Spoil)	20	n/a	n/a	n/a
TOTAL OUTPUT	**1010**	**1,118**	**1,914**	**894**	**515**	**532**	**548**
Change in inventory	*-460*	*927*	*630*	*1,218*	*64*	*125*	*193*

Note: For Jan-Dec (annual) period, values must be compared with caution as the EA value is based on 17 year annual average with changing catchment and land uses over time.

8 REHABILITATION

8.1 Post Rehabilitation Land Uses

According to the Mine Site Rehabilitation Management Plan and the rehabilitation Management Plan, woodland areas will be established on slopes and upper terraces of the Northern and Southern Emplacement Areas.

Rehabilitation on the Southern Emplacement is still immature while it is further advanced on the Northern Emplacement (including in ML1685 adjacent to Boggabri Coal Mine) with some older sections close to achieving open woodland land use target. However, no rehabilitation to Box Gum Endangered Ecological Community (EEC) woodland was undertaken nor has rehabilitation to agricultural land occurred during the reporting period.

8.2 Rehabilitation Performance during the Reporting Period

8.2.1 Status of Mining and Rehabilitation

Integration with Boggabri Coal's waste emplacement has started with rehabilitation activities to follow as per the RMP. The EA Total disturbance Area generally aligns with the most recent total disturbance Areas.

Due to excessive flooding throughout most of 2022, Tarrawonga's rehabilitation progression was impacted.

At the close of 2023, Tarrawonga achieved 42ha of ecosystem establishment in excess of the target of 37ha, and 26ha of landform prepared for rehabilitation.

The status of mining and rehabilitation at the completion of the reporting period is summarised in Table 8-1 and Figure 11.

Table 8-1- Rehabilitation Status

Mine Area Type 1 [Ha]	2017	2018	2019	2020	*2021*	*2022*	*2023*
0 Total Mine Footprint	600.1	627.6	687.5	741.8	*772.2*	*786.3*	*828.4*
1 Total Active Disturbance	498.4	540.7	579.4	607.8	*625.6*	*607.6*	*638.6*
2 Land Being Prepared for Rehabilitation	8.9	12.9	29.6	27.6	*11.7*	*26.2*	*26.1*
3 Land Under Active Rehabilitation	67.2*	74.1	78.5	106.4	*146.7*	*152.4*	*194.4*
4 Completed Rehabilitation	0.0	0.0	0.0	0.0	*0.0*	*0*	*0*

[1] *Refer Annual Review Guideline (p.11) for description of mine area types.*
**Active rehabilitation area was incorrectly calculated and reported for 2017 with 83.3Ha.*
[†] *Forecast for 2022 based on MOPG*

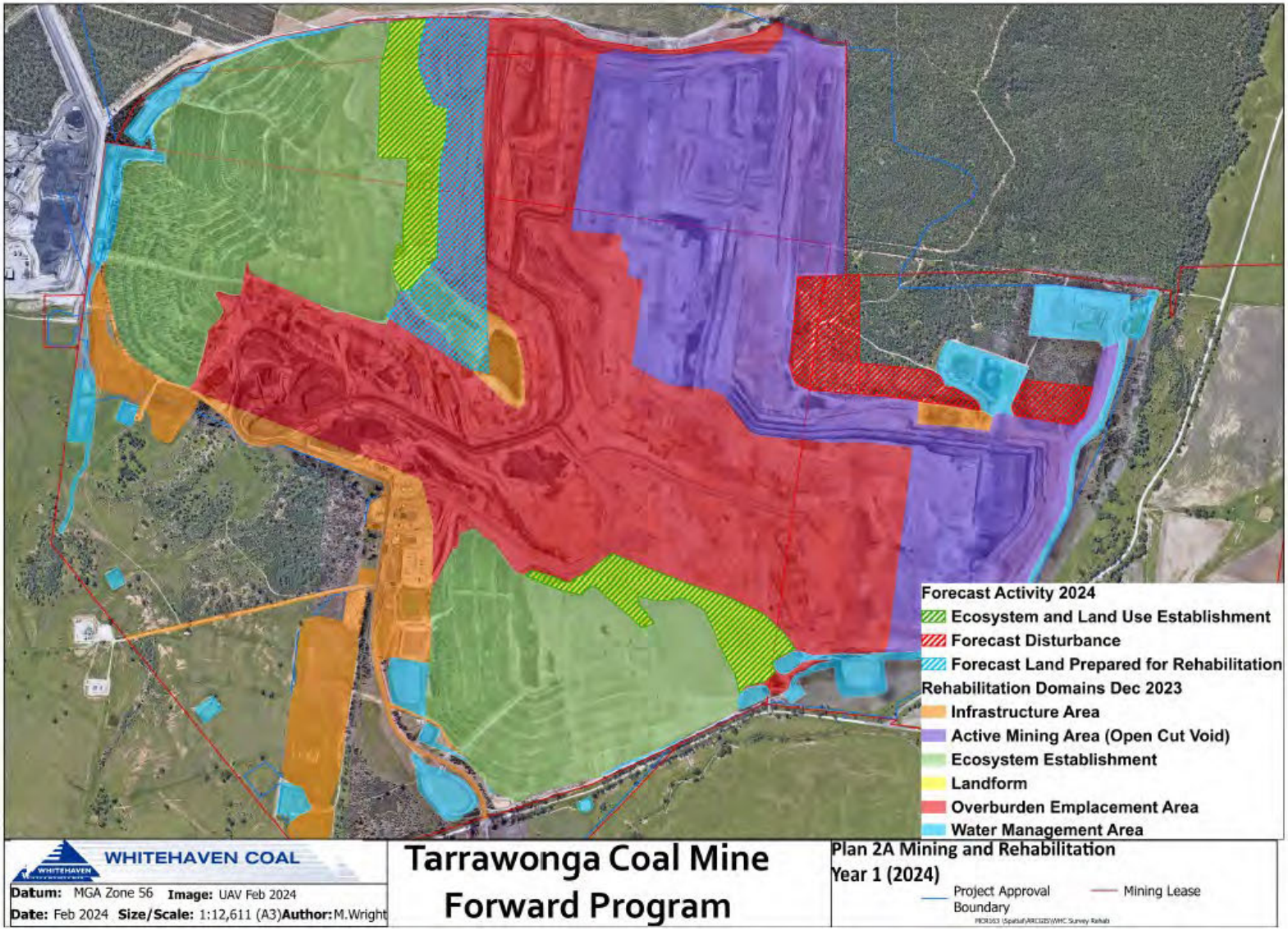


Figure 11 - Forecast Activity and rehabilitation Stats for Tarrawonga December 2023

8.2.2 Rehabilitation Fauna and Flora Monitoring

Investigations undertaken by Geoff Cunningham Natural Resource Consultants Pty Ltd as part of the original Mine EIS identified no significant impact on threatened flora species, endangered ecological communities, endangered flora populations or critical habitat as a consequence of the development. Establishment of monitoring plots commenced in April 2007 and has continued as required. Over the life of the mine, quadrats are to be established across rehabilitation sites and control sites. Potential impacts noted in the EA included the clearing of Box-Gum Woodland EEC/CEEC and the groundwater dependent ecosystem - Bracteates Honey myrtle low riparian forest. However, these areas had not yet been disturbed or cleared for mining purposes.

The annual flora and fauna monitoring program has been developed progressively over the life of the project. Qualified ecologists completed the 2023 annual monitoring program in accordance with the Rehabilitation Management Plan, the Mine Site Rehabilitation Management Plan, the Biodiversity Management Plan and the recommendations from previous reports.

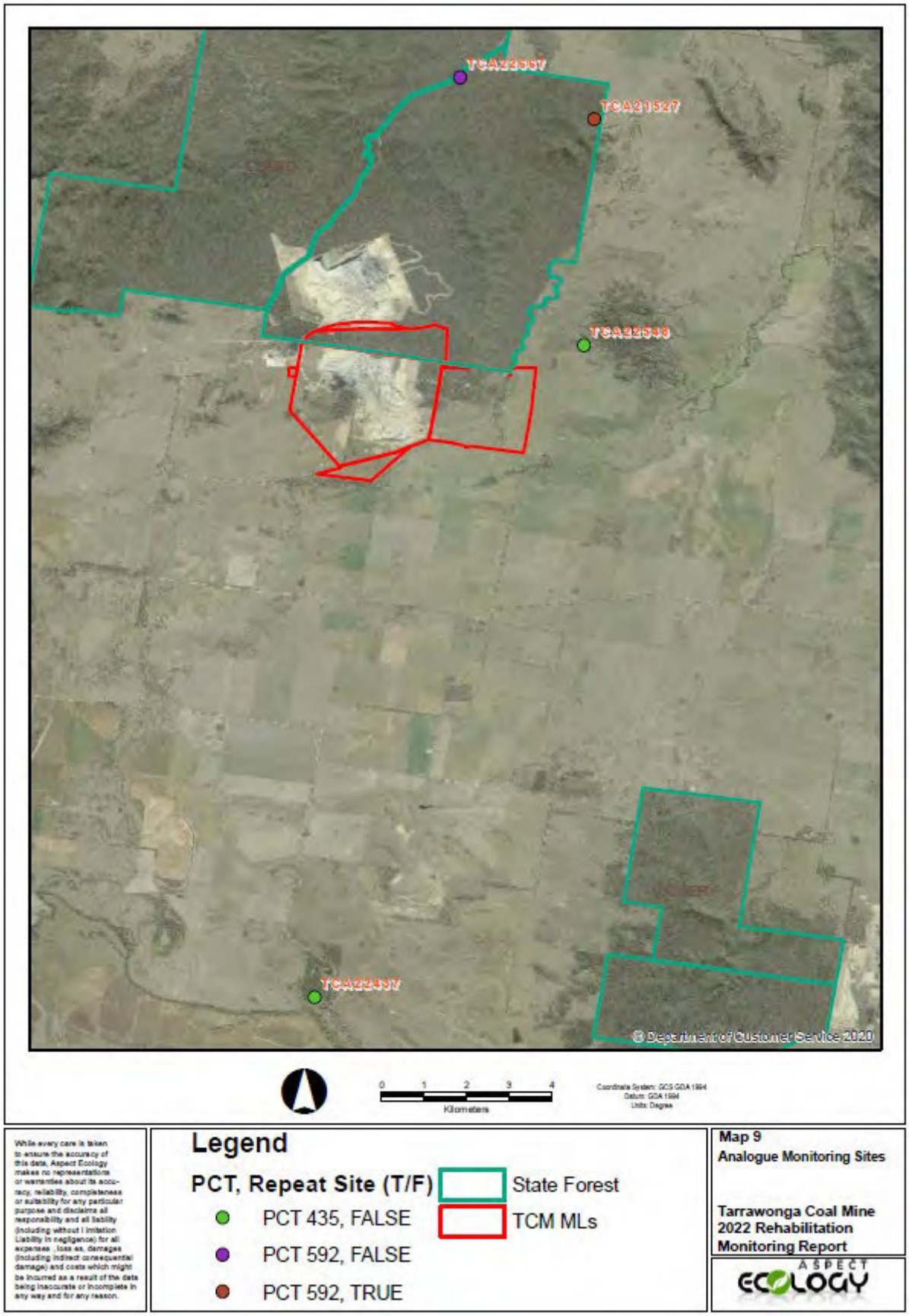


Figure 12 - Analogue site locations – Rehabilitation monitoring 2022

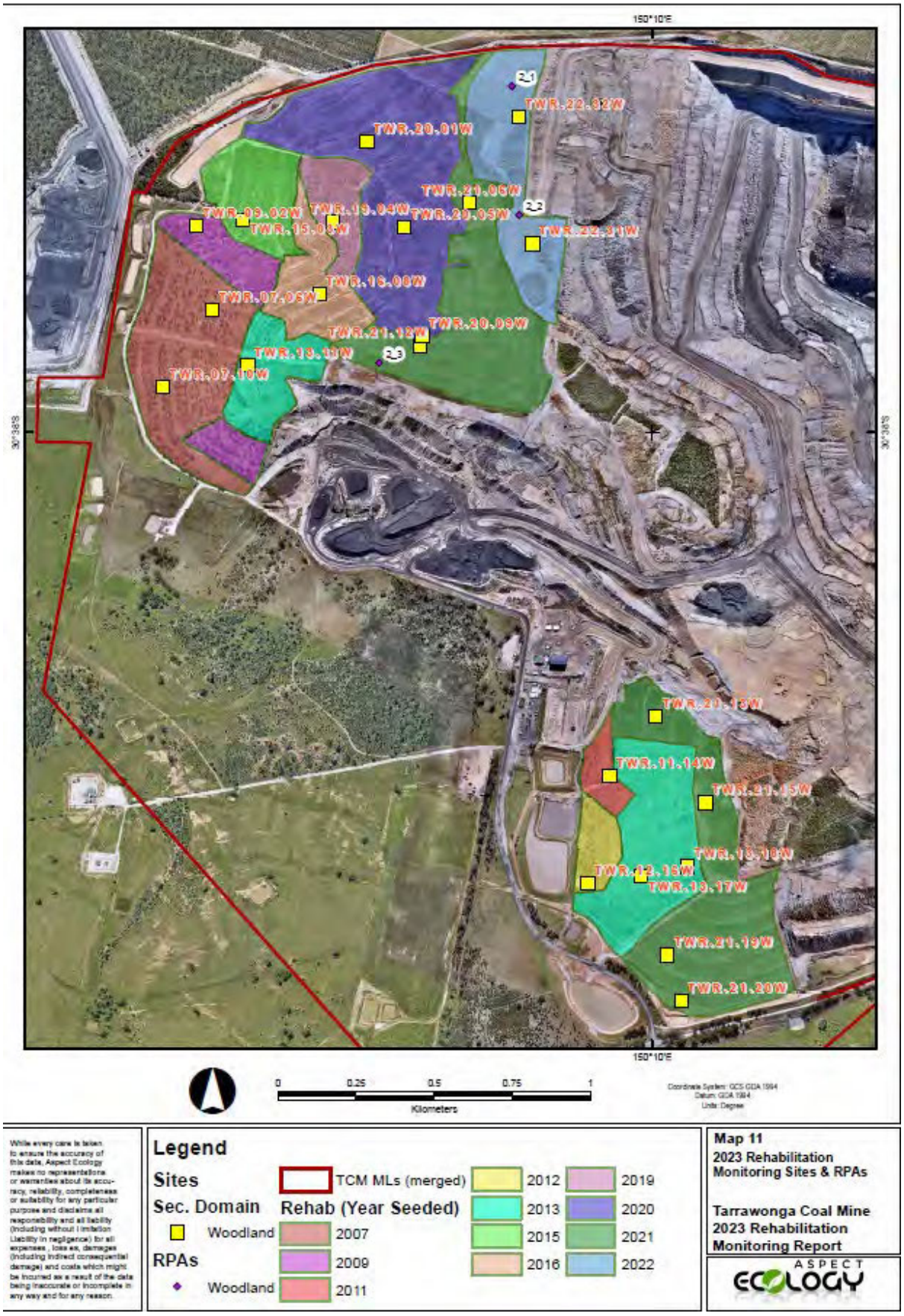


Figure 13 - Monitoring locations – Rehabilitation Monitoring 2023

8.2.2.1 Flora Monitoring

A detailed ecological field assessment of rehabilitated areas and analogue sites was undertaken during October/November 2023. Monitoring was undertaken using the Whitehaven Annual Rehabilitation Monitoring Methodology [in prep.]. Monitoring comprised:

- twenty repeat monitoring woodland rehabilitation sites;
- two newly established woodland rehabilitation sites;
- two repeat monitoring analogue woodland sites;
- three newly established analogue woodland sites; and,
- three categorical point assessments at notable locations within the Woodland rehabilitation.

Groundcover

In relation to surface cover, there has been an increase in the desirable surface cover by 0.3% and 11.6% vegetation surface cover since initial monitoring. The 2011 rehabilitation reached the target for surface cover in this monitoring. In these plots, an increase in the ground cover of native species and litter, and a reduction in the percentage of bare earth, was recorded. This exhibits progression towards restoring ecosystem function and vegetation establishment of 85% ground cover.

Tree cover

Native mid-storey cover serves as an indicator of the rehabilitation objective for woodland re-establishment. Results are provided for native mid-storey cover against the completion criterion target interpreted as being above 80% of the analogue mean value for the Ecosystem Development Phase (RMP table 16).

In the 2023 monitoring year, the analogue site mean was 19.5%. This results in a derived mean target of 15.6% for the Ecosystem Development Phase. The rehabilitation is yet to achieve any of the phase-specific completion criterion targets for this indicator.

Native overstorey cover serves as an indicator of the rehabilitation objective for woodland re-establishment. Results are provided for native overstorey cover against the completion criterion target interpreted as being above 80% of the analogue mean value for the Ecosystem Development Phase (RMP table 16).

In the 2023 monitoring year, the analogue site mean was 17.6%. This results in a derived mean target of 14.1% for the Ecosystem Development Phase. All rehabilitation areas in the Ecosystem Development Phase achieved the target for this indicator except for the rehabilitation established in 2011.

Native species richness serves as an indicator of the rehabilitation objective for woodland re-establishment. For the Ecosystem Establishment Phase, native species completion criteria target a

minimum of 19 and 24 individuals (interpreted as individual species) per 20 m x 20 m plot for the initial (12–18 month) and ongoing (2–10 year) Ecosystem Establishment Phases, respectively (RMP table 15). For the Ecosystem Development Phase, results are provided for native species richness against the completion criterion target interpreted as being above 80% of the analogue mean value (RMP table 16).

In the 2023 monitoring year, the analogue site mean was 36 species. This results in a derived mean target of 28 species for the Ecosystem Development Phase. All rehabilitation met the phase-specific targets for this indicator, apart from the five areas established in 2022, 2013, 2011, and 2007.
On average, rehabilitation sites have decreased in native species richness by 0.3 species since initial monitoring.

Abundance of species that will contribute to native overstorey cover serves as an indicator of the rehabilitation objective for woodland re-establishment. As trees and shrubs may both potentially contribute to mid-storey cover, this metric represents the species richness of these two growth-forms. The completion criteria target a minimum 2 species per 20 m x 20 m plot for both the initial (12–18 month) and ongoing (2–10 year) Ecosystem Establishment Phases, respectively (RMP tbl 4-4).
All rehabilitation areas achieved the relevant phase-specific targets for this indicator except for the rehabilitation established in 2022.

Abundance of species that will contribute to native overstorey cover serves as an indicator of the rehabilitation objective for woodland re-establishment. This metric represents the summed abundance of trees including seedlings. The completion criteria target a minimum 8 individuals per 20 m x 20 m plot for both the initial (12–18 month) and ongoing (2–10 year) Ecosystem Establishment Phases, respectively (RMP table 4-4).
All rehabilitation areas achieved the relevant phase-specific targets for this indicator except for the rehabilitation established in 2022 and 2013.
On average, rehabilitation sites have increased in tree density (all size classes) by 5.2 stems per 50 m x 20 m plot since initial monitoring.

It was recommended that:

- the newly established rehabilitation in the Northern Emplacement Area is checked for seedling germination following sufficient rainfall events, and in the event seedling germination fails, that it is reseeded;

- for rehabilitation areas lacking in trees and having high exotic species abundance, broadscale methods of weed control are applied and followed up with reseeding and tubestock plantings;
- areas with sparse tree density and distant from natural recruitment sources receive tubestock supplementation.

Soil pits

Soil profile and condition assessments were recommended every three years. Two soil pits were established in 2011, one in the rehabilitation zone, and one in each control zone. Soil pits are described using standard field measures with particular notice of horizon boundaries and ecological functionality (e.g. root establishment, evidence of soil fauna). Soil pits are analysed every three years. As soil pits were analysed in 2018, this parameter was due in the 2021 reporting period. Due to outward impacts such as flooding and overall site access issues due to saturated ground, soil pits were unable to be dug in 2022, but done during 2023.

In the summer 2023 survey, the soil pit in the rehabilitation zone (Rehabilitation Zone 2) showed a profile reconstruction with topsoil depth at 15 cm and depth to overburden at 30 cm. The control zone showed a similar profile reconstruction with topsoil depth at 10 cm and depth to compact clays at 30 cm. The rehabilitation zone exhibited good establishment of grass. The control zone also showed good establishment of grass and other plant roots including larger tree roots, which were present in all horizons. Soil fauna were not identified in any pits.

An extensive soil testing program was conducted in 2020 to obtain representative soil samples within each rehabilitation area. This program is discussed further in section 8.2.3.2.

Revegetation Management

Topsoil throughout all rehabilitated areas was mixed with mulch from previous tree clearing campaigns, spread in 200 to 300mm layers and ameliorated with gypsum and manure. The topsoil was then seeded with cover crop (millet) and native seed mix consisting of (but not limited to) the following species: *Eucalyptus albens, Eucalyptus Mellidora, Eucalyptus crebra Acacia buxifolia, Acacia paradoxa, Geijera parviflora, Indigofera adesmiifolia, Indigofera australis, Clematis spp., Desmodium spp., Dianella revoluta, Vittadinia spp., Austrodanthonia spp, Austrostipa aristiglumis ,and, Digitaria spp.*Due to previous reporting years having above average rainfall and flooding, Hiko tree planting has not been achieved since mid-2022. A planting event will likely be carried out in the 2024 calendar year if weather conditions prevail and soil moisture is reflective of a good season.

8.2.2.2 Fauna Monitoring

Fauna habitat broadly consisted of stag trees, rocks of mixed size, course woody debris, emerging tree canopies, and pondage areas, yet some sites had minimal habitat features. Native fauna observations included a variety of birds, including wrens and ravens, and skinks. Macropod scats were present at several sites. Feral pigs and goats were also observed.

Woodland birds monitoring was undertaken during winter 2023 and Spring 2023. Birds were recorded whilst walking in a meandering path in the area surrounding each monitoring point, with all birds recorded either through direct observation or calls. Monitoring sites were surveyed for 20 minutes by one observer, once in the morning and again in the afternoon to cover peak activity hours for bird species.

Winter Bird Survey

A total of 22 bird species were recorded during the 2023 monitoring surveys, and only one exotic species. No threatened species were recorded. This survey indicated an approximate 56% decrease in species richness, including in control sites. However, three (3) species were recorded in 2023, not previously recorded within the TCM sites, being Plum-headed Finch, Yellow-throated Miner and Little Friarbird.

Overall, the total species richness recorded is lower in 2023 (23) compared to monitoring in 2022 (39) and 2021 (35). Nevertheless, a similar trend of bird communities can be observed between the two years, with woodland birds constituting for the majority of species recorded, being 77% in 2023, 67% in 2022 and 74% in 2021. Only four grassland species have been recorded in these years.

Spring Bird Survey

A total of 43 bird species were recorded during the 2023 spring monitoring surveys. No threatened species were recorded. The Eastern Koel was observed at control sites and recorded as migratory. The average species richness for the five survey sites in 2023 was 16.4 species. This is the lowest figure across the survey years. Of note is that site C04 always yielded high species numbers and is no longer included in the analysis. Also, the number and location of sites have varied since 2019. The last two years of data has been generated from the same sites and the averages are comparable.

8.2.3 Habitat Management

On TCM's Southern Emplacement Rehabilitated area, woody debris and dead trees were emplaced during the rehabilitation process to generate habitat and protection for species. Cover crop was sown during the seeding process to establish vegetation cover, weed suppression and erosion control while native species germinate.

8.2.3.1 Weeds Management

During 2023, a noxious weed monitoring program was conducted at TCM by site personnel. These inspections noted an increase in Noogoora Burr on the Southern OEA and African Boxthorn in other areas of the lease. Management of targeted weed within the mine leases was undertaken at opportune times following suitable weather and with consideration to the NIWAC Weed Management Guide for North West NSW (NSW DPI) including:

- Manual removal of African Boxthorn, spraying of stumps to prevent regrowth;
- Spot spraying of general weeds and grasses in the vicinity of monitoring stations, administration building, magazine and ROM areas,
- Spot spraying of Prickly Pear around site,
- Spraying of Noogoora Burr and other aggressive species surrounding dams and on the rehabilitated areas; and,
- Spot spraying of weeds including boxthorn and prickly pear prior to clearing, to try and exclude them from the topsoil.

8.2.3.2 Feral Animal Management

TCM coordinated the implementation of the Vertebrate Pest Management Plan using infra-red motion cameras installed at strategic locations around the Mining Leases. Findings indicate overall vertebrate pest sighting onsite has significantly dropped since 2018.

The survey for 2023 (Table 8-2) showed there were no sightings of feral goats, cats, or dogs. Sightings for rabbits and hares have decreased significantly from 163 in 2018 to 1 during the reporting period. While goats were not captured on these cameras, they were seen throughout the pit and cleared areas throughout 2023. When spotted, they were manually removed from site by a contractor, and sold on the market.

Feral pig sightings continued to decrease from 34 in 2018 to 8 total sightings for this reporting period. In response to an increase in feral pigs, a baiting program was conducted within the Mining Lease in 2023 however TCM will continue to monitor and manage feral animals according to the BMP and MSRMP.

Table 8-2 - Summary of Vertebrae Pest Sighting (2018 - 2023)

	Feral Pig (descendant of various breeds of Sus scrofa)	Fox (Vulpes vulpes)	Feral Cat Felis catus)	Rabbit/Hare (Oryctolagus cuniculus) / (Lepus capensis))	Wild Dog (Canis familiaris)	Other
Quarter 1	0	0	0	0	0	0
Quarter 2	2	0	0	1	0	0
Quarter 3	4	0	0	0	0	0
Quarter 4	2	0	0	0	0	1
Total 2023	8	0	0	1	0	1
Total 2022	34	2	0	1	0	2
Total 2021	**6**	**1**	**0**	**1**	**0**	**0**
Total 2020	***17***	***4***	***0***	***22***	***0***	***0***
Total 2019	***54***	***73***	***2***	***140***	***0***	***2***
Total 2018	**159**	**168**	**1**	**163**	**0**	**2**

8.2.3.3 Soil & Erosion Management

During 2023, significant efforts were made to improve soil management and minimise erosion on site.

Soil Management

A soil specialist conducted an extensive soil testing program in 2020. The objective was to provide a soil inventory of rehabilitated areas through field soil assessment and laboratory testing aimed at improving the growth medium for future revegetation.

The field program was designed to obtain representative samples within each rehabilitation area. Sampling points were irregularly located according to the survey team judgement to enable the delineation of potential soil boundaries based on year of rehabilitation or change in soil type used as growth medium. Soil test sites were excavated by hand to 0.3-0.5m. The number of survey points totalled 35 sites in the Northern Rehabilitation Area and 20 sites in the Southern Rehabilitation Area. This survey density fulfilled the requirement of a 1:10,000 soil survey. Sampling consisted of one bulked topsoil sample at each site with typical sample depth 0-10cm, with occasional 'subsoil' samples taken at 30-40cm for assessment of erosion tunnelling risks.

The laboratory testing suite for these sites included pH and EC (1:5 water); pH (1:5 CaCl); Available (Ammonium, Nitrate, Sulfur); Exchangeable Sodium, Potassium, Calcium, Magnesium, Hydrogen, Aluminium, Cation Exchange Capacity; Colwell Phosphorus; Available Micronutrients Zinc, Manganese, Iron, Copper, Boron, Silicon; Total Carbon (TC), Total Nitrogen (TN), TC/TN Ratio, Organic Matter; Basic Colour, Basic Texture.

The findings indicate that the soil resources used on the rehabilitated areas at TCM, depth and characteristic of the top soil layer provide an adequate growth medium to establish the desired vegetation species. Following recommendations of the soil specialist, gypsum was used to improve characteristics of top soil spread on the Southern Emplacement area prior to the start of revegetation activities.

Topsoil was stripped from areas cleared of vegetation in accordance with the stripping ratio recommended by a soil consultant. In one area of rehabilitation, topsoil was direct placed. All other areas, topsoil was spread from pre-existing stockpiles that were showing significant signs of regeneration.

Erosion and Sediment control

Several water infrastructures including drop structures, diversion drains and contour banks were designed and sized in accordance with the *Managing-urban-stormwater-soils and construction guide* (volume-2E-fourth-edition). TCM constructed engineered drains in the Southern Rehabilitation area (Figure 14). The inlet and spillway of SD26 and a new clean water diversion and dirty water drain for the south eastern portion of the mine were completed in the reporting period.

Figure 14 - Photo of completed contours on the Southern Rehabilitation area after topsoil placement - December 2023.

During 2023, TCM was issued a Pollution Studies and Reduction Program by the EPA. This program indicated that inlets and spillways of some of the sediment dams required attention in order to meet a stable status. These 13 inlets, spillways and drains were remediated using armour rock or earthlok. TCM undertook seeding activities with cover crop at some of new water infrastructures.

The PRP also required some studies and assessments be undertaken regarding runoff coefficiency and material characterisation. All PRP conditions were completed by their due dates and progress reports were submitted to the EPA via email. The EPA are expected to attend site and inspect the projects prior to the end of the FY24. While all projects were completed by their due dates,

continuous monitoring and maintenance is expected in these areas to promote the most stable outcomes.

In accordance with RMP requirement and TARPs, TCM will continue to implement erosion control measures and remediate affected areas to meet the completion criteria for mine landform stability.

8.2.4 Renovation or Removal of Buildings

During the reporting period the Tarrawonga Central (TC) Crib hut was moved to the north-east as the landform progressed. No other buildings have been moved or erected in the reporting period.

8.2.5 Other Rehabilitation Undertaken

No additional rehabilitation of exploration areas, infrastructure, shafts, dams, fence lines or bunds occurred during the reporting period.

8.2.6 Departmental Sign-off of Rehabilitated Areas

Departmental sign-off has not been requested for any rehabilitated areas during the reporting period.

8.2.7 Variations in Activities against Forward Program

Table 8-3 - Summary of Variations in Activities against Forward Program

Activity	FWP Proposed Amount	Actual CY23 Amount
ROM tonnes	2.3 Mt	1.9 Mt
Overburden tonnes	25,500,000 bcm	20,770,000 bcm
Rejects Disposed	0.7 Mt	0.65 Mt
Disturbance	30ha	30ha
Landform establishment	26.1ha	20.6ha (6ha of landform converted to ecosystem resulted in higher ecosystem ha achieved in 2023. 54ha of landform was shaped over the reporting period -most of which was converted to ecosystem- to create the final totals reported)
Ecosystem establishment	37ha	43ha

During 2023 (Year 1 in the new Forward Program) some clearing was brought forward to enable construction of a new mine water dam to replace the existing dam which will be mined through in FY25/26.

The 2023 rehabilitation activities were successful, and an additional 6ha of landform establishment was able to be developed to ecosystem establishment phase. The numbers above in Table 4 reflect this difference.

8.2.8 Trials, Research Projects and Initiatives

In 2021 TCM engaged Aspect Ecology to undertake a Ground Flora Rehabilitation Study. The overall study aims were to:

1. Identify and evaluate management methods to reduce exotic ground flora, and
2. Identify and evaluate methods to enhance groundcover diversity and cover/abundance
3. Apply findings from aims 1 and 2 to produce management recommendations for Whitehaven Coal.

In 2022, project activities focussed on:

- database searches;
- review of abstracts against article inclusion criteria; and
- research article compilation and evaluation.

The interim report evaluated the existing literature and concluded that control of exotic species is crucial in the first few years following seeding. This Ground Flora Rehabilitation Study will continue into 2023. TCM will continue to implement weed spraying controls in rehabilitated areas as vegetation establishes.

The nearby Whitehaven Coal mine, Maules Creek coal mine has a requirement to undertake a $1M research program into rehabilitation of Box Gum Grassy Woodland upon mine rehabilitation, the findings from which has been considered by TCM and will be integrated into Rehabilitation Management Plans (replacement of the MOP) as appropriate.

8.2.9 Key challenges to Achieving Successful Rehabilitation

The key issues to achieving successful rehabilitation include:

- Improved landform design and site water modelling to reduce erosion and sedimentation (e.g. gullying and sedimentation resulting in land stability and vegetation growth issues);
- weed and feral animal control;

- Native vegetation establishment corresponding to identified PCT (Plant Community types);
- landform stability; and
- climate/ and extreme weather conditions

In cases where the performance is sub-optimal, additional management measures will be implemented (e.g. replanting, repairing landforms and water management features, application of mulch/fertilisers, feral animal and weed control etc.). A Trigger Action Response Plan (TARP) for rehabilitation at the TCM has been included in the RMP, which outlines appropriate actions and varied responses that will be implemented as required.

8.3 Actions for Next Reporting Period

Vegetation clearing will be undertaken during the approved window from 15th Feb to 30th April 2023. 20.7ha of vegetation is proposed to be cleared in the 2024 clearing program. Improvement measures identified following the investigation of the clearing incident in March 2022 will continue to be implemented as described in the updated Biodiversity Management Plan. These include:

- Updated Boundary Marking Protocol utilising continuous demarcation along external boundaries;
- Provision of spatial data on field tablets for the contractors undertaking clearing in the field to allow real time location to be ascertained in relation to habitat features; and
- Mining lease boundary fencing upgraded during 2023.

9 COMMUNITY AND COMPLAINTS

In accordance with MP 11_0047, a Community Consultative Committee (CCC) meeting was held on a quarterly basis at TCM. The committee comprised representatives of Gunnedah Shire Council, Narrabri Shire Council, TCM and the community including landholders.

Community contributions continued to be managed in accordance with the Whitehaven Coal Donations and Sponsorship Policy. Approximately $ 236,002.03was donated on behalf of TCM to several organisations including Narrabri Rugby League Club, Clontarf Foundation, Winanga-Li Early Learning and the Dorothea Mackellar Poetry Awards.

TCM maintained a designated community complaints line. In the event of a complaint, details pertaining to the complainant, complaint and action taken are recorded. Each complaint is investigated and documented with individual complaint records maintained. Complaints are reported and findings discussed with CCC members during meetings. These meetings give an opportunity to provide an update of the environmental and operational performance.

TCM recorded one complaint during 2023 regarding Blasting/ Air Quality.

1. The complaint was made anonymously to the EPA on the 10th August 2023 and information was requested from the EPA in regards to a blast undertaken on that day. Tarrawonga Environmental personnel responded to the EPA and the complaint was resolved satisfactorily.

The number of complaints has significantly decreased in recent years. Table 9-1 provides a comparison of complaints received since 2016 annual reporting period.

Table 9-1 - Complaints Summary

Category	2016	2017	2018	2019	2020	2021	2022	2023
Air Quality	1	3	1	0	0	0	**0**	0
Traffic	1	0	0	0	0	0	**0**	0
Surface Water	1	0	0	0	0	0	**0**	0
Visual Amenity	0	0	0	0	0	0	**0**	0
Noise / Vibration	1	0	0	0	1	0	**1**	0
Blast	2	0	0	0	1	1	**0**	1
Other	0	0	0	0	0	0	**0**	0
TOTAL	**5**	**3**	**1**	**0**	**1**	**1**	**1**	**1**

Note: Some complaints may relate to more than one category.

9.1 Community Contributions

Community contributions are managed in accordance with the Whitehaven Coal Donations and Sponsorship Policy. In 2023 Whitehaven Coal donated $245,490.80 to local Gunnedah groups and over $339,094.89 to support local groups in Narrabri during the reporting period. Groups and activities which received contributions included, but were not limited to the following;

Gunnedah LGA:

Yawiriawiri Murri Ganuur Descendants
Rotary Club Gunnedah West
Carroll Community Bus Incorporated
Swimming Gunnedah Incorporated
Extent
The Combined Catholic Schools P&F
Winganga Li Early Learning And Care Sevices
Crossfit Gunnedah
Gunnedah High School
Gunnedah Filipino Australia Community
Gunnedah Junior Rugby Club Incorporated
Gomeroi Roos
Australian Whipcrackers & Plaiters Association
Multicultural Women's Association Inc Charity No.
Gunnedah And District Bulldogs Afl
Naidoc Week Committee Incorporated
The Central Noth Rugby Union
Gunnedah Bulldogs
Gunnedah Shire Council
Gunnedah And District Chamber Of Commerce
Women In Mining Network
Gomeroi Allstars
Gunnedah Pistol Club
Lions Club Of Gunnedah
Gunnedah Junior Rugby Club Incorporated
Eric & Carol Hannan
Boggabri Gunnedah Gun Club
Gunnedah Ministers Fraternal
Dorothea Mackellar Poetry Awards
Lake Keepit Fishing Club
The Red Chief - Local Aboriginal Local Council
Gunnedah Shire Council
Gunnedah Shire Council
Gunnedah Swimming
Cougar Warriors
Gunnedah Shire Council
Plains Of Plenty
Gunnedah Meals On Wheels
Curlewis Ps P&C
Movember Foundation
Gunnedah And District Chamber Of Commerce
Gunnedah South Public School P&C Association
Gunnedah Can Assist
Gunnedah Shire Council
Gunnedah High School
Gunnedah High School
Gunnedah & District Chamber Of Comm
Pcyc Gunnedah

Narrabri Lga:

North Branding

Narrabri Industrial Network Inc

Education Public Schools

North Western Courier

Boggabri Golf Club

Forest Coaches

Narrabri Arts Eisteddfod Inc

Eulah Creek Recreation Reserve Trust

Wee Waa & District Historical Society Inc

Presbyterian Social Service

Narrabri District Junior Rugby League Club

Rotary Club Narrabri

Narrabri Shire Community Radio Inc

The Rotary Club Of Narrabri Inc.

Narrabri And District Chamber Of Commerce

Narrabri High School

Narrabri & District Community Aid Service Incorporated

Narrabri Dolphins Water Polo Club Incorporated

Wee Waa Community Band Inc.

Narrabri Dolphins Water Polo Club Incorporated

Wee Waa Show Society Inc.

Narrabri Industrial Network Inc

Narrabri Oztag

Narrabri Rugby League Football Club

Namoi Women's Shed Incorporated

Narrabri Industrial Network Inc

Richard Barry

Narrabri Rsl Sub-Branch

Maules Creek Campdraft And Junior Rodeo 2023

Yarrie Lake Flore & Fuana Trust

St Xaviers Narrabri

Boggabri Rugby League Football Club

Nosh Narrabri Committee

Nosh Narrabri Committee

Boggabri Public School

Whc - Clontarf

10 INDEPENDENT AUDIT

In 2023, TCM was required to complete both an Independent Environmental Audits (IEA) and Independent Biodiversity Audit (IBA). Details of previous audits and a brief outcome of these audits conducted in 2023 are discussed below.

10.1 Independent Biodiversity Audit (EPBC)

The Commonwealth Department of Agriculture, Water and Environment (DAWE) directed TCM to undertake an Independent Compliance Audit of the EPBC Approval 2011/5923 including site inspections of the mine site and Willeroi BOA. An audit was required during the reporting period.
The Tarrawonga Independent Biodiversity Audit was completed by 11 August 2023 and submitted to NSW DPE and accepted on 22 November 2023 as satisfying NSW Project Approval 11_0047 Schedule 3 Condition 50. The Tarrawonga Independent Biodiversity Audit 2023 identified two additional management measures for the Mine Rehabilitation than those identified in the RMP and BMP recommended to be implemented to improve rehabilitation outcomes. The Audit also found for the BOS that the revegetation is progressing adequately towards the completion criteria and no additional measures are required to augment the TCM BOS. The Tarrawonga Independent Biodiversity Audit identified no non-compliance. There was no Leard Forest Regional Biodiversity Strategy Review during the reporting period. Next Independent Biodiversity Audit is due by the end of September 2026.

10.2 Independent Environmental Audit (IEA)

In accordance with Sch 5, cn 10 of MP 11_0047, a 3 yearly Independent Environmental Audit (IEA) and Biodiversity component were conducted between July and August 2023.

The IEA found one Non-Compliance not already reported by TCM. This was a minor administrative non-compliance that pertained to the Annual rehabilitation Report not being displayed on the website within 14 days of submission in accordance with Condition 16(3)(b) of Schedule 8A of the *Mining Regulation 2016*. There were mitigating circumstances in that there had been issues with obtaining the completed Annual Rehabilitation Report from the Regulator Portal at the time of submission. The Resources Regulator acknowledged the non-compliance following WHC self-reporting the finding immediately after its identification during the audit. There were no other actions from the 2023 audit. The full audit report can be found on Tarrawonga's website.

11 INCIDENTS AND NON-COMPLIANCES FOR THE REPORTING PERIOD

11.1 Reportable Incidents

No reportable incidents occurred in the reporting period.

11.2 Non-compliances

Tarrawonga had one non-compliance during the reporting period which is discussed in Section 10.2.

Table 11-1 - Non-compliance Action plan

Non - Compliance	Date / Location	Cause	Action Plan	Status/Estimated Completion Date
On 2 August 2023, Whitehaven Coal Mining Limited self-reported via the Regulator Portal (Portal) that the Annual Rehabilitation Report was not submitted within the specified 14 days timeframe as required under Clause 16(3)(b) of Schedule 8A. As a result of an investigation by the Resources Regulator due to mitigating circumstances, the Resources Regulator did not take any further action.	2 August 2023	The submission of the report was captured in the compliance management system however the publication of the report on the website was not. Subsequently the delay in receiving the submitted report back from the Regulator Portal meant that this requirement was missed.	Add website publication to the compliance management system as a separate action requiring close out.	Complete

11.3 Regulatory Actions

No regulatory actions were taken against TCM in the reporting period.

12 ACTIVITIES TO BE COMPLETED IN THE NEXT REPORTING PERIOD

The following measures will be continued or implemented in the next reporting period:

Table 12-1 - Summary of activities for 2024

	Activity Description	Timing
1	Update and review Environmental management plans as required by the MP 11_0047.	Ongoing throughout the year
2	Undertake rehabilitation and mining activities in accordance with the most recent Forward Program.	Ongoing throughout the year
3	Continue environmental monitoring and management.	Ongoing throughout the year
4	Continue implementation of approved Leard State Forest Mining Precinct Strategies.	Ongoing throughout the year
5	Continue community liaison and engagement with local stakeholders	Ongoing throughout the year

Appendix 1: Blast Monitoring Data

BLAST MONITORING DATA

Environmental Blast Monitoring

Tarrawonga Coal Pty Ltd ACN 100 742 185

SHOT NO	LOCATION I.D	DATE	MONITOR LOCATION	PEAK OVERPRESSURE (dBL)	PEAK GROUND PRESSURE (mm/s)	TIME	Fume Rating
1166	TC53_1217_MN & TC51_17_MN	06-Jan-23	Coomalgah	105.50	0.68	11:09 AM	
			Tarrawonga	117.30	0.36		
1167	TN26_0510_NG	12-Jan-23	Coomalgah	97.90	0.07	9:16 AM	
			Tarrawonga	102.00	0.20		
1168	TN26_0104_NG	14-Jan-23	Coomalgah	88.80	0.08	9:06 AM	
			Tarrawonga	99.80	0.11		
1169	TC32_0103_BC	17-Jan-23	Coomalgah	88.60	0.04	9:15 AM	
			Tarrawonga	89.00	0.04		
1170	TC32_0407_BC & TC32_0810_BC	20-Jan-23	Coomalgah	99.10	0.01	3:35 PM	
			Tarrawonga	99.80	0.01		
1171	TN32_1012_RL	25-Jan-23	Coomalgah	95.50	0.12	10:59 AM	
			Tarrawonga	95.30	0.20		
1172	TC31_0910_NG	28-Jan-23	Coomalgah	91.30	0.04	11:30 AM	
			Tarrawonga	91.50	0.07		
1173	TC31_0104	03-Feb-23	Coomalgah	90.90	0.13	11:24 AM	
			Tarrawonga	93.20	0.16		
1174	TC54_1217_MN & TC54_1217_MN_PS	10-Feb-23	Coomalgah	105.80	0.56	4:12 PM	
			Tarrawonga	110.50	0.34		
1175	TN27_0610_VY	15-Feb-23	Coomalgah	94.20	0.36	1:10 PM	
			Tarrawonga	104.60	0.85		
1176	TC33_0507_BC	20-Feb-23	Coomalgah	91.20	0.03	4:17 PM	
			Tarrawonga	95.40	0.04		
1177	TN27_0105_VY	23-Feb-23	Coomalgah	112.70	0.18	12:26 PM	
			Tarrawonga	103.00	0.41		
1178	TN30_0406_RL310 & TC33_01_BR-TOE	28-Feb-23	Coomalgah	107.30	0.12	4:04 PM	
			Tarrawonga	90.00	0.21		
1179	TN29_10_BW_RL325, TC32_0610_JE_PS & TN31_12_BR_PS	02-Mar-23	Coomalgah	90.00	0.98	12:58 PM	
			Tarrawonga	94.10	0.47		
1180	TC32_0710_JE	13-Mar-23	Coomalgah	95.90	0.49	4:11 PM	1a
			Tarrawonga	103.10	0.30		
1181	TC56_1317_MN & TC56_1317_MN_PS	21-Mar-23	Coomalgah	102.40	0.39	1:07 PM	1a
			Tarrawonga	106.90	0.35		
1182	TN29_10_BR & TC33_0102_BC	23-Mar-23	Coomalgah	97.80	0.05	4:59 PM	
			Tarrawonga	98.50	0.06		
1183	TN27_0610_NG	30-Mar-23	Coomalgah	97.80	0.06	1:04 PM	
			Tarrawonga	98.00	0.06		
1184	TC49_1820_NG	31-Mar-23	Coomalgah	108.00	0.16	4:15 PM	
			Tarrawonga	101.30	0.11		
1185	TN27_0105_NG & TC32_0306_JE	06-Apr-23	Coomalgah	87.40	0.05	1:07 PM	
			Tarrawonga	90.20	0.10		
1186	TC32_0306_JE & TC32_0305_JE_PS	14-Apr-23	Coomalgah	94.40	0.52	11:48 AM	2b
			Tarrawonga	105.30	0.37		
1187	TN30_0204_BC_BEZ & TC32_0102_JE_PS	18-Apr-23	Coomalgah	95.70	0.32	12:07 PM	1a
			Tarrawonga	97.50	0.35		
1188	TC49_1517_NG	20-Apr-23	Coomalgah	100.70	0.18	3:58 PM	
			Tarrawonga	92.60	0.11		
1189	TC49_15_NG	21-Apr-23	Coomalgah	100.90	0.22	1:01 PM	
			Tarrawonga	97.60	0.08		
1190	TC57_1317_MN_PS	24-Apr-23	Coomalgah	103.70	0.17	1:04 PM	
			Tarrawonga	90.20	0.16		
1191	TC32_0102_JE	28-Apr-23	Coomalgah	96.40	0.40	12:59 PM	1a
			Tarrawonga	115.90	0.55		
1192	TC57_1317_MN	29-Apr-23	Coomalgah	104.40	1.69	12:04 PM	
			Tarrawonga	105.40	0.73		
1193	TC50&51_MN	04-May-23	Coomalgah	89.80	0.36	3:51 PM	1a
			Tarrawonga	91.20	0.28		
1194	TC50_1317_NG_PS	06-May-23	Coomalgah	92.10	0.39	12:52 PM	
			Tarrawonga	85.30	0.24		
1195	TN31_12_BW_325RL & TN32_0812_330RL_230513	13-May-23	Coomalgah	97.50	0.09	12:03 PM	
			Tarrawonga	98.60	0.12		
1196	TN32_1012_330RL_B	12-May-23	Coomalgah	93.60	0.19	1:05 PM	
			Tarrawonga	92.10	0.41		
1197	TC50_1824_MN	18-May-23	Coomalgah	105.50	0.54	3:44 PM	
			Tarrawonga	108.50	0.46		
1198	TC49_1314_NG	22-May-23	Coomalgah	91.30	0.13	4:02 PM	
			Tarrawonga	90.60	0.06		
1199	TC49_1314_NG	24-May-23	Coomalgah	92.30	0.09	3:58 PM	
			Tarrawonga	97.20	0.06		
1200	TN28_0511_RL300	25-May-23	Coomalgah	99.90	0.07	3:58 PM	
			Tarrawonga	98.20	0.09		
1201	TN29_0912_BC	30-May-23	Coomalgah	88.10	0.03	3:56 PM	
			Tarrawonga	83.90	0.03		
1202	TC50_1317_NG_PS_B	01-Jun-23	Coomalgah	98.40	0.52	11:45 AM	
			Tarrawonga	84.90	0.15		
1203	TN30_0102_JE+PS_TC32_0105_MN+PS	03-Jun-23	Coomalgah	98.50	0.38	1:20 PM	
			Tarrawonga	106.50	0.46		
1204	TC50_1819_VY	06-Jun-23	Coomalgah	90.20	0.21	12:59 PM	
			Tarrawonga	95.00	0.11		
1205	TN29_0608_BR	15-Jun-23	Coomalgah	90.50	0.08	12:59 PM	1a
			Tarrawonga	89.50	0.06		
1206	TN29_05_BC	17-Jun-23	Coomalgah	93.70	0.20	11:25 AM	3b
			Tarrawonga	95.70	0.12		
1207	TC50_1719_NG	22-Jun-23	Coomalgah	98.30	0.16	2:59 PM	
			Tarrawonga	106.60	0.12		
1208	TN29_0609_BC_A	24-Jun-23	Coomalgah	92.60	0.22	3:59 PM	
			Tarrawonga	91.00	0.11		
1209	TN29_06_09_BC_B	28-Jun-23	Coomalgah	106.30	0.04	1:27 PM	
			Tarrawonga	109.90	0.04		
1210	TC50_2023_NG TC50_1317_VY	10-Jul-23	Coomalgah	103.60	0.68	1:15 PM	
			Tarrawonga	107.20	0.23		

1211	TN32_0507_310RL	15-Jul-23	Coomalgah	116.50	0.18	11:15 AM	
			Tarrawonga	101.10	0.24		
1212	TC32_0707_VY	19-Jul-23	Coomalgah	88.00	0.15	12.00 pm	
			Tarrawonga	92.00	0.25		
1213	TN28_0611_JE	27-Jul-23	Coomalgah	100.30	0.35	3.39pm	
			Tarrawonga	102.70	0.43		
1214	TC50_1317_NG	29-Jul	Coomalgah	102.40	0.18	9.03am	
			Tarrawonga	98.40	0.07		
1215	TC33_0610_JE_PS	4-Aug	Coomalgah	86.40	0.79	12.56pm	
			Tarrawonga	87.50	0.42		
1216	TC51_1824_MN/TC51_224_MN_PS	7-Aug	Coomalgah	96.90	0.58	11:54am	1a
			Tarrawonga	110.10	0.39		
1217	TC33_0610_JE_PS	10-Aug	Coomalgah	98.50	0.53	4:34pm	
			Tarrawonga	103.80	0.37		
1218	TN28_0205_280RL/TN28_0205_MNL_PS	15-Aug	Coomalgah	90.70	0.21	12:07pm	
			Tarrawonga	94.90	0.28		
1219	TN32_0610_310RL	16-Aug	Coomalgah	97.40	0.48	01:05pm	
			Tarrawonga	97.40	0.52		
1220	TN28_0609_RL300_TOE	21-Aug	Coomalgah	92.40	0.05	04:08pm	
			Tarrawonga	94.30	0.05		
1221	TE07_1520_RLBERM_PS	22-Aug	Coomalgah	97.80	0.16	11:57am	
			Tarrawonga	98.30	0.08		
1222	TC33_0103_JE_PS	25-Aug	Coomalgah	91.60	0.40	1:08pm	
			Tarrawonga	100.10	0.35		
1223	TC51_1317_NG_PS	26-Aug	Coomalgah	87.10	0.34	12:06pm	
			Tarrawonga	105.20	0.18		
1224	TE07_1520_280RL	4-Sep	Coomalgah	105.60	0.29	11:10am	2B
			Tarrawonga	95.00	0.20		
1225	TN30_0812_325RL	4-Sep	Coomalgah	102.20	0.11	12:33pm	
			Tarrawonga	100.60	0.11		
1226	TN28_0205_JE	6-Sep	Coomalgah	89.50	0.04	1:02pm	
			Tarrawonga	89.20	0.04		
1227	TC51_1317_VY	9-Sep	Coomalgah	100.10	0.92	9:07am	
			Tarrawonga	107.60	0.25		
1228	TC33_-1_JE_PS, TC33_01_JE/TN30_0708_310RL	15-Sep	Coomalgah	93.00	0.43	1103am	
			Tarrawonga	106.50	0.32		
1229	TE07_1520_RLBERM_PS_B	20-Sep	Coomalgah	100.90	0.01	4:05pm	
			Tarrawonga	106.40	2.65		
1230	TC51_1823_VY/TC51_1823_NG_PS	21-Sep	Coomalgah	99.70	0.29	9:26am	
			Tarrawonga	90.50	0.19		
1231	TN28_13_328RL/TN31_0305_BC/TN32_0102_310RL	27-Sep	Coomalgah	105.50	0.13	10:08 AM	
			Tarrawonga	106.70	0.37		
1232	1232_TN28_0205_0610_MN_231005	5-Oct	Coomalgah	89.20	0.12	9:07 AM	
			Tarrawonga	92.30	0.12		
1233	TE07_1520_295RL	10-Oct	Coomalgah	98.90	0.16	9:29am	1A
			Tarrawonga	96.50	0.16		
1234	TC51_2023_NG	13-Oct	Coomalgah	88.80	0.20	11:12 AM	
			Tarrawonga	82.80	0.22		
1235	TC32_0911_NG/ TC32_0708_NG	14-Oct	Coomalgah	96.70	0.08	11:59am	
			Tarrawonga	86.60	0.11		
1236	TC52_1824_MN_PS/ TC52_24_MN_PS	18-Oct	Coomalgah	101.70	0.34	10:57am	1a
			Tarrawonga	94.00	0.13		
1237	TC37_0105_32RL_A	21-Oct	Coomalgah	100.00	0.13	2:02pm	
			Tarrawonga	90.60	0.20		
1238	TC51_1419_NG	26-Oct	Coomalgah	90.40	0.41	9:11am	
			Tarrawonga	89.30	0.12		
1239	TC32_0105_NG/ TN32_01_310RL	7-Nov	Coomalgah	85.80	0.01	1:42pm	
			Tarrawonga	109.90	0.22		
1240	TN34_0109_BR	8-Nov	Tarrawonga	92.50	0.12	9:03am	1a
			Coomalgah	89.60	0.19		
1241	TN28_0104_VY	9-Nov	Tarrawonga	102.50	0.51	04:20pm	
			Coomalgah	97.60	0.57		
1242	TC51_13_NG	13-Nov	Tarrawonga	92.70	0.08	4:09pm	
			Coomalgah	87.60	0.15		
1243	TN28_0510_VY/ TN28_0111_NG_PS_B	20-Nov	Tarrawonga	100.90	0.45	9:02am	
			Coomalgah	96.70	0.33		
1244	TN34_0607_BC_A / TN34_0305_BC / TN34_0911_BR_TOE	25-Nov	Tarrawonga	101.60	0.05	2:59pm	1b
			Coomalgah	96.10	0.05		
1245	TC52_1819_MN / TC52_2023_MN	5-Dec	Tarrawonga	106.50	0.26	9:20am	
			Coomalgah	99.90	0.55		
1246	TN34_0607_BC	8-Dec	Coomalgah	100.40	0.08	11.02am	
			Tarrawonga	116.30	0.1		
1247	TC33_01_MN	11-Dec	Coomalgah	90.10	0.33	4.03pm	
			Tarrawonga	98.00	0.35		
1248	TN28_0103_NG / TH33_0711_MW / TH330111_VY_PS	23-Dec	Coomalgah	98.40	0.73	11:14am	
			Tarrawonga	99.90	0.8		
1249	TC33_0106_MN	30-Dec	Coomalgah	100.30	0.2	09:16am	
			Tarrawonga	97.40	0.21		

Appendix 2: HVAS Monitoring Data

HVAS MONITORING DATA

COOMALGAH PM_{10} 24Hrs average at HIGH VOLUME AIR SAMPLER		
Date	**µg/m³**	**Comments**
5-Jan-23	18.7	
11-Jan-23	14.4	
17-Jan-23	11.9	
23-Jan-23	9.1	
29-Jan-23	13.4	
4-Feb-23	12	
10-Feb-23	9.2	
16-Feb-23	16.2	
22-Feb-23	9.6	
28-Feb-23	21	
6-Mar-23	21	
12-Mar-23	4.8	
18-Mar-23	12.2	
24-Mar-23	8.4	
30-Mar-23	6.7	
5-Apr-23	10.4	
11-Apr-23	7.2	
17-Apr-23	13.2	
23-Apr-23	7	
29-Apr-23	24.4	
5-May-23	13.2	
11-May-23	21.5	
17-May-23	10.6	
23-May-23	12.6	
29-May-23	8	
4-Jun-23	22.5	
10-Jun-23	4.3	
16-Jun-23	4.2	
22-Jun-23	0.2	
28-Jun-23	5.2	
4-Jul-23	1	
10-Jul-23	1.9	
16-Jul-23	3.9	
22-Jul-23	1.7	
28-Jul-23	7.6	
3-Aug-23	12.1	
9-Aug-23	8.5	
15-Aug-23	3.4	
21-Aug-23	6.1	
27-Aug-23	12.9	
2-Sep-23	4.5	
8-Sep-23	7.6	
14-Sep-23	8	
20-Sep-23	19.1	
26-Sep-23	11.2	
2-Oct-23	23.5	
8-Oct-23	3.6	
14-Oct-23	9.3	
20-Oct-23	19.0	
26-Oct-23	11.3	
1-Nov-23	33.0	
7-Nov-23	18.0	
13-Nov-23	16.3	
19-Nov-23	13.7	
25-Nov-23	5.5	
1-Dec-23	10.5	
7-Dec-23	25.7	Bushfire in Pilliga Forest - results could be affected by smoke
13-Dec-23	38.3	Bushfire in Pilliga Forest - results could be affected by smoke
19-Dec-23	20.8	Bushfire in Pilliga Forest - results could be affected by smoke
25-Dec-23	7.8	Bushfire in Pilliga Forest - results could be affected by smoke
31-Dec-23	9.1	Bushfire in Pilliga Forest - results could be affected by smoke

Appendix 3: SW Monitoring Data

SURFACE WATER MONITORING DATA

Quarterly Surface Water Monitoring Results

Date	Sample Location	pH	EC (µS/cm)	Total Suspended Solids (mg/L)	Total Organic Carbon (mg/L)	Grease & Oil (mg/L)	Antimony (mg/L)	Arsenic (mg/L)	Molybdenum (mg/L)	Selenium (mg/L)	Comments
8 September 2006	SD5	6.5	930	144		<2					
8 September 2006	SD6	7.5	310	104		<2					
8 September 2006	SD8	8.9	190	25		<6					
8 September 2006	SD9	9	285	1940		<2					
2007											
11 January 2007	SD5	8.4	3750	20		<2					
11 January 2007	SD8	8.2	420	84							
11 January 2007	SD9	8.6	440	15		<2					
11 January 2007	MV1	7.7	3970	293		<2					
18 April 2007	SD1	8.6	605	86		<2					
18 April 2007	SD2	8.5	395	102		<2					
18 April 2007	SD8	8.6	270	36		<2					
18 April 2007	SD9	8.4	310	133		<2					
18 April 2007	SD20	9.1	520	80		<2					
18 April 2007	MV	7.8	4260	<2		<2					
25 July 2007	SD1	7.5	990	23		<2					
25 July 2007	SB5	8	1150	17		<2					
25 July 2007	MV1	7.6	3130	15		30					
25 July 2007	SD8	8.1	260	25		<2					
25 July 2007	SD9	7.7	290	22		<2					
25 July 2007	SD5	8.4	3370	8		<2					
31 October 2007	SD9	7.8	310	16		<2					
31 October 2007	SD8	8.8	780	32		<2					
31 October 2007	SB5	8.9	1200	60		<2					
31 October 2007	SB8*	9	2000	110		<2					
31 October 2007	SB7	8.4	560	27		<2					
31 October 2007	MV	8.1	2780	45		<2					
31 October 2007	SD5	8.3	2620	44		<2					
2008											
18 March 2008	SD9	6.9	245	27		<2					
18 March 2008	SD8	8.4	1340	19		<2					
18 March 2008	SD5										
18 March 2008	SD20	7.4	385	44		<2					
18 March 2008	Pit Water Dam	8.4	1620	14		<2					
18 March 2008	MV	7.8	3110	10		<2					
18 March 2008	SB5	7.8	870	54		<2					
18 March 2008	SB7	7.5	365	387		<2					
18 March 2008	SD17	7.4	460	58		<2					
22 August 2008	SD9	7.9	275	35		<2					
22 August 2008	SD8	8.9	1450	20		<2					
22 August 2008	SB16	8.8	1440	16		<2					
22 August 2008	SD5	8.7	1310	35		<2					
22 August 2008	SB4	8.7	1980	31		<2					
22 August 2008	SB5	8.5	955	13		<2					
22 August 2008	Pit Water Dam	8.7	2420	17		<2					
5 September 2008	BCD	7.2	75	150		<2					
5 September 2008	DAM1	7.4	185	4930		<2					
23 September 2008	BCU	6.8	95	92		<2					
23 September 2008	BCD	6.7	115	107		<2					
23 September 2008	SD8	8.9	995	24		<2					
23 September 2008	SD17	8.3	720	456		<2					
7 October 2008	SD17	8.2	735	75		<2					

Date	Sample Location	pH	EC (µS/cm)	Total Suspended Solids (mg/L)	Total Organic Carbon (mg/L)	Grease & Oil (mg/L)	Antimony (mg/L)	Arsenic (mg/L)	Molybdenum (mg/L)	Selenium (mg/L)	Comments
7 October 2008	SD8	8.9	775	22		<2					
7 October 2008	SB14	8.5	255	43		<2					
15 December 2008	SD17	7.4	435	152		<2					
15 December 2008	SD9	7.3	245	24		3					
15 December 2008	SD8	8.2	635	22		<2					
15 December 2008	BCD	6.9	135	30		<2					
2009											
10 February 2009	MV	8.2	3370	13		<2					
10 February 2009	SD8	8.9	790	11		<2					
10 February 2009	SD9	8.5	330	16		<2					
10 February 2009	SB14	8	380	32		<2					
10 February 2009	SB5	8.8	1070	7		<2					
10 February 2009	SB16	9	1200	6		<2					
24 June 2009	SB7	8.21	401	90	6	<5					
24 June 2009	SB5	8.62	1180	12	8	<5					
24 June 2009	Pit water	8.87	2330	148	5	<5					
24 June 2009	SD9	8.33	335	5	8	<5					
24 June 2009	SD16	8.16	550	20	5	<5					
24 June 2009	SB14	7.71	351	29	9	<5					
27 August 2009	SB7	8.1	418	62	5	<10					
27 August 2009	SB5	8.64	1210	29	8	<10					
27 August 2009	Pit water	8.2	2580	264	6	<10					
27 August 2009	SD9	8.36	389	12	8	<10					
31 August 2009	SB14	8.73	342	56	10	<10					
31 August 2009	SD16	8.3	547	158	5	<10					
22 December 2009	NCD	7.8	137	164	16	19					
22 December 2009	BCU	7.32	150	220	25	-					
22 December 2009	BCD	7.04	146	32	43	-					
29 December 2009	BCD	6.88	75	47	15						
29 December 2009	NCD	6.73	143	32	10						
29 December 2009	NCU	6.79	95	34	18						
29 December 2009	SD14	8.12	1080	65	4						
29 December 2009	SB14	7.41	374	128	19						
29 December 2009	Goonbri Creek	7.02	60	38	12						
2010											
25 February 2010	SB7	8.14	197	194	3	5					
25 February 2010	SB5	8.06	681	77	4	<5					
25 February 2010	SD9	7.95	123	18	8	5					
25 February 2010	SD16	8.49	734	257	3	<5					
25 February 2010	SB14	8.03	232	40	6	<5					
25 February 2010	SD2	8.37	276	15	<5	<5					
24 May 2010	SB7	8.41	291	17	4	13					
24 May 2010	SB5	8.59	531	48	5	13					
24 May 2010	SD9	8.62	148	10	8	6					
24 May 2010	SD16	8.93	810	9	4	8					
24 May 2010	SB14	7.76	251	538	8	6					
6 July 2010	SB14	8.09	245	95	5	<5					
9 August 2010	SB16	8.39	1170	10	3	<5					
9 August 2010	Pit water	7.07	1940	37	2	<5					
9 August 2010	SD9	7.72	147	24	9	<5					
9 August 2010	SD16	8.29	793	40	5	<5					
9 August 2010	SB14	7.69	260	1300	6	<5					
2 November 2010	SB7 (pre floc)	8.33	332	38	4	<5					
4 November 2010	SB7 (post floc)	8.72	339	10	3	<5					

Date	Sample Location	pH	EC (µS/cm)	Total Suspended Solids (mg/L)	Total Organic Carbon (mg/L)	Grease & Oil (mg/L)	Antimony (mg/L)	Arsenic (mg/L)	Molybdenum (mg/L)	Selenium (mg/L)	Comments
10 November 2010	SB16	9.19	1140	14	3	<5					
10 November 2010	SD9	7.94	168	16	11	<5					
10 November 2010	SD16	9.49	831	11	5	<5					
10 November 2010	SB14	7.72	323	56	5	<5					
2011											
9 March 2011	SD17	8.38	393	42	6	<5					
9 March 2011	SB16	7.17	968	20	6	<5					
9 March 2011	VOID	7.95	2540	78	6	<5					
9 March 2011	SD9	7.98	186	30	11	<5					
9 March 2011	SD16	8.71	762	27	5	<5					
9 March 2011	SB14	8.17	361	43	6	<5					
3 May 2011	SD16	8.58	1020	22	6	<5	<0.001	0.002	0.014	<0.01	
3 May 2011	SB14	7.9	434	24	6	<5	<0.001	0.002	0.004	<0.01	
3 May 2011	SD17	8.92	2040	20	6	<5	<0.001	0.004	0.014	<0.01	
3 May 2011	SB16	8.58	1030	13	4	<5	0.003	0.2	0.029	<0.01	
3 May 2011	VOID	Dry									
4 August 2011	SD16	8.64	975	32	8	<5	<0.001	0.002	0.011	<0.01	
4 August 2011	SB14	8.33	414	24	6	<5	<0.001	0.001	0.003	<0.01	
4 August 2011	SD17	8.53	925	10	8	<5	<0.001	0.002	0.006	<0.01	
4 August 2011	SB16	8.52	891	24	4	<5	0.004	0.002	0.028	<0.01	
4 August 2011	VOID	8.52	2890	49	5	<5		0.015			
9 November 2011	SD16	9.03	791	20	7	<5	<0.001	0.003	0.010	<0.01	
9 November 2011	SB14	7.84	431	20	5	<5	<0.001	0.002	0.004	<0.01	
9 November 2011	SD17	8.39	448	56	6	<5	<0.001	0.002	0.003	<0.01	
9 November 2011	SB16	8.39	646	6	3	<5	0.003	0.002	0.026	<0.01	
9 November 2011	VOID	8.08	1790	158	3	<5					
2012											
29 February 2012	SD16	7.96	365	34	2	<5	<0.001	0.001	0.009	<0.01	
29 February 2012	SB14	8.15	443	174	5	<5	<0.001	0.002	0.003	<0.01	
29 February 2012	SD17	8.23	434	18	7	<5	<0.001	0.003	0.004	<0.01	
29 February 2012	SB16	8.17	433	23	1	<5	0.001	0.001	0.012	<0.01	
29 February 2012	VOID	8.3	727	1620	2	<5		0.008			
9 March 2012	SB23 Pre-floc	7.84	148	70	4	<5					
10 March 2012	SB23 24hrs post floc	7.82	159	60	16	<5					
11 March 2012	SB23 48hrs post floc	7.75	158	61	16	<5					
2 March 2012	SD16 Pre-floc	8.17	351	16	2	<5					
2 March 2012	SB14 Pre-floc	8.13	452	50	5	<5					
2 May 2012	SD16	8.37	388	14	2	<5	<0.001	<0.001	0.008	<0.01	
2 May 2012	SB14	9.08	1060	57	5	<5	<0.001	0.002	0.004	<0.01	
2 May 2012	SD17	8.74	602	8	6	<5	<0.001	0.001	0.006	<0.01	
2 May 2012	SB16	7.87	456	6	1	<5	0.001	0.001	0.013	<0.01	
2 May 2012	VOID	8.26	2080	10	1	<5	0.002	0.009	0.048	<0.01	
2 May 2012	GCR1	7.99	689	104	35	<5	<0.001	0.003	0.002	<0.01	
11 May 2012	SB23		246	18	8	<5					

Date	Sample Location	pH	EC (µS/cm)	Total Suspended Solids (mg/L)	Total Organic Carbon (mg/L)	Grease & Oil (mg/L)	Antimony (mg/L)	Arsenic (mg/L)	Molybdenum (mg/L)	Selenium (mg/L)	Comments
22 May 2012	SB24		373	42	11	<5					
22 May 2012	SB14		980	42	5	<5					
22 May 2012	SD16		400	35	2	<5					
22 May 2012	SD9		133	36	8	<5					
22 May 2012	SD17		618	20	6	<5					
28 May 2012	SD17	8.58	558	16	7	<5					
28 May 2012	SD9	7.97	136	37	8	<5					
28 May 2012	SB14	8.21	661	53	5	<5					
28 May 2012	SB24	8.21	351	42	11	<5					
18 June 2012	SB14	8.05	513	92	5	<5					
18 June 2012	SD16	8.13	445	25	4	<5					
18 June 2012	SD9	7.95	137	23	8	<5					
18 June 2012	SD17	8.54	533	14	6	<5					
18 June 2012	Canyon SD	8.13	304	87	9	<5					
11 July 2012	NCD	7.19	174	150	19	<5					
20 July 2012	SB23-After Floc	7.92	254	16	3	<5					
23 July 2012	SD16-Background info water	8.02	450	25	3	<5					
23 July 2012	SD14-After floc	7.94	590	35	3	<5					
14 August 2012	SD16	8.1	454	<5	3	<5	<0.001	0.001	0.008	<0.01	
14 August 2012	SB14	8.11	646	<5	7	<5	<0.001	0.002	0.007	<0.01	
14 August 2012	SD17	8.08	465	<5	5	<5	<0.001	0.001	0.004	<0.01	
14 August 2012	SB16	7.96	561	<5	2	<5	0.003	0.002	0.02	<0.01	
14 August 2012	VOID	8.39	2220	<5	2	<5					
14 August 2012	GCR1	7.82	190	16	19	<5	<0.001	0.002	<0.001	<0.01	
14 August 2012	GCR2	7.72	182	12	17	<5	<0.001	0.002	<0.001	<0.01	
14 November 2012	SD16	9.84	679	100	6	<5	<0.001	0.004	0.01	<0.01	
14 November 2012	SB14	8.85	890	24	3	<5	<0.001	<0.001	0.006	<0.01	
14 November 2012	SD17	8.7	700	14	4	<5	<0.001	<0.001	0.006	<0.01	
14 November 2012	SB16	8.69	707	76	1	<5	0.004	0.002	0.026	<0.01	
14 November 2012	VOID	8.62	2870	10	<1	<5					
2013											
1 February 2013	SD9 pre floc	7.44	262	43	7	<5					
1 February 2013	SD9 post floc	7.39	267	82	8	<5					
20 February 2013	SD9-Pre Discharge	7.89	275	18	8	<5					
6 March 2013	SD16	7.69	252	288	5	<5	<0.001	0.005	0.001	<0.01	
6 March 2013	SB14	7.81	378	99	4	<5	<0.001	0.001	0.002	<0.01	
6 March 2013	SD17	8	229	91	4	<5	<0.001	<0.001	0.002	<0.01	
6 March 2013	SB16A	8.01	365	240	4	<5	0.002	0.004	0.013	<0.01	
6 March 2013	VOID	8.23	1620	16	2	<5					
6 March 2013	GCR1	7.43	126	106	5	<5	<0.001	<0.001	<0.001	<0.01	
6 March 2013	GCR2	7.42	173	48	16	<5	<0.001	0.002	<0.001	<0.01	
30 May 2013	SD16	8.16	341	100	7	<5	<0.001	0.003	0.003	<0.01	
30 May 2013	SB14	8.42	538	38	6	<5	<0.001	0.002	0.003	<0.01	
30 May 2013	SD17	8.47	334	49	6	<5	<0.001	0.002	0.003	<0.01	
30 May 2013	SB16A	8.25	530	108	10	<5	0.004	0.004	0.018	<0.01	
30 May 2013	VOID	8.51	3120	45	4	<5					
7 August 2013	SD16	8.49	390	7	6	<5	<0.001	0.001	0.003	<0.01	

Date	Sample Location	pH	EC (µS/cm)	Total Suspended Solids (mg/L)	Total Organic Carbon (mg/L)	Grease & Oil (mg/L)	Antimony (mg/L)	Arsenic (mg/L)	Molybdenum (mg/L)	Selenium (mg/L)	Comments
7 August 2013	SB14	8.96	570	8	7	<5	<0.001	<0.001	0.002	<0.01	
7 August 2013	SD17	8.59	371	9	4	<5	<0.001	<0.001	0.003	<0.01	
7 August 2013	SB16A	8.05	585	20	7	<5	0.005	0.003	0.022	<0.01	
7 August 2013	VOID	8.35	2660	29	6	<5					
7 August 2013	TAR-GCD	7.4	155	52	16	<5	<0.001	0.002	<0.001	<0.01	
7 August 2013	TAR-GCU	7.42	208	14	20	<5	<0.001	0.003	<0.001	<0.01	
5 November 2013	SD16	9.42	538	29	15	<5	<0.001	0.004	0.004	<0.01	
5 November 2013	SB14	8.55	1070	172	17	<5	<0.001	0.002	0.005	<0.01	
5 November 2013	SD17	8.87	573	21	9	<5	<0.001	0.002	0.005	<0.01	
5 November 2013	SB16A	8.8	918	38	8	<5	0.008	0.005	0.04	<0.01	
5 November 2013	VOID	8.25	2530	11	29	<5		0.01			
2014											
20 February 2014	TAR-SD16	8.35	432	65	6	<5	<0.001	0.006	0.003	<0.01	
20 February 2014	TAR-SB14	8.09	393	1280	8	<5	<0.001	0.005	<0.001	0.01	
20 February 2014	TAR-SD17	8.79	712	46	8	<5	<0.001	0.002	0.007	<0.01	
20 February 2014	TAR-SB16A	8.61	713	330	8	<5	0.004	0.01	0.023	<0.01	
20 February 2014	TAR-VOID	8.63	1350	22	1	<5	0.007	0.026	0.101	<0.01	
20 February 2014	TAR-GCU	6.69	115	433	23	<5	<0.001	0.005	0.001	<0.01	
6 May 2014	TAR-SD16	8.12	404	19	3	21	<0.001	0.004	0.003	<0.01	
6 May 2014	TAR-SB14	8.92	1980	10	4	5	<0.001	0.002	0.008	<0.01	
6 May 2014	TAR-SD17	8.26	351	25	3	<5	<0.001	0.002	0.0002	<0.01	
6 May 2014	TAR-SB16A	8.2	483	134	1	<5	0.003	0.008	0.02	<0.01	
6 May 2014	TAR-VOID	8.31	3280	213	<1	<5		0.006			
6 May 2014	TAR-GCU	7.89	318	<5	14	<5	<0.001	0.002	0.001	<0.01	
6 May 2014	TAR-GCD	7.88	301	<5	17	<5	<0.001	0.001	<0.001	<0.01	
6 August 2014	TAR-SD16	8.7	439	5	6	<5	<0.001	0.002	0.002	<0.01	
6 August 2014	TAR-SB14	8.67	1450	22	7	<5	<0.001	0.001	0.004	<0.01	
6 August 2014	TAR-SD17	8.44	397	48	7	<5	<0.001	0.002	0.003	<0.01	
6 August 2014	TAR-SB16A	8.25	609	63	8	<5	0.005	0.004	0.024	<0.01	
6 August 2014	TAR-VOID	8.5	3260	515	16	<5					
6 August 2014	TAR-GCU	8.31	392	42	14	<5	<0.001	0.002	<0.001	<0.01	
11 November 2014	TAR-SD16	8.7	507	14	6	<5	<0.001	0.002	0.004	<0.01	
11 November 2014	TAR-SB14	8.85	1480	50	14	<5	<0.001	0.003	0.012	<0.01	
11 November 2014	TAR-SD17	8.7	539	34	7	<5	<0.001	<0.001	0.005	<0.01	
11 November 2014	TAR-SB16A	8.51	740	18	5	<5	0.006	0.003	0.032	<0.01	
11 November 2014	TAR-GCU	7.7	549	1230	57	<5	<0.001	0.022	0.006	<0.01	
11 November 2014	TAR-GCD	7.64	751	62	50	<5	<0.001	0.011	0.004	<0.01	
8 December 2014	TAR-VOID	8.04	3060	170	<1	<5					
2015											
18 February 2015	TAR-SD16	8.19	451	16	4	<5	<0.001	0.004	0.006	<0.01	
18 February 2015	TAR-SB14	8	626	12	4	<5	<0.001	0.004	0.005	<0.01	
18 February 2015	TAR-SD17	8.13	313	123	5	<5	<0.001	0.007	0.006	<0.01	
18 February 2015	TAR-SB16A	8.29	574	71	2	<5	0.003	0.007	0.025	<0.01	
18 February 2015	TAR-GCU	7.43	242	86	6	<5	<0.001	0.01	0.02	<0.01	
18 February 2015	TAR-GCD	7.22	444	748	26	<5	<0.001	0.016	0.002	<0.01	
18 February 2015	TAR-VOID	8.72	3170	10	<1	<5					
7 May 2015	TAR-SD16	8.27	409	16	6	<5	<0.001	0.003	<0.001	<0.01	
7 May 2015	TAR-SB14	8.85	1300	17	8	<5	<0.001	0.002	0.002	<0.01	
7 May 2015	TAR-SD17	8.3	539	44	5	<5	0.001	0.003	0.007	<0.01	
7 May 2015	TAR-SB16A	8.19	571	44	2	<5	0.005	0.003	0.008	<0.01	
7 May 2015	TAR-VOID	8.62	2910	5	5	<5					
7 May 2015	TAR-GCD	7.35	147	29	8	<5	<0.001	0.003	<0.001	<0.01	
17 August 2015	TAR-SD16	8.43	426	19	4	8	<0.001	0.003	0.011	<0.01	

Date	Sample Location	pH	EC (µS/cm)	Total Suspended Solids (mg/L)	Total Organic Carbon (mg/L)	Grease & Oil (mg/L)	Antimony (mg/L)	Arsenic (mg/L)	Molybdenum (mg/L)	Selenium (mg/L)	Comments
17 August 2015	TAR-SB14	8.91	1070	7	5	<5	0.001	0.001	0.02	<0.01	
17 August 2015	TAR-SD17	8.81	902	192	8	7	<0.001	0.002	0.043	<0.01	
17 August 2015	TAR-SB16A	7.95	658	65	2	7	0.007	0.004	0.05	<0.01	
17 August 2015	TAR-GCU	7.67	161	96	6	6	<0.001	0.004	0.001	<0.01	
17 August 2015	TAR-GCD	7.59	202	35	7	<5	<0.001	0.007	<0.001	<0.01	
27 August 2015	TAR-VOID	8.41	1020	49200	<20	6					
17 November 2015	TAR-SD16	8.9	440	10	6	<5	<0.001	0.004	0.004	<0.01	
17 November 2015	TAR-SB14	8.21	455	100	9	<5	<0.001	0.003	0.005	<0.01	
17 November 2015	TAR-SD17	7.98	361	191	10	<5	<0.001	0.004	0.004	<0.01	
17 November 2015	TAR-SB16A	8.08	550	64	6	<5	0.001	0.002	0.048	<0.01	
17 November 2015	TAR-VOID	8.36	1350	43	4	<5					
17 November 2015	TAR-GCU	7.47	157	33	15	<5	<0.001	0.006	<0.001	<0.01	
2016											
11 February 2016	TAR-SD16	8.2	289	95	5	<5	<0.001	0.006	0.004	<0.01	
11 February 2016	TAR-SB14	8.29	722	21	4	<5	<0.001	0.004	0.007	<0.01	
11 February 2016	TAR-SD17	8.26	698	174	2	<5	0.002	0.007	0.014	<0.01	
11 February 2016	TAR-SB16A	7.99	622	84	1	<5	0.002	0.003	0.035	<0.01	
11 February 2016	TAR-VOID	8.28	882	53	<1	<5					
11 February 2016	TAR-GCD	7.45	159	129	10	<5	<0.001	0.01	0.002	<0.01	
10 May 2016	TAR-VOID	8.33	3270	<5	2	<5		0.011		<0.01	
10 May 2016	TAR-SD16	8.04	340	66	5	<5	<0.001	0.004	0.003	<0.01	
10 May 2016	TAR-SB14	8.45	535	108	8	<5	<0.001	0.005	0.004	<0.01	
10 May 2016	TAR-SD17	8.45	774	25	9	<5	<0.001	0.003	0.016	<0.01	
10 May 2016	TAR-SB16A	8.42	847	21	4	<5	<0.001	0.002	0.03	<0.01	
10 May 2016	TAR-GCD	7.25	170	119	14	<5	<0.001	0.005	<0.001	<0.01	
10 August 2016	TAR-SD16	8.13	427	19	6	<5	<0.001	0.004	0.003	<0.01	
10 August 2016	TAR-SD14	8.13	644	154	6	<5	<0.001	0.004	0.003	<0.01	
10 August 2016	TAR-SD17	7.85	267	87	5	<5	<0.001	0.005	0.003	<0.01	
10 August 2016	TAR-SB16A	8.13	474	45	3	<5	<0.001	0.002	0.017	<0.01	
10 August 2016	TAR-GCU	7.29	136	18	16	<5	<0.001	0.003	<0.001	<0.01	
10 August 2016	TAR-GCD	7.08	95	33	12	<5	<0.001	0.002	<0.001	<0.01	
10 August 2016	TAR-VOID	8.55	3010	6	1	<5					
15 November 2016	TAR-SD16	8.72	712	7	5	<5	<0.001	0.005	0.004	<0.01	
15 November 2016	TAR-SD17	8.77	557	37	10	<5	<0.001	0.003	0.01	<0.01	
15 November 2016	TAR-SB16A	8.36	603	14	6	<5	<0.001	0.003	0.025	<0.01	
15 November 2016	TAR-VOID	8.6	3000	26	2	<5					
15 November 2016	TAR-GCU	7.89	242	26	16	<5	<0.001	0.004	0.002	<0.01	
15 November 2016	TAR-GCD	8.15	526	12	12	<5	<0.001	0.004	<0.001	<0.01	
2017											
2 August 2017	SD14	7.9	459	28	12	<5	<0.001	0.008	0.002	<0.01	
2 August 2017	SD17	8.1	528	202	22	<5	<0.001	0.009	0.006	<0.01	
2 August 2017	SB16a	8.4	551	93	8	<5	<0.001	0.003	0.017	<0.01	
2 August 2017	GCU	7.3	208	70	29	<5	<0.001	0.009	0.001	<0.01	
2 August 2017	GCD	8.1	489	169	33	<5	<0.001	0.026	0.002	<0.01	
2 August 2017	VOID	8.1	3360	8	2	<5	----	----	----	----	
5 September 2017	SB14	8.9	757	67	5	5	<0.001	0.008	0.004	<0.01	
5 September 2017	SD17	9.1	1300	170	12	12	<0.001	0.005	0.023	<0.01	
5 September 2017	SB16a	8.4	957	41	1	1	<0.001	0.003	0.03	<0.01	
5 September 2017	QCU	8.3	15	878	7	7	<0.001	0.006	<0.001	<0.01	
5 September 2017	QCD	7.4	678	225	37	37	<0.001	0.006	0.003	<0.01	
5 September 2017	VOID	8.6	3100	12	1	<5	----	0.006	----	----	
8 September 2017	SD16	9.4	463	19	9	<5	<0.01	<0.01	<0.01	<0.01	
8 September 2017	SD14	9.7	580	47	11	<5	<0.01	<0.01	<0.01	<0.01	
8 September 2017	SD17	8.2	416	120	10	<5	<0.01	<0.01	<0.01	<0.01	

Date	Sample Location	pH	EC (µS/cm)	Total Suspended Solids (mg/L)	Total Organic Carbon (mg/L)	Grease & Oil (mg/L)	Antimony (mg/L)	Arsenic (mg/L)	Molybdenum (mg/L)	Selenium (mg/L)	Comments
8 September 2017	SB16a	8.1	703	62	6	<5	<0.01	<0.01	0.02	<0.01	
8 September 2017	GCU	7.5	114	121	8	<5	<0.01	<0.01	<0.01	<0.01	
8 September 2017	GCD	7.9	280	161	12	<5	<0.01	<0.01	<0.01	<0.01	
9 May 2017	VOID	8.5	3050	21	1	<5	---	---	---	---	
13 November 2017	SB14	8.1	440	130	11	<5	<0.001	0.007	0.002	<0.01	
13 November 2017	SD17	9.1	958	122	29	<5	<0.001	0.006	0.017	<0.01	
13 November 2017	SB16A	8.6	901	85	7	<5	<0.001	0.004	0.026	<0.01	
13 November 2017	VOID	8.6	2970	19	2	<5	----	----	----	----	
13 November 2017	GCU	6.5	175	22	14	<5	<0.001	0.007	0.001	<0.01	
13 November 2017	GCD	6.7	234	125	14	<5	<0.001	0.005	0.001	<0.01	
2018											
22 February 2018	SD16	9.2	1400	216	34	<5	<0.001	0.018	0.015	<0.01	
22 February 2018	SB14	8.9	823	60	11	<5	<0.001	0.01	0.007	<0.01	
22 February 2018	SB16a	9.4	1330	280	36	<5	<0.001	0.012	0.028	<0.01	
22 February 2018	Void	8.7	3600	15	1	<5	----	----	----	----	
22 February 2018	GCU	7.0	170	166	25	<5	<0.001	0.004	<0.001	<0.01	
22 May 2018	Void	8.9	3340	14	1	6	----	----	----	----	
21 August 2018	SB16A	9.3	5300	54	51	<5	0.002	0.022	0.192	<0.01	
21 August 2018	Void	8.9	3590	<5	2	<5	----	----	----	----	
13 November 2018	SD16	8.5	407	634	4	<5	<0.001	0.014	0.001	0.01	
13 November 2018	SD14	8.9	2020	26	10	5	<0.001	0.004	0.006	<0.01	
13 November 2018	SD17	8.1	439	898	10	<5	<0.001	0.01	0.002	<0.01	
13 November 2018	SB16A	8.4	1090	436	20	<5	<0.001	0.014	0.011	<0.01	
13 November 2018	GCU	7.1	253	14	18	<5	<0.001	0.005	0.001	<0.01	
13 November 2018	GCD	7.2	260	65	18	<5	<0.001	0.011	0.001	<0.01	
13 November 2018	Void	8.2	2880	18	5	<5	----	----	----	----	
2019											
22 February 2019	SB14	8.8	2410	536	24	<5	<0.001	0.016	0.007	<0.01	
22 February 2019	SB16A	10	6840	47	126	<5	0.002	0.058	0.238	<0.01	
22 February 2019	Void	8.6	3720	19	3	<5	----	----	----	----	
Other sites were not flowing- no sample taken											
23 May 2019	Void	8	3070	<5	<1	<5	----	----	----	----	
5 September 2019	SD16	7.6	169	83	5	<5	<0.001	0.01	<0.001	0.01	
5 September 2019	SD14	8.4	971	20	5	<5	<0.001	0.002	0.003	<0.01	
5 September 2019	SD17	7.4	435	141	10	<5	0.001	0.003	0.004	<0.01	
5 September 2019	SD16A	8.2	509	276	11	<5	<0.001	0.006	0.005	<0.01	
5 September 2019	GCU	6.8	90	16	10	<5	<0.001	0.002	<0.001	<0.01	
5 September 2019	GCD	6.7	101	39	8	<5	<0.001	0.002	<0.001	<0.01	
23 May 2019	Void	8	3070	<5	<1	<5	----	0.046	----	----	
13 August 2019	SD16	7.8	297	434	4	<5	<0.001	0.012	0.001	0.01	
13 August 2019	SD17	7.9	393	181	6	<5	<0.001	0.002	0.002	<0.01	
13 August 2019	VOID	8.6	3000	15	<1	<5	----	----	----	----	
Other sites were dry- no sample taken											
11 August 2019	VOID	8.6	3700	13	4	<5	----	----	----	----	
Other sites were dry- no sample taken - See photos											
2020											
13 February 2020	SD16	7.9	421	262	8	<5	<0.001	0.004	0.002	<0.01	Approx. 180mm of rain that week from Saturday 8th to Thurs 13th
13 February 2020	SB14	8.2	938	37	7	<5	<0.001	0.004	0.005	<0.01	
13 February 2020	SD17	8	166	1170	4	<5	<0.001	0.004	<0.001	<0.01	
13 February 2020	SB16A	8.2	493	282	7	<5	<0.001	0.004	0.004	<0.01	
13 February 2020	GCU	7.3	147	95	14	<5	<0.001	0.002	<0.001	<0.01	
13 February 2020	GCD	7.2	269	64	14	<5	<0.001	0.002	<0.001	<0.01	

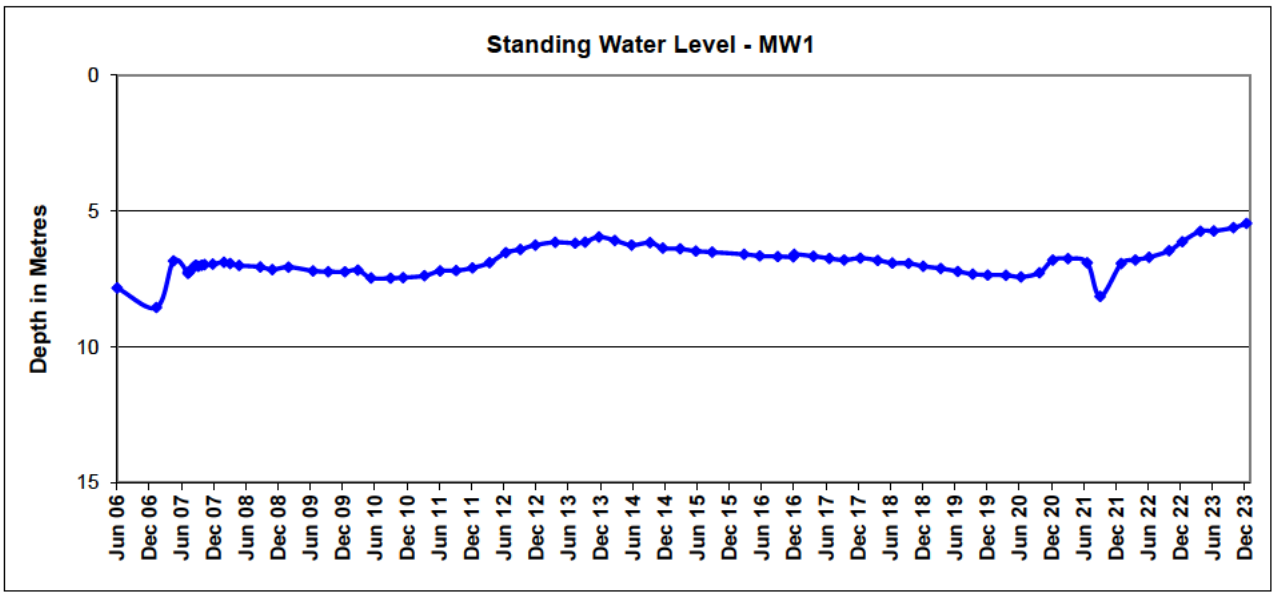
Date	Sample Location	pH	EC (µS/cm)	Total Suspended Solids (mg/L)	Total Organic Carbon (mg/L)	Grease & Oil (mg/L)	Antimony (mg/L)	Arsenic (mg/L)	Molybdenum (mg/L)	Selenium (mg/L)	Comments
5 March 2020	VOID	8.17	2420	380	4	<5	0.001	0.001	0.001	0.01	
6 May 2020	SD16	8.8	397	21	10	<5	<0.001	0.001	0.005	<0.01	
6 May 2020	SB14	8.7	2250	92	12	<5	<0.001	0.003	0.005	<0.01	
6 May 2020	SD17	8.4	293	120	8	<5	<0.001	0.001	0.002	<0.01	
6 May 2020	SB16a	8.8	543	33	9	<5	<0.001	0.002	0.013	<0.01	
6 May 2020	VOID	7.8	3290	34	<1	<5	----	0.012	----	----	
19 August 2020	SD17	8.27	367	42	6	<5	<0.001	0.001	0.002	<0.01	
19 August 2020	SD16	7.75	444	37	5	<5	<0.001	0.001	0.004	<0.01	
19 August 2020	SB14	8.97	1320	32	9	<5	<0.001	0.003	0.004	<0.01	
28 August 2020	VOID	8.36	3600	25	30	<5	----	----	----	----	
12 November 2020	SB16A	8.44	967	78	8	6	0.001	0.003	0.021	0.01	
12 November 2020	SD17	8.53	645	62	4	6	0.001	0.001	0.003	0.01	
12 November 2020	VOID	8.58	1700	40	2	5	----	----	----	----	
2021											
12 February 2021	VOID	8.5	2040	42	<1	<5	0.03	0.008	0.06	<0.01	
12 February 2021	SD17	8.15	342	322	5	<5	0.001	0.003	0.002	<0.01	
12 February 2021	SD16A	8.41	430	4600	3	<5	<0.001	0.01	0.002	<0.01	
17 May 2021	SD17	7.88	236	212	-	<5	-	0.005	0.001	<0.01	
17 May 2021	SD27	7.96	256	257	-	<5	-	0.003	0.001	<0.01	
17 May 2021	SB16A	8.23	391	220	-	<5	-	0.005	0.007	<0.01	
17 May 2021	Void	8.72	1540	17	-	<5	-	0.004			
17 May 2021	GCU	7.78	160	62	-	<5	-	0.002	<0.001	<0.01	
17 May 2021	GCD	7.53	210	68	-	<5	-	0.002	<0.001	<0.01	
17 May 2021	SB23B	8.12	224	22	-	<5	-	0.002	<0.001	<0.01	
16 August 2021	SD17	7.64	213	185	-	<5	-	0.006	0.001	0.01	
16 August 2021	SD27	8.15	320	124	-	<5	-	0.003	0.003	0.01	
16 August 2021	SB16A	8.2	406	48	-	<5	-	0.006	0.006	0.01	
16 August 2021	Void	8.84	1240	11	-	<5	-	0.006			
16 August 2021	GCU	7.95	196	35	-	<5	-	0.002	0.001	0.01	
16 August 2021	GCD	7.84	493	24	-	<5	-	0.002	0.001	0.01	
17 November 2021	GCU	7.57	164	12	-	<5	-	0.003	0.001	0.01	
17 November 2021	GCD	7.38	234	79	-	<5	-	0.005	0.002	0.01	
17 November 2021	SD17	8.15	255	143	-	<5	-	0.002	0.006	0.01	
17 November 2021	SD27	8.61	384	15	-	<5	-	0.001	0.006	0.01	
17 November 2021	SB16A	8.38	406	31	-	<5	-	0.006	0.006	0.01	
19 November 2021	Void	8.78	1970	64	-	<5	-	0.014		0.01	
19 November 2021	SB16B	8.94	408	20	-	<5	-	0.002	0.007	0.01	
2022											
16 February 2022	SD17	8.35	213	22	-	<5	-	0.001	0.001	<0.01	
16 February 2022	SB25	7.85	190	140	-	<5	-	<0.001	<0.001	<0.01	
16 February 2022	SB6	7.92	205	46	-	<5	-	<0.001	0.002	<0.01	
16 February 2022	SB7	8.99	236	0	-	<5	-	0.003	<0.001	<0.01	
16 February 2022	SD1	8.81	260	9	-	<5	-	0.003	0.002	<0.01	
16 February 2022	SD2	8.81	293	48	-	<5	-	0.002	0.001	<0.01	
16 February 2022	SB5A	8.44	455	325	-	<5	-	0.001	<0.001	<0.01	
16 February 2022	SB5B	0.94	284	22	-	<5	-	<0.001	0.002	<0.01	
16 February 2022	SB4	8.27	433	71	-	<5	-	0.002	0.012	<0.01	
16 February 2022	PW3	9	329	30	-	<5	-	<0.001	0.005	<0.01	
16 February 2022	SB16B	8.51	354	22	-	<5	-	0.002	0.004	<0.01	
16 February 2022	SD8	8.36	356	33	-	<5	-	0.002	0.005	<0.01	
16 February 2022	SB23A	8.52	152	16	-	<5	-	0.002	<0.001	<0.01	
16 February 2022	SB23B	8.88	205	18	-	<5	-	0.002	<0.001	<0.01	
16 February 2022	SD9	8.43	329	17	-	<5	-	0.001	0.005	<0.01	
16 February 2022	SD28	8.96	683	136	-	<5	-	0.005	0.006	<0.01	
16 February 2022	SD26	8.68	616	14	-	<5	-	0.002	0.003	<0.01	
16 February 2022	SB26	9.1	409	80	-	<5	-	0.003	0.002	<0.01	

Date	Sample Location	pH	EC (µS/cm)	Total Suspended Solids (mg/L)	Total Organic Carbon (mg/L)	Grease & Oil (mg/L)	Antimony (mg/L)	Arsenic (mg/L)	Molybdenum (mg/L)	Selenium (mg/L)	Comments
16 February 2022	SB24A	8.8	1340	17	-	<5	-	0.003	0.031	<0.01	
16 February 2022	SB24B	8.16	174	392	-	<5	-	0.002	<0.001	<0.01	
16 February 2022	PW5	8.51	333	21	-	<5	-	0.001	<0.001	<0.01	
16 February 2022	PW6	8.69	1830	8	-	6	-	0.002	0.045	<0.01	
14 March 2022	VOID	8.36	3060	8	2	<5	0.003	0.002	0.058	<0.01	
6 June 2022	SD17	8.08	255	36	-	<5	-	<0.001	0.003	<0.01	
6 June 2022	SD27	7.59	234	152	-	<5	-	0.003	0.004	<0.01	
6 June 2022	SB16A	8.24	526	191	-	<5	-	0.002	0.01	<0.01	
6 June 2022	SB23B	8.29	303	50	-	<5	-	0.001	0.002	<0.01	
6 June 2022	SD9	8.17	413	52	-	<5	-	<0.001	0.001	<0.01	
6 June 2022	SB24B	7.84	232	141	-	<5	-	0.001	0.005	<0.01	
4 July 2022	VOID	8.52	2730	31	4	<5	-	0.02	0.064	<0.01	
18 August 2022	SD17	7.83	275	286	-	<5	-	0.003	0.002	<0.01	
18 August 2022	SD27	7.79	220	45	-	<5	-	0.004	<0.001	<0.01	
18 August 2022	SB16A	8.11	464	48	-	<5	-	0.003	0.009	<0.01	
18 August 2022	VOID	8.59	1050	18	-	<5	-	0.004	-	-	
18 August 2022	GC-U	7.19	190	18	-	<5	-	0.001	<0.001	<0.01	
18 August 2022	GC-D	7.3	185	46	-	<5	-	0.003	<0.001	<0.01	
18 August 2022	BC-D	7	152	10	-	<5	-	0.002	<0.001	<0.01	
18 August 2022	SB6	7.62	186	58	-	<5	-	<0.001	<0.001	<0.01	
18 August 2022	SB7	7.81	190	104	-	<5	-	0.002	<0.001	<0.01	
18 August 2022	SD1	8.07	319	28	-	<5	-	0.002	0.002	<0.01	
18 August 2022	SD2	8.25	288	71	-	<5	-	<0.001	0.002	<0.01	
18 August 2022	SB5A	8.12	374	433	-	<5	-	0.001	0.003	<0.01	
18 August 2022	SB5B	8.26	248	15	-	<5	-	<0.001	0.002	<0.01	
18 August 2022	SB4	8.09	472	45	-	<5	-	0.002	0.014	<0.01	
18 August 2022	PW3	7.38	543	21	-	<5	-	0.002	0.018	<0.01	
18 August 2022	SB16B	7.87	402	73	-	<5	-	0.002	0.006	<0.01	
18 August 2022	SD8	7.67	283	161	-	<5	-	0.002	0.002	<0.01	
18 August 2022	SB23A	7.57	183	8	-	<5	-	<0.001	<0.001	<0.01	
18 August 2022	SB23B	7.75	197	39	-	<5	-	<0.001	<0.001	<0.01	
18 August 2022	SD9	8.11	387	64	-	<5	-	0.001	0.006	<0.01	
18 August 2022	SD28	8.12	367	21	-	<5	-	0.001	0.002	<0.01	
18 August 2022	SD26	8.2	449	270	-	<5	-	0.008	0.002	<0.01	
18 August 2022	SB26	8.17	481	1880	-	<5	-	0.004	0.004	<0.01	
18 August 2022	SB24A	8.94	1340	13	-	<5	-	0.002	0.03	<0.01	
18 August 2022	SB24B	7.74	197	268	-	<5	-	0.002	<0.001	<0.01	
18 August 2022	PW5	7.74	388	42	-	<5	-	0.002	0.003	<0.01	
18 August 2022	PW6	8.8	1990	5	-	<5	-	0.003	0.048	<0.01	
18 November 2023	SD17	7.45	165	54	0.001	0.014	0.001	0.002	0.001	<0.01	
18 November 2023	SD27	7.4	126	267	0.001	0.002	0.001	0.001	<0.001	<0.01	
18 November 2023	SB16A	8.27	372	60	0.007	0.004	0.001	0.002	0.006	<0.01	
18 November 2023	Void	8.5	1850	7	0.024	<0.001	0.004	0.003	0.025	<0.01	
18 November 2023	GC-U	7.45	416	14	<0.001	0.049	0.004	0.002	<0.001	<0.01	
18 November 2023	GC-U	7.45	416	14	<0.001	0.049	0.004	0.002	<0.001	<0.01	
18 November 2023	GC-D	7.87	375	26	<0.001	0.025	<0.001	0.002	<0.001	<0.01	
18 November 2023	BC-U	7.94	379	20	<0.001	0.017	0.001	0.002	<0.001	<0.01	
18 November 2023	BC-D	7.52	286	6	<0.001	0.026	0.001	0.002	<0.001	<0.01	
18 November 2023	SB23B	7.65	163	24	<0.001	0.047	0.003	0.002	<0.001	<0.01	
18 November 2023	SD9	8.21	305	51	0.005	<0.001	<0.001	0.002	0.005	<0.01	
18 November 2023	SB24B	7.2	141	66	0.003	<0.001	0.001	0.004	<0.001	<0.01	
18 November 2023	Blank	6.62	<1	<5	<0.001	<0.001	<0.001	<0.001	<0.001	<0.01	
18 November 2023	Duplicate	7.43	412	16	<0.001	0.048	0.004	0.002	<0.001	<0.01	
2023											
13 February 2023	SD17	8.21	233	29	-	<5	-	0.002	0.002	<0.01	
13 February 2023	SD27	7.98	286	122	-	<5	-	0.004	0.005	<0.01	
14 February 2023	Void	8.63	2900	22	-	<5	-				
13 February 2023	SB25	8.28	322	36	-	<5	-	<0.001	0.004	<0.01	

Date	Sample Location	pH	EC (µS/cm)	Total Suspended Solids (mg/L)	Total Organic Carbon (mg/L)	Grease & Oil (mg/L)	Antimony (mg/L)	Arsenic (mg/L)	Molybdenum (mg/L)	Selenium (mg/L)	Comments
13 February 2023	SB6	7.94	271	26	-	<5	-	<0.001	0.001	<0.01	
13 February 2023	SD7	9.33	306	52	-	<5	-	0.002	0.002	<0.01	
13 February 2023	SD1	8.53	384	36	-	<5	-	0.002	0.002	<0.01	
13 February 2023	SD2	8.09	399	246	-	<5	-	0.001	0.002	<0.01	
13 February 2023	SB5A	8.9	511	51	-	<5	-	0.001	0.005	<0.01	
13 February 2023	SB5B	8.65	288	22	-	<5	-	<0.001	0.002	<0.01	
13 February 2023	SB4	8.56	614	29	-	<5	-	<0.001	0.01	<0.01	
13 February 2023	PW3	9.08	521	32	-	<5	-	0.002	0.013	<0.01	
13 February 2023	SB16B	8.39	540	104	-	<5	-	0.002	0.012	<0.01	
13 February 2023	SD8	8.29	533	112	-	<5	-	0.002	0.014	<0.01	
13 February 2023	SB23A	8.13	330	48	-	<5	-	0.002	0.002	<0.01	
13 February 2023	SB23B	8.11	320	182	-	<5	-	0.002	0.002	<0.01	
13 February 2023	SD9	8.58	461	20	-	<5	-	0.001	0.008	<0.01	
13 February 2023	SD28	8.13	386	173	-	<5	-	0.002	0.002	<0.01	
13 February 2023	SD26	9.06	1250	54	-	<5	-	0.006	0.008	<0.01	
13 February 2023	SB26	8.17	469	697	-	<5	-	0.002	0.007	<0.01	
13 February 2023	SB24A	8.69	2260	26	-	<5	-	0.009	0.088	<0.01	
13 February 2023	SB24B	7.92	327	202	-	<5	-	0.004	0.003	<0.01	
14 February 2023	PW5	8.55	607	23	-	<5	-	0.002	0.005	<0.01	
14 February 2023	PW6	8.6	2330	12	-	<5	-	0.009	0.065	<0.01	
13 February 2023	SW Blank	6.64	<1	<5	-	<5	-	<0.001	0.004	<0.01	
13 February 2023	SW Duplicate	8.69	2290	25	-	<5	-	0.008	0.067	<0.01	
17 May 2023	SD17	8.74	339	12	-	<5	-	0.001	0.002	<0.01	
17 May 2023	SB16A	9.27	1740	12	-	<5	-	0.002	0.045	<0.01	
17 May 2023	Void	8.66	2700	7	-	<5	-				
17 May 2023	SB23B	8.06	217	10	-	<5	-	0.001	0.001	<0.01	
17 May 2023	SD9	8.85	448	100	-	<5	-	0.001	0.004	<0.01	
17 May 2023	SB24B	9.34	586	23	-	<5	-	0.002	0.01	<0.01	
18 August 2023	SD17	8.16	590	89	-	<5	-	<0.001	0.001	<0.01	
21 August 2023	Void	8.22	2920	1080	-	<5	-				
18 August 2023	SB25	8.1	430	5	-	<5	-	<0.001	0.006	<0.01	
18 August 2023	SB6	7.76	250	48	-	<5	-	<0.001	<0.001	<0.01	
18 August 2023	SD1	8.54	442	30	-	<5	-	0.002	0.002	<0.01	
18 August 2023	SB5A	8.71	318	14	-	<5	-	<0.001	0.002	<0.01	
18 August 2023	SB5B	8.51	353	12	-	<5	-	<0.001	0.001	<0.01	
18 August 2023	SB4	8.79	2210	8	-	<5	-	0.013	0.049	<0.01	
17 August 2023	PW3	8.84	2320	5	-	<5	-	0.01	0.051	<0.01	
17 August 2023	SB16B	8.6	604	34	-	<5	-	0.002	0.01	<0.01	
18 August 2023	SD8	8.58	677	25	-	<5	-	0.001	0.015	<0.01	
17 August 2023	SB23A	8.39	258	<5	-	<5	-	<0.001	0.002	<0.01	
17 August 2023	SB23B	9.1	271	12	-	<5	-	<0.001	0.001	<0.01	
17 August 2023	SD9	9.43	1330	122	-	<5	-	0.002	0.022	<0.01	
17 August 2023	SD26	8.72	1280	34	-	<5	-	<0.001	0.01	<0.01	
17 August 2023	SB26	8.9	1270	95	-	<5	-	0.001	0.02	<0.01	
17 August 2023	SB24A	8.82	2460	12	-	<5	-	0.02	0.058	<0.01	
17 August 2023	SB24B	8.7	1470	99	-	<5	-	0.001	0.022	<0.01	
17 August 2023	SW Blank	7.63	<1	<5	-	<5	-	<0.001	<0.001	<0.01	
18 August 2023	SW Duplicate	8.48	356	<5	-	<5	-	<0.001	0.002	<0.01	
23 November 2023	SD17	8.16	362	106	-	<5	-	<0.001	0.006	<0.01	
23 November 2023	SD27	7.99	136	382	-	<5	-	0.003	0.002	<0.01	
23 November 2023	SB16A	8.57	762	57	-	<5	-	0.003	0.03	<0.01	
12 December 2023	Void	8.92	3300	51	-	<5	-				
23 November 2023	SB23B	9.09	281	22	-	<5	-	0.002	0.002	<0.01	
23 November 2023	SD9	8.01	584	1300	-	<5	-	0.003	0.004	<0.01	
23 November 2023	SB24B	8.41	1010	70	-	<5	-	0.003	0.022	<0.01	
23 November 2023	SW Blank	7.67	<1	<5	-	<5	-	<0.001	0.001	<0.01	
23 November 2023	SW Duplicate	8.42	1020	72	-	<5	-	0.003	0.022	<0.01	

Appendix 4: GW Monitoring Data

GROUNDWATER MONITORING DATA


Standing Water Level - MW1
Depth in Metres
0
5
10
15
Jun 06
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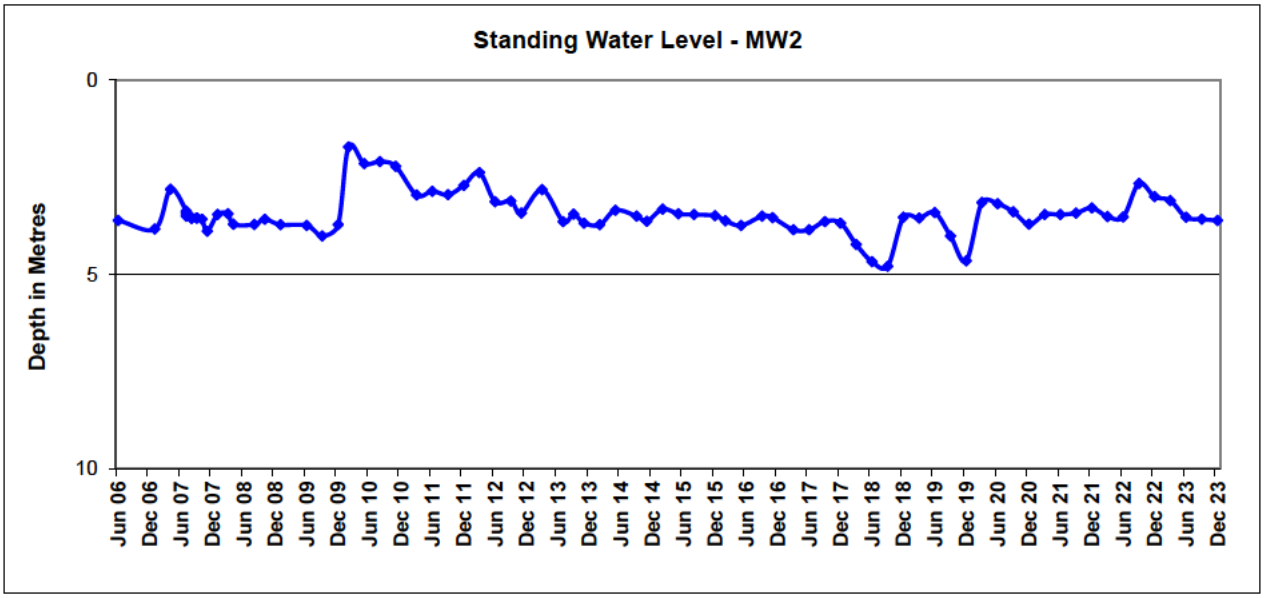
Standing Water Level - MW2
Depth in Metres
0
5
10
Jun 06
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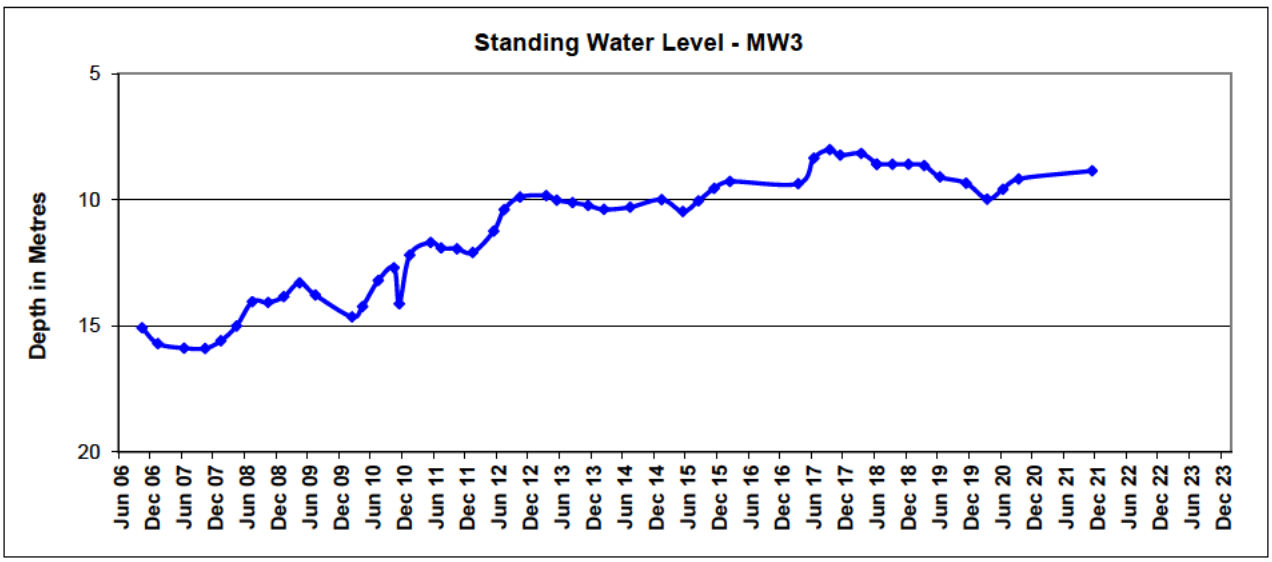
Standing Water Level - MW3
Depth in Metres
5
10
15
20
Jun 06
Dec 06
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Dec 10
Jun 11
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Jun 12
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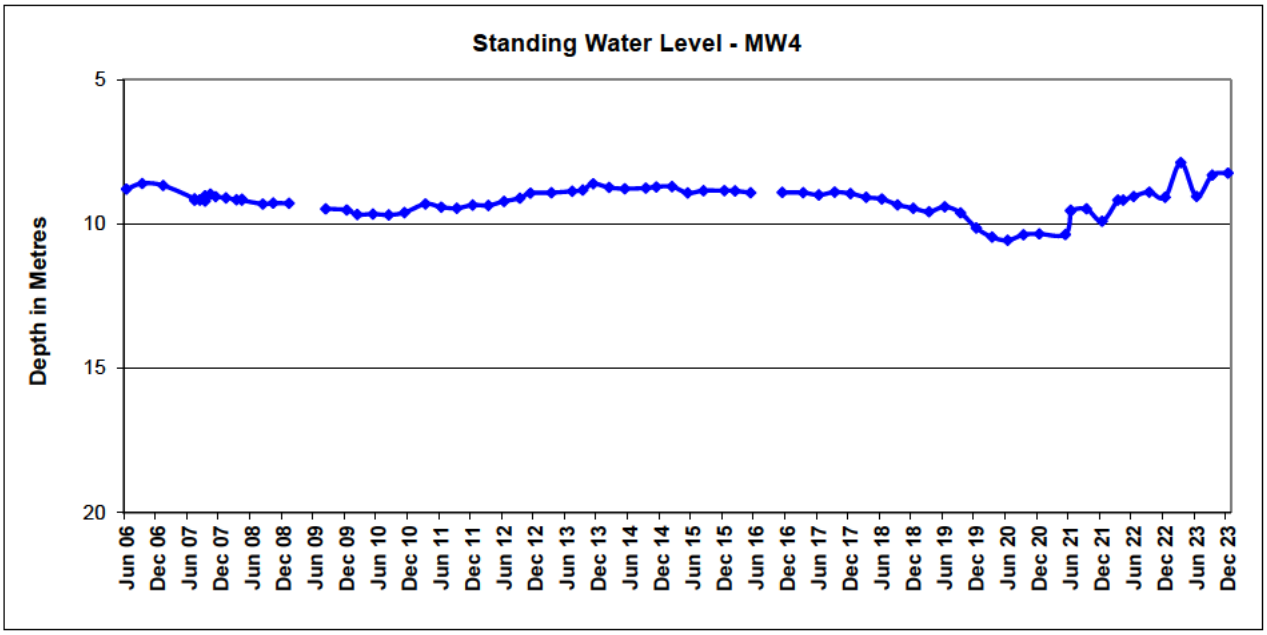
Dec 23


Standing Water Level - MW4
Depth in Metres
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10
15
20
Jun 06
Dec 06
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Dec 10
Jun 11
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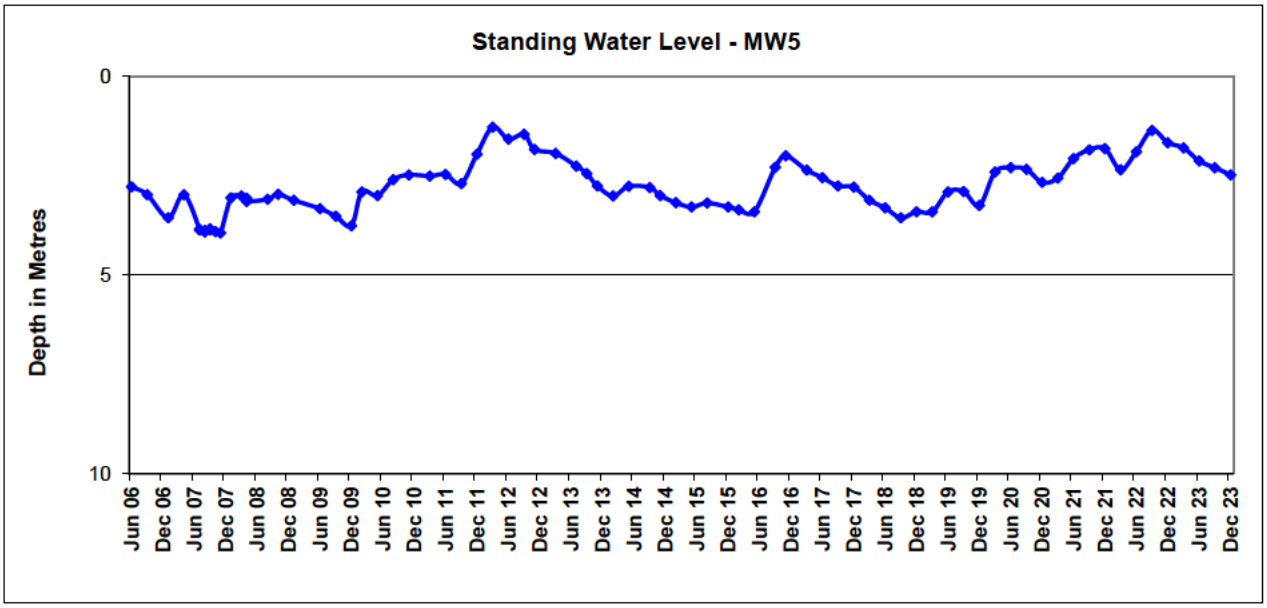
Standing Water Level - MW5
Depth in Metres
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5
10
Jun 06
Dec 06
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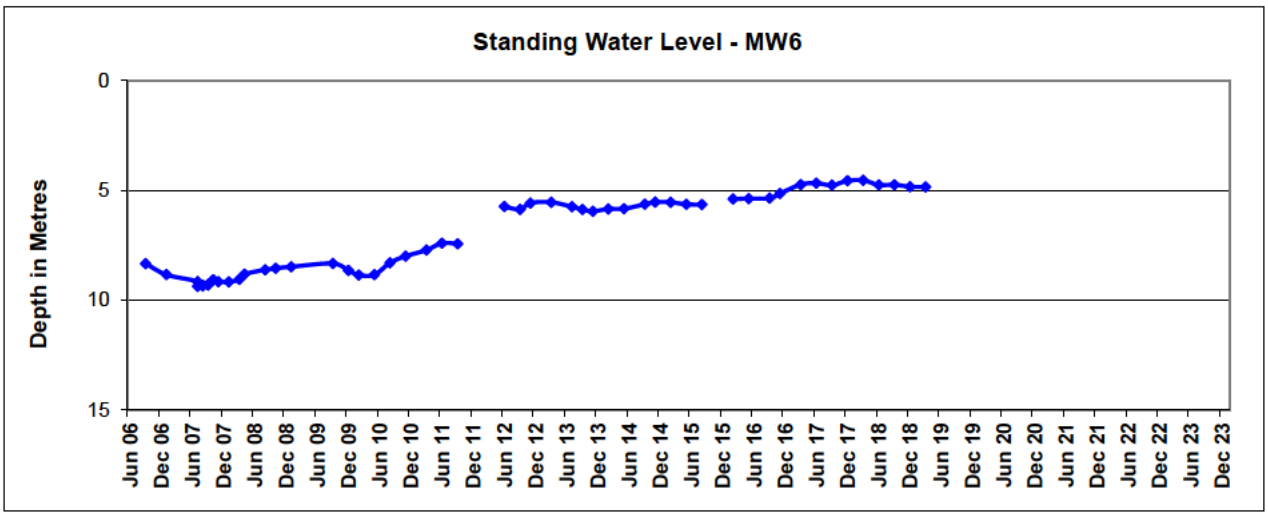
Standing Water Level - MW6
Depth in Metres
0
5
10
15
Jun 06
Dec 06
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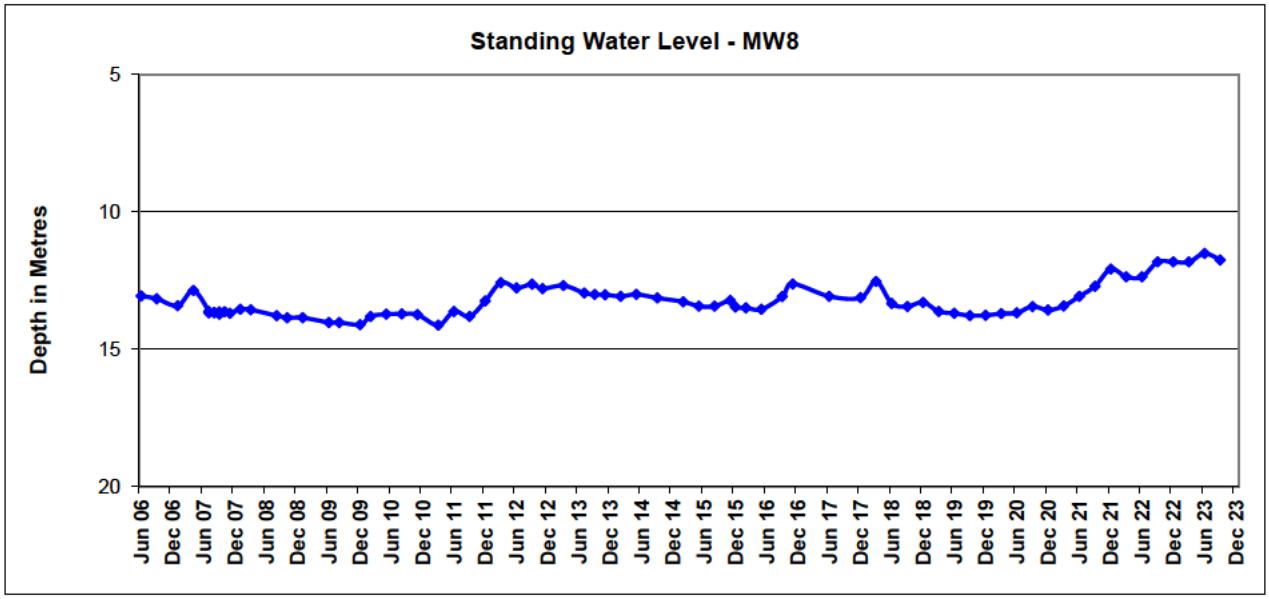
Standing Water Level - MW8
Depth in Metres
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10
15
20
Jun 06
Dec 06
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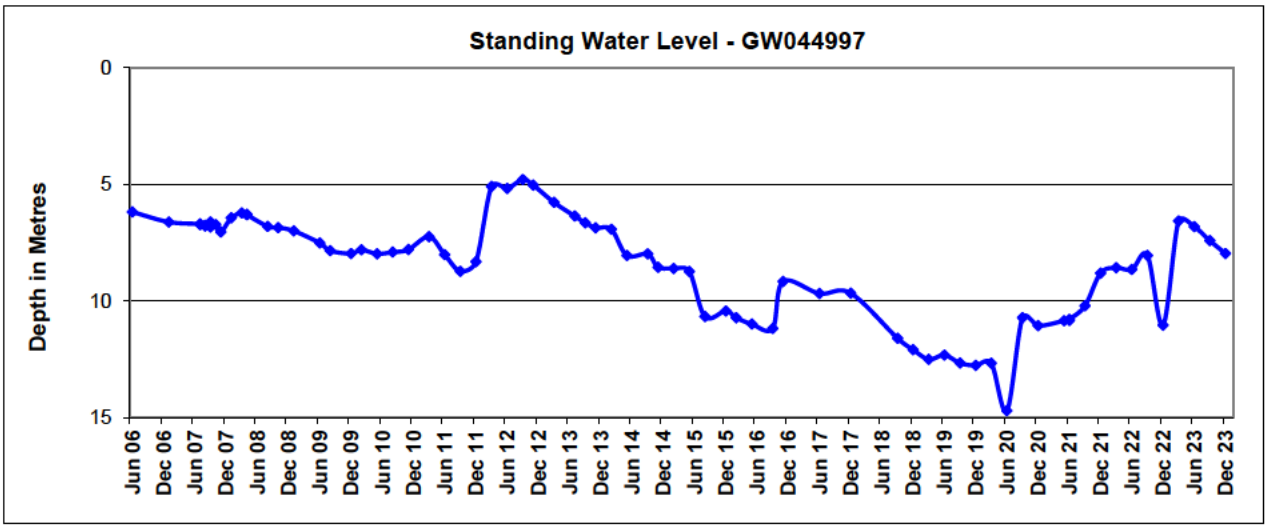
Standing Water Level - GW044997
Depth in Metres
0
5
10
15
Jun 06
Dec 06
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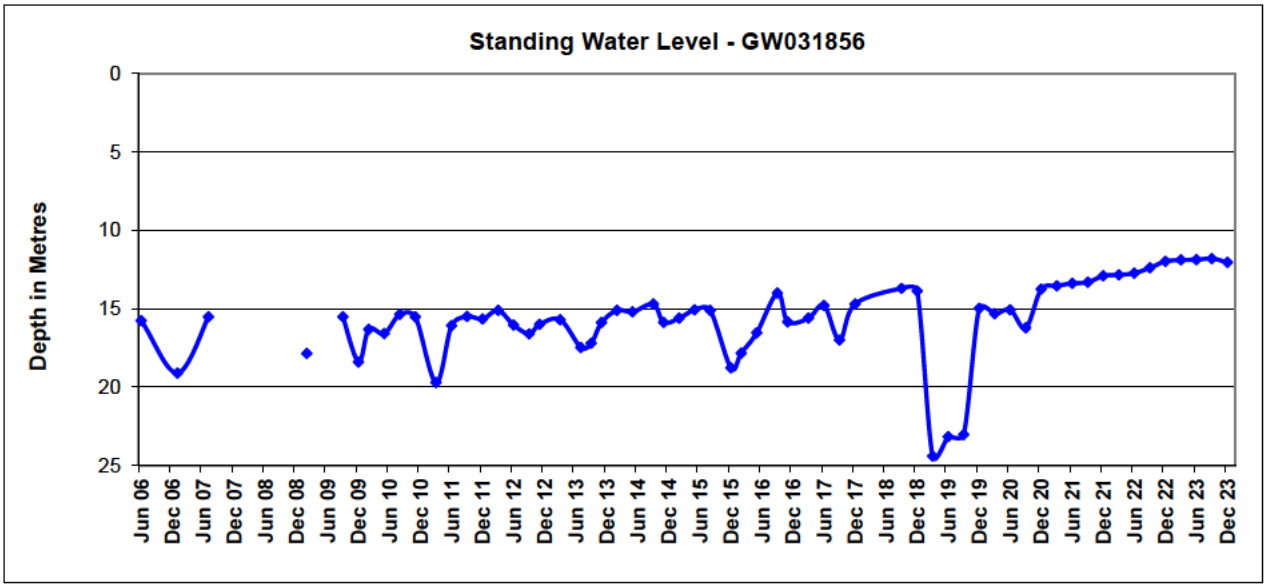
Standing Water Level - GW031856
Depth in Metres
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20
25
Jun 06
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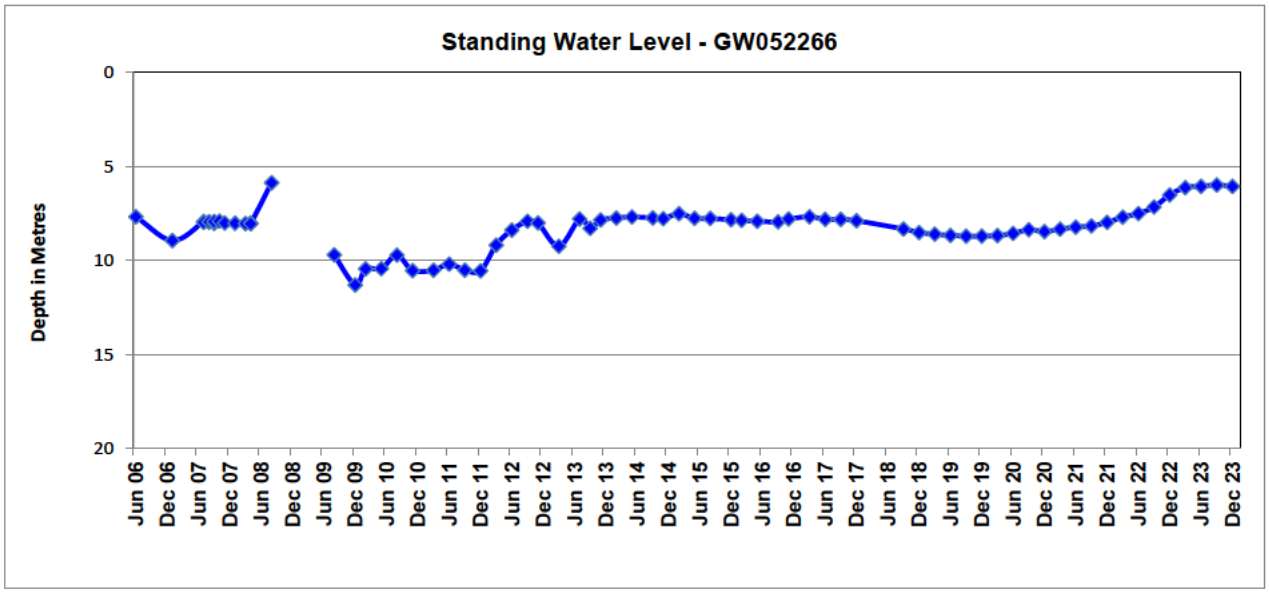
Standing Water Level - GW052266
Depth in Metres
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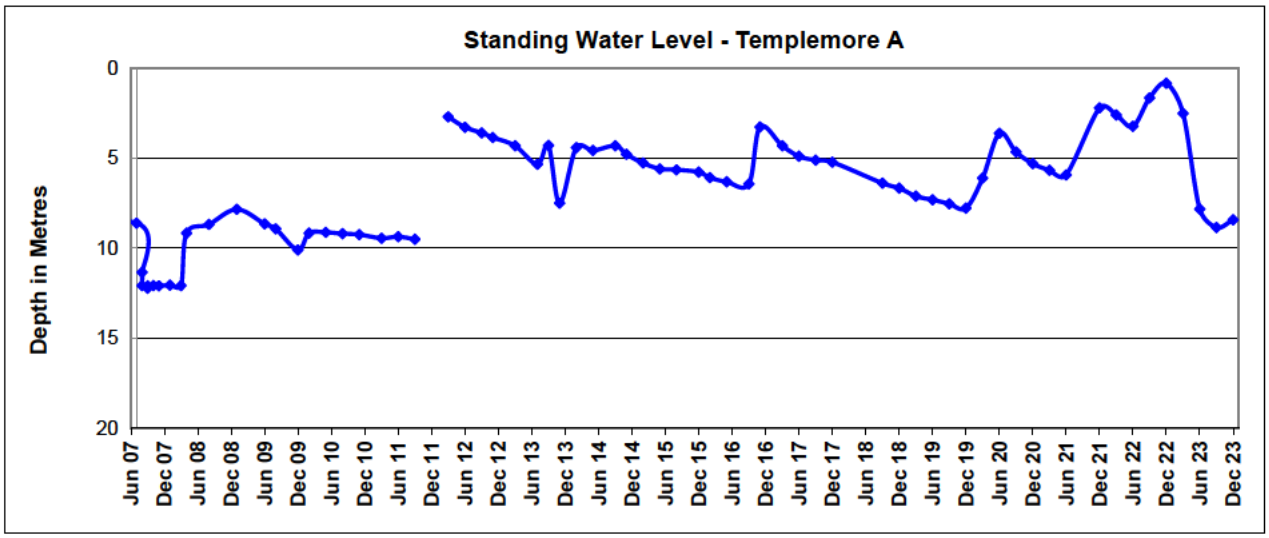
Jun 23
Dec 23


Standing Water Level - Templemore A
Depth in Metres
0
5
10
15
20
Jun 07
Dec 07
Jun 08
Dec 08
Jun 09
Dec 09
Jun 10
Dec 10
Jun 11
Dec 11
Jun 12
Dec 12
Jun 13
Dec 13
Jun 14
Dec 14
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Dec 15
Jun 16
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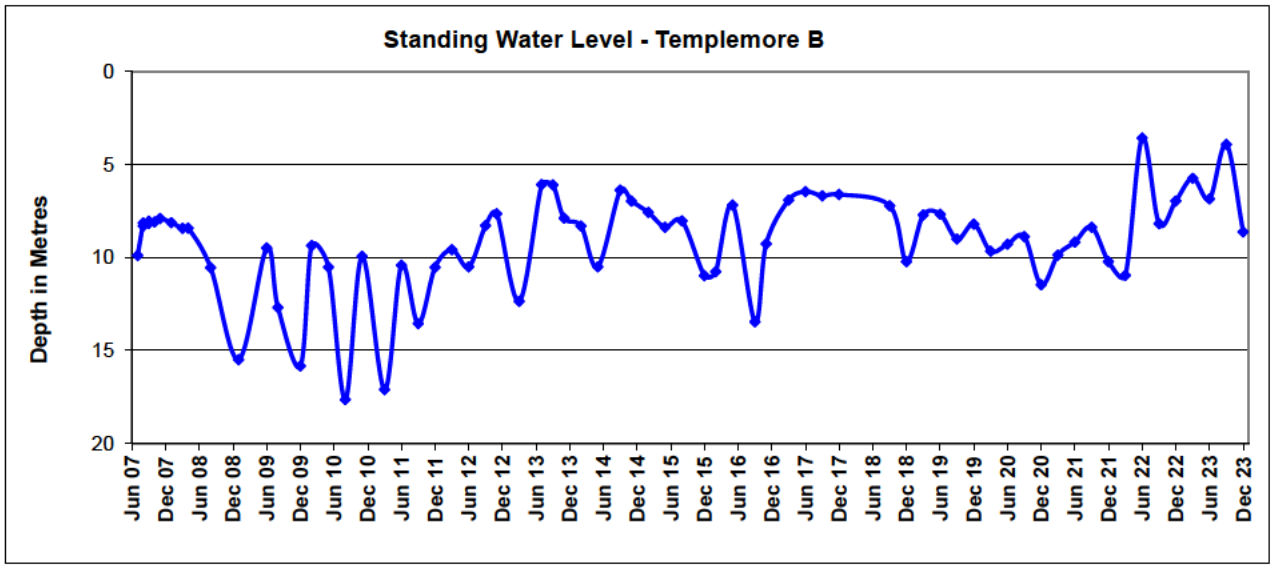
Dec 23


Standing Water Level - Templemore B
Depth in Metres
0
5
10
15
20
Jun 07
Dec 07
Jun 08
Dec 08
Jun 09
Dec 09
Jun 10
Dec 10
Jun 11
Dec 11
Jun 12
Dec 12
Jun 13
Dec 13
Jun 14
Dec 14
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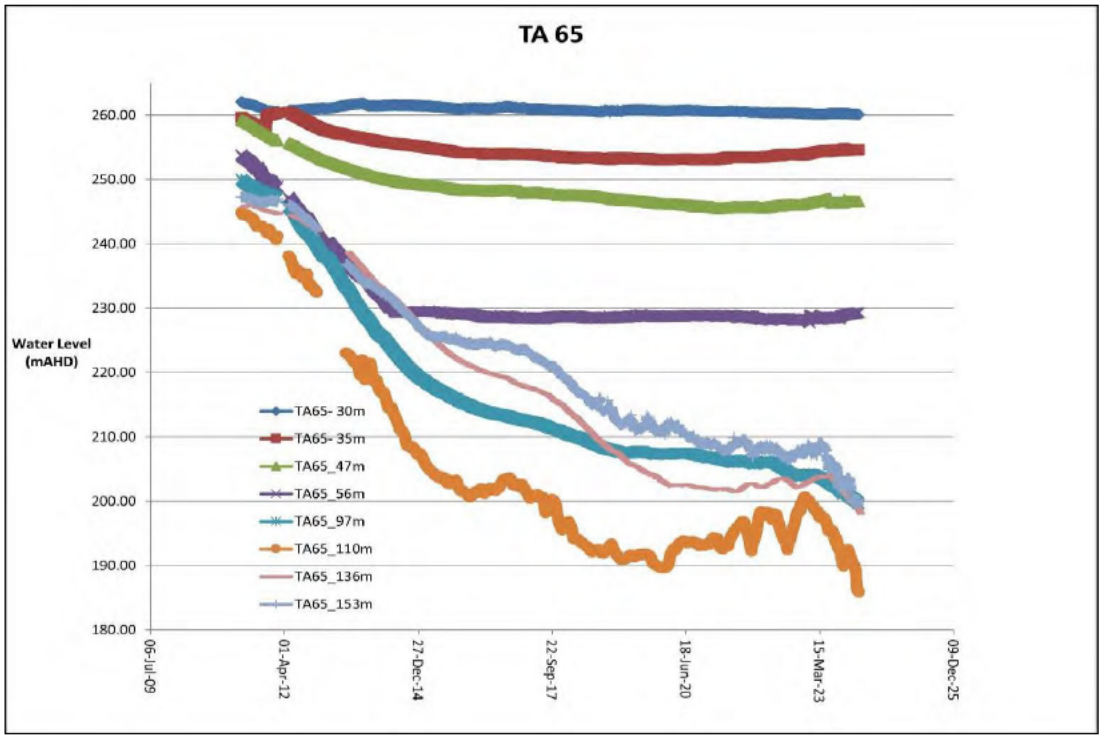
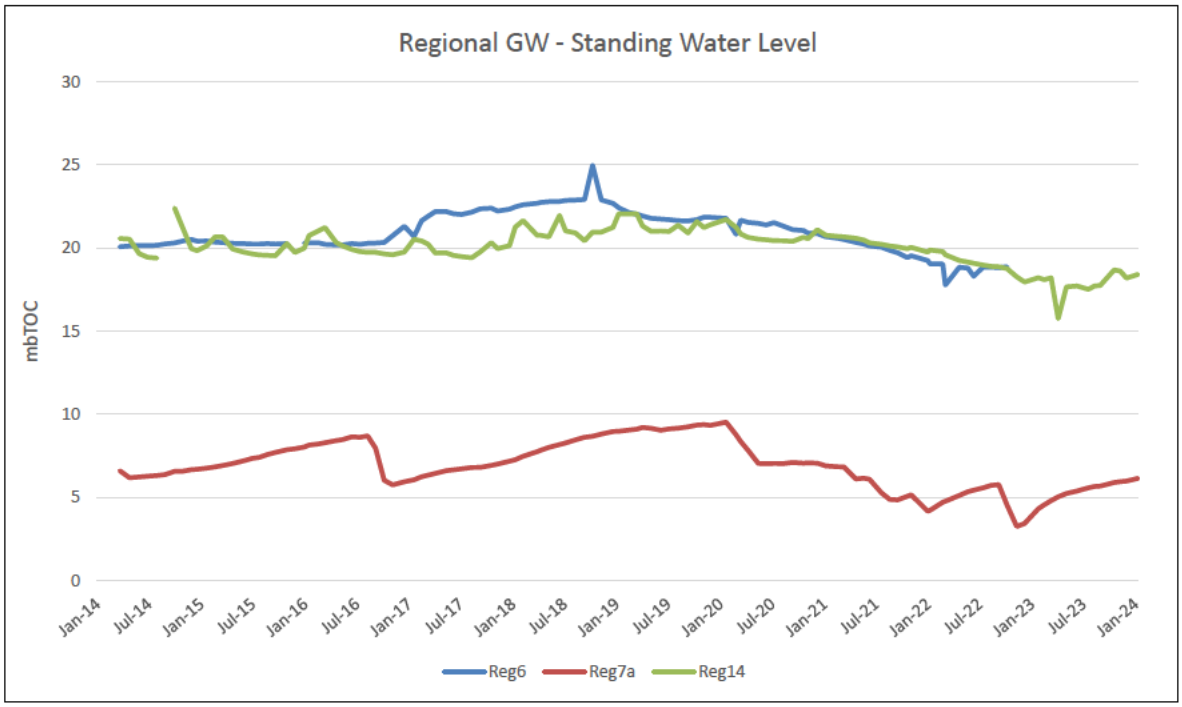
Jun 22
Dec 22
Jun 23
Dec 23

Vibrating Wire Piezometers:



Regional Bores:



Sample Location	Date	Depth to Ground - mbgl	Depth to Stand - mbtoc	Field Parameters			pH - Lab	EC - Lab - µs/cm	Total Dissolved Solids	Major Anions						Major Cations			
				pH - Field	EC - Field - µs/cm	Temp - Field - °C				Hydroxide Alkalinity as CaCO3 - mg/L	Carbonate Alkalinity as CaCO3 - mg/L	Bicarbonate Alkalinity as CaCO3 - mg/L	Alkalinity - mg/L	Sulfate (SO4) - mg/L	Chloride (Cl) - mg/L	Calcium (Ca) - mg/L	Magnesium (Mg) - mg/L	Sodium (Na) - mg/L	Potassium (K) - mg/L
ANZECC Guideline - stock drinking water									**4000**					**1000**		**1000**			
NEPC Guideline - Agricultural Irrigation (mg/L)									**600**										
NEPC Guideline - Livestock (mg/L)									**2400**					**1000**		**1000**			
THUIN																			
MW1	2-Jun-06	7 83	8.50	7.48				6330					772	424	2680	92	138	1710	43
MW1	11-Jan-07	8 55	9.22	7.12				2410					684	145	346	26	33	554	18
MW1	18-Apr-07	6 83	7.50																
MW1	9-Jul-07	7 29	7.96	7.30	2440	17.4		2500					614	143	385	21	29	504	25
MW1	10-Jul-07	7 24	7.91																
MW1	18-Jul-07	7 24	7.91																
MW1	7-Aug-07	7 07	7.74																
MW1	22-Aug-07	6 99	7.66																
MW1	5-Sep-07	7 03	7.70																
MW1	24-Sep-07	6 99	7.66																
MW1	11-Oct-07	6 97	7.64																
MW1	26-Nov-07	6 95	7.62																
MW1	29-Jan-08	6 88	7.55																
MW1	4-Mar-08	6 93	7.60																
MW1	23-Apr-08	7 00	7.67	7.30	3100	21.3		3120					665	247	567	46	50	614	29
MW1	21-Aug-08	7 06	7.73																
MW1	29-Oct-08	7.15	7.82	7.80	3430	21.6		3500					690	210	680	44	51	670	32
MW1	29-Jan-09	7 06	7.73																
MW1	17-Jun-09	7 20	7.87	7.20	5470	19.8		3870	2320	<1	<1	725	725	167	777	46	61	762	28
MW1	11-Sep-09	7 23	7.90																
MW1	14-Dec-09	7 23	7.90	7.5	4670	17.5	7.83	4510		<1	<1	780	780	234	882	70	95	875	28
MW1	25-Feb-10	7.17	7.84																
MW1	11-May-10	7.46	8.13	7.56	4330	22.6		4090	1850	<1	<1	694	694	229	795	43	60	779	26
MW1	30-Aug-10	7.47	8.14	7.47	3890	21.5													
MW1	9-Nov-10	7.45	8.12	7.06	3170	24.6													
MW1	10-Mar-11	7 38	8.05	7.1	3280	23.7	7.26	3650		<1	<1	658	658	210	839	44	62	771	29
MW1	6-Jun-11	7 20	7.87	7.2	3110	19.9													
MW1	6-Sep-11	7.19	7.86	7.09	3200	22.5	7.72	3990	2080	<1	<1	620	620	246	774	41	56	739	26
MW1	7-Dec-11	7 09	7.76	7.16	3150	20.1													
MW1	13-Mar-12	6 90	7.57	7.44	3140	21.9	7.78	3590	2040	<1	<1	629	629	232	748	44	58	758	30
MW1	13-Jun-12	6 53	7.20	7.37	3730	20.3													
MW1	4-Sep-12	6.41	7.08	7.44	3340	20.8	7 8	3570	2090	<1	<1	681	681	212	676	39	55	662	26
MW1	27-Nov-12	6 25	6.92	7.54	3140	20.8													
MW1	20-Mar-13	6.15	6.82	7.52	3180	21.9	7.65	3400	1830	<1	<1	690	690	182	575	35	48	700	25
MW1	11-Jul-13	6.18	6.85	7.49	3110	20.1													
MW1	5-Sep-13	6.14	6.81	7.48	3040	21.4	7.99	3330	1900	<1	<1	672	672	205	586	31	44	677	27
MW1	22-Nov-13	5 95	6.62	7.6	3140	20.8													
MW1	20-Feb-14	6 08	6.75	7.5	3150	20.2	7.65	3440	1800	<1	<1	624	624	195	516	29	45	710	30
MW1	27-May-14	6 25	6.92	7.6	3140	20.7													
MW1	9-Sep-14	6.16	6.83	7.7	3220	20.2	7.97	3320		<1	<1	714	714	206	520	29	40	594	24
MW1	20-Nov-14	6 36	7.03	7.7	3190	21.6													
MW1	26-Feb-15	6 39	7.06	7.6	3170	27.7	7.13	800	1700	<1	<1	739	739	210	551	34	45	634	22
MW1	26-May-15	6.47	7.14	7.5	3210	19.2													
MW1	27-Aug-15	6 51	7.18	7.6	3280	18.5	8.03	3440	1900	<1	<	636	636	225	<1	28	42	651	22
MW1	4-Dec-16	6 59	7.26	7.7	3270	21													
MW1	24-Feb-16	6 59	7.26	7.6	3290	23.2	8.09	3400	1950	<1	<1	686	686	233	582	40	48	715	24
MW1	23-May-16	6.65	7.32	7.7	3340	21.4													
MW1	1-Sep-16	6.67	7.34	7.6	3270	20.8	8	3350		<1	<1	674	674	210	572	36	45	545	20
MW1	29-Nov-16	6.68	7.35	7.6	3170	21.7													
MW1	23-Mar-17	6.66	7.33	7.7	3210		8.36	3380	2060	<1	17	708	725	188	578	34	45	634	23
MW1	21-Jun-17	6.74	7.41	7.8	3290	19.4													
MW1	13-Sep-17	6 80	7.47	7.8	3270		8.31	3370	1850	<1	8	784	792	214	550	31	46	656	22
MW1	13-Dec-17	6.73	7.4	7.7	3280														
MW1	22-Mar-18	6 81	7.48	7.9	3360	20.2	8.41	3360	1950	<1	32	754	786	212	646	33	44	581	24
MW1	12-Jun-18	6 91	7.58	7.9	3350														
MW1	13-Sep-18	6 92	7.59	7.7	3300	21.9	8.09	3430	1810	<1	<1	704	704	208	639	33	44	603	21
MW1	5-Dec-18	7 03	7.7	7.8	3420	21.7													
MW1	14-Mar-19	7.11	7.78	8.1	3430	20.8	8.22	3640	2190	<1	<1	755	755	211	561	31	45	693	27
MW1	19-Jun-19	7 22	7.89	8	3320	20.3													
MW1	11-Sep-19	7 32	7.99	8	3440	21.7	8.21	3430	2010	<1	<1	672	672	224	36 3	40	51	701	24
MW1	5-Dec-19	7 35	8.02	8	3510	21.3													
MW1	18-Mar-20	7 36	8.03	7.9	3410	21.6	8.06	3520	2020	<1	<1	687	687	224	675	38	48	652	22
MW1	11-Jun-20	7.42	8.09	7.8	3490	20.3													
MW1	23-Sep-20	7 27	7.94	7.9	3500	19	8.16	3260	2040	<1	<1	780	780	211	616	34	49	665	23
MW1	8-Dec-20	6 80	7.47	7.9	3510	17.7													
MW1	4-Mar-21	6.75	7.42	7.97	3390	21.4	8	3420	2220	<1	7	796	802	240	654	32	49	694	23
MW1	21-Jun-21	6 90	7.57	7.84	3480	19.1													
MW1	2-Sep-21	8.14	8.81	6.72	3520	16.5	7.57	3530	2290	<1	<1	729	729	208	628	45	53	669	25
MW1	31-Dec-21	6 93	7.6	7.32	3600	26.2													
MW1	21-Mar-22	6 80	7.47	7.54	3910	22.2	7.72	3540	2300	<1	<1	693	693	214	680	41	53	645	24
MW1	6-Jun-22	6.70	7.37	7.52	3580	18.2													
MW1	28-Sep-22	6.46	7.13	7.58	3490	21	7 8	3470	2260	<1	<1	713	713	222	710	42	54	640	26
MW1	12-Dec-22	6.12	6.79	7.75	3420	22.4													
MW1	24-Mar-23	5.74	6.41	7.37	3600	21.9	8	3340	2170	<1	<1	721	721	213	635	41	51	628	24
MW1	9-Jun-23	5.73	6.4	7.73	3 83	18.3													
MW1	28-Sep-23	5.61	6.28	6.98	3390	22.6	7 8	3600	2340	<1	20	776	796	247	636	42	53	670	24
MW1	11-Dec-23	5.45	6.12	7 24	2810	33.5													

Sample Location	Date	Total Metals																Mercury (Hg) - mg/L	Ammonia as Nitrogen (N)	Nitrite as N - mg/L	Nitrate as N - mg/L	Nitrite + Nitrate as N - mg/L	Total Anions - meq/L	Total Cations - meq/L	Ionic Balance	TPH C6-C9	TPH C10-C36	TRH C6- C10	TRH C10-C40
		Aluminium (Al) - mg/L	Arsenic (As) - mg/L	Boron (B) - mg/L	Barium (Ba) - mg/L	Beryllium (Be) - mg/L	Cadmium (Cd) - mg/L	Cobalt (Co) - mg/L	Chromium (Cr) - mg/L	Copper (Cu) - mg/L	Manganese (Mn) - mg/L	Nickel (Ni) - mg/L	Lead (Pb) - mg/L	Selenium (Se) - mg/L	Vanadium (V) - mg/L	Zinc (Zn) - mg/L	Iron (Fe) - mg/L												
ANZECC Guideline - stock drinking water		**5**	**0.5**				**0.01**	**1**	**1**	**1**		**1**	**0.1**	**0.02**		**20**		**0.002**			**400**								
NEPC Guideline - Agricultural Irrigation (mg/L)		**5**	**0.1**	**0.5**			**0.01**	**0.05**	**1**	**0.2**	**2**	**0.02**		**0.02**		**2**	**0.2**	**0.002**											
NEPC Guideline - Livestock (mg/L)		**5**	**0.5**	**5**			**0.01**	**1**		**0.5**		**1**				**20**		**0.002**		**30**	**400**								
THUIN																													
MW1	2-Jun-06		0 006																										
MW1	11-Jan-07		0 001				<0.0001		<0.005	<0 006		0.026	<0 001			0.11		<0.0001											
MW1	18-Apr-07																												
MW1	9-Jul-07		<0.001				<0.0001		<0.005	0.0005		0.008	<0 001			0 09		<0.0001								<20	380		
MW1	10-Jul-07																												
MW1	18-Jul-07																												
MW1	7-Aug-07																												
MW1	22-Aug-07																												
MW1	5-Sep-07																												
MW1	24-Sep-07																												
MW1	11-Oct-07																												
MW1	26-Nov-07																												
MW1	29-Jan-08																												
MW1	4-Mar-08																												
MW1	23-Apr-08		<0.001				<0.00005		<0 01	0.002		0.01	0.0036			0 007		0 0002								<0.025	0 027		
MW1	21-Aug-08																												
MW1	29-Oct-08		0 001				0 00023		0.015	0.13		0.03	0 37			0 22		<0.0001								<0.025	<0.100		
MW1	29-Jan-09																												
MW1	17-Jun-09		0 001		0.091	<0 001	<0.0001	0 001	0.013	0.047	0.103	0.009	0.008		<0.01	0 019	0.71	<0.0001	<0.01				39 9	41.2	1.58				
MW1	11-Sep-09																												
MW1	14-Dec-09	<0.01	0 001						<0.005	0.014	0.131	0.038	0.001			0 048	<0 05	<0.0001		<0.01	0.2	0.2	45 3	50.1	4.99				
MW1	25-Feb-10																												
MW1	11-May-10		0 001		0.075	<0 001	0.0001	0 002	0.002	0.011	0.204	0.009	0.005		<0.01	0 012	0.88	<0.0001	0.16				41	41.7	0.75				
MW1	30-Aug-10																												
MW1	9-Nov-10																												
MW1	10-Mar-11	0 04	0 002						0.003	0.063	0.035	0.006	0.006			0 016	0 3	<0.0001		<0.01	0.09	0.09	41 2	41.6	0.49				
MW1	6-Jun-11																												
MW1	6-Sep-11	0.1	0 003		0.057	<0 001	0.0001	0 002	0.002	0.019	0.193	0.005	0 01		<0.01	0 014	0.99	<0.0001	<0.01	<0.01	0.04	0.04	39 3	39.5	0.12				
MW1	7-Dec-11																												
MW1	13-Mar-12	0.12	<0.001		0.067	<0 001	<0.0001	<0.001	0.003	0.081	0.028	0.009	0.001		<0.01	0 027	0.23	<0.0001	<0.01	<0.01	0.12	0.12	38 5	40.7	2.76				
MW1	13-Jun-12																												
MW1	4-Sep-12	0 03	<0.001		0.069	<0 001	<0.0001	<0.001	0.005	0 09	0.067	0.007	0.003		<0.01	0 067	0 2	<0.0001	<0.01	<0.01	0.06	0.06	37.1	35.9	1.62				
MW1	27-Nov-12																												
MW1	20-Mar-13	0 05	0 002		0.055	<0 001	<0.0001	<0.001	0.007	0.1	0.031	0.016	0.008		<0.01	0.125	0.25	<0.0001	0.08	<0.01	0.1	0.1	33 8	36.8	4.2				
MW1	11-Jul-13																												
MW1	5-Sep-13	0.15	<0.001	0.06	0.058	<0 001	<0.0001	<0.001	0.003	0.113	0.088	0.012	0.005	<0.01	<0.01	0 079	0.24	<0.0001	0.02				34 2	35.3	1.52				
MW1	22-Nov-13																												
MW1	20-Feb-14	1 23	0 001	<0 05	0.062	<0 001	0.0004	0 001	0.023	0.487	0.073	0.016	0.031	<0.01	<0.01	0.624	2.49	<0.0001	0.07				31.1	36.8	8.39				
MW1	27-May-14																												
MW1	9-Sep-14	0.13	0 002						0.01	0.058	0.077	0.009	0.006			0 098	0.53			<0.01	0.17	0.17	33 2	31.2	3.19				
MW1	20-Nov-14																												
MW1	26-Feb-15	0 08	0 001		0.056	<0 001	<0.0001	<0.001	0.004	0.045	0.078	0.009	0.003	<0.01	<0.01	0.118	0 3	<.00001	0.05	<0.01	0.15	0.15	34.7	33.5	1.71				
MW1	26-May-15																												
MW1	27-Aug-15	0.1	0 001	<0 05	0.066	<0 001	<0.0001	<0.001	<0.001	0.026	0.019	0.004	<0 001	<0.01	<0.01	0 073	0.18	<0.0001	0.06	<0.01	0.11	0.11	30.1	33.7	5.68				
MW1	4-Dec-16																												
MW1	24-Feb-16	0 02	0 001	<0 05	0.061	<0 001	<0.0001	<0.001	<0.001	0.032	0.016	0.006	0.001	<0.01	<0.01	0 049	0.12	<0.0001	0.1	<.01	0.15	0.15	35	37.7	3.66				
MW1	23-May-16																												
MW1	1-Sep-16	0 22	0 002						0.008	0.062	0.708	0.026	0.008				2.07	<0.0001		<0.01	0.03	0.13	34	34.1	0.1				
MW1	29-Nov-16																												
MW1	23-Mar-17	0.11	0 002	<0 05	0.069	<0 001	<0.0001	0 001	0.003	0.086	0.323	0.016	0.011	<0.01	<0.01	0.135	0.93	<0.0001	0.03	<0.01	0.15	0.15	34.7	33.6	1.67				
MW1	21-Jun-17																												
MW1	13-Sep-17	0 05	<0.001	<0 05	0.047	<0 001	<0.0001	<0.001	0.001	0.025	0.065	0.009	0.002	<0.01	<0.01	0 028	0.17	<0.0001	0.01	<0.01	0.07	0.07	35 8	34.4	1.94				
MW1	13-Dec-17																												
MW1	22-Mar-18	0.76	0 002	<0 05	0.068	<0 001	<0.0001	0 002	0.012	0.071	0.286	0.018	0.038	<0.01	<0.01	0.2	3.81	<0.0001	0.05	0.06	0.14	0.2	38 3	31.2	10 3				
MW1	12-Jun-18																												
MW1	13-Sep-18	0.73	0 002	<0 05	0.061	<0 001	<0.0001	0 004	0.005	0.036	0.325	0.01	0.004	<0.01	<0.01	0 037	1.38	<0.0001	0.19	<0.01	0.01	0.01	36.4	32	6.41				
MW1	5-Dec-18																												
MW1	14-Mar-19	0.11	0 001	<0 05	0.054	<0 001	<0.0001	<0.001	0.005	0.017	0.064	0.014	0.005	<0.01	<0.01	0 04	0.62	<0.0001	<0.01	0.03	0.11	0.14	35 3	36.1	1.09	<20	<50	<20	<100
MW1	19-Jun-19																												
MW1	11-Sep-19	0 06	<0.001	<0 05	0.046	<0 001	<0.0001	0 001	0.002	0.012	0.199	0.008	0.003	<0.01	<0.01	0 037	0.33	<0.0001		<0.01	0.04	0.04	36 3	37.3	1.34	<20	<50	<20	<100
MW1	5-Dec-19																												
MW1	18-Mar-20	<0.01	<0.001	<0 05	0.047	<0 001	<0.0001	<0.001	<0.001	0.005	0.208	0.01	<0 001	<0.01	<0.01	0 013	0.11	<0.0001	0.02	<0.01	<0.01	<0.01	37.4	34.8	3.68	<20	<50	<20	<100
MW1	11-Jun-20																												
MW1	23-Sep-20	0 07	<0.001	<0 05	0 05	<0 001	<0.0001	<0.001	0.002	0.015	0.064	0.004	0.002	<0.01	<0.01	0 015	0.25	<0.0001	0.03	<0.01	0.14	0.14	37.4	35.2	2.91	<20	<50	<20	<100
MW1	8-Dec-20																												
MW1	4-Mar-21	0 05	<0.001	<0 05	0.047	<0 001	<0.0001	<0.001	0.022	0.039	0.085	0.136	0.004	<0.01	<0.01	0 026	0.72	<0.0001	0.14	<0.01	0.22	0.22	39 5	36.4	4.04	<20	<50	<20	<100
MW1	21-Jun-21																												
MW1	2-Sep-21	0.71	<0.001	<0 05	0.061	<0 001	<0.0001	<0.001	0.013	0.029	0.129	0.02	0.008	<0.01	<0.01	0 078	1.4	<0.0001	0.7	0.17	0.31	0.31	0.7	0 07	0.02	<20	<100	<20	<100
MW1	31-Dec-21																												
MW1	21-Mar-22	0 03	<0.001	<0 05	0.053	<0 001	<0.0001	<0.001	0.017	0.015	0.041	0.015	0.002	<0.01	<0.01	0 029	0.23	<0.0001	0.03	<0.01	0.26	0.26	37 5	35.1	3.32	<20	<50	<20	<100
MW1	6-Jun-22																												
MW1	28-Sep-22	0.1	<0.001	<0 05	0.052	<0 001	<0.0001	<0.001	0.023	0.026	0.06	0.027	0.006	<0.01	<0.01	0 047	0.45	<0.0001	0.04	<0.01	0.85	0.85	38 9	35	5.21	<20	<50	<20	<100
MW1	12-Dec-22																												
MW1	24-Mar-23	<0.01	<0.001	<0 05	0.047	<0 001	<0.0001	<0.001	0.02	0 01	0.003	0.019	<0 001	<0.01	<0.01	0 021	<0 05	<0.0001	<0.01		0.47	0.47							<100
MW1	9-Jun-23																												
MW1	28-Sep-23	<0.01	<0.001	0.12	0.049	<0 001	<0.0001	<0.001	0.22	0.011	<0.001	0.021	<0 001	<0.01	<0.01	0 03	<0 05	<0.0001	0.02	<0.01	0.54	0.54	39	36.2	3.69	<20	<50	<20	<100
MW1	11-Dec-23																												

				Field Parameters						Major Anions						Major Cations				Total Metals																											
Sample Location	Date	Depth to Ground - mbgl	Depth to Stand - mbtoc	pH - Field	EC - Field - µs/cm	Temp - Field - °C	pH - Lab	EC - Lab - µs/cm	Total Dissolved Solids	Hydroxide Alkalinity as CaCO3 - mg/L	Carbonate Alkalinity as CaCO3 - mg/L	Bicarbonate Alkalinity as CaCO3 - mg/L	Alkalinity - mg/L	Sulfate (SO4) - mg/L	Chloride (Cl) - mg/L	Calcium (Ca) - mg/L	Magnesium (Mg) - mg/L	Sodium (Na) - mg/L	Potassium (K) - mg/L	Aluminium (Al) - mg/L	Arsenic (As) - mg/L	Boron (B) - mg/L	Barium (Ba) - mg/L	Beryllium (Be) - mg/L	Cadmium (Cd) - mg/L	Cobalt (Co) - mg/L	Chromium (Cr) - mg/L	Copper (Cu) - mg/L	Manganese (Mn) - mg/L	Nickel (Ni) - mg/L	Lead (Pb) - mg/L	Selenium (Se) - mg/L	Vanadium (V) - mg/L	Zinc (Zn) - mg/L	Iron (Fe) - mg/L	Mercury (Hg) - mg/L	Ammonia as Nitrogen (N)	Nitrite as N -mg/L	Nitrate as N - mg/L	Nitrite + Nitrate as N - mg/L	Total Anions - meq/L	Total Cations - meq/L	Ionic Balance	TPH C6-C9	TPH C10-C36	TRH C6- C10	TRH C10-C40
ANZECC Guideline - stock drinking water									**4000**					**1000**		**1000**				**5**	**0.5**				**0.01**	**1**	**1**	**1**		**1**	**0.1**	**0.02**		**20**		**0.002**			**400**								
THUIN																																															
MW2	2-Jun-06	3.61	4.40	7				5440					432	475	2230	132	106	1400	14		<0.001																										
MW2	11-Jan-07	3 83	4.62	6.8				511					176	9	25.1	1	<1	101	1		0 002				0.0001									0 09		<0.0001											
MW2	18-Apr-07	2 81	3.60																																												
MW2	9-Jul-07	3 37	4.16	7.15	446	18.8		496					175	11	27 2	<1	<1	99	1		0 002				0.0002		<0.005	0.003		0.002	<0 001			0 233		<0.0001								<20	250		
MW2	10-Jul-07	3.43	4.22																																												
MW2	18-Jul-07	3 5	4.29																																												
MW2	7-Aug-07	3 56	4.35																																												
MW2	22-Aug-07	3 53	4.32																																												
MW2	5-Sep-07	3 55	4.34																																												
MW2	24-Sep-07	3 55	4.34																																												
MW2	11-Oct-07	3 58	4.37																																												
MW2	26-Nov-07	3 89	4.68																																												
MW2	29-Jan-08	3.46	4.25																																												
MW2	4-Mar-08	3.44	4.23																																												
MW2	23-Apr-08	3.71	4.50	7.3	400	19.9		440					165	10	39	8 9	5.8	99	17		0 005				0 00018		0.11	0.13		0.15	0.14			0 37		0 0004								<0.025	<0.1		
MW2	21-Aug-08	3.715	4.51																																												
MW2	29-Oct-08	3 58	4.37	6.9	600	19.2		620					180	27	93	6 8	7.1	120	6 8		0 008				0 00007		0.026	0.027		0.031	0.061			0.17		0 0002								<0.025	<0.100		
MW2	29-Jan-09	3.72	4.51																																												
MW2	17-Jun-09	3.74	4.53	7.7	660	19.1		602	1540	<1	<1	195	195	<10	59	1	1	128	2		0 006		0.311	0.004	0.0002	0 052	0.025	0.047	1.54	0.041	0.052		0.08	0.172	32.6	0 0005	0.1				5.57	5.76	1.62				
MW2	11-Sep-09	4 01	4 8																																												
MW2	14-Dec-09	3.72	4.51	7.7	691	18.3	7 5	640		<1	<1	202	202	12.8	55 3	2	1	134	2	<0.01	<0.001						<0.001	<0 001	0.018	<0.001	<0 001			<0.005	<0 05	<0.0001		<0.01	0.45	0.45	5.86	6 07	1.73				
MW2	25-Feb-10	1.72	2.51																																												
MW2	11-May-10	2.15	2.94	7.61	717	22.3		618	780	<1	<1	149	149	24.3	76.7	2	1	129	2		0 014		0.441	0.006	0.0002	0 058	0.071	0.073	1.06	0.094	0.071		0.13	0.3	88.3	0 0002	0.01				5.66	5 84	1.6				
MW2	30-Aug-10	2.1	2.89	7.4	590	20.5																																									
MW2	9-Nov-10	2 22	3.01	7.32	513	24.1																																									
MW2	10-Mar-11	2 96	3.75	7.31	566	24.2	7.23	457		<1	<1	156	156	24	69	2	2	124	2	0 28	0 001						0.001	0.018	0.018	0.006	0.002			0 045	0 3	0 0001		<0.01	0.07	0.07	5.57	5.69	1.02				
MW2	6-Jun-11	2 86	3.65	7.3	553	20.3																																									
MW2	6-Sep-11	2 95	3.74	6.9	585	19.8	7.33	692	340	<1	<1	169	169	32	92	3	3	144	2	1 93	<0.001		0.016	<0 001	<0.0001	<0.001	0.002	0.005	0.028	0.003	0.001		<0.01	0 021	1.76	<0.0001	<0.01	<0.01	0.02	0.02	6.64	6.71	0.5				
MW2	7-Dec-11	2.71	3 5	7.08	600	19.2																																									
MW2	13-Mar-12	2 38	3.17	7.06	912	22	7.41	1060	640	<1	<1	232	232	50	164	12	10	224	4	0 3	<0.001		0.012	<0 001	<0.0001	<0.001	0.002	0.002	0.058	0.004	<0 001		<0.01	0 01	0.28	<0.0001	0.03	<0.01	0.05	0.05	10 3	11.3	4.44				
MW2	13-Jun-12	3.13	3.92	7.02	1320	20																																									
MW2	4-Sep-12	3.11	3 9	7.07	1260	19.7	7.47	1310	802	<1	<1	319	319	68	221	20	17	252	5	3.48	0 001		0.034	<0 001	<0.0001	0 002	0.002	0.009	0.145	0.004	0.003		<0.01	0 075	2.86	0 0002	<0.01	<0.01	0.06	0.06	14	13.5	1.99				
MW2	27-Nov-12	3.42	4.21	7.29	905	19.1																																									
MW2	20-Mar-13	2 82	3.61	7.39	670	22.7	6 9	686	376	<1	<1	179	179	26	95	3	3	150	3	1 3	0 002		0.022	<0 001	<0.0001	0 004	<0.001	0.036	0.293	0.005	0.006		<0.01	0 078	0.88	0 0002	0.04	<0.01	0.05	0.05	6.8	7	1.41				
MW2	11-Jul-13	3.64	4.43	7.03	739	19.8																																									
MW2	5-Sep-13	3.45	4.24	6.78	680	19.8	7.46	674	389	<1	<1	173	173	28	83	2	2	142	3	6 39	0 001	<0.001	0.1	0.039	<0.0001	0 002	0.005	0.037	0.134	0.006	0.006	<0.01	0.02	0 095	5.54	0 0002	0.04				6.38	6 52	1.01				
MW2	22-Nov-13	3.68	4.47	6.9	694	19.4																																									
MW2	20-Feb-14	3.72	4.51	7.4	675	21.2	7.01	694	395	<1	<1	171	171	27	85	2	2	155	3	1 32	0 001	<0.001	0 06	0.012	<0.0001	<0.001	0.004	0.055	0.058	0.004	0.006	<0.01	<0.01	0 08	1.32	<0.0001	<0.01				6.38	7 08	5.2				
MW2	27-May-14	3 35	4.14	7.4	618	20.9																																									
MW2	9-Sep-14	3 5	4.29	7.6	845	21.4	7.27	615		<1	<1	219	219	19	57	<1	<1	131	2	14.8	0 004						0.01		0.22	0.012	0 01			0 086	11.8	<0.0001		<0.01	0.08	0.08	6.38	5.75	5.25				
MW2	20-Nov-14	3.63	4.42	7.4	615	20.4																																									
MW2	26-Feb-15	3 32	4.11	7.3	495	21.6	7.59	567	306	<1	<1	214	214	16	27	<1	<1	113	2	0 01	0 002	0.05	0.007	<0 001	<0.0001	0 001	<0.001	0.006	0.066	0.002	0.001	<0.01	<0.01	0 027	0.75	<0.0001	0.02	<0.01	0.02	0.02	5.37	4 97	3.97				
MW2	26-May-15	3.44	4.23	7.2	522	19.7																																									
MW2	27-Aug-15	3.46	4.25	7.1	540	18	7.32	538	298	<1	<	188	188	13	28	1	1	119	1	0 87	0 002	<0 05	0.015	<0 001	<0.0001	<0.001	<0.001	0.006	0.035	0.002	0.001	<0.01	0.01	0 028	0.69	<0.0001	0.04	<0.01	<0.01	0.02	4.82	5 33	5.04				
MW2	4-Dec-15	3.49	4.28	7.1	528	20.2																																									
MW2	24-Feb-16	3.62	4.41	7	562	21.4	7.38	575	305	<1	<1	209	209	3.1	37	2	2	131	2	0.48	0 002	<0 05	0.008	<0 001	<0.0001	<0.001	<0.001	0.032	0.038	0.002	<0 001	<0.01	<0.01	0 016	0.45	<0.0001	<0.01	<0.01	0.03	0.03	5.66	6 01	3				
MW2	23-May-16	3.74	4.53	6.9	597	21																																									
MW2	1-Sep-16	3 5	4.29	6.9	554	19.6	7.04	557		<1	<1	207	207	19	36	<1	<1	130	2	11.7	0 004						0.01	0 02	0.287	0.011	0.007			0 091	11.4	0 0001		<0.01	0.27	0.27	5.55	5.7	1.35				
MW2	29-Nov-16	3 54	4.33	7	524	21.2																																									
MW2	23-Mar-17	3 85	4.64	7	650		7.7	639	432	<1	<1	232	232	18	48	<1	1	138	2	4.76	0 002	0.06	0.032	<0 001	<0.0001	0 004	0.004	0.019	0.235	0.005	0.004	<0.001	0.02	0 045	4.7	<0.0001	0.02	<0.01	0.74	0.74	6.36	6.14	1.82				
MW2	21-Jun-17	3 85	4.64	7	591	18.9																																									
MW2	13-Sep-17	3.64	4.43	6.9	548		7.54	533	295	<1	<1	226	226	16	31	2	1	130	2	0 32	0 001	0.07	0.006	<0 001	<0.0001	0 001	<0.001	0.002	0.077	0.001	<0 001	<0.01	<0.01	0 01	0.21	<0.0001	0.02	<0.01	1.11	1.11	5.72	5 89	1.42				
MW2	13-Dec-17	3.68	4.47	7	545	20.2																																									
MW2	22-Mar-18	4 23	5.02	7.3	519	21.2	7.4	498	348	<1	<1	204	204	15	34	3	2	102	1	17.5	0 004	0.06	0.073	<0 001	<0.0001	0 011	0.013	0.013	0 8	0.012	0 01	<0.01	0.03	0 056	16.8	0 0004	0.04	0.01	0.97	0.98	5.35	4.78	5.64				
MW2	12-Jun-18	4.67	5.46	7.3	547																																										
MW2	13-Sep-18	4.79	5.58	6.8	600	21.2	7.21	615	612	<1	<1	192	192	18	63	2	2	119	2	18.3	0 003	0.07	0.077	0.001	<0.0001	0 009	0.015	0.013	0.492	0.013	0.009	<0.01	0.03	0 06	19.2	<0.0001	0.04	<0.01	0.89	0.89	5.99	5.49	4.32				
MW2	5-Dec-18	3 53	4.32	6.8	545	20.4																																									
MW2	14-Mar-19	3 55	4.34	7.1	560	21	7.38	532	532	<1	<1	186	186	20	40	<1	<1	122	2	4	0 002	0.07	0 02	<0 001	<0.0001	0 002	0.004	0.004	0.168	0.003	0.002	<0.01	0.01	0 014	3.68	<0.0001	0.01	<0.01	3.08	3.08	5.26	5 36	0.91			<20	<100
MW2	19-Jun-19	3.41	4 2	7	461	20.4																																									
MW2	11-Sep-19	4 01	4 8	6.9	530	21	7.35	530	379	<1	<1	166	166	22	44	2	1	113	2	11.9	0 003	0.07	0.049	<0 001	<0.0001	0 006	0.01	0.007	0.341	0.009	0.006	<0.01	0.02	0 028	9.97	<0.0001		<0.01	2.32	2.32	5.02	5.15	1.3				
MW2	5-Dec-19	4.65	5.44	7.1	560	21.2																																									
MW2	18-Mar-20	3.15	3.94	7.1	470	22.8	7.59	496	310	<1	<1	162	162	19	34	2	2	106	2	2.78	0 001	0.07	0.008	<0 001	<0.0001	<0.001	0.004	<0 001	0.028	0.002	<0 001	<0.01	<0.01	0 009	1 8	<0.0001	0.01	<0.01	1.8	1.8	4.59	4.66	0.71	<20	<50	<20	<100
MW2	11-Jun-20	3.18	3.97	7.3	490	20.8																																									
MW2	23-Sep-20	3 39	4.18	7.2	505	18.2	7.39	435	299	<1	<1	187	187	14	29	<1	<1	101	1	1 22	0 001	0.06	0.008	<0 001	<0.0001	<0.001	0.001	0.002	0.054	0.001	<0 001	<0.01	<0.01	0 01	1.1	<0.0001	<0.01	<0.01	0.15	0.15	4.84	4.42	4.61	<20	<50	<20	<100
MW2	8-Dec-20	3.71	4 5	7.3	535	16.5																																									
MW2	4-Mar-21	3.46	4.25	6.99	462	21.3	7.03	468	304	<1	<1	176	176	19	33	2	1	104	2	1 91	0 002	<0 05	0.022	<0 001	<0.0001	0 005	0.002	0 02	0.245	0.005	0.003	<0.01	<0.01	0 014	1.43	<0.0001	<0.01	<0.01	0.71	0.71	39 5	36.4	4.04	<20	<50	<20	<100
MW2	21-Jun-21	3.46	4.25	7.05	527	17.7																																									
MW2	2-Sep-21	3.42	4.21	6.36	676	16.5	6.97	615	400	<1	<1	254	254	24	43	2	2	138	2	0 92	<0.001	0.06	0.015	<0 001	<0.0001	0 003	<0.001	0.003	0.127	0.003	0.002	<0.01	<0.01	0 017	0.61	<0.0001	0.01		1.09	109				<20	<50	<20	<100
MW2	29-Dec-21	3 29	4.08	6.74	822	26.6																																									
MW2	21-Mar-22	3 51	4 3	6.82	952	21.5	6.94	848	551	<1	<1	275	275	38	81	2	2	185	2	0 59	<0.001	0.05	0.014	<0 001	<0.0001	0 002	<0.001	0.004	0.108	0.002	0.002	<0.01	<0.01	0 053	0.38	<0.0001	0.03	0.02	0.66	0.68	8.57	8 36	1.23	<20	<50	<20	<100
MW2	6-Jun-22	3 52	4.31	6.59	826	17.8																																									
MW2	28-Sep-22	2.66	3.45	6.69	806	19.9	7.03	754	484	<1	<1	304	304	30	60	3	2	176	3	4 8	0 002	<0 05	0.031	<0 001	<0.0001	0 005	0.003	0.003	0.17	0.004	0.003	<0.01	0.01	0 013	4.47	<0.0001	<0.01	0.01	4.28	4.29	8.39	8 05	2.1	<20	<50	<20	<100
MW2	12-Dec-22	3	3.79	6.91	906	20.7																																									
MW2	24-Mar-23	3.1	3.89	6.41	946	23.3	7.38	961	625	<1	<1	354	354	45	90	5	4	202	3	<0.01	<0.001	0.13	0.013	<0 001	<0.0001	0 002	<0.001	<0 001	0.168	0.002	0.001	<0.01	<0.01	0 028	<0 001	<0.001	0.34										
MW2	9-Jun-23	3 53	4.32	6.87	979	18.8																																									
MW2	28-Sep-23	3 58	4.37	6.31	778	22.6	7.1	859	558	<1	<1	378	378	33	67	4	4	196	3	<0.01	0 001	0.12	0.006	<0 001	<0.0001	<0.001	<0.001	0.002	<0.001	0.002	<0 001	<0.01	<0.01	0 028	0.34	<0.0001	0.08	0.05	0.73	0.78	10 5	9.44	5.54	<20	<50	<20	<100
MW2	11-Dec-23	3.61	4.4	7.15	729	23.4																																									
NAGERO																																															
MW3	2-Jun-06	15 08		7.65		20		1525					642	16	139	25	10	356	4		<0.001																										
MW3	15-Oct-06	15.71		7.85		23.1		1534																																							
MW3	11-Jan-07	15 89		7.66		24.9		1600					696	4	127	19	7	381	4		<0.001						<0.001	0.006		0.004	<0 001																
MW3	9-Jun-07	15.9		7.69		19.7		1028					673	3		15	5	389	3		<0.001				<0.0001		<0.005	<0 001		0.01	<0 001			0.1													
MW3	5-Oct-07	15.6		6.8		19.8		1710																																							
MW3	8-Jan-08	15 01		7.9		23.8		1620																																							
MW3	23-Apr-08	14 05		7.8		23.5		1740																																							
MW3	10-Jul-08	14 08		7.8		19		1630																																							
MW3	29-Oct-08	13 85		7.8		22.8		1770																																							
MW3	20-Jan-09	13.3		7.8		21.7		1770																																							
MW3	22-Apr-09	13.78		7.9		21.8		1780																																							
MW3	22-Jul-09	14.13		7.9		21.2		1780	890																																						
MW3	12-Nov-10	14.65		8		23.1		1800	890																																						
MW3	15-Feb-10	14 24		7.9	1440	21.5		1440	720																																						

Sample Location	Date	Depth to Ground - mbgl	Depth to Stand - mbtoc	Field Parameters			pH - Lab	EC - Lab - µs/cm	Total Dissolved Solids	Major Anions						Major Cations				Total Metals																Mercury (Hg) - mg/L	Ammonia as Nitrogen (N)	Nitrite as N - mg/L	Nitrate as N - mg/L	Nitrite + Nitrate as N - mg/L	Total Anions - meq/L	Total Cations - meq/L	Ionic Balance	TPH C6-C9	TPH C10-C36	TRH C6- C10	TRH C10-C40
				pH - Field	EC - Field - µs/cm	Temp - Field - °C				Hydroxide Alkalinity as CaCO3 - mg/L	Carbonate Alkalinity as CaCO3 - mg/L	Bicarbonate Alkalinity as CaCO3 - mg/L	Alkalinity - mg/L	Sulfate (SO4) - mg/L	Chloride (Cl) - mg/L	Calcium (Ca) - mg/L	Magnesium (Mg) - mg/L	Sodium (Na) - mg/L	Potassium (K) - mg/L	Aluminium (Al) - mg/L	Arsenic (As) - mg/L	Boron (B) - mg/L	Barium (Ba) - mg/L	Beryllium (Be) - mg/L	Cadmium (Cd) - mg/L	Cobalt (Co) - mg/L	Chromium (Cr) - mg/L	Copper (Cu) - mg/L	Manganese (Mn) - mg/L	Nickel (Ni) - mg/L	Lead (Pb) - mg/L	Selenium (Se) - mg/L	Vanadium (V) - mg/L	Zinc (Zn) - mg/L	Iron (Fe) - mg/L												
ANZECC Guideline - stock drinking water									**4000**					**1000**		**1000**				**5**	**0.5**				**0.01**	**1**	**1**	**1**		**1**	**0.1**	**0.02**		**20**		**0.002**			**400**								
MW3	16-Apr-10	13 21		8	1440	23.3		1440	720																																						
MW3	19-Jul-10	12.7		7.8	1700	20.3	7.93	1730	1020	<1	<1	871	871	<1	104	12	4	479	3		0 002				<0.0001		<0.001	0.003		0.003	<0 001			0 013	0.27		0.17	<0.01	<0.01	<0.01	20 3	21.8	3.56				
MW3	26-Oct-10	12.2		7.83	1730	21.7																																									
MW3	28-Jan-11	11.7		7.35	1750	26.1	7.6	1740		<1	<1	815	815	<1	108	10	4	436	3		0 001				<0.0001		<0.005	<0 001		0.003	<0 001			0 005	0.16		0.33	<0.01	<0.01	<0.01	19 3	19.8	1.27				
MW3	2-May-11	11 92		8.05	1760	22.2																																									
MW3	18-Jul-11	11 95		7.9	1760	20.8	7.96	1840	1060	<1	<1	798	798	<1	104	11	4	3	454		<0.001				0.0001		0.003	<0 001		0.004	<0 001			0 017	<0 005		0.33	<0.01	0.02	0.02	18 9	20.7	4.55				
MW3	24-Oct-11	12.1		8.08	1810	23.5																																									
MW3	18-Jan-12	11 25		6.86	1670	23.6	7.63	1690		<1	<1	715	715	40	112	29	9	5	410		0 002				<0.0001		0.004	0.001		0.007	<0 001			0 02	0.49		0.14	<0.01	<0.01	<0.01	18 3	20.2	4.82				
MW3	1-May-12	10.4		7.18	1840	22.5																																	910								
MW3	23-Jul-12	9 9		7.56	1700	20.6	8.05	1730	1010	<1	<1	765	765	35	104	19	5	398	4		<0.001				<0.0001		0.001	<0 001		0.004	<0 001			0 01	<0 05		0.31	<0.01	0.02	0.02	19	18.8	0.52				
MW3	23-Oct-12	9 84		7.66	1900	21.7			1020																																						
MW3	7-Mar-13	10 02		7.25	1650	21.9	7.68	1830	1190	<1	<1	815	815	31	103	18	5	470	4		0 001				<0.0001		0.008	0.001		0.013	<0 001			0 022	0.17		0.17	<0.01	<0.01	<0.01	19 8	21.9	4.79				
MW3	16-May-13	10.12		7.78	1730	20.7																																									
MW3	21-Aug-13	10 23		7.57		20.1	7.93	2020		<1	<1	592	592	52	284	12	4	504	4		0 003				<0.0001		<0.001	<0 001		0.002	<0 001			0 008	<0 05		0.23	<0.01	<0.01	<0.01	20 9	23	4.58				
MW3	14-Nov-13	10 39		8.13	1820	23.6																																									
MW3	3-Feb-14	10.3		8.41	1 87	23.3	7.76	2140		<1	<1	477	477	60	319	17	5	464	4		0 001				<0.0001		<0.001	0.002		0.002	<0 001			0 013	<0 05		0.12	<0.01	0.12	0.12	19 8	21.5	4.23				
MW3	17-Jul-14	10 00		7.98	2150																																										
MW3	29-Jan-15	10.47					7.92	2050		<1	<	398	398	74	369	17	5	436	3		0 001				<0.0001	<0.001		0.001		0.002	<0 001			0 026	<0 05		0.2	<0.01	0.02	0.02	20 5	20.3	0.66				
MW3	19-May-15	10 05		7.96	1790	21.9																																									
MW3	13-Aug-15	9 55				20.2	7.96	2060		<1	<1	451	451	78	285	15	5	403	3		<0.001				<0.0001		<0.001	0.028		0.003	<0 001			0 584	<0 05		0.32	<0.01	0.02	0.02	18.7	18.8	0.2				
MW3	30-Nov-15	9 28		7.22		23.2																																									
MW3	24-Feb-16	9 37		6.93		22.9	7.94	2050		<1	<1	348	348	83	397	17	5	450	3		<0.001				<0.0001		<0.001	<0 001		0.002	<0 001			0 014	<0 05		0.22	<0.01	<0.01	<0.01	19 9	20.9	2.49				
MW3	1-Mar-17	8 35		7.48	2060																																										
MW3	1-Jun-17	8 02		7.93	2060																										<0 001																
MW3	1-Sep-17	8 24		7.44	2070																																										
MW3	1-Nov-17	8.17		7.64	2030																										<0 001																
MW3	28-Mar-18	8.6		7.87	2050	23.3																																									
MW3	4-Jun-18	8.6		7.31	2050	21.5	6.79	2430																							<0 0005																
MW3	5-Jun-18	8.6		6.33	2040																																										
MW3	3-Sep-18	8.6		7.35	2050	22.5																																									
MW3	5-Dec-18	8.65		7.37	2020	24.1	7.77	2130																							<0 001																
MW3	22-Mar-19	9.1		7.87	2050	36.2																																									
MW3	19-Jun-19	9 35		7.76	2129	23.5	8.28	2120		<1	<1	384	384	82	367	16	5	436	3		<0.001				<0.0001		<0.0001	<0 001	0.105	0.005	<0 001			<0.005	<0 05		0.19	<0.01	0.01	0.01							
MW3	25-Nov-19	9 98		7.85	2097	26.6	7.87	2090		<1	<1	419	419	80	447	15	5	431	3		<0.001				<0.0001		<0.0001	<0 001	0.069	0.006	<0 001			<0.005	<0 05		0.22	<0.01	<0.01	<0.01							
MW3	23-Mar-20	9 59			2102				1 37																																						
MW3	2-Jun-20	9.18		7.61	2085	14.7	7.89	2150		<1	<1	429	429	74	353	14	5	426	3		<0.001				<0.0001		<0.0001	<0 001	0.079	0.008	<0 001			<0.005	<0 05		0.18	<0.01	0.12	0.12							
MW3	16-Sep-20	8 86		7.61	2176	27.7			1.42ppt																																						
MW3	24-Nov-21	8 95		7.89	2431	31.8	7.94	2680		<1	<1	466	466	122	511	20	24	484	5		<0.001				<0 001		<0.001	<0 001	0.016	0.008	<0 001			0 006	<0 05		0.19	<0.01	0.06	0.06							
TARRAWONGA																																															
MW4	2-Jun-06	8 8	9 5	7				3290					1010	155	905	157	118	614	19		0 006																										
MW4	9-Sep-06	8.6	9 3																																												
MW4	11-Jan-07	8.67	9.37	7.06				3430					1050	143	787	152	103	594	17		0 004				0.0003		<0.005	0.011		0.014	0.029			0.1		<0.0001											
MW4	9-Jul-07	9.13	9.83	6.82	5410	18.9		5400					989	235	1480	211	166	829	16		0 001				0.0004		<0.005	0.008		0.011	0.011			0.13		<0.0001								<20	330		
MW4	18-Jul-07	9.18	9.88																																												
MW4	7-Aug-07	9.17	9.87																																												
MW4	22-Aug-07	9.17	9.87																																												
MW4	5-Sep-07	9 21	9.91																																												
MW4	24-Sep-07	9 03	9.73																																												
MW4	11-Oct-07	8 97	9.67																																												
MW4	26-Nov-07	9 06	9.76																																												
MW4	29-Jan-08	9.1	9 8																																												
MW4	4-Mar-08	9.17	9.87																																												
MW4	4-Apr-08	9.15	9.85																																												
MW4	23-Apr-08	9.18	9.88	7.1	5160	18		4960					995	317	1240	210	158	802	21		0 004				0.0015		0.042	0 29		0.16	0.44			0.62		0 001								<0.025	<0.1		
MW4	21-Aug-08	9 31	10 01																																												
MW4	29-Oct-08	9 28	9.98	7	5740	22.2		5800					980	280	1400	220	170	840	23		0 001				0 00009		0.008	0.008		0.016	0.18			0.2		<0.0001								<0.025	<0.100		
MW4	29-Jan-09	9 29	9.96																																												
MW4	17-Jun-09		10 05	6.8	5400	21.5		4920	2980	<1	<1	977	977	156	1160	189	147	755	16		0 007		1.16	0.003	0.0004	0 015	0.023	0.207	1.82	0.055	0.106		0.04	0 278	24.9	0 0004	<0.01				55.6	54.8	0.8				
MW4	28-Aug-09	9.48	10.1																																												
MW4	14-Dec-09	9 52	10.14	6.94	5060	25.6	7.35	5040		<1	<1	783	783	31.6	64.1	187	149	746	16	<0.01	0 001						<0.005	0.001	0.671	0.016	<0 001			0.114	<0 05	<0.0001		0.02	0.45	0.48	45 3	54.5	3.41				
MW4	25-Feb-10	9.68	10 3																																												
MW4	11-May-10	9.66	10 28	7.58	5660	21.8		5210	3120	<1	<1	942	942	200	1180	149	115	821	14		0 012		1 84	0.006	0.0006	0.03	0.033	0.17	1.26	0.096	0.138		0.08	0 238	25.3	0 0002	0.02				56 2	53	3.01				
MW4	30-Aug-10	9.69	10 31	7.33	4740	20																																									
MW4	9-Nov-10	9.61	10 23	6.9	3810	24.4																																									
MW4	10-Mar-11	9 31	9.93	7.18	3060	24.9	7.37	3460		<1	<1	893	893	87	730	78	63	741	11	0.77	<0.001						0.005	0.084	0.188	0.014	0.15			0 801	1.08	<0.0001		0.04	0.38	0.41	40 2	41.6	1.61				
MW4	6-Jun-11	9.42	10 04	7.25	3080	18.7																																									
MW4	6-Sep-11	9.46	10 08	7.12	3196	21	7.77	3910		<1	<1	861	861	104	700	74	58	702	10	0.65	<0.001		0.146	<0 001	<0.0001	0 002	0.001	0.008	0.175	0.006	0.006		<0.01	0.418	0.7	<0.0001	0.2	<0.01	0.43	0.43	39.1	39.3	0.15				
MW4	7-Dec-11	9 35	9.97	7.1	3180	20.5																																									
MW4	13-Mar-12	9 36	9.98	7.6	2580	22.1	8.01	3690	2130	<1	<1	898	898	103	700	90	64	759	13	0.16	<0.001		0.159	<0 001	<0.0001	<0.001	<0.001	0 01	0.017	0.004	<0 001		<0.01	0 27	0 3	<0.001	<0.01	<0.01	0.85	0.85	39 8	43.1	3.92				
MW4	13-Jun-12	9 22	9.84	7.52	3850	20.6																																									
MW4	4-Sep-12	9.11	9.73	7.72	3410	21.8	7.98	3770	2170	<1	<1	962	962	108	674	82	65	664	12	0 07	<0.001		0.167	<0 001	<0.0001	<0.001	<0.001	0.058	0.116	0.007	0.005		<0.01	0 513	0.44	<0.0001	0.02	0.02	1.04	1.06	40 5	38.6	2.37				
MW4	27-Nov-12	8 94	9.56	7.74	3440	21.7																																									
MW4	20-Mar-13	8 92	9.54	7.53	3420	21.6	7.65	3730	2020	<1	<1	880	880	49	652	104	73	672	12	0 27	0 001		0.156	<0 001	<0.0001	<0.001	0.011	0 05	0.158	0.01	0.006		<0.01	0 338	0.4	<0.0001	0.02	<0.01	1.68	1.68	37	40.7	4.78				
MW4	11-Jul-13	8 87	9.49	7.76	3410	20.9																																									
MW4	5-Sep-13	8 83	9.45	7.63	3560	21.8	7.99	3950	2260	<1	<1	908	908	110	745	110	81	704	15	0 21	<0.001	<0.001	<0.05	0.182	0.0002	0 005	0.001	0.144	0.282	0.008	0.018	<0.01	<0.01	0.453	0.68	<0.0001	0.09				41.4	43.2	2				
MW4	22-Nov-13	8.61	9.23	7.6	3720	21.7																																									
MW4	24-Feb-14	8.74	9.36	7.6	3920	21.4	7.98	3890	2010	<1	<1	875	875	113	676	93	78	644	15	0.14	<0.001	<0.001	<0.05	0.166	0.0003	<0.001	0.005	0.128	0.116	0.007	0.006	<0.01	<0.01	0.444	1.22	<0.0001	0.06				38 9	39.5	0.68				
MW4	27-May-14	8.78	9.4	7.6	3840	21.3																																									
MW4	9-Sep-14	8.76	9.38	7.2	4090	20.5	7.83	4170		<1	<1	1020	1020	118	679	108	79	597	11	0.13	<0.001						0.003	0.057	0.235	0.008	0.007			0 334	0.86	<0.0001		0.2	0.54	0.74	42	38.1	4.83				
MW4	20-Nov-14	8.72	9.34	7.3	3970	21.8																																									
MW4	26-Feb-15	8.71	9.33	7.3	4030	21.6	7.7	4430	2200	<1	<1	1090	1090	132	786	131	107	687	14	0.13	<0.001	<0 05	0.159	<0 001	<0.0001	0 002	0.002	0.033	0.373	0.007	0 02	<0.01	<0.01	0 244	3.4	<0.0001	0.18	0.01	0.97	0.98	46.7	45.6	1.23				
MW4	26-May-15	8 93	9.55	7.3	4120	20.7																																									
MW4	27-Aug-15	8 85	9.47	7.2	4340	19.5	7.72	4680	2550	<1	<1	870	870	151	711	123	107	719	14	0 02	<0.001	<0 05	0.159	<0 001	<0.0001	<0.001	<0.001	0.004	0.359	0.004	0.002	<0.01	<0.01	0.149	1.21	<0.0001	0.56	<0.01	0.6	0.6	40.6	46.6	6.85				
MW4	4-Dec-15	8 85	9.47	7.3	4410	21.1																																									
MW4	24-Feb-16	8 86	9.48	7.4	4450	21.7	7.85	4650	2610	<1	<1	988	988	152	899	156	119	767	17	0 2	0 003	<0 05	0.18	0.002	0.0004	0 003	0.003	0 02	0.46	0.006	0.014	<0.01	<0.01	0 209	1.84	<0.0001	2.22	<0.01	0.07	0.07	48 3	51.4	3.1				
MW4	23-May-16	8 92	9.54	7.4	4480	21.4																																									
MW4	1-Sep-16																																														
MW4	29-Nov-16	8 91	9.53	7.3	4330	22.8																																									
MW4	23-Mar-17	8 92	9.54	7.4	4370		8.13	4610	2800	<1	<1	982	982	101	882	145	113	710	16	0 54	<0.001	<0 05	0.184	<0 001	0.0002	0 002	<0.001	0.036	0.356	0.008	0.011	<0.01	<0.01	1 57	1.05	<0.0001	0.1	0.05	1.36	1.41	46.6	47.8	1.3				
MW4	21-Jun-17	9	9.62	7.4	4370	19.7																																									
MW4	13-Sep-17	8 9	9.52	7.3	4420		7.82	4570	2450	<1	<1	1040	1040	147	848	141	116	730	15	0.75	<0.001	<0 05	0.166	<0 001	<0.0001	0 001	<0.001	0.015	0.316	0.005	0.009	<0.01	<0.01	0.686	1.46	<0.0001	0.03	0.08	1.15	1.23	47 8	48.7	0.99				
MW4	13-Dec-17	8 95	9.57	7.2	4440	22.6																																									
MW4	22-Mar-18	9 08	9.7	7.4	4610	21.3	7.4	4470																							0.013																
MW4	12-Jun-18	9.14	9.76	7.3	4430																																										
MW4	13-Sep-18	9 34	9.96	6.9	4370	22.1	7.49	4560	2310	<1	<1	919	919	142	959	155	102	611	10	0 05	0 001	<0 05	0.161	<0 001	<0.0001	0 001	<0.001	0.004	0.307	0.004	0.002	<0.01	<0.01	0 077	0.12	<0.0001	0.33	<0.01	0.06	0.06	48.4	43	5.92				
MW4	5-Dec-18	9.46	10 08	7	4610	21.9																																									
MW4	14-Mar-19	9 58	10 2	7.2	4480	21.9	7.67	4840	2460	<1	<1	1010	1010	145	818	145	112	702	16	0.14	<0.001	<0 05	0.181	<0 001	<0.0001	<0.001	0.001	0.005	0.394	0.003	0.008	<0.01	<0.01	0 079	0.65	<0.0001	2	0.05	0.21	0.26	46 3	47.4	1.2			<20	360
MW4	19-Jun-19	9.41	10 03	7.3	3860	20.5																																									
MW4	11-Sep-19	9.62	10 24	7.4	3460	20.8	7.95	3460	1930	<1	<1	715	715	112	682	78	52	685	8	0.12	<0.001	<0 05	0.075	<0 001	<0.0001	<0.001	0.001	0.002	0.141	0.002	0.002	<0.01	<0.01	0 023	0.4	<0.0001		<0.01	0.08	0.08	35 8	38.2	3.13				
MW4	5-Dec-19	10.14	10.76	7.3	3530	21.8																																									
MW4	18-Mar-20	10.46	11 08	7.5	3490	22.5	7.74	3600	2040	<1	<1	822	822	124	716	70	50	674	8	0 02	<0.001	<0 05	0.077	<0 001	<0.0001	<0.001	<0.001	0.002	0.13	<0.001	<0 001	<0.01	<0.01	0 017	0.21	<0.0001	0.82	0.02	0.05	0.07	39 2	36.6	3.49	<20	<50	<20	<100
MW4	11-Jun-20	10 57	11.19	7.4	3530	21.5																																									
MW4	23-Sep-20	10 38	11	7.3	3580	19.4	8.02	3380	2050	<1	<1	953	953	94	650	67	50	653	8	0 06	<0.001	<0 05	0.086	<0 001	<0.0001	<0.001	<0.001	0.002	0.174	0.002	0.002	<0.01	<0.01	0 051	0.14	<0.0001	8.34	0.03	0.12	0.15	39 3	36.1	4.33	<20	<50	<20	<100
MW4	8-Dec-20	10 35	10 97	7.4	3640	19.2																																									
MW4	14-May-21	10 37	10 99	8.1	3820	18.7	7.71	3750	2440	<1	20	876	896	103	684	75	56	701	14	0.15	<0.001	0.11	0.092	<0 001	<0.0001	<0.001	<0.001	0.006	0.236	0.006	0.008	<0.01	<0.01	0.134	0.32	<0.0001	14.9	0.11	0.22	0.33	39 3	39.2	0.18	<20	680	<20	<100
MW4	7-Jun-21	9 56	10.18	7.26	3530	15.5	7.37	3400	2210	<1	<1	805	805	98	587	84	59	644	11	0 24	<0.001	<0 05	0.166	<0 001	<0.0001	<0.001	0.001	0 01	0.419	0.009	0.013	<0.01	<0.01	0.169	0.58	<0.0001	5.34	0.16	0.07	0.23	34.7	37.3	3.69	<20	<50	<20	<100
MW4	21-Jun-21	9 53	10.15	7.26	3250	18.9																																									
MW4	2-Sep-21	9.48	10.1	6.76	3060	16.5	7.62	3100	2020	<1	<1	871	871	70	490	50	35	613	6	0.13	<0.001	<0 05	0.088	<0 001	<0.0001	<0.001	<0.001	0.002	0.166	0.005	0.003	<0.01	<0.01	0 083	0.003	<0.001	0.9		0.08	0.09				<20	<50	<20	<100
MW4	31-Dec-21	9 91	10 53	7.56	3040	20.2																																									
MW4	21-Mar-22	9.18	9 8	7.55	3290	23.5	7.7	3080	2000	<1	<1	821	821	80	524	40	31	608	6	0.13	<0.001	0.06	0 07	<0 001	<0.0001	<0.001	<0.001	0.003	0.143	0.003	0.002	<0.01	<0.01	0 086	0.21	<0.0001	0.71	0.15	0.2	0.35	32 8	31.1	2.66	<20	280	<20	270
MW4	5-Apr-22	9.18	9 8	7.6	3360	19.3	7.69	2740	1780	<1	<1	889	889	81	501	40	32	625	6	0.11	<0.001	<0 05	0 07	<0 001	<0.0001	0 001	<0.001	0.005	0.151	0.005	0.006	<0.01	<0.01	0.105	0.21	<0.0001	0.67	<0.01	0.37	0.37	33.6	32	2.46	<20	<50	<20	<100
MW4	6-Jun-22	9 05	9.67	7.45	3090	19.2																																									
MW4	28-Sep-22	8 9	9.52	7.39	3010	22.8	7.64	3000	1950	<1	<1	854	854	85	536	40	31	604	6	0 04	<0.001	<0 05	0.058	<0 001	<0.0001	<0.001	<0.001	0.004	0.005	0.002	0.002	<0.01	<0.01	0 078	0.11	<0.0001	0.04	0.01	0.37	0.38	34	31	4.59	<20	<50	<20	<100
MW4	12-Dec-22	9 08	9.7	7.51	3050	22.7																																									
MW4	24-Mar-23	7 88	8 5	7.04	2900	24.9	8.03	2860	1860	<1	<1	874	874	78	475	37	30	588	6	<0.01	<0.001	0.08	0.067	<0 001	<0.0001	<0.001	<0.001	0.005	0.013	0.002	0 02	<0.01	<0.01	0 061	0.09	<0.0001	0.17	<0.01	1.98	1.98	32 5	30	3.9	<20	<50	<20	<100
MW4	9-Jun-23	9 05	9.67	7.43	3380	16.7																																									
MW4	28-Sep-23	8 31	8.93	6.62	2990	23.2	7.65	3150	2050	<1	<1	966	966	92	499	47	35	611	6	<0.01	<0.001	<0 05	0.071	<0 001	<0.0001	<0.001	<0.001	<0 001	<0.001	<0.001	<0 001	<0.01	<0.01	0 022	<0 05	<0.0001	0.02	<0.01	0.98	0.98	35 3	32	4.96				
MW4	11-Dec-23	8 24	8.86	7.49	3100	21.6																																									

Sample Location	Date	Depth to Ground - mbgl	Depth to Stand - mbtoc	Field Parameters			pH - Lab	EC - Lab - µs/cm	Total Dissolved Solids	Major Anions						Major Cations				Total Metals																Mercury (Hg) - mg/L	Ammonia as Nitrogen (N)	Nitrite as N - mg/L	Nitrate as N - mg/L	Nitrite + Nitrate as N - mg/L	Total Anions - meq/L	Total Cations - meq/L	Ionic Balance	TPH C6-C9	TPH C10-C36	TRH C6- C10	TRH C10-C40
				pH - Field	EC - Field - µs/cm	Temp - Field - °C				Hydroxide Alkalinity as CaCO3 - mg/L	Carbonate Alkalinity as CaCO3 - mg/L	Bicarbonate Alkalinity as CaCO3 - mg/L	Alkalinity - mg/L	Sulfate (SO4) - mg/L	Chloride (Cl) - mg/L	Calcium (Ca) - mg/L	Magnesium (Mg) - mg/L	Sodium (Na) - mg/L	Potassium (K) - mg/L	Aluminium (Al) - mg/L	Arsenic (As) - mg/L	Boron (B) - mg/L	Barium (Ba) - mg/L	Beryllium (Be) - mg/L	Cadmium (Cd) - mg/L	Cobalt (Co) - mg/L	Chromium (Cr) - mg/L	Copper (Cu) - mg/L	Manganese (Mn) - mg/L	Nickel (Ni) - mg/L	Lead (Pb) - mg/L	Selenium (Se) - mg/L	Vanadium (V) - mg/L	Zinc (Zn) - mg/L	Iron (Fe) - mg/L												
ANZECC Guideline - stock drinking water									**4000**					**1000**		**1000**				**5**	**0.5**				**0.01**	**1**	**1**	**1**		**1**	**0.1**	**0.02**		**20**		**0.002**			**400**								
TEMPLEMORE																																															
MW5	2-Jun-06	2.78	3.4	6.9				1530					472	138	169	17	13	373	6		0 006																										
MW5	9-Sep-06	2 98	3.6																																												
MW5	11-Jan-07	3 56	4.18	7.25				4870					836	435	1060	44	49	1070	13		0 003				<0.0001		<0.001	<0 001		0.013	<0 001			0 09													
MW5	18-Apr-07	2 98	3.6																																												
MW5	10-Jul-07	3 85	4.47	7.59	1360	19.7		1930					380	161	291	14	15	13	5		0 002				<0.0001		<0.005	0.001		0.009	<0 001			0.111		<0.0001								<20	3490		
MW5	18-Jul-07	3 87	4.49																																												
MW5	7-Aug-07	3 92	4.54																																												
MW5	22-Aug-07	3 88	4 5																																												
MW5	5-Sep-07	3 84	4.46																																												
MW5	24-Sep-07	3 86	4.48																																												
MW5	11-Oct-07	3 91	4.53																																												
MW5	26-Nov-07	3 94	4.56																																												
MW5	29-Jan-08	3 06	3.68																																												
MW5	4-Mar-08	3 01	3.63																																												
MW5	4-Apr-08	3 07	3.69																																												
MW5	23-Apr-08	3.15	3.77	7.9	3550	19.9		3260					630	332	553	29	33	696	13		0 012				0 00017		0.006	0.027		0.042	0.054			0.11		<0.0001											
MW5	21-Aug-08	3.10	3.72																																												
MW5	29-Oct-08	2 97	3.59	7.3	3300	19.1		3400					680	290	560	21	24	640	11		0 008				<0.00005		0.005	0.004		0.007	0.018			0 028		<0.0001								<0.025	0.57		
MW5	29-Jan-09	3.12	3.73																																												
MW5	17-Jun-09	3 33	4.18	7.7	2390	19.6		2120	1370	<1	<1	486	486	120	315	13	15	485	8		0 012		0.054	<0 001	<0.0001	0 003	0.002	0 02	0.586	0.006	0.019		<0.01	0.105	1.66	<0.0001	0.07				21.1	23.2	4.6				
MW5	14-Sep-09	3 52	4.32																																												
MW5	14-Dec-09	3.76	4.56	7.21	6900	28.4	7.44	7460		<1	<1	1110	1110	678	1720	9	106	1870	28	0 04	0 016						<0.001	0.002	1.4	0.022	<0 001			0 078	0.19	<0.0001		<0.01	<0.01	<0.01	84 9	91	3.44				
MW5	25-Feb-10	2 91	3.71																																												
MW5	11-May-10	3	3 8	7.73	6590	22		5920	3630	<1	<1	838	838	491	1260	38	70	1210	17		0 032		0.426	0.001	0.009	0 032	0.024	0 07	1.59	0.071	0.068		0.05	0 277	23	<0.0001	0.1				62.4	60.5	1.53				
MW5	30-Aug-10	2.6	3.4	7.85	1740	22.8																																									
MW5	9-Nov-10	2.48	3.28	7.35	2620	24.1																																									
MW5	10-Mar-11	2 51	3.31	7.39	1917	25.2	7.69	1980		<1	<1	416	416	150	396	11	13	474	8	0 81	0.01						0.001	0 03	0.64	0.003	0.007			0.139	0.79	<0.0001		<0.01	0.11	0.11	22.6	22.4	0.49				
MW5	6-Jun-11	2.47	3.27	7.45	1032	20.8																																									
MW5	6-Sep-11	2.7	3 5	7.39	1910	22.6	7.89	2310	1360	<1	<1	427	427	177	385	10	11	501	7	6 24	0 012		0.051	<0 001	<0.0001	0 001	0.004	0.006	0.081	0.005	0.004		<0.01	0 032	4.1	<0.0001	0.11	<0.01	0.04	0.04	23.1	23.4	0.6				
MW5	7-Dec-11	1 96	2.76	7.36	2275	20.5																																									
MW5	13-Mar-12	1 28	2.08	7.52	1110	25.1	7.78	1250	736	<1	<1	269	269	45	262	8	7	292	5	1 91	0 006		0.027	<0 001	<0.0001	<0.001	0.002	0.005	0.122	0.003	<0 001		0.01	0 02	1 2	<0.0001	<0.01	<0.01	0.43	0.43	13.7	13.8	0.33				
MW5	13-Jun-12	1 58	2.38	7.81	977	20.3																																									
MW5	4-Sep-12	1.46	2.26	7.63	1980	20.1	7.92	2120	1400	<1	<1	439	439	146	380	9	11	473	8	7 89	0 016		0.056	<0 001	<0.0001	<0.001	0.004	0.014	0.073	0.004	0.007		<0.01	0 086	5.13	<0.0001	<0.01	<0.01	<0.01	<0.01	22 5	22.1	0.93				
MW5	27-Nov-12	1 84	2.64	7.65	2650	22.5																																									
MW5	20-Mar-13	1 94	2.74	7.54	1430	24.7	7.61	1520	956	<1	<1	323	323	46	236	7	8	321	6	0 53	0 011		0.029	<0 001	<0.0001	<0.001	0.002	0.054	0.33	0.004	0.008		<0.01	0.158	0.56	<0.0001	0.08	<0.01	0.06	0.06	14.1	15.1	3.57				
MW5	11-Jul-13	2 26	3.06	7.62	846	21.5																																									
MW5	5-Sep-13	2.45	3.25	7.55	1640	21.8	8.07	1810	1040	<1	<1	396	396	115	287	5	7	406	8	4.62	0 011	<0.001	0.12	0.038	<0.0001	<0.001	0.003	0.062	0.07	0.004	0.009	<0.01	<0.01	0.118	3.25	<0.0001	0.02				18.4	18.7	0.73				
MW5	22-Nov-13	2.76	3.56	7.7	2430	21.1																																									
MW5	20-Feb-14	3 01	3.81	7.9	1790	22.7	7.77	1850	964	<1	<1	377	377	111	282	7	8	394	6	2.6	0 014	<0.001	<0.05	0.039	0.0004	0 002	0.01	0.166	0.232	0.007	0.024	<0.01	<0.01	0.46	2.68	<0.0001	<0.01				17 8	18.3	1.34				
MW5	27-May-14	2.77	3.57	7.7	925	22.5																																									
MW5	9-Sep-14	2 80	3.6	7.7	2130	20.5	7.99	2200		<1	<1	476	476	159	319	7	8	462	8	12.7	0 014						0.009	0.059	0.379	0.019	0.016			0.141	8.81	<0.0001		0.02	0.65	0.67	21 8	21.3	1.23				
MW5	20-Nov-14	3 00	3 8	7.8	3020	22.3																																									
MW5	26-Feb-15	3.18	3.97	7.8	1890	23.7	8.15	2060	1060	<1	<1	433	433	130	299	5	6	399	6	1.18	0.01	<0 05	0.026	<0 001	<0.0001	<0.001	<0.001	0.005	0.044	0.002	<0 001	<0.01	<0.01	0 04	0.74	<0.0001	0.01	<0.01	0.14	0.14	19 8	18.2	4.09				
MW5	26-May-15	3 29	4.08	7.8	2120	21.3																																									
MW5	27-Aug-15	3.19	3.98	7.7	2110	19.7	8.08	2210	1300	<1	<1	424	424	174	262	8	9	465	6	1 29	0 023	<0 05	0.051	<0 001	<0.0001	<0.001	<0.001	0.002	0.373	0.002	<0 001	<0.01	<0.01	0 036	1.67	<0.0001	0.04	<0.01	0.02	0.02	19 5	21.5	4.92				
MW5	4-Dec-15	3 29	4.08	7.7	3070	21.2																																									
MW5	24-Feb-16	3 36	4.15	7.7	2060	23.5	7.76	2230	1180	<1	<1	471	471	184	361	12	13	519	7	0 95	0.01	<0 05	0.036	<0 001	<0.0001	<0.001	<0.001	0.013	0.209	0.003	0.002	<0.01	<0.01	0 071	0.79	<0.0001	0.09	<.01	0.24	0.24	23.4	24.4	2.04				
MW5	23-May-16	3.41	4 2	7.7	1632	23.4																																									
MW5	1-Sep-16	2 29	3.08	7.7	1700	21	7.96	1750		<1	<1	382	382		256	6	7	378	5	5 55	0 009						0.003	0.007	0.071	0.004	0.002			0 05	3.86	<0.0001		<0.01	1.1	1.1	17 5	17.4	0.25				
MW5	29-Nov-16	2	2.79	7.6	3010	20.7																																									
MW5	23-Mar-17	2 36	3.15	7.7	1750		8.24	1750	1100	<1	<1	340	340	92	293	8	9	352	7	0 59	0 007	<0 05	0.042	<0 001	<0.0001	0 002	<0.001	0 03	0.638	0.004	0.005	<0.01	<0.01	0.144	0 5	<0.0001	0.94	0.14	2.4	2.54	17	16.6	1.02				
MW5	21-Jun-17	2 55	3.34	7.9	1288	20.7																																									
MW5	13-Sep-17	2.76	3.55	7.8	2610		8.19	2640	1520	<1	<1	561	561	200	421	12	14	567	8	1.13	0 014	<0 05	0.035	<0 001	<0.0001	<0.001	<0.001	0.007	0.082	0.001	0.005	<0.01	<0.01	0 085	0.74	<0.0001	0.06	<0.01	0.06	0.06	27 2	26.6	1.17				
MW5	13-Dec-17	2.79	3.58	7.7	2630	21.4																																									
MW5	22-Mar-18	3.12		7.9	2320																																										
MW5	12-Jun-18	3 31	4.1	7.9	1413																																										
MW5	13-Sep-18	3 56	4.35	7.8	1980	22	8.07	2040	1080	<1	<1	418	418	146	341	8	8	386	5	1.43	0.01	<0 05	0 03	<0 001	<0.0001	<0.001	<0.001	0.005	0.035	<0.001	0.002	<0.01	<0.01	0 024	1.09	<0.0001	0.04	<0.01	0.03	0.03	21	18	7.78				
MW5	5-Dec-18	3.41	4 2	7.7	2130	21.5																																									
MW5	14-Mar-19	3.41	4 2	7.9	1240	24.1	8.11	1220	764	<1	<1	313	313	69	162	3	3	286	4	1.65	0.01	<0 05	0.023	<0 001	<0.0001	<0.001	<0.001	0.004	0.044	0.002	0.001	<0.01	0.01	0 028	1.4	<0.0001	0.02	<0.01	0.17	0.17	12 3	12.9	2.69			<20	<100
MW5	19-Jun-19	2 91	3.7	7.6	1292	22.5																																									
MW5	11-Sep-19	2 9	3.69	7.8	2100	20.4	8.12	2120	1170	<1	<1	393	393	164	370	10	10	450	7	2.47	0 009	<0 05	0.032	<0 001	<0.0001	<0.001	0.002	0.004	0.044	0.002	0.002	<0.01	0.01	0 031	1.63	<0.0001		<0.01	0.09	0.09	21.7	21.2	1.47	<20	<50	<20	<100
MW5	5-Dec-19	3 25	4.04	7.8	2080	21.4																																									
MW5	18-Mar-20	2.41	3 2	7.5	835	24.5	7.81	874	504	<1	<1	180	180	48	115	4	3	182	3	1 8	0 006	<0 05	0.018	<0 001	<0.0001	<0.001	<0.001	<0 001	0.04	0.001	<0 001	<0.01	0.01	0 02	1.35	<0.0001	0.03	<0.01	1.51	1.51	7.84	7 89	0.33	<20	<50	<20	<100
MW5	11-Jun-20	2 3	3.09	7.6	675	20.7																																									
MW5	23-Sep-20	2 34	3.13	7.7	1920	18.3	8.09	2090	1390	<1	<1	461	461	142	360	9	10	432	7	4.41	0.01	<0 05	0.034	<0 001	<0.0001	<0.001	0.002	0.006	0.055	0.002	0.003	<0.01	<0.01	0 029	3.28	<0.0001	0.02	<0.01	0.28	0.28	22 3	20.2	4.89	<20	<50	<20	<100
MW5	8-Dec-20	2.67	3.46	7.8	1960	18.1																																									
MW5	4-Mar-21	2 56	3.35	7.36	874	23	7.47	885	575	<1	<1	245	245	42	129	4	4	193	3	5.72	0 006	<0 05	0.029	<0 001	<0.0001	<0.001	0.004	0.013	0.068	0.004	0.002	<0.01	0.01	0 029	4.01	<0.0001	0.03	<0.01	0.54	0.54	9.41	9	2.22	<20	<50	<20	<100
MW5	21-Jun-21	2 07	2.86	7.65	766	18.1																																									
MW5	2-Sep-21	1 85	2.64	6.8	1771	19.8	7.7	1810	1180	<1	<1	423	423	90	282	7	8	373	7	5.73	0 009	<0 05	0.041	<0 001	<0.0001	<0.001	0.005	0.016	0.221	0.008	0.011	<0.01	<0.01	0.102	3 5	<0.0001	0.31		0.12	0.12				<20	<50	<20	<100
MW5	29-Dec-21	1 82	2.61	7.7	2054	21.6																																									
MW5	21-Mar-22	2 35	3.14	8.01	1529	23.1	7.96	1410	916	<1	<1	423	423	64	173	4	5	249	9	1.49	0.01	<0 05	0.026	<0 001	<0.0001	0 001	0.002	0 01	0.193	0.002	0.016	<0.01	<0.01	0.169	1.44	<0.0001	25.4	0.94	<0.01	0.05	14.7	13.5	4.21	<20	<50	<20	<100
MW5	6-Jun-22	1 9	2.69	7.52	830	20																																									
MW5	28-Sep-22	1 36	2.15	7.66	1874	19.9	7.76	1750	1140	<1	<1	436	436	105	309	8	9	364	8	3.75	0 008	<0 05	0.034	<0 001	<0.0001	0 001	0.003	0.016	0.124	0.004	0.008	<0.01	<0.01	0.146	2.99	<0.0001	7.14	0.73	0.03	0.76	19.6	17.2	6.62	<20	<50	<20	<100
MW5	12-Dec-22	1.67	2.46	7.88	2022	21.8																																									
MW5	24-Mar	1 8	2.59	7.13	1412	25.3	7.78	1350	878	<1	<1	480	480	23	133	5	4	191	9	0.11	0.01	0.08	0.038	<0 001	<0.0001	<0.001	0.004	0.019	0.127	0.004	0 01	<0.01	0.01	0 557	4.33	<0.0001	60.1	<0.01	0.15	0.15	13 8	13.4	1.42	<20	1620	<20	1720
MW5	9-Jun-23	2.13	2.92	7.45	757	16.7																																									
MW5	28-Sep-23	2 3	3.09	6.97	1862	25.2	7.74	2080	1350	<1	2	506	508	142	343	9	10	428	7	<0.01	0 012	0.05	0 02	<0 001	<0.0001	<0.001	<0.001	<0 001	<0.001	<0.001	<0 001	<0.01	<0.01	0 006	<0 05	<0.0001	0.08	<0.01	0.16	0.16	22 8	20.1	6.33				
MW5	11-Dec-23	2.48	3.27	7.52	2009	22.8																																									

				Field Parameters						Major Anions						Major Cations				Total Metals																											
Sample Location	Date	Depth to Ground - mbgl	Depth to Stand - mbtoc	pH - Field	EC - Field - µs/cm	Temp - Field - °C	pH - Lab	EC - Lab - µs/cm	Total Dissolved Solids	Hydroxide Alkalinity as CaCO3 - mg/L	Carbonate Alkalinity as CaCO3 - mg/L	Bicarbonate Alkalinity as CaCO3 - mg/L	Alkalinity - mg/L	Sulfate (SO4) - mg/L	Chloride (Cl) - mg/L	Calcium (Ca) - mg/L	Magnesium (Mg) - mg/L	Sodium (Na) - mg/L	Potassium (K) - mg/L	Aluminium (Al) - mg/L	Arsenic (As) - mg/L	Boron (B) - mg/L	Barium (Ba) - mg/L	Beryllium (Be) - mg/L	Cadmium (Cd) - mg/L	Cobalt (Co) - mg/L	Chromium (Cr) - mg/L	Copper (Cu) - mg/L	Manganese (Mn) - mg/L	Nickel (Ni) - mg/L	Lead (Pb) - mg/L	Selenium (Se) - mg/L	Vanadium (V) - mg/L	Zinc (Zn) - mg/L	Iron (Fe) - mg/L	Mercury (Hg) - mg/L	Ammonia as Nitrogen (N)	Nitrite as N - mg/L	Nitrate as N - mg/L	Nitrite + Nitrate as N - mg/L	Total Anions - meq/L	Total Cations - meq/L	Ionic Balance	TPH C6-C9	TPH C10-C36	TRH C6- C10	TRH C10-C40
ANZECC Guideline - stock drinking water									**4000**					**1000**		**1000**				**5**	**0.5**				**0.01**	**1**	**1**	**1**		**1**	**0.1**	**0.02**		**20**		**0.002**			**400**								
NAGERO																																															
MW6	2-Jun-06	8 34	9	7.3				2030					720	55	308	59	29	440	8		<0.001																										
MW6	9-Sep-06	8 84	9 5																																												
MW6	11-Jan-07	9.15	9.81	6.89				2030					724	51	252	62	30	426	7		<0.001				<0.0001		<0.005	<0 001		0.011	<0 001			0 08		<0.0001											
MW6	10-Jul-07	9 37	10 03	7.5	2060	18.1		2000					666	47	283	58	27	411	8		0 0005				0 00005		0 0025	0.001		0.004	0.0005			0 01		0.00005											
MW6	18-Jul-07	9 35	10 01																																												
MW6	7-Aug-07	9 32	9.98																																												
MW6	22-Aug-07	9 29	9.95																																												
MW6	5-Sep-07	9 31	9.97																																												
MW6	24-Sep-07	9 07	9.73																																												
MW6	11-Oct-07	9.16	9.82																																												
MW6	26-Nov-07	9.17	9.83																																												
MW6	29-Jan-08	9 06	9.72																																												
MW6	4-Mar-08	8.815	9.475																																												
MW6	22-Apr-08	8.62	9.28	7.1	2000	21.1		2120					670	51	273	64	29	391	9 8		0 001				<0.00005		0.001	0.002		0.006	0.0031			0 005		<0.0001								<0.025	<0.1		
MW6	21-Aug-08	8.545	9.205																																												
MW6	29-Oct-08	8.48	9.15	7.1	2050	23.9		2100					680	50	280	60	27	380	8 5		0 001				0 00005		0.003	0.003		0.004	0.077			0 034		<0.0001								<0.025	0.18		
MW6	29-Jan-09	8 33	9.1																																												
MW6	14-Sep-09	8.65	9.43																																												
MW6	14-Dec-09	8 86	9.64	7.13	2112	23.4	7 3	2100		<1	<1	652	652	39.4	252	56	26	385	8	<0.01	<0.001						<0.005	<0 001	0.336	0.008	0.002			0 01	<0 05	<0.0001		0.02	0.53	0.55	21	21.9	2.24				
MW6	25-Feb-10	8 84	9.62																																												
MW6	11-May-10	8 3	9.08	7.56	2360	21.5		2030	1160	<1	<1	645	645	42.2	261	56	26	380	7		<0.001		0.193	<0 001	<0.0001	0 002	0.002	0.002	0.278	0.003	0.006		<0.01	0 008	2.13	<0.0001	<0.01				21.1	21.6	1.14				
MW6	30-Aug-10	8	8.78	7.2	1927	23.8																																									
MW6	9-Nov-10	7.72	8 5	7.03	1835	24.3																																									
MW6	10-Mar-11	7.41	8.19	7.08	1783	24	7.53	1790		<1	<1	627	627	42	293	55	27	406	9	0.15	<0.001						0.002	0.034	0.047	0.003	0.015			0 216	0.32	<0.0001		0.03	0.97	1	21.7	22.9	2.61				
MW6	6-Jun-11	7.44	8.22	7.15	1670	19.6																																									
MW6	6-Sep-11	Piezo damaged																																													
MW6	7-Dec-11	Piezo damaged																																													
MW6	13-Mar-12	5.74	6.52	7.49	1840	23.4	7.68	1980	1150	<1	<1	624	624	46	262	55	24	390	9	0.15	<0.001		0.125	<0 001	<0.0001	<0.001	0.002	0.009	0.013	0.004	0.001		<0.01	0 071	0.12	<0.0001	<0.01	<0.01	1.44	1.44	20 8	21.9	2.54				
MW6	13-Jun-12	5 87	6.65	7.45	2040	21.3																																									
MW6	4-Sep-12	5 58	6.36	7.82	1840	22	8.08	1990	1210	<1	<1	681	681	39	276	53	25	381	8	0 09	<0.001		0.143	<0 001	<0.0001	<0.001	<0.001	0.012	0.013	0.003	0.003		<0.01	0 072	0.18	<0.0001	<0.01	<0.01	1.13	1.13	22 2	21.5	1.69				
MW6	27-Nov-12	5 55	6.33	7.6	1817	21.1																																									
MW6	20-Mar-13	5.75	6.53	7.46	343	22.8	7.43	351	252	<1	<1	106	106	28	16	12	3	49	8	0.49	0 001		0.037	<0 001	<0.0001	<0.001	0.003	0.081	0.095	0.006	0.009		0.02	0.402	0.56	<0.0001	0.23	0.1	0.6	0.7	3.15	3.18	0.44				
MW6	11-Jul-13	5 88	6.66	7.62	452	20.8																																									
MW6	5-Sep-13	5 96	6.74	7.21	465	21.3	7 8	496	327	<1	<1	132	132	60	25	18	3	75	10	0 86	<0.001	<0.001	0 08	0.038	<0.0001	<0.001	0.002	0.075	0.058	0.005	0.006	<0.01	0.02	0.151	0.93	<0.0001	0.09				4.59	4.66	0.74				
MW6	22-Nov-13	5 85	6.63	7.2	486	20.8																																									
MW6	24-Feb-14	5 84	6.62	7.8	215	22.1	7.51	212	182	<1	<1	66	66	26	5	8	1	29	8	0.48	<0.001	<0.001	<0.05	0.02	<0.0001	0 001	0.008	0.045	0.094	0.005	0.004	<0.01	0.02	0.185	0 5	<0.0001	0.35				2	1 95					
MW6	27-May-14	5.64	6.42	7.5	360	22.1																																									
MW6	9-Sep-14	5 54	6.32	7.6	845	21.4	7.61	854		<1	<1	274	274	46	83	24	7	140	8	1.63	0 002						0.005	0.006	0.154	0.012	0.016			0.13	1.55	<0.0001		<0.01	<0.01	<0.01	8.77	8 07	4.22				
MW6	20-Nov-14	5 55	6.33	7.5	712	21.6																																									
MW6	26-Feb-15	5.64	6.43	7.6	543	22.2	7.67	617	353	<1	<1	173	173	42	43	25	5	89	10	0.13	<0.01	<0 05	0.036	<0 01	<0.0001	<0.001	0.001	0.012	0.059	0.007	0.002	<0.01	<0.01	0 238	0.32	<0.0001	0.06	<0.01	0.62	0.62	5.54	5.79	2.11				
MW6	26-May-15	5.65	6.44	7.5	692	19.7																																									
MW6	27-Aug-15																																														
MW6	4-Dec-15	5.4	6.18	7.8	946	21.2																																									
MW6	24-Feb-16	5 38	6.16	7.6	1012	21.2	7.85	1080	620	<1	<1	327	327	46	125	41	12	203	10	0 31	0 002	0.06	0.083	<0 001	<0.0001	<0.001	0.004	0.018	0.063	0.01	0.006	<0.01	<0.01	0 211	1.94	<0.0001	0.09	<0.01	0.98	0.98	11	12.1	4.73				
MW6	23-May-16	5 36	6.14	7.6	1090	21.8																																									
MW6	6-Sep-16	5.15	5.93	7.6	1080	23.3	7.77	1100		<1	<1	331	331		129	34	10	181	9	0 04	<0.001						<0.001	0.004	0.016	0.007	<0 001			0 079	0.49	<0.0001		<0.01	0.42	0.42	11	10.6	1.97				
MW6	29-Nov-16	4.74	5.52	7.5	1416	21.2																																									
MW6	13-Mar-17	4.68	5.46	7.5	1600	22.8	8.25	1630	980	<1	<1	481	481	45	269	44	20	296	9	0 04	<0.001	0.07	0.103	<0 001	0.0001	<0.001	0.003	0.026	0.008	0.007	0.002	<0.01	<0.01	0.156	0.21	<0.0001	0.01	<0.01	1.1	1.1	18.1	16.9	3.39				
MW6	21-Jun-17	4.77	5.55	7.5	1660	21.8																																									
MW6	13-Sep-17	4 57	5.35	7.6	1660		8.15	1710	1710	<1	<1	573	573	46	221	51	22	318	9	0 05	<0.001	0.08	0 09	<0 001	<0.0001	<0.001	0.007	0.006	0.006	0.008	<0 001	<0.01	<0.01	0.121	0.14	<0.0001	0.03	<0.01	1.7	1.7	18.6	18.4	0.6				
MW6	13-Dec-17	4 55	5.33	7.6	1738	21.7																																									
MW6	22-Mar-18	4.76	5.54	7.8	1833																																										
MW6	12-Jun-18	4.75	5.53	7.7	1828																																										
MW6	13-Sep-18	4 84	5.62	8	2020	21.8	8.23	2090	2090	<1	<1	566	566	48	347	38	26	344	6	0 06	<0.001	0.07	0.11	<0 001	<0.0001	<0.001	0.001	0.002	0.005	0.003	<0 001	<0.01	<0.01	0 007	0.09	<0.0001	0.04	<0.01	1.35	1.35	22.1	19.2	7.14				
MW6	5-Dec-18	4 85	5.63	7.6	2200	21.3																																									
MW6	14-Mar-19	Casing broken																																													
MW6	19-Jun-19	Casing broken																																													
MW6	11-Sep-19	Casing broken																																													
MW6	5-Dec-19	Casing broken																																													
MW6	10-Jun-20	Casing broken																																													
MW6	23-Sep-20	Casing broken																																													
MW6	8-Dec-20	Casing broken																																													
MW6	4-Mar-21	Casing broken																																													
NGA MINE - MW7 Decomissioned																																															
TARRAWONGA MINE																																															
MW8	2-Jun-06	13 06	13 8	6.7				2240					588	46	426	161	48	298	9		<0.001																										
MW8	9-Sep-06	13.16	13 9																																												
MW8	11-Jan-07	13.41	14.15	6.7				2260					587	80	411	180	53	319	7		<0.001				<0.0001		<0.005	0.002		0.007	0.001			0.16		<0.0001											
MW8	18-Apr-07	12 86	13.6																																												
MW8	9-Jul-07	13.62	14 36	6.8	2530	18.9		2610					616	80	483	196	55	308	8		<0.001				<0.0001		<0.005	0.005		0.006	0.004			0.102		<0.0001								<20	250		
MW8	18-Jul-07	13.67	14.41																																												
MW8	7-Aug-07	13.66	14.4																																												
MW8	22-Aug-07	13.66	14.4																																												
MW8	5-Sep-07	13.72	14.46																																												
MW8	24-Sep-07	13.64	14 38																																												
MW8	11-Oct-07	13.63	14 37																																												
MW8	26-Nov-07	13.69	14.43																																												
MW8	29-Jan-08	13 54	14 28																																												
MW8	4-Mar-08	13 56	14 3																																												
MW8	22-Apr-08		Bore blocked no sample																																												
MW8	21-Aug-08	13.78	14 52																																												
MW8	29-Oct-08	13 85	14 59	cked no sample																																											
MW8	28-Jan-09	13 85	14.6																																												
MW8	17-Jun-09	14 02	14 77	mple - casing blocked																																											
MW8	27-Aug-09	14 02	14.77																																												
MW8	23-Dec-09	14.1	14 85	mple - casing blocked																																											
MW8	25-Feb-10	13.8	14 55																																												
MW8	11-May-10	13.72	14.47	Unable to sample - casing blocked																																											
MW8	30-Aug-10	13.71	14.46	Unable to sample - casing blocked																																											
MW8	9-Nov-10	13.74	14.49	Unable to sample - casing blocked																																											
MW8	14-Mar-11	14.12	14 87	Unable to sample - casing blocked																																											
MW8	21-Jun-11	13.62	14 37	Unable to sample - casing blocked																																											
MW8	8-Sep-11	13 80	14 55	Unable to sample - casing blocked																																											
MW8	9-Dec-11	13 24	13 99	Unable to sample - casing blocked																																											
MW8	14-Mar-12	12 57	13 32	Unable to sample - casing blocked																																											
MW8	14-Jun-12	12.76	13 51	Blocked 3.2 down pipe																																											
MW8	6-Sep-12	12.63	13 38	Blocked 3.2 down pipe																																											
MW8	28-Nov-12	12.79	13 54	Blocked about 3m down pipe																																											
MW8	20-Mar-13	12.68	13.43	Blocked 3.2 down pipe																																											
MW8	11-Jul-13	12 95	13.7	Blocked 3.2 down pipe																																											
MW8	5-Sep-13	13 00	13.75	Blocked 3.2 down pipe																																											

				Field Parameters						Major Anions						Major Cations				Total Metals																											
Sample Location	Date	Depth to Ground - mbgl	Depth to Stand - mbtoc	pH - Field	EC - Field - µs/cm	Temp - Field - °C	pH - Lab	EC - Lab - µs/cm	Total Dissolved Solids	Hydroxide Alkalinity as CaCO3 - mg/L	Carbonate Alkalinity as CaCO3 - mg/L	Bicarbonate Alkalinity as CaCO3 - mg/L	Alkalinity - mg/L	Sulfate (SO4) - mg/L	Chloride (Cl) - mg/L	Calcium (Ca) - mg/L	Magnesium (Mg) - mg/L	Sodium (Na) - mg/L	Potassium (K) - mg/L	Aluminium (Al) - mg/L	Arsenic (As) - mg/L	Boron (B) - mg/L	Barium (Ba) - mg/L	Beryllium (Be) - mg/L	Cadmium (Cd) - mg/L	Cobalt (Co) - mg/L	Chromium (Cr) - mg/L	Copper (Cu) - mg/L	Manganese (Mn) - mg/L	Nickel (Ni) - mg/L	Lead (Pb) - mg/L	Selenium (Se) - mg/L	Vanadium (V) - mg/L	Zinc (Zn) - mg/L	Iron (Fe) - mg/L	Mercury (Hg) - mg/L	Ammonia as Nitrogen (N)	Nitrite as N - mg/L	Nitrate as N - mg/L	Nitrite + Nitrate as N - mg/L	Total Anions - meq/L	Total Cations - meq/L	Ionic Balance	TPH C6-C9	TPH C10-C36	TRH C6- C10	TRH C10-C40
ANZECC Guideline - stock drinking water									4000					1000		1000				5	0.5				0.01	1	1	1		1	0.1	0.02		20		0.002			400								
MW8	22-Nov-13	13 01	13.76	Blocked 3.2 down pipe																																											
MW8	20-Feb-14	13 07	13 82	Blocked 3.2 down pipe																																											
MW8	27-May-14	13 00	13.75	Blocked 3.2 down pipe																																											
MW8	9-Sep-14	13.13	13 88	Blocked 3.2 down pipe																																											
MW8	20-Nov-15	13 22	13 97	Blocked 3.2 down pipe																																											
MW8	26-Feb-15	13 27	14 02	Blocked 3.2 down pipe																																											
MW8	26-May-15	13.43	14 22	Blocked 3.2 down pipe																																											
MW8	27-Aug-15	13.43	14 22	Blocked 3.2 down pipe																																											
MW8	4-Dec-15	13.46	14 25	Blocked 3.2 down pipe																																											
MW8	24-Feb-16	13.49	14 28	Blocked 3.2 down pipe																																											
MW8	23-May-16	13 54	14 33	Blocked 3.2 down pipe																																											
MW8	1-Sep-16	13 08	13 87	Blocked 3.2 down pipe																																											
MW8	29-Nov-16	12.62	13.41	Blocked 3.2 down pipe																																											
MW8	21-Jun-17	13 07	13 86	Blocked 3.2 down pipe																																											
MW8	13-Dec-17	13.12	13 91	Blocked 3.2 down pipe																																											
MW8	22-Mar-18	12 53	13 32	Blocked 3.2 down pipe																																											
MW8	12-Jun-18	13 33	14.12	Blocked 3.2 down pipe																																											
MW8	13-Sep-18	13.44	14 23	Blocked 3.2 down pipe																																											
MW8	5-Dec-18	13 29	14 08	Blocked 3.2 down pipe																																											
MW8	14-Mar-19	13.62	14.41	Blocked 3.2 down pipe																																											
MW8	19-Jun-19	13.69	14.48	Blocked 3.2 down pipe																																											
MW8	11-Sep-19	13.77	14 56	Blocked 3.2 down pipe																																											
MW8	6-Dec-19	13.76	14 55	Blocked 3.2 down pipe																																											
MW8	18-Mar-20	13.7	14.49	Blocked 3.2 down pipe																																											
MW8	10-Jun-20	13.67	14.46	Blocked 3.2 down pipe																																											
MW8	24-Sep-20	13.44	14 23	Blocked 3.2 down pipe																																											
MW8	8-Dec-20	13 57	14 36	Blocked 3.2 down pipe																																											
MW8	4-Mar-21	13.42	14 21	Blocked 3.2 down pipe																																											
MW8	21-Jun-21	13 07	13 86	Blocked 3.2 down pipe																																											
MW8	2-Sep-21	12.7	13.49	Blocked 3.2 down pipe																																											
MW8	29-Dec-21	12 08	12 87	Blocked 3.2 down pipe																																											
MW8	21-Mar-22	12 36	13.15	Blocked 3.2 down pipe																																											
MW8	6-Jun-22	12 36		Blocked 3.2 down pipe																																											
MW8	28-Sep-22	11 82	12.61	Blocked 3.2 down pipe																																											
MW8	12-Dec-22	11 82		Blocked 3.2 down pipe																																											
MW8	24-Mar-23	11 82		Blocked 3.2 down pipe																																											
MW8	9-Jun-23	11 51	12 3	Blocked 3.2 down pipe																																											
MW8	28-Sep-23	11.75	12 54	Blocked 3.2 down pipe																																											
MW8	11-Dec-23			Blocked 3.2 down pipe																																											
TEMPLEMORE																																															
GW044997	2-Jun-06	6.19	6.4	6.9				3000					768	170	758	112	102	544	4		0 001																										
GW044997	11-Jan-07	6.62	6.83	6.95				1570					495	55	200	45	36	298	1		0 009				<0.0001		<0.005	0.001		0.002	<0 001			0 04		<0.0001											
GW044997	10-Jul-07	6.7	6.91	7.06	785	17.1		1590					441	84	211	46	41	270	1		0 009				0.0002		<0.005	0.001		0.001	<0 001			0 088		<0.0001								<20	740		
GW044997	18-Jul-07	6.73	6.94																																												
GW044997	7-Aug-07	6.79	7																																												
GW044997	22-Aug-07	6.76	6.97																																												
GW044997	5-Sep-07	6 83	7.04																																												
GW044997	24-Sep-07	6.62	6.83																																												
GW044997	11-Oct-07	6.73	6.94																																												
GW044997	26-Nov-07	7 05	7.26																																												
GW044997	29-Jan-08	6.44	6.65																																												
GW044997	4-Mar-08	6 23	6.44																																												
GW044997	4-Apr-08	6.295	6.505																																												
GW044997	22-Apr-08	6 31	6.52	7	3370	21.8		3150					585	276	656	135	125	461	1.7		0 007				<0.00005		<0.001	0.005		0.012	0.0003			0 008		<0.0001								<0.025	<0.1		
GW044997	21-Aug-08	6 81	7.02																																												
GW044997	29-Oct-08	6 86	7.06	cked no sample																																											
GW044997	29-Jan-09	7	7 2																																												
GW044997	17-Jun-09	7 52	7.77	7.1	3580	18.9		3350	2020	<1	<1	693	693	132	626	112	111	486	8		0 066		0.523	<0 001	0.0003	0 002	0.001	0.134	0.204	0.006	0.016		0.09	0 327	46.9	0 0001	2.93				34 2	36	2.53				
GW044997	28-Aug-09	7 85	8.05																																												
GW044997	23-Dec-09	7 97	8.17	6.95	3050	24.2	6.87	3050		<1	<1	517	517	203	636	40	118	546	3	0 02	0 008						<0.001	0.005	0.021	0.004	<0 0010			0 065	0.07	<0.0001		0.22	21	21 2	32 5	35.5	4.4				
GW044997	25-Feb-10	7 81	8.01																																												
GW044997	11-May-10	7 98	8.18	7.49	3720	22.7		3480	1770	<1	<1	593	593	192	640	114	119	434	2		0 018		0.258	<0 001	<0.0001	<0.001	<0.001	0.014	0.04	0.006	0.002		0.04	0 048	7 2	<0.0001	2.03				33 9	34.4	0.66				
GW044997	30-Aug-10	7 91	8.11	6.82	3720	22.2																																									
GW044997	9-Nov-10	7 8	8	6.8	3010	24.2																																									
GW044997	14-Mar-11	7 25	7.45	6.83	1670	25.9	7.15	1620		<1	<1	410	410	87	333	131	67	160	2	0 04	0 002						<0.001	0.013	0.004	<0.001	<0 001			0 032	<0 05	<0.0001		<0.01	1.8	1.8	19.4	19.1	0.84				
GW044997	6-Jun-11	8 02	8.22	7.3	1514	16.8																																									
GW044997	6-Sep-11	8.73	8.93	6.98	1525	16.7	7.64	1830	1000	<1	<1	400	400	110	308	122	58	174	2	0 05	0 002		0.174	<0 001	<0.0001	<0.001	<0.001	0 01	0.007	<0.001	<0 001		0.02	0 047	<0 05	<0.0001	0.51	<0.01	1.43	1.43	19	18.5	1.31				
GW044997	7-Dec-11	8 32	8.52	7.27	1545	20.6																																									
GW044997	13-Mar-12	5.1	5 3	ump not operational																																											
GW044997	14-Jun-12	5.18	5.38																																												
GW044997	6-Sep-12	4 8	5	7.95	1750	17.5	7.69	1840	1130	<1	<1	409	409	147	323	120	56	211	2	0 02	0 002		0.128	<0 001	<0.0001	<0.001	<0.001	0.011	0.005	<0.001	<0 001		0.01	0 027	0.07	<0.0001	0.05	<0.01	5	5	20 3	19.8	1.29				
GW044997	27-Nov-12	5 04	5.24	7.61	1665	24.6																																									
GW044997	21-Mar-13	5.78	5.98																																												
GW044997	11-Jul-13	6 37	6.57																																												
GW044997	5-Sep-13	6.65	6.85																																												
GW044997	22-Nov-13	6 87	7.07																																												
GW044997	20-Feb-14	6 93	7.13																																												
GW044997	27-May-14	8 05	8.25																																												
GW044997	9-Sep-14	7 99	8.19																																												
GW044997	20-Nov-14	8 56	8.76																																												
GW044997	26-Feb-15	8.61	8.81																																												
GW044997	26-May-15	8.74	8.94																																												
GW044997	27-Aug-15	10.67	10 87																																												
GW044997	4-Dec-15	10.43	10.63																																												
GW044997	24-Feb-16	10.72	10 92																																												
GW044997	23-May-16	10 99	11.19																																												
GW044997	1-Sep-16	11.18	11 38																																												
GW044997	29-Nov-16	9.17	9.37																																												
GW044997	21-Jun-17	9.68	9.88																																												
GW044997	13-Dec-17	9.67	9.87																																												
GW044997	13-Sep-18	11.6	11 8	7	6120	20.8	7.6	6400	3400	<1	<1	1010	1010	618	1270	179	183	897	3	0 08	0 005	0.14	0.137	<0 001	<0.0001	<0.001	<0.001	0.009	0.028	0.002	<0 001	<0.01	0.02	0 012	1.08	<0.0001	0.04	<0.01	24	24	68 9	63.1	4.38				
GW044997	5-Dec-18	12 09	12 29	7.1	5710	20.7																																									
GW044997	14-Mar-19	12.5	12.7	7.3	5710	21.1	7.75	6350	3810	<1	<1	1050	1050	555	994	166	172	956	4	0 05	0 005	0.13	0.144	<0 001	<0.0001	<0.001	0.004	0.008	0.024	0.002	<0 001	<0.01	0.02	0 021	0.35	<0.0001	0.06	<0.01	17	17	60.6	64.1	2.85			<20	<100
GW044997	19-Jun-19	12 32	12 52	7.1	3470	20.1																																									
GW044997	11-Sep-19	12.66	12 86	7.3	5260	19.9	7.77	5490	3430	<1	<1	892	892	479	1080	181	166	933	4	0 08	0 006	0.12	0.125	<0 001	<0.0001	<0.001	0.001	0.007	0.043	0.002	<0 001	<0.01	0.02	0 017	3.25	<0.0001		<0.01	13.2	13 2	58 3	63.4	4.21	<20	<50	<20	<100
GW044997	5-Dec-19	12.76	12 96	7.3	5290	20.6																																									
GW044997	18-Mar-20	12.67	12 87	7.3	3840	21.5	7.57	3980	2460	<1	<1	549	549	324	791	141	123	555	6	<0.01	0 005	0.15	0.106	<0 001	<0.0001	<0.001	<0.001	0.027	0.056	0.003	<0 001	<0.01	0.02	0 009	0.1	<0.0001	0.05	0.74	47.6	48 3	40	41.4	1.68	<20	<50	<20	<100
GW044997	11-Jun-20	14.7	14 9	7.2	2960	19.5																																									
GW044997	23-Sep-20	10.72	10 92	7.2	3550	20	7 9	3320	2130	<1	<1	926	926	185	624	100	92	543	9	0 22	0.35	0.12	0.154	<0 001	<0.0001	0 001	<0.001	0.012	0.324	0.002	<0 001	<0.01	<0.01	0 029	0.79	<0.0001	<0.01	<0.01	0.02	0.02	40	36.4	4.64	<20	<50	<20	<100
GW044997	8-Dec-20	11 06	11 26	7.2	3580	19.6																																									
GW044997	5-May-21	10 85	11 05	7.11	4870	9.7	7.34	4590	2980	<1	<1	877	877	379	874	115	128	744	11	0 06	0 043	0.13	0.251	<0 001	<0.0001	<0.001	<0.001	0.004	0.195	0.004	<0 001	<0.01	0.01	0 014	16.2	<0.0001	5.56	0.05	0.58	0.63	50.1	48.9	1.16	<20	<50	<20	<100
GW044997	7-Jun-21	10 83	11 03	7.23	4800	14.1	7.32	4550	2960	<1	<1	790	790	382	879	149	132	776	5	0 03	0 013	0.12	0.164	<0 001	<0.0001	0 002	<0.001	0.006	0.181	0.003	<0 001	<0.01	0.02	0 016	4.43	<0.0001	0.02	0.35	4.71	5.06	48 5	52.3	3.7	<20	<50	<20	<100
GW044997	21-Jun-21	10.79	10 99	7.27	4730	17.7																																									
GW044997	2-Sep-21	10 21	10.41	6.44	4010	20.7	7.43	3960	2570	<1	<1	731	731	286	712	111	100	631	3	0 04	0 002	0.1	0.103	<0 001	<0.0001	0 002	<0.001	0.003	0.184	0.002	<0 001	<0.01	<0.01	0 009	0.98	<0.0001	0.04		4.87	5.35				<20	<50	<20	<100
GW044997	29-Dec-21	8 81	9.01	7.18	1253	20.5																																									
GW044997	21-Mar-22	8 58	8.78	7.1	1669	21.9	7.18	1500	975	<1	<1	472	472	84	199	52	42	233	4	0 08	0 004	0.08	0.081	<0 001	<0.0001	0 003	<0.001	0 01	0.388	0.004	<0 001	<0.01	<0.01	0 015	8.69	<0.0001	0.04	<0.01	0.01	0.01	16 8	15.8		<20	<50	<20	<100
GW044997	6-Jun-22	8.65	8.85	7.25	1915	20.3																																									
GW044997	28-Sep-22	8 05	8.25	7.27	3480	20.4	7.45	3460	2250	<1	<1	719	719	184	688	122	117	473	4	0.14	0 009	0.08	0.16	<0 001	<0.0001	<0.001	<0.001	0.004	0.047	0.002	<0 001	<0.01	0.02	0 009	3.84	<0.0001	0.02	0.03	29.1	29.1	37.6	36.4	1.64	<20	<50	<20	<100
GW044997	12-Dec-22	11 04	11 24	8.02	2990	22.4																																									
GW044997	24-Mar-23	6 58	6.78	7.03	3140	21.3	7.89	2880	1870	<1	<1	650	650	155	600	77	94	420	7	0 01	0 002	0.08	0.203	<0 001	<0.0001	<0.001	<0.001	<0 001	1.18	0.001	<0 001	<0.01	<0.01	<0.005	22	<0.0001	0.6	<0.01	0.1	0.1	33.1	30	4.93	<20	<50	<20	<100
GW044997	9-Jun-23	6 82	7.02	7.58	3250	18.7																																									
GW044997	28-Sep-23	7.42	7.62	6.66	3840	22.3	7.35	4270	2780	<1	<1	800	800	177	893	96	130	626	7	<0.01	0 001	0.06	0.165	<0 001	<0.0001	<0.001	<0.001	<0 001	0.293	<0.001	<0 001	<0.01	<0.01	<0.005	0.76	<0.0001	0.17	<0.01	30.9	30 9	44 8	42.9	2.23				
GW044997	11-Dec-23	7 97	8.17	7.07	5890	23.9																																									

Sample Location	Date	Depth to Ground - mbgl	Depth to Stand - mbtoc	Field Parameters: pH - Field	Field Parameters: EC - Field - µs/cm	Field Parameters: Temp - Field - °C	pH - Lab	EC - Lab - µs/cm	Total Dissolved Solids	Major Anions: Hydroxide Alkalinity as CaCO3 - mg/L	Major Anions: Carbonate Alkalinity as CaCO3 - mg/L	Major Anions: Bicarbonate Alkalinity as CaCO3 - mg/L	Major Anions: Alkalinity - mg/L	Major Anions: Sulfate (SO4) - mg/L	Major Anions: Chloride (Cl) - mg/L	Major Cations: Calcium (Ca) - mg/L	Major Cations: Magnesium (Mg) - mg/L	Major Cations: Sodium (Na) - mg/L	Major Cations: Potassium (K) - mg/L
ANZECC Guideline - stock drinking water									4000					1000		1000			
AMBARDO																			
GW031856	2-Jun-06	15.76	16.4	7.3				1150					459	22	105	50	33	156	3
GW031856	11-Jan-07	19.1	19.74	7.27	910	23.1		1080					457	18	75	47	30	164	3
GW031856	10-Jul-07	15 51	16.15	7.9	1080	13.5		1180					440	20	94 8	48	34	162	3
GW031856	22-Apr-08			7.4	1090	19.8		1060					480	18	106	50	33	145	3.6
GW031856	29-Oct-08																		
GW031856	10-Feb-09	17 85	18.49	7.3	1090	26.9		1100					440	19	81	51	30	150	2 8
GW031856	17-Jun-09			7.4	1170	20.1		1110	704	<1	<1	453	453	15	92	51	33	149	3
GW031856	11-Sep-09	15 51	16 28																
GW031856	23-Dec-09	18.4		7.73	1029	29.3	7.45	1060		<1	<1	422	422	17.4	92 2	40	34	169	3
GW031856	25-Feb-10	16 31	16 91	7.61	1240	25.3	7.54	1110		<1	<1	436	436	17.6	90 8	47	34	160	3
GW031856	11-May-10	16 58	17.18	8.2	1292	14.9		1140	576	<1	<1	431	431	16.8	91 8	49	32	154	3
GW031856	30-Aug-10	15 35	15 95	7.35	1106	18.2	7.33	1140		<1	<1	426	426	20	98	49	33	159	3
GW031856	10-Nov-10	15 52	16.12	7.08	990	27.8	7.42	1160		<1	<1	440	440	18	103	22	33	163	3
GW031856	14-Mar-11	19.71	20 31	7.19	945	26.5	7.46	887		<1	<1	414	414	20	92	45	30	151	3
GW031856	7-Jun-11	16 08	16.68	7.35	929	19.2													
GW031856	9-Sep-11	15.49	16 09	7.33	970	17	7.71	1120	620	<1	<1	412	412	22	109	52	35	161	3
GW031856	7-Dec-11	15.65	16 25	7.64	940	20.9													
GW031856	19-Mar-12	15.1	15.7	7.27	1070	24.3	7.82	1110	666	<1	<1	421	421	23	106	53	34	155	3
GW031856	14-Jun-12	16 04	16.64	7.57	1170	25.1													
GW031856	19-Sep-12	16.6	17 2	7.39	1060	21.2	7.84	1160	670	<1	<1	410	410	21	115	48	33	158	4
GW031856	27-Nov-12	16	16.6	7.43	1048	25.4													
GW031856	21-Mar-13	15.7	16 3	7.42	1020	24.2	7.78	1100	640	<1	<1	435	435	21	90	49	32	157	3
GW031856	11-Jul-13	17.47	18 07	7.54	1064	19.6													
GW031856	5-Sep-13	17.2	17 8	7.56	1070	19.2	7.92	1130	660	<1	<1	432	432	20	100	49	33	158	4
GW031856	22-Nov-13	15 88	16.48	7.6	1120	24.9													
GW031856	24-Feb-14	15.1	15.7	7.7	1120	24.5	7.84	1150	684	<1	<1	430	430	22	99	48	32	155	3
GW031856	27-May-14	15 20	15 8	7.5	1097	20.1													
GW031856	9-Sep-14	14.70	15 3	7.3	1120	18	7.82	1140		<1	<1	388	388	23	101	46	30	142	3
GW031856	20-Nov-14	15 87	16.47	7.2	1120	24.5													
GW031856	26-Feb-15	15.6	16 2	7.5	1090	25.6	7.94	1220	570	<1	<1	478	478	22	99	48	33	150	3
GW031856	26-May-15	15 07	15.67	essure at tap.															
GW031856	27-Aug-15	15.1	15.7	6.9	1120	14.7	7 8	1120	592	<1	<1	406	406	23	66	49	35	157	2
GW031856	4-Dec-15	18.77	19 37	7	1118	22.1													
GW031856	24-Feb-16	17 83	18.43	7.1	1117	23.8	7.89	1140	656	<1	<1	454	454	23	75	57	38	173	3
GW031856	23-May-16	16 53	17.13	7.2	1121	21													
GW031856	6-Sep-16	14	14.6	7.3	1140	16.7	7.61	1120		<1	<1	424	424		96	53	33	142	2
GW031856	29-Nov-16	15 83	16.43																
GW031856	23-Mar-17	15.6	16 2	7.2	1130		8.08	1110	682	<1	<1	460	460	18	102	50	34	149	3
GW031856	21-Jun-17	14.79	15 39	7.5	1152	14.7													
GW031856	13-Sep-17	17	17.6	7.4	1150		7.99	1130	601	<1	<1	497	497	22	82	56	35	159	3
GW031856	13-Dec-17	14.7	15 3	7.4	1133	25.6													
GW031856	13-Sep-18	13.7	14 3	7.3	1130	16.1	7.76	1150	598	<1	<1	433	433	20	110	51	32	139	2
GW031856	5-Dec-18	13 87	14.47	7.1	1190	24.4													
GW031856	14-Mar-19	24.4	25	7.2	1100	22.2	7.86	1050	736	<1	<1	451	451	19	68	42	29	155	3
GW031856	19-Jun-19	23.16	23.76	7.3	1120	18.6													
GW031856	11-Sep-19	23 03	23.63	7.4	1160	16.9	7.92	1160	636	<1	<1	429	429	21	104	63	38	156	3
GW031856	6-Dec-19	14 98	15 58	7.4	1180	25.9													
GW031856	17-Mar-20	15 32	15 92																
GW031856	11-Jun-20	15 07	15.67	7.3	1150	16.3													
GW031856	24-Sep-20	16 22	16 82	7.3	1090	19.5													
GW031856	8-Dec-20	13.75	14 35	7.5	1150	16.3	7.92	1110	654	<1	<1	480	480		105	54	35	152	3
GW031856	4-Mar-21	13 54	14.14	7.41	1135	23.4	7.46	800	520	<1	<1	273	273	34	66	64	18	93	<1
GW031856	21-Jun-21	13 38	13 98	7.33	1145	17.5													
GW031856	2-Sep-21	13 31	13 91	6.97	1123	17.3	7.7	1120	728	<1	<1	498	498	21	99	56	34	153	3
GW031856	29-Dec-21	12.9	13 5	7.32	1206	19.3													
GW031856	21-Mar-22	12 84	13.44	7.23	1260	19.8	7.39	1130	734	<1	<1	463	463	20	107	55	35	152	3
GW031856	6-Jun-22	12.73	13 33	7.1	1146	18.5													
GW031856	28-Sep-22	12 39	12 99	7.07	1126	21.5	7.43	1110	722	<1	<1	455	455	20	112	56	36	148	3
GW031856	12-Dec-22	11 98	12 58	7.21	1149	21.2													
GW031856	24-Mar-23	11 89	12.49	6.75	1145	23.9	7.74	1110	722	<1	<1	461	461	23	118	54	33	143	3
GW031856	9-Jun-23	11 87	12.47	7.55	1214	16.2													
GW031856	28-Sep-23	11.8	12.4	6.48	739	20	7 5	1150	748	<1	<1	492	492	21	116	55	33	153	3
GW031856	11-Dec-23	12 04	12.64	7.23	1163	28.9													
TARRAWONGA																			
GW052266	2-Jun-06	7.67	8.1	7.9				1360					488	65	134	17	13	301	5
GW052266	11-Jan-07	8 94	9.37	7.58				1950					457	126	362	45	29	389	8
GW052266	10-Jul-07	7 92	8.35	8.01	1330	13.3		1480					435	79	170	23	14	315	6
GW052266	18-Jul-07	7 97	8.4																
GW052266	7-Aug-07	7 94	8.37																
GW052266	22-Aug-07	7 95	8.38																
GW052266	5-Sep-07	8 02	8.45																
GW052266	24-Sep-07	7 92	8.35																
GW052266	11-Oct-07	7 9	8.33																
GW052266	26-Nov-07	8	8.43																
GW052266	29-Jan-08	8 01	8.44																
GW052266	4-Mar-08	8 04	8.47																
GW052266	4-Apr-08	8	8.43																
GW052266	22-Apr-08	8 04	8.47	7.2	1230	20.6		1250					465	19	131	94	48	110	4 5
GW052266	21-Aug-08	5 86	6.29																
GW052266	29-Oct-08			8.7	1600	28.4		1600					450	93	220	19	17	270	6 5
GW052266	28-Aug-09	9.7	10.13																
GW052266	14-Dec-09	11.3	11 35	7.4	922	23.3	7.51	838		<1	<1	252	252	31.6	64.1	55	16	84	<1
GW052266	25-Feb-10	10.44	10.49																
GW052266	11-May-10	10.43	10.48	8.23	954	18.6		813	446	<1	<1	241	241	34	68 3	54	16	80	<1
GW052266	16-Aug-10	9.71	10 21	7.4	860	18.7													
GW052266	9-Nov-10	10 53	10 58	6.98	817	24.1													
GW052266	10-Mar-11	10 51	11 01	7.04	786	23.5	7	640		<1	<1	262	262	34	72	53	17	94	1
GW052266	6-Jun-11	10.19	10 24	7.05	663	20.2													
GW052266	6-Sep-11	10 51	10 56	6.94	714	20.2	7.48	823	464	<1	<1	260	260	38	71	57	16	90	<1
GW052266	7-Dec-11	10 55	10.60	6.95	705	20.6													
GW052266	13-Mar-12	9.18	9.23	7.04	784	21.6	7.54	821	498	<1	<1	267	267	37	68	57	17	99	<1
GW052266	13-Jun-12	8 38	8.43	7.05	837	20.4													
GW052266	4-Sep-12	7 91	7.96	7.41	780	22.4	7.56	802	562	<1	<1	260	260	32	76	50	17	93	<1
GW052266	27-Nov-12	8 00	8.05	7.28	750	22													
GW052266	20-Mar-13	9 24	9.29	7.18	740	21.4	7.13	798	326	<1	<1	244	244	28	80	54	17	89	<1
GW052266	11-Jul-13	7.79	7.84	7.25	822	18.1													
GW052266	5-Sep-13	8 29	8.34	7.09	590	22.4	7.62	782	493	<1	<1	238	238	35	73	48	16	95	<1
GW052266	22-Nov-13	7 84	7.89	7.2	670	21.8													
GW052266	24-Feb-14	7.74	7.79	7	727	21.2	7.48	737	514	<1	<1	203	203	33	66	42	14	83	<1
GW052266	27-May-14	7.68	7.73	7.2	692	20.6													
GW052266	9-Sep-14	7.73	7.78	7.4	684	20.6	7.83	693		<1	<1	222	222	34	66	34	12	82	<1
GW052266	20-Nov-14	7.77	7.82	7.2	748	21.5													
GW052266	26-Feb-15	7 51	7.56	7.2	752	21.6	7.13	800	430	<1	<1	168	168	81	62	47	15	89	1

Sample Location	Date	Total Metals: Aluminium (Al) - mg/L	Arsenic (As) - mg/L	Boron (B) - mg/L	Barium (Ba) - mg/L	Beryllium (Be) - mg/L	Cadmium (Cd) - mg/L	Cobalt (Co) - mg/L	Chromium (Cr) - mg/L	Copper (Cu) - mg/L	Manganese (Mn) - mg/L	Nickel (Ni) - mg/L	Lead (Pb) - mg/L	Selenium (Se) - mg/L	Vanadium (V) - mg/L	Zinc (Zn) - mg/L	Iron (Fe) - mg/L
ANZECC Guideline - stock drinking water		5	0.5				0.01	1	1	1		1	0.1	0.02		20	
AMBARDO																	
GW031856	2-Jun-06		<0.001				<0.0001		<0.001	0.036		0.001	0.001			0.126	
GW031856	11-Jan-07		<0.001				<0.0001		<0.005	0.005		<0.001	<0 001			<0.005	
GW031856	10-Jul-07		<0.001				<0.0001		<0.005	0.008		0.0005	0.0005			2 29	
GW031856	22-Apr-08		0 001				<0.00005		<0.001	0.008		0.003	0.0004			0 048	
GW031856	29-Oct-08																
GW031856	10-Feb-09		0 002				<0.00005		0.003	0.009		0.002	0.0006			0 26	
GW031856	17-Jun-09		0 001		0.156	<0 001	<0.0001	<0.001	<0.001	0.004	0.001	<0.001	<0 001		<0.01	0 037	0.06
GW031856	11-Sep-09																
GW031856	23-Dec-09	0 01	0 001						<0.001	0.001	0.012	0.001	0.001			0 205	<0 05
GW031856	25-Feb-10	<0.01	0 001						<0.005	0.002	0.001	<0.001	<0 001			0 014	<0 05
GW031856	11-May-10		<0.001		0.15	<0 001	0.0002	<0.001	<0.001	0.116	<0.001	<0.001	0.006		<0.01	0 51	<0 05
GW031856	30-Aug-10	<0.01	<0.001						<0.001	0.008	0.009	<0.001	<0 001			1 88	<0 05
GW031856	10-Nov-10	<0.01	0 001						<0.005	0.014	0.004	<0.001	<0 001			1 26	<0 05
GW031856	14-Mar-11	<0.01	<0.001						0.001	0.004	<0.001	<0.001	<0 001			0 015	<0 05
GW031856	7-Jun-11																
GW031856	9-Sep-11	<0.01	<0.001		0.146	<0 001	<0.0001	<0.001	<0.001	0.005	<0.001	0.001	<0 001		<0.01	1 25	<0 05
GW031856	7-Dec-11																
GW031856	19-Mar-12	0 02	0 002		0.161	<0 001	<0.0001	<0.001	0.002	0.012	0.002	<0.001	<0 001		0.02	0 034	0.06
GW031856	14-Jun-12																
GW031856	19-Sep-12	0 01	0 001		0.176	<0 001	<0.0001	<0.001	<0.001	0.012	0.004	<0.001	0.002		0.01	0 027	0.29
GW031856	27-Nov-12																
GW031856	21-Mar-13	<0.01	0 001		0.166	<0 001	<0.0001	<0.001	0.003	0.027	0.005	<0.001	0.006		0.01	0.193	<0 05
GW031856	11-Jul-13																
GW031856	5-Sep-13	<0.01	<0.001	<0.001	<0.05	0.141	<0.0001	<0.001	<0.001	0.005	0.002	<0.001	<0 001	<0.01	<0.01	0 017	0.06
GW031856	22-Nov-13																
GW031856	24-Feb-14	<0.01	0 001	<0.001	<0.05	0.156	<0.0001	<0.001	<0.001	0.007	<0.001	<0.001	<0 001	<0.01	0.01	0.138	<0 05
GW031856	27-May-14																
GW031856	9-Sep-14	<0.01	0 002						0.002	0.006	<0.001	<0.001				0 056	0.12
GW031856	20-Nov-14																
GW031856	26-Feb-15	<0.01	0 001	<0 05	0.143	<0 001	<0.0001	<0.001	<0.001	<0 001	<0.001	0.001		<0.01	0.01	0.197	<0 05
GW031856	26-May-15																
GW031856	27-Aug-15	0 01	0 001	<0 05	0.126	<0 001	<0.0001	<0.001	<0.001	0.022	0.002	0.001	0.003	<0.01	<0.01	0 348	0.19
GW031856	4-Dec-15																
GW031856	24-Feb-16	0 01	0 002	<0 05	0.154	<0 001	<0.0001	<0.001	<0.001	0.007	0.005	<0.001	<0 001	<0.01	0.01	0 035	0.09
GW031856	23-May-16																
GW031856	6-Sep-16	<0.01	0 001						0.001	0.057	0.001	0.002	0.009			0 594	0.25
GW031856	29-Nov-16																
GW031856	23-Mar-17	<0.01	0 001	<0 05	0.158	<0 001	<0.0001	<0.001	<0.001	0 03	0.002	<0.001	0.002	<0.01	0.01	0 068	0.06
GW031856	21-Jun-17																
GW031856	13-Sep-17	<0.01	0 001	<0 05	0.146	<0 001	<0.0001	<0.001	<0.001	0.004	<0.001	<0.001	<0 001	<0.01	<0.01	0 008	<0 05
GW031856	13-Dec-17																
GW031856	13-Sep-18	0 01	0 002	<0 05	0.132	<0 001	<0.0001	<0.001	0.003	0.054	0.002	<0.001	0.018	<0.01	<0.01	0 527	0.82
GW031856	5-Dec-18																
GW031856	14-Mar-19	0 01	0 001	<0 05	0.147	<0 001	<0.0001	<0.001	0.001	0.031	0.002	<0.001	0.002	<0.01	0.01	0 022	<0 05
GW031856	19-Jun-19																
GW031856	11-Sep-19	<0.01	0 001	<0 05	0.166	<0 001	<0.0001	<0.001	0.002	0.013	0.002	0.001	<0 001	<0.01	<0.01	0.2	<0 05
GW031856	6-Dec-19																
GW031856	17-Mar-20																
GW031856	11-Jun-20																
GW031856	24-Sep-20																
GW031856	8-Dec-20	<0.01	0 001	<0 05	0.149	<0 01	<0.0001	<0.001	<0.001	0.015	0.002	0.001	0.001	<0.01	0.01	1.12	0.08
GW031856	4-Mar-21	0 06	0 003	<0 05	0.082	<0 001	<0.0001	<0.001	0.001	0.006	0.11	<0.001	0.002	<0.01	0.02	0 03	2.68
GW031856	21-Jun-21																
GW031856	2-Sep-21	0 03	0 002	<0 05	0.068	<0 001	<0.0001	<0.001	<0.001	<0 001	0.04	<0.001	<0 001	<0.01	0.01	0 01	0.59
GW031856	29-Dec-21																
GW031856	21-Mar-22	0.1	0 002	<0 05	0.093	<0 001	<0.0001	<0.001	<0.001	0.001	0.453	0.002	<0 001	<0.01	0.02	0 024	6.43
GW031856	6-Jun-22																
GW031856	28-Sep-22	<0.01	0 001	<0 05	0.136	<0 001	<0.0001	<0.001	0.003	0.001	0.005	0.001	<0 001	<0.01	<0.01	<0.005	0.4
GW031856	12-Dec-22																
GW031856	24-Mar-23	<0.01	0 004	0.06	0.187	<0 001	<0.0001	<0.001	0.18	0.006	0.114	0.013	<0 001	<0.01	0.02	0 228	8.58
GW031856	9-Jun-23																
GW031856	28-Sep-23	<0.01	0 001	<0 05	0.124	<0 001	0.0004	<0.001	<0.001	0.001	<0.001	<0.001	<0 001	<0.01	<0.01	0 522	<0 05
GW031856	11-Dec-23																
TARRAWONGA																	
GW052266	2-Jun-06		<0.001														
GW052266	11-Jan-07		<0.001				<0.0001		<0.005	<0 001		<0.001	<0 001			0 02	
GW052266	10-Jul-07		<0.001				<0.0001		<0.005	<0 001		<0.001	<0 001			0 01	
GW052266	18-Jul-07																
GW052266	7-Aug-07																
GW052266	22-Aug-07																
GW052266	5-Sep-07																
GW052266	24-Sep-07																
GW052266	11-Oct-07																
GW052266	26-Nov-07																
GW052266	29-Jan-08																
GW052266	4-Mar-08																
GW052266	4-Apr-08																
GW052266	22-Apr-08		<0.001				<0.00005		<0.001	<0 001		0.006	0.0002			<0.005	
GW052266	21-Aug-08																
GW052266	29-Oct-08		<0.001				<0.00005		0.002	0.001		<0.001	0.0003			0 013	
GW052266	28-Aug-09																
GW052266	14-Dec-09	<0.01	0 003						<0.001	0.003	0.006	0.003	<0 001			0 018	<0 05
GW052266	25-Feb-10																
GW052266	11-May-10		0 002		0.078	<0 001	<0.0001	<0.001	<0.001	0.002	0.017	0.004	0.002		0.01	0 024	0.54
GW052266	16-Aug-10																
GW052266	9-Nov-10																
GW052266	10-Mar-11	0.15	0 004						<0.001	0.024	0.034	0.001	0.002			0.103	1.28
GW052266	6-Jun-11																
GW052266	6-Sep-11	0 96	0 003		0.106	<0 001	<0.0001	<0.001	0.002	0.009	0.085	0.008	0.002		0.02	0 061	2.63
GW052266	7-Dec-11																
GW052266	13-Mar-12	0 03	0 002		0.086	<0 001	<0.0001	<0.001	<0.001	0.113	0.005	0.012	0.003		0.02	0.15	0.1
GW052266	13-Jun-12																
GW052266	4-Sep-12	0 04	0 003		0.078	<0 001	<0.0001	<0.001	<0.001	0.018	0.03	<0.001	0.002		0.01	0 068	0.92
GW052266	27-Nov-12																
GW052266	20-Mar-13	0 02	0 004		0.072	<0 001	<0.0001	<0.001	<0.001	0.034	0.007	0.001	0.002		0.01	0.176	0.16
GW052266	11-Jul-13																
GW052266	5-Sep-13	1 02	0 002	<0.001	<0.05	0.091	<0.0001	0 002	0.004	0.324	0.036	0.009	0.006	<0.01	0.02	0.19	1.72
GW052266	22-Nov-13																
GW052266	24-Feb-14	0 2	0 002	<0.001	<0.05	0.072	<0.0001	<0.001	0.001	0.112	0.03	0.003	0.007	<0.01	0.01	0.152	0.86
GW052266	27-May-14																
GW052266	9-Sep-14	0 22	0 0001						<0.001	0.007	0.318	0.003	<0 001			0 048	3.63
GW052266	20-Nov-14																
GW052266	26-Feb-15	0.44	0 006	<0 05	0.086	<0 001	<0.0001	0 001	0.001	0.012	0.141	0.008	0.002	<0.01	0.03	0 214	22.9

Sample Location	Date	Mercury (Hg) - mg/L	Ammonia as Nitrogen (N)	Nitrite as N -mg/L	Nitrate as N - mg/L	Nitrite + Nitrate as N - mg/L	Total Anions - meq/L	Total Cations - meq/L	Ionic Balance	TPH C6-C9	TPH C10-C36	TRH C6- C10	TRH C10-C40
ANZECC Guideline - stock drinking water		0.002			400								
AMBARDO													
GW031856	2-Jun-06	<0.0001								<20	<50		
GW031856	11-Jan-07	<0.0001								<20	<50		
GW031856	10-Jul-07	0.00005								10	25		
GW031856	22-Apr-08	<0.0001								<0.025	<0.1		
GW031856	29-Oct-08												
GW031856	10-Feb-09	<0.0001								<0.025	<0.025		
GW031856	17-Jun-09	<0.0001	<0.01				12	11.8	0.52				
GW031856	11-Sep-09												
GW031856	23-Dec-09	<0.0001		<0.01	0.14	0.14	11.4	12.2	3.24				
GW031856	25-Feb-10	<0.0001		<0.01	0.19	0.19	11.6	12.2	2.42				
GW031856	11-May-10	<0.0001	0.02				11 5	11.9	1.45				
GW031856	30-Aug-10	<0.0001		<0.01	0.24	0.24	11.7	12.2	1.99				
GW031856	10-Nov-10	<0.0001		<0.01	0.2	0.2	12.1	11	4.84				
GW031856	14-Mar-11	<0.0001		<0.01	0.2	0.2	11 3	11.4	0.4				
GW031856	7-Jun-11												
GW031856	9-Sep-11	<0.0001	<0.01	<0.01	0.16	0.16	11 8	12.6	3.22				
GW031856	7-Dec-11												
GW031856	19-Mar-12	<0.0001	<0.01	<0.01	0.27	0.27	11 9	12.3	1.55				
GW031856	14-Jun-12												
GW031856	19-Sep-12	<0.0001	<0.01	<0.01	0.17	0.17	11 9	12.1	0.86				
GW031856	27-Nov-12												
GW031856	21-Mar-13	<0.0001	<0.01	<0.01	0.22	0.22	11.7	12	1.31				
GW031856	11-Jul-13												
GW031856	5-Sep-13	<0.0001	<0.01				11 9	12.1	1.08				
GW031856	22-Nov-13												
GW031856	24-Feb-14	<0.0001	0.02				11 8	11.8	<0.01				
GW031856	27-May-14												
GW031856	9-Sep-14	<0.0001		<0.01	0.2	0.2	11.1	11	0.31				
GW031856	20-Nov-14												
GW031856	26-Feb-15	<0.0001	0.02	<0.01	0.21	0.21	12 8	11.7	4.47				
GW031856	26-May-15												
GW031856	27-Aug-15	<0.0001	0.04	<0.01	0.21	0.21	10.4	12.2	7.71				
GW031856	4-Dec-15												
GW031856	24-Feb-16	<0.0001	0.05	<0.01	0.21	0.21	11.7	13.6	7.53				
GW031856	23-May-16												
GW031856	6-Sep-16	<0.0001		<0.01	0.2	0.2	11.6	11.6	0.06				
GW031856	29-Nov-16												
GW031856	23-Mar-17	<0.0001	0.02	<0.01	0.22	0.22	12.4	11.8	2.44				
GW031856	21-Jun-17												
GW031856	13-Sep-17	<0.0001	0.03	<0.01	0.23	0.23	12.7	12.7	0.13				
GW031856	13-Dec-17												
GW031856	13-Sep-18	<0.0001	0.02	<0.01	0.2	0.2	12 2	11.3	3.82				
GW031856	5-Dec-18												
GW031856	14-Mar-19	<0.0001	0.01	<0.01	0.22	0.22	11 3	11.3	0.1			<20	<100
GW031856	19-Jun-19												
GW031856	11-Sep-19	<0.0001		<0.01	0.26	0.26	11 9	13.1	4.75	<20	<50	<20	<100
GW031856	6-Dec-19												
GW031856	17-Mar-20												
GW031856	11-Jun-20												
GW031856	24-Sep-20												
GW031856	8-Dec-20	<0.0001	<0.01	<0.01	0.24	0.24	13	12.3	2.79	<20	<50	<20	<100
GW031856	4-Mar-21	<0.0001	<0.01	<0.01	6.92	6.92	8.02	8.72	4.16	<20	<50	<20	<100
GW031856	21-Jun-21												
GW031856	2-Sep-21	<0.0001	<0.01	<0.01	7.05	7.05				<20	<50	<20	<100
GW031856	29-Dec-21												
GW031856	21-Mar-22	<0.0001	0.04	<0.01	7.4	7.4	12.7	12.3	1.49	<20	<50	<20	<100
GW031856	6-Jun-22												
GW031856	28-Sep-22	<0.0001	<0.01	<0.01	0.34	0.34	12.7	12.3	1.58	<20	<50	<20	<100
GW031856	12-Dec-22												
GW031856	24-Mar-23	<0.0001	<0.01	<0.01	0.38	0.38	13	11.7	5.3	<20	<50	<20	<100
GW031856	9-Jun-23												
GW031856	28-Sep-23	<0.0001	<0.01	<0.01	0.31	0.31	13 5	12.2	5.24				
GW031856	11-Dec-23												
TARRAWONGA													
GW052266	2-Jun-06												
GW052266	11-Jan-07	<0.0001											
GW052266	10-Jul-07	<0.0001								<20	250		
GW052266	18-Jul-07												
GW052266	7-Aug-07												
GW052266	22-Aug-07												
GW052266	5-Sep-07												
GW052266	24-Sep-07												
GW052266	11-Oct-07												
GW052266	26-Nov-07												
GW052266	29-Jan-08												
GW052266	4-Mar-08												
GW052266	4-Apr-08												
GW052266	22-Apr-08	<0.0001								<0.025	<0.1		
GW052266	21-Aug-08												
GW052266	29-Oct-08	0 0006								<0.025	<0.100		
GW052266	28-Aug-09												
GW052266	14-Dec-09	<0.0001		<0.01	6.09	6.09	7.51	7.72	1.36				
GW052266	25-Feb-10												
GW052266	11-May-10	<0.0001	0.05				7.46	7 52	0.42				
GW052266	16-Aug-10												
GW052266	9-Nov-10												
GW052266	10-Mar-11	<0.0001		0.34	4.32	4.66	7.98	8.2	1.34				
GW052266	6-Jun-11												
GW052266	6-Sep-11	<0.0001	0.14	<0.01	6.35	6.35	7.99	8 08	0.53				
GW052266	7-Dec-11												
GW052266	13-Mar-12	<0.0001	<0.01	<0.01	5.92	5.92	8.44	8 55	0.65				
GW052266	13-Jun-12												
GW052266	4-Sep-12	<0.0001	0.07	0.01	5.53	5.54	8	7 94	0.42				
GW052266	27-Nov-12												
GW052266	20-Mar-13	<0.0001	0.02	<0.01	5.9	5.9	7.71	7 97	1.58				
GW052266	11-Jul-13												
GW052266	5-Sep-13	<0.0001	<0.01				7.54	7 84	1.94				
GW052266	22-Nov-13												
GW052266	24-Feb-14	<0.0001	0.05				6.6	6 86	1.87				
GW052266	27-May-14												
GW052266	9-Sep-14	<0.0001		<0.01	1.75	1.75	7.01	6 25	4.83				
GW052266	20-Nov-14												
GW052266	26-Feb-15	<0.0001	0.54	0.74	5.12	5.86	9.56	7.48	14 2				

Sample Location	Date	Depth to Ground - mbgl	Depth to Stand - mbtoc	Field Parameters: pH - Field	Field Parameters: EC - Field - µs/cm	Field Parameters: Temp - Field - °C	pH - Lab	EC - Lab - µs/cm	Total Dissolved Solids	Major Anions: Hydroxide Alkalinity as CaCO3 - mg/L	Major Anions: Carbonate Alkalinity as CaCO3 - mg/L	Major Anions: Bicarbonate Alkalinity as CaCO3 - mg/L	Major Anions: Alkalinity - mg/L	Major Anions: Sulfate (SO4) - mg/L	Major Anions: Chloride (Cl) - mg/L	Major Cations: Calcium (Ca) - mg/L	Major Cations: Magnesium (Mg) - mg/L	Major Cations: Sodium (Na) - mg/L	Major Cations: Potassium (K) - mg/L	Total Metals: Aluminium (Al) - mg/L	Total Metals: Arsenic (As) - mg/L	Total Metals: Boron (B) - mg/L	Total Metals: Barium (Ba) - mg/L	Total Metals: Beryllium (Be) - mg/L	Total Metals: Cadmium (Cd) - mg/L	Total Metals: Cobalt (Co) - mg/L	Total Metals: Chromium (Cr) - mg/L	Total Metals: Copper (Cu) - mg/L	Total Metals: Manganese (Mn) - mg/L	Total Metals: Nickel (Ni) - mg/L	Total Metals: Lead (Pb) - mg/L	Total Metals: Selenium (Se) - mg/L	Total Metals: Vanadium (V) - mg/L	Total Metals: Zinc (Zn) - mg/L	Total Metals: Iron (Fe) - mg/L	Mercury (Hg) - mg/L	Ammonia as Nitrogen (N)	Nitrite as N - mg/L	Nitrate as N - mg/L	Nitrite + Nitrate as N - mg/L	Total Anions - meq/L	Total Cations - meq/L	Ionic Balance	TPH C6-C9	TPH C10-C36	TRH C6- C10	TRH C10-C40
ANZECC Guideline - stock drinking water									**4000**					**1000**		**1000**				**5**	**0.5**				**0.01**	**1**	**1**	**1**		**1**	**0.1**	**0.02**		**20**		**0.002**			**400**								
GW052266	26-May-15	7.75	7 8	7.3	713	20.2																																										
GW052266	27-Aug-15	7.76	7.81	7.2	707	19.7	7.61	712	380	<1	<1	218	218	36	48	40	15	85	2	0 06	<0.001	<0 05	0.049	<0 001	<0.0001	<0.001	<0.001	0.006	0.273	0.002	<0 001	<0.01	<0.01	0 093	16	<0.0001	0.19	0.03	0.46	0.49	6.46	6 98	3.85				
GW052266	4-Dec-15	7 83	7.88	7.1	734	20.5																																										
GW052266	24-Feb-16	7 86	7.91	7	752	21.7	7 5	508	508	<1	<1	219	219	37	56	52	15	90	<1	0.14	0 007	<0 05	0.084	<0 001	<0.0001	<0.001	<0.001	0.008	0.096	<0.001	<0 001	<0.01	0.03	0 067	30.6	<0.0001	0.1	<0.01	6.21	6.21	7.74	7.74	3.82				
GW052266	23-May-16	7 91	7.96	7	746	20.6																																										
GW052266	6-Sep-16	7 94	7.99	7.1	712	21.5	7.51	719		<1	<1	224	224		66	43	14	80	<1	0.12	0 001						<0.001	0.002	0.03	<0.001	<0 001			0 026	0.34	<0.0001		<0.01	3.05	3.05	7	6.78	1.65				
GW052266	29-Nov-16	7.79	7.84	7.3	752	21.3																																										
GW052266	23-Mar-17	7.67	7.72	7.3	780	21.5	7.81	780	490	<1	<1	246	246	29	67	47	17	90	<1	0 07	0 002	<0 05	0.071	<0 001	<0.0001	<0.001	<0.001	0.013	0.03	<0.001	<0 001	<0.01	0.01	0 05	0.39	<0.0001	0.02	<0.01	5.97	5.97	7.41	7.66	1.66				
GW052266	21-Jun-17	7 81	7.86	7.3	776	19.9																																										
GW052266	13-Sep-17	7 81	7.86	6.9	793	21	7.72	779	404	<1	<1	264	264	35	60	58	18	93	<1	0.61	0 001	<0 05	0.067	<0 001	<0.0001	<0.001	<0.001	0.002	0.176	0.001	<0 001	<0.01	0.01	0 029	2.56	<0.0001	0.04	<0.01	6.17	6.17	7.7	8.42	4.5				
GW052266	13-Dec-17	7 88	7.93	7.1	815	22.3																																										
GW052266	13-Sep-18	8 32	8.37	7	770	21.9	7.54	795	442	<1	<1	233	233	34	65	50	15	81	<1	0.14	0 004	<0 05	0.067	<0 001	<0.0001	<0.001	<0.001	0.002	0.055	0.001	<0 001	<0.01	0.01	0 019	0.49	<0.0001	0.03	<0.01	6.71	6.71	7.2	7 25	0.4				
GW052266	5-Dec-18	8 51	8.56	7	818	21.8																																										
GW052266	14-Mar-19	8.6	8.65	7.1	855	21.6	7.46	824	581	<1	<1	285	285	31	64	53	17	95	<1	0.18	0 003	<0 05	0.094	<0 001	<0.0001	<0.001	<0.001	0.002	0.284	0.002	<0 001	<0.01	0.02	0 047	2.92	<0.0001	0.03	<0.01	6.68	6.68	8.14	8.18	0.19			<20	<100
GW052266	19-Jun-19	8.66	8.71	7	780	19.8																																										
GW052266	11-Sep-19	8.7	8.75	6.9	810	21	7.6	814	478	<1	<1	227	227	33	62	61	17	89	<1	0 39	0 002	<0 05	0.075	<0 001	<0.0001	<0.001	0.002	<0 001	0.168	<0.001	<0 001	<0.01	0.01	0 016	1.69	<0.0001		<0.01	6.85	6.85	7.47	8 31	5.38	<20	<50	<20	<100
GW052266	5-Dec-19	8.7	8.75	7.1	840	21.8																																										
GW052266	17-Mar-20	8.67	8.72																																												
GW052266	11-Jun-20	8 56	8.61	7.1	795	21.1																																										
GW052266	23-Sep-20	8 36	8.41	7.2	780	19	7.73	751	527	<1	<1	263	263	34	60	57	17	91	<1	0.1	0 002	<0 05	0.078	<0 001	<0.0001	<0.001	<0.001	<0 001	0.056	<0.001	<0 001	<0.01	0.01	0 02	0.79	<0.0001	<0.01	<0.01	7.32	7.32	7.66	8.2	3.45	<20	<50	<20	<100
GW052266	8-Dec-20	8.46	8.51	7.1	795	18.7																																										
GW052266	15-Mar-21	8 33	8.38	6.99	808	20.3	7.14	1120	728	<1	<1	497	497	22	114	51	36	161	3	<0.01	0 003	<0 05	0.151	<0 001	<0.0001	<0.001	0.003	0.004	0.002	<0.001	<0 001	<0.01	0.01	0.104	0.73	<0.0001	<0.01	<0.01	0.24	0.24	13.6	12.6	3.88				
GW052266	21-Jun-21	8 22	8.27	7.08	802	18.3																																										
GW052266	2-Sep-21	8.16	8.21	6.28	796	17.1	7.19	790	514	<1	<1	283	283	33	65	57	17	90	<1	0 08	0 001	<0 05	0.141	<0 001	<0.0001	<0.001	0.006	0.007	0.03	0.002	0.004	<0.01	0.01	0.168	1.74	<0.001	<0.001	<0.01	0.23	0.23				<20	<50	<20	<100
GW052266	19-Dec-21	7 97	8.02	7	818	19																																										
GW052266	21-Mar-22	7.69	7.74	7.03	872	22.4	7.14	799	519	<1	<1	247	247	33	70	56	17	88	<1	<0.01	<0.001	<0 05	0.139	<0 001	<0.0001	<0.001	<0.001	0.004	<0.001	<0.001	<0 001	<0.01	<0.01	0 009	<0 05	<0.0001	<0.01	<0.01	0.23	0.23	7.6	8 02	2.72	<20	<50	<20	<100
GW052266	6-Jun-22	7 5	7.55	6.85	814	17.5																																										
GW052266	28-Sep-22	7.15	7 2	8.82	785	21.7	7.17	737	479	<1	<1	245	245	33	70	56	17	86	<1	<0.01	0 002	<0 05	0 07	<0 001	<0.0001	<0.001	<0.001	<0 001	0.028	<0.001	<0 001	<0.01	0.01	<0.005	0.67	<0.0001	0.03	<0.01	8.04	8.04	7.56	7 93	2.44	<20	<50	<20	<100
GW052266	12-Dec-22	6 51	6.56	6.84	778	22.2																																										
GW052266	24-Mar-23	6.12	6.17	6.56	785	24.2	7.32	768	499	<1	<1	253	253	34	70	52	16	83	<1	<0.01	0 002	<0 05	0.067	<0 001	<0.0001	<0.001	<0.001	<0 001	0.028	<0.001	<0 001	<0.01	<0.01	<0.005	0.97	<0.0001	0.05	<0.01	7.64	7.64	7.74	7 52	1.41	<20	<50	<20	<100
GW052266	9-Jun-23	6 05	6.1	7.01	879	17.2																																										
GW052266	28-Sep-23	5 98	6.03	5.9	739	24.3	7.12	779	506	<1	<1	275	275	33	76	57	17	86	<1	<0.01	0 001	<0 05	0.066	<0 001	<0.0001	<0.001	<0.001	<0 001	0.003	<0.001	<0 001	<0.01	<0.01	<0.005	<0 05	<0.0001	<0.01	<0.01	7.77	7.77	8.32	7 98	2.09				
GW052266	11-Dec-23	6 05	6.1	6.95	770	22.7																																										
TEMPLEMORE A																																															
Templemore A	18-Jul-07	8.61	9.07																																												
Templemore A	7-Aug-07	11 33	11.79																																												
Templemore A	22-Aug-07	12 08	12 54																																												
Templemore A	5-Sep-07	12 09	12 55																																												
Templemore A	24-Sep-07	12 22	12.68																																												
Templemore A	11-Oct-07	12 08	12 54																																												
Templemore A	26-Nov-07	12 09	12 55																																												
Templemore A	29-Jan-08	12 05	12 51																																												
Templemore A	4-Mar-08	12 07	12 53																																												
Templemore A	4-Apr-08	9.16	9.62																																												
Templemore A	21-Aug-08	8.68	9.14																																												
Templemore A	29-Jan-09	7 84	8 3																																												
Templemore A	17-Jun-09	8.65	9.39	7.7	1640	19.7	0.16	1500	1000	<1	<1	426	426	56	228	165	42	106	1		0 003		0.132	<0 001	<0.0001	<0.001	<0.001	0.021	0.247	0.002	0.002		<0.01	0 02		<0.0001	0.01				16.1	16.3	0.7				
Templemore A	28-Aug-09	8 92	9.4																																												
Templemore A	23-Dec-09	10.1	10 58	7.2	1473	24	7.54	1400		<1	<1	241	241	79	246	72	41	125	1	<0.01	0 002						<0.001	0.007	0.013	0.001	<0 001			0 025	<0 05	<0.0001		0.07	3.25	3.32	13.6	12.4	4.61				
Templemore A	25-Feb-10	9.16	9.64																																												
Templemore A	11-May-10	9.12	9.6	7.92	1083	21.2		1600	906	<1	<1	376	376	68.3	241	152	38	105	3		0 004		0 21	<0 001	0.0001	<0.001	<0.001	0.011	1 9	0.006	<0 001		0.01	0 019	0.11	<0.0001	3.1				15.7	15.4	1.13				
Templemore A	30-Aug-10	9.19	9.67	7.77	1590	22.1																																										
Templemore A	9-Nov-10	9 24	9.72	7.67	1485	23.7																																										
Templemore A	14-Mar-11	9.44	9.92	7.35	1486	24.8	7.56	1420		<1	<1	402	402	49	297	175	41	120	4	0 02	0 003						<0.001	0.011	3.31	0.005	<0 001			0 079	0.76	<0.0001		<0.01	0.09	0.09	17.4	17.4	0.03				
Templemore A	6-Jun-11	9 36	9.84	7.45	1392	20.2																																										
Templemore A	6-Sep-11	9 5	9.98	7.61	1395	21.8	8.04	1670	790	<1	<1	405	405	62	285	169	41	120	3	0 08	0 004		0.266	<0 001	<0.0001	<0.001	<0.001	0.004	1.81	0.004	<0 001		<0.01	0 033	0.1	<0.0001	1.37	0.12	0.46	0.58	17.4	17.1	0.9				
Templemore A	9-Dec-11	No access to well - paddock flooded																																													
Templemore A	13-Mar-12	2.7	3.18	7.62	960	22.9	7.79	988	578	<1	<1	222	222	59	103	92	25	74	8	0.1	0 003		0.093	<0 001	<0.0001	<0.001	<0.001	<0 001	0.006	<0.001	<0 001		<0.01	0 023	0.11	<0.0001	0.04	0.01	19.7	19.7	9.98	10.1	0.6				
Templemore A	13-Jun-12	3 28	3.76	7.31	826	20.2																																										
Templemore A	6-Sep-12	3 59	4.07	7.32	816	20.1	7.67	820	500	<1	<1	203	203	66	103	80	22	54	4	0 05	0 002		0.071	<0 001	<0.0001	<0.001	<0.001	0.017	0.008	<0.001	<0 001		<0.01	0 026	0.09	<0.0001	<0.01	<0.01	2.79	2.79	8.34	8 25	0.48				
Templemore A	27-Nov-12	3 85	4.33	7.42	812	21.1																																										
Templemore A	21-Mar-13	4.31	4.79	7.67	943	21.8	7.75	1020	614	<1	<1	242	242	74	116	97	24	60	9	1.68	0 003		0.114	<0 001	0.0001	0 001	0.001	0.142	0.501	0.005	0 01		<0.01	0 279	2.56	<0.0001	2.75	3.32	0.18	3.5	9.65	9.66	0.06				
Templemore A	11-Jul-13	5 34	5.82	7.68	1162	19.2																																										
Templemore A	5-Sep-13	4.29	4.77	7.57	1150	20.4	7.96	1240	765	<1	<1	284	284	96	175	119	30	93	5	0 07	0 003	<0.001	<0.05	0.119	<0.0001	<0.001	<0.001	0.068	0.688	0.003	0.003	<0.01	<0.01	0.103	0.12	<0.0001	0.07				12.6	12.6	0.1				
Templemore A	22-Nov-13	7 5	7.98	7.7	1189	19.8																																										
Templemore A	20-Feb-14	4.41	4.89	7.7	1110	20.7	7.71	1150	669	<1	<1	272	272	84	150	104	27	80	6	0 23	0 004	<0.001	<0.05	0.1	<0.0001	<0.001	0.001	0.105	0.432	0.005	0.012	<0.01	<0.01	0 204	0.75	<0.0001	4.83				11.4	11	1.63				
Templemore A	27-May-14	4 57	5.05	7.6	1281	20																																										
Templemore A	9-Sep-14	4 31	4.79	7.8	1150	19.3	7.98	1190		<1	<1	272	272	98	164	105	26	78	2	0 02	0 004						<0.001	0.012	0.011	<0.001	<0 001			0 031	0.86	<0.0001		<0.01	2.6	2.6	12	10.8	5.3				
Templemore A	20-Nov-14	4.78	5.26	7.9	1117	21.2																																										
Templemore A	26-Feb-15	5 27	5.75	7.9	1100	23.7	7.69	1210	674	<1	<1	242	242	105	157	109	27	84	4	0 2	0 003	<0 05	0.079	<0 001	<0.0001	<0.001	<0.001	0.015	0.1	0.002	<0 001	<0.01	<0.01	0 064	0.22	<0.0001	0.73	0.14	0.3	0.44	12 9	11.4	13.7				
Templemore A	26-May-15	5 59	6.07	7.9	1125	19.4																																										
Templemore A	27-Aug-15	5.64	6.12	7.9	1180	18.4	8.03	1190	755	<1	<1	264	264	82	134	113	27	87	3	0 04	0 002	<0 05	0.077	<0 001	<0.0001	<0.001	<0.001	0.019	0.014	<0.001	<0 001	<0.01	<0.01	0 034	0.05	<0.0001	0.04	<0.01	0.93	0.93	10 8	11.7	4.28				
Templemore A	4-Dec-15	5.77	6.25	7.8	1192	22.7																																										
Templemore A	24-Feb-16	6 08	6.56	7.8	1234	22.5	8.09	1300	668	<1	<1	340	340	88	176	147	30	102	4	0 03	0 004	<0 05	0.105	<0 001	<0.0001	<0.001	<0.001	0.012	0.415	0.001	0.001	<0.01	<0.01	0 037	0.11	<0.0001	0.5	0.44	<0.01	0.27	13.6	14.3	2.71				
Templemore A	23-May-16	6 31	6.79	7.9	1302	20.7																																										
Templemore A	6-Sep-16	6.43	6.91	7.9	1280	23.8	7.89	1300		<1	<1	338	338		183	134	26	89	4	0 04	0 003						<0.001	0.023	0.404	0.001	0.002			0 26	0.26	<0.0001		<.01	2.14	2.14	13 5	12.8	2.64				
Templemore A	29-Nov-16	3 27	3.75	7.5	810	20.5																																										
Templemore A	23-Mar-17	4 31	4.79	7.4	824	22.1	7.99	816	530	<1	<1	189	189	53	112	65	20	65	4	0 31	0 002	<0 05	0 07	<0 001	<0.0001	<0.001	<0.001	0.026	0.086	0.001	0.001	<0.01	<0.01	0 097	0.35	<0.0001	0.56	0.1	3.14	3.24	8.04	7 82	1.39				
Templemore A	21-Jun-17	4 89	5.37	7.6	943	18.7																																										
Templemore A	13-Sep-17	5.11	5.59	7.5	1050	20.3	8.08	1030	575	<1	<1	259	259	76	143	110	24	75	4	0.1	0 003	<0 05	0.076	<0 001	0.0002	<0.001	<0.001	0 02	0.018	<0.001	<0 001	<0.01	<0.01	0 07	0.1	<0.0001	0.05	<0.01	1.79	1.79	10 8	10.8	0.18				
Templemore A	13-Dec-17	5 22	5.7	7.7	1091	210																																										
Templemore A	13-Sep-18	6 39	6.87	7.7	1250	20.2	7 9	1280	762	<1	<1	287	287	84	201	114	26	86	2	0 03	0 003	<0 05	0.087	<0 001	<0.0001	<0.001	<0.001	0.025	0.078	<0.001	0.001	<0.01	<0.01	0 024	0.17	<0.0001	0.05	<0.01	1.54	1.54	13 2	11.6	6.19				
Templemore A	5-Dec-18	6.66	7.14	7.7	1278	21.2																																										
Templemore A	14-Mar-19	7.11	7.59	7.8	1230	21.3	7.77	1200	850	<1	<1	276	276	82	177	112	30	83	2	0 02	0 003	<0 05	0.096	<0 001	<0.0001	<0.001	<0.001	0.006	0.018	<0.001	<0 001	<0.01	0.01	0 025	0.11	<0.0001	0.12	0.08	3.49	3.57	12 2	11.7	2.07			<20	<100
Templemore A	19-Jun-19	7 31	7.79	7.5	1240	19.5																																										
Templemore A	11-Sep-19	7 53	8.01	7.6	1290	19.6	8.06	1310	778	<1	<1	271	271	107	206	142	34	94	2	0 02	0 002	<0 05	0.092	<0 001	<0.0001	<0.001	<0.001	0.006	0.006	<0.001	<0 001	<0.01	<0.01	0.158	0.05	<0.0001		<0.01	2.19	2.19	13.4	14	2.08	<20	<50	<20	<100
Templemore A	5-Dec-19	7.77	8.25	7.7	1360	20.7																																										
Templemore A	18-Mar-20	6.1	6.58	7.5	1480	21.6	7 9	1310	823	<1	<1	257	257	91	198	135	31	94	2	0 02	0 003	<0 05	0.061	<0 001	<0.0001	<0.001	<0.001	0.005	0.049	<0.001	<0 001	<0.01	<0.01	0 067	0.07	<0.0001	0.03	<0.01	6.39	6.39	12.6	13.4	2.98	<20	<50	<20	<100
Templemore A	11-Jun-20	3.62	4.1	7.6	785	19.6																																										
Templemore A	23-Sep-20	4.65	5.13	7.8	950	17.8	7.56	930	6.18	<1	<1	233	233	67	125	81	20	69	3	0 07	0 002	<0 05	0.076	<0 001	<0.0001	<0.001	<0.001	0.003	0.006	<0.001	<0 001	<0.01	<0.01	0 072	0.09	<0.0001	<0.01	<0.01	5.19	5.19	9.58	8.77	4.42	<20	<50	<20	<100
Templemore A	8-Dec-20	5 3	5.78	7.9	1040	17.9																																										
Templemore A	4-Mar-21	5.67	6.15	7.42	1175	22.5	7.55	1180	767	<1	<1	281	281	94	194	121	32	85	2	0 03	0 002	<0 05	0.102	<0 001	<0.0001	<0.001	<0.001	0.006	0.025	<0.001	<0 001	<0.01	0.01	0.149	<0 05	<0.0001	<0.01	0.02	9.49	9.51	13	12.4	2.45	<20	<50	<20	<100
Templemore A	21-Jun-21	5 93	6.41	7.36	1352	17.6																																										
Templemore A	2-Sep-01	5 07	5.55	7.01	1398	20.3	7.94	1380	897	<1	<1	289	289	89	203	141	34	96	2	0 04	0 003	<0 05	0.098	<0 001	<0 001	<0.001	<0.001	0.002	0.014	0.001	<0 001	<0.01	0.01	0 082	<0 05	<0.0001	0.02		15	15				<20	<50	<20	<100
Templemore A	29-Dec-21	2 21	2.69	7.41	1387	20.4																																										
Templemore A	21-Mar-22	2.6	3.08	7.23	822	21.6	7.34	754	490	<1	<1	253	253	42	64	68	19	57	5	0 03	0 003	<0 05	0 06	<0 001	<0.0001	<0.001	<0.001	0.006	0 0015	<0.001	<0 001	<0.01	<0.01	0 062	<0 05	<0.0001	0.03	<0.01	2.02	2.02	7.73	7 56	1.11	<20	<50	<20	<100
Templemore A	6-Jun-22	3 23	3.71	6.94	822	18.1																																										
Templemore A	28-Sep-22	1.65	2.13	7.17	1058	19.6	7.38	967	628	<1	<1	250	250	75	155	101	28	69	6	0 04	0 002	<0 05	0.079	<0 001	<0.0001	<0.001	<0.001	<0 001	0.004	0.001	<0 001	<0.01	<0.01	0 036	0.11	<0.0001	<0.01	0.01	4.28	4.29	10 9	10.5	2	<20	<50	<20	<100
Templemore A	12-Dec-22	0 84	1.32	7.09	1009	22.6																																										
Templemore A	24-Mar-23	2 51	2.99	6.58	809	21.2	7 3	793	515	<1	<1	239	239	46	90	72	19	52	13	<0.01	0 002	0.07	0.083	<0 001	<0 001	<0.001	<0.001	<0 001	<0.001	<0.001	<0 001	<0.01	<0.01	<0.005	<0 05	<0.0001	<0.01	<0.01	0.51	0.51	8.27	7.75	3.25	<20	<50	<20	<100
Templemore A	9-Jun-23	7 82	8 3	6.82	1009	18.5																																										
Templemore A	28-Sep-23	8 85	9.33	6.78	1750	25.4	7.27	1750	1140	<1	<1	422	422	104	41	206	2	<0.01	0.002	<0.05	0 078	<0.001	<0 0001	<0 001	<0 001	<0.001	<0.001	<0 001	0.008	<0.001	<0 001	<0.01	0.01	0 007	<0 05	<0.0001	0.01	<0.01	2.45	2.45	19 5	17.6	5.12				
Templemore A	11-Dec-23	8.42	8 9	6.91	1066	21.8																																										

Sample Location	Date	Depth to Ground - mbgl	Depth to Stand - mbtoc	Field Parameters			pH - Lab	EC - Lab - µs/cm	Total Dissolved Solids	Major Anions						Major Cations				Total Metals																Mercury (Hg) - mg/L	Ammonia as Nitrogen (N)	Nitrite as N -mg/L	Nitrate as N - mg/L	Nitrite + Nitrate as N - mg/L	Total Anions - meq/L	Total Cations - meq/L	Ionic Balance	TPH C6-C9	TPH C10-C36	TRH C6- C10	TRH C10-C40
				pH - Field	EC - Field - µs/cm	Temp - Field - °C				Hydroxide Alkalinity as CaCO3 - mg/L	Carbonate Alkalinity as CaCO3 - mg/L	Bicarbonate Alkalinity as CaCO3 - mg/L	Alkalinity - mg/L	Sulfate (SO4) - mg/L	Chloride (Cl) - mg/L	Calcium (Ca) - mg/L	Magnesium (Mg) - mg/L	Sodium (Na) - mg/L	Potassium (K) - mg/L	Aluminium (Al) - mg/L	Arsenic (As) - mg/L	Boron (B) - mg/L	Barium (Ba) - mg/L	Beryllium (Be) - mg/L	Cadmium (Cd) - mg/L	Cobalt (Co) - mg/L	Chromium (Cr) - mg/L	Copper (Cu) - mg/L	Manganese (Mn) - mg/L	Nickel (Ni) - mg/L	Lead (Pb) - mg/L	Selenium (Se) - mg/L	Vanadium (V) - mg/L	Zinc (Zn) - mg/L	Iron (Fe) - mg/L												
ANZECC Guideline - stock drinking water									**4000**					**1000**		**1000**				**5**	**0.5**				**0.01**	**1**	**1**	**1**		**1**	**0.1**	**0.02**		**20**		**0.002**			**400**								
TEMPLEMORE B																																															
Templemore B	18-Jul-07	9 89	9.89																																												
Templemore B	7-Aug-07	8.14	8.14																																												
Templemore B	22-Aug-07	8 31	8.31																																												
Templemore B	5-Sep-07	8.17	8.17																																												
Templemore B	24-Sep-07	8 05	8.05																																												
Templemore B	11-Oct-07	8 09	8.09																																												
Templemore B	26-Nov-07	7 9	7 9																																												
Templemore B	29-Jan-08	8.13	8.13																																												
Templemore B	4-Mar-08	8.44	8.44																																												
Templemore B	4-Apr-08	8.42	8.42																																												
Templemore B	21-Aug-08	10 55	10 55																																												
Templemore B	29-Jan-09	15.5	15 5																																												
Templemore B	17-Jun-09	9.49	9.63	7.3	1810	19.5		1700	1080	<1	<1	419	419	106	240	118	52	175	2		0 002		0.145	<0 001	<0.0001	<0.001	<0.001	0.055	0.008	<0.001	<0 001		0.01	0 052	<0 05	<0.0001	<0.01				17.4	17.9	1.46				
Templemore B	28-Aug-09	12.69	12 83																																												
Templemore B	23-Dec-09	15 84	15 98	6.75	1491	24.4	7.44	1420		<1	<1	291	291	134	196	31	31	221	2	<0.01	0 003						<0.001	0.022	0.003	0.002	<0 001			0 068	<0 05	<0.0001		<0.01	0.74	0.74	14.1	13.8	1.29				
Templemore B	25-Feb-10	9 36	9 5																																												
Templemore B	11-May-10	10 52	10.66	8.01	1722	22.2		1540	854	<1	<1	328	328	129	204	85	30	194	2		0 002		0.059	<0 001	<0.0001	<0.001	<0.001	0.007	0.024	<0.001	<0 001		0.01	0 02	0.11	<0.0001	0.02				15	15.1	0.48				
Templemore B	30-Aug-10	17.65	17.79	7.23	1532	23.8																																									
Templemore B	9-Nov-10	9 94	10 08	7.19	1405	24.8																																									
Templemore B	14-Mar-11	17.11	17 25	7.21	1460	24.7	7.28	1400		<1	<1	339	339	136	264	97	37	200	2	0 28	0 002						<0.001	0.055	0.034	0.002	0.003			0.185	0.43	<0.0001		<0.01	2.85	2.85	17	16.6	1.3				
Templemore B	6-Jun-11	10.42	10 56	7.3	1370	21.5																																									
Templemore B	8-Sep-11	13 56	13.7	7.12	1387	20.8	7.54	1630	982	<1	<1	325	325	137	254	62	38	202	2	0 03	0 003		0.076	<0 001	<0.0001	<0.001	<0.001	0.015	0.005	<0.001	<0 001		0.01	0 019	<0 05	<0.0001	0.03	<0.01	0.73	0.73	16 5	15.1	4.62				
Templemore B	7-Dec-11	10 53	10.67	7.21	1360	21																																									
Templemore B	13-Mar-12	9 58	9.72	7.28	1680	23	7.7	1790	1040	<1	<1	338	338	142	307	116	42	228	2	0 07	0 002		0 09	<0 001	<0.0001	<0.001	<0.001	0.013	0.004	<0.001	<0 001		0.02	0 036	0.1	<0.0001	0.11	<0.01	3.37	3.37	18.4	19.2	2.24				
Templemore B	13-Jun-12	10 51	10.65	7.34	1704	20.8																																									
Templemore B	4-Sep-12	8 28	8.42	7.3	1770	21.4	7.63	1920	1200	<1	<1	364	364	181	326	110	46	248	2	0 05	0 002		0.099	<0 001	<0.0001	<0.001	<0.001	0 01	0.005	<0.001	<0 001		0.01	0 072	0.1	<0.0001	<0.01	<0.01	7.25	7.25	20 2	20.1	0.31				
Templemore B	27-Nov-12	7.65	7.79	7.37	1611	21.8																																									
Templemore B	20-Mar-13	12 36	12 5	7.29	1570	22.4	7.51	1700	886	<1	<1	335	335	137	255	94	36	235	2	0 04	0 004		0.069	<0 001	<0.0001	<0.001	<0.001	0.019	0.012	<0.001	0.001		0.01	0 064	0.09	<0.0001	0.03	<0.01	4.44	4.44	16.7	17.9	3.41				
Templemore B	11-Jul-13	6 08	6.22	7.22	1523	21.7																																									
Templemore B	5-Sep-13	6.1	6.24	7.24	1470	22.3	7.79	1620	988	<1	<1	304	304	158	242	78	32	230	2	0 28	0 003	<0.001	0 06	0.076	<0.0001	<0.001	<0.001	0.046	0.035	<0.001	0.002	<0.01	0.02	0.148	0 3	<0.0001	0.03				16 2	16.6	1.18				
Templemore B	22-Nov-13	7 89	8.03	7.4	1483	20.7																																									
Templemore B	20-Feb-14	8 31	8.45	7.5	1400	21.6	7.47	1470	829	<1	<1	293	293	142	199	69	29	204	1	0.1	0 004	<0.001	0 06	0.061	<0.0001	<0.001	<0.001	0.045	0.022	0.002	0.005	<0.01	0.02	0.129	0.38	<0.0001	0.02				14.4	14.7	1.03				
Templemore B	27-May-14	10 51	10.65	7.4	1566	19.7																																									
Templemore B	9-Sep-14	6 38	6.52	7.4	1390	21.5	7.7	1480		<1	<1	325	325	141	195	63	25	192	1	0 05	0 004						<0.001	0.007	0.004	<0.001	<0 001			0 028	0.07	0 0001		<0.01	2.3	2.3	14 9	13.6	4.76				
Templemore B	20-Nov-14	6 96	7.1	7.4	1523	22.3																																									
Templemore B	26-Feb-15	7 58	7.72	7.4	1450	23.6	7.89	1580	955	<1	<1	328	328	144	211	70	30	205	2	0.15	0 003	<0 05	0.064	<0 001	<0.0001	<0.001	<0.001	0 01	0.013	0.002	<0 001	<0.01	0.01	0 078	0 2	<0.0001	0.09	<0.01	2.38	2.38	15 5	14.9	1.9				
Templemore B	26-May-15	8 37	8.51	7.4	1453	20.6																																									
Templemore B	27-Aug-15	8 03	8.17	7.3	1480	19.2	7.73	1520	826	<1	<1	286	286	158	179	74	31	202	1	0 03	0 003	<0 05	0.061	<0 001	<0.0001	<0.001	<0.001	0.006	0.005	<0.001	0.003	<0.01	0.02	0 046	0.07	<0.0001	0.04	<0.01	2.07	2.07	14	15	3.43				
Templemore B	4-Dec-15	10 98	11.12	7.3	1572	22.8																																									
Templemore B	24-Feb-16	10.77	10 91	7.2	1465	23.4	7.77	1510	874	<1	<1	307	307	158	214	82	32	219	1	0 31	0 004	<0 05	0.069	<0 001	<0.0001	<0.001	<0.001	0.007	0.005	<0.001	<0 001	<0.01	0.01	0 046	1.7	<0.0001	0.05	<0.01	0.21	0.21	15 5	16.3	2.56				
Templemore B	23-May-16	7.18	7.32	7.2	1481	21.8																																									
Templemore B	6-Sep-16	13.46	13.6	7.2	1510	23.5	7.58	1560		<1	<1	325	325		240	90	30	196	2	0 25	0 004						<0.001	0.024	0.021	<0.001	0.003			0.153	1.12	<0.0001		<0.01	2.14	2.14	16.1	15.5	1.84				
Templemore B	29-Nov-16	9 27	9.41	7.2	1345	21.3																																									
Templemore B	23-Mar-17	6 91	7.05	7.3	1500	23	8.02	1520	1040	<1	<1	322	322	129	235	71	31	197	1	0 04	0 003	<0 05	0.069	<0 001	<0.0001	<0.001	<0.001	0.014	0.012	<0.001	<0 001	<0.01	0.02	0 035	0.08	<0.0001	0.02	<0.01	2.42	2.42	15.7	14.7	3.48				
Templemore B	21-Jun-17	6.46	6.6	7.4	1613	19.7																																									
Templemore B	13-Sep-17	6.68	6.82	7.6	1600	21.1	8 3	1620	916	<1	<1	360	360	149	245	89	37	213	2	<0.01	0 003	<0 05	0 07	<0 001	<0.0001	<0.001	0.001	0.011	0.009	0.004	<0 001	<0.01	0.01	0 044	0.23	<0.0001	0.04	<0.01	2.31	2.31	17 2	16.8	1.19				
Templemore B	13-Dec-17	6.61	6.75	7.4	1425	22.4																																									
Templemore B	13-Sep-18	7 22	7.36	7.1	1440	22	7.59	1480	777	<1	<1	305	305	135	233	74	27	180	2	0 07	0 003	<0 05	0.058	<0 001	<0.0001	<0.001	<0.001	0.001	0.004	<0.001	<0 001	<0.01	0.02	0 033	0.09	<0.0001	0.05	<0.01	1.89	1.89	15 5	13.8	5.74				
Templemore B	5-Dec-18	10 22	10 36	7.1	1520	21.7																																									
Templemore B	14-Mar-19	7.71	7.85	7.3	1390	22.9	7.58	1410	874	<1	<1	319	319	138	194	66	66	66	66	0 03	0 003	0.05	0.063	<0 001	<0.0001	<0.001	<0.001	0.001	0.003	<0.001	<0 001	<0.01	0.02	0 025	0.11	<0.0001	0.01	<0.01	1.3	1.3	14.7	14.4	0.96			<20	<100
Templemore B	19-Jun-19	7.67	7.81	7.2	1580	20.5																																									
Templemore B	11-Sep-19	9 01	9.15	7.4	1780	21.3	7.84	1820	1010	<1	<1	376	376	121	322	143	65	174	2	<0.01	0 002	<0 05	0.134	<0 001	0.0003	<0.001	0.001	0 02	0.006	0.06	0.003	<0.01	0.02	0 394	1.04	<0.0001		<0.01	1.55	1.55	19.1	20.1	2.52	<20	<50	<20	<100
Templemore B	5-Dec-19	8 21	8.35	7.4	1820	22.1																																									
Templemore B	18-Mar-20	9.66	9 8	7.5	1480	21.6	7.71	1550	856	<1	<1	291	291	142	242	91	32	202	2	0 02	0 003	<0 05	0.061	<0 001	<0.0001	<0.001	<0.001	<0 001	<0.001	<0.001	<0 001	<0.01	0.02	0 019	<0 05	<0.0001	0.01	<0.01	1.41	1.41	15.6	15.5	0.37	<20	<50	<20	<100
Templemore B	11-Jun-20	9 29	9.43	7.4	1460	20.4																																									
Templemore B	23-Sep-20	8 88	9.02	7.3	1380	19	7.78	1450	878	<1	<1	340	340	132	224	77	26	162	2	0 03	0 002	<0 05	0 06	<0 001	<0.0001	<0.001	<0.001	0.001	0.003	<0.001	0.001	<0.01	0.02	0 022	<0 05	<0.0001	<0.01	<0.01	1.36	1.36	15 9	13.1	9.61	<20	<50	<20	<100
Templemore B	8-Dec-20	11.47	11.61	7.3	1420	19.8																																									
Templemore B	4-Mar-21	9 87	10 01	7.41	1412	23.4	7.41	1400	520	<1	<1	345	345	143	233	84	30	197	2	<0.01	0 003	<0 05	0.059	<0 001	<0.0001	<0.001	<0.001	0.004	<0.001	<0.001	<0 001	<0.01	0.02	0 019	<0 05	<0.0001	0.04	<0.01	1.33	1.33	16.4	15.3	3.66	<20	<50	<20	<100
Templemore B	21-Jun-21	9.17	9.31	7.13	1493	18.3																																									
Templemore B	2-Sep-21	8 37	8.51	6.29	1581	21.3	7.36	1580	1030	0.7	<1	362	362	128	238	94	32	200	1	0.02	0 002	<0.05	0.057	<0.001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0 001	<0.01	0 01	0.029	<0 05	<0 0001	<0.01		2 51	2.51						<20	<100
Templemore B	29-Dec-21	10 22	10 36	7.2	1670	21.8																																									
Templemore B	21-Mar-22	10 96	11.1	7.24	1708	22.5	7.37	1530	994	<1	<1	344	344	136	244	91	31	188	2	0.02	0 003	<0.05	0.058	<0.001	<0.0001	<0.001	<0.001	0.001	0 007	<0.001	<0 001	<0.01	0 02	0 02	<0 05	0.0004	0 03	<0.01	2 54	2.54	16.6	15.3	3.97	<20	<50	<20	<100
Templemore B	6-Jun-22	3 57	3.71	6.94	822	18.1																																									
Templemore B	28-Sep-22	8.18	8.32	7.18	1030	21.9	7.34	1500	975	<1	<1	359	359	147	263	95	36	197	2	0.05	0 002	<0.05	0.066	<0.001	<0.0001	<0.001	<0.001	0.006	0 033	<0.001	<0 001	<0.01	0 01	0.033	0.16	<0 0001	<0.01	<0.01	2 34	2.34	17.6	16.3	3.91	<20	<50	<20	<100
Templemore B	12-Dec-22	6 96	7.1	7.19	2135	23.3																																									
Templemore B	24-Mar-23	5.74	5.88	6.63	1889	24.5	7.52	1820	1180	<1	<1	419	419	137	317	112	52	195	2	<0 01	0 002	0.07	0.109	<0.001	<0.0001	<0.001	<0.001	<0.001	0 028	<0.001	<0 001	<0.01	0 01	0.039	<0 05	<0 0001	<0.01	<0.01	3 83	3.83	20 2	18.4	4.57	<20	<50	<20	<100
Templemore B	9-Jun-23	6 85	6.99	7.01	1774	19.6																																									
Templemore B	28-Sep-23	3 92	4.06	6.12	955	25.6	7.06	1060	689	<1	<1	243	243	100	173	107	29	65	6	<0 01	0 002	<0.05	0.088	<0.001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0 001	<0.01	<0.01	0.007	<0 05	<0 0001	<0.01	<0.01	0.48	0.48	11 8	10.7	4.93				
Templemore B	11-Dec-23	8.62	8.76	7.14	1644	24.7																																									
REGIONAL BORES																																															
Reg 6																																															
Reg 6	21-Aug-15		20 08																																												
Reg 6	24-Sep-15		20.13	12.28	2580	19.2	11.6	2270	1170	<1	90	60	150	111	520	14	<1	491	42	<0.01	<0.001	<0 05	0.126		<0.0001		0.006	0.005	<0.001	0.001	<0 001			0 027	<0 05		0.84	<0.01	0.14	0.14	20	23.1	7.29				
Reg 6	29-Oct-15		20.16																																												
Reg 6	27-Nov-15		20.15																																												
Reg 6	29-Dec-15		20.17	8.02	2310	33.9	8.15	2360	1420	<1	<1	234	234	147	532	47	23	358	9	<0.01	<0.001	0.08	0.048		<0.0001		<0.001	<0 001	0.13	0.001	<0 001			0 006	<0 05		0.16	<0.01	0.01	0.01	22.7	20	6.33				
Reg 6	15-Jan-16		20 25																																												
Reg 6	17-Feb-16		20 31																																												
Reg 6	11-Mar-16		20.43	7.95	2336	25.3	8.05	2300	1250	<1	<1	228	228	151	527	49	28	359	10	<0.01	0 001	0.06	0.054		<0.0001		<0.001	<0 001	0.129	0.004	<0 001			<0.005	<0 05		0.12	<0.01	<0.01	<0.01	22.6	20.6	4.52				
Reg 6	18-Apr-16		20 52																																												
Reg 6	12-May-16		20.42																																												
Reg 6	14-Jun-16		20.43	11.61	2480	16.3	10.7	2270	943	30	95	<1	124	112	528	12	<1	408	31	0 04	0 003	0.07	0.107		<0.0001		<0.001	0.006	0.001	0.004	<0 001			0 006	<0 05		1.13	0.43	1.89	2.32	19.7	19.1	1.48				
Reg 6	21-Jun-16		20 36	8.33	2280	11.7	7.33	2240	1370	<1	<1	283	283	148	466	46	21	348	8	<0.01	<0.001	0.07	0.058		<0.0001		<0.001	<0 001	0.047	0.001	<0 001			<0.005	<0 05		0.13	<0.01	0.01	0.01	21 9	19.4	6.12				
Reg 6	12-Jul-16		20 33																																												
Reg 6	8-Aug-16		20 29																																												
Reg 6	5-Sep-16		20 27	7.77	2148	17.8	8.16	2160	1080	<1	<1	216	216	161	478	52	23	401	8	<0.01	0 002	0.08	0.053		<0.0001		<0.001	<0 001	0.129	0.002	<0 001			<0.005	0.08		0.1	<0.01	0.04	0.04	21 2	22.1	2.25				
Reg 6	5-Oct-16		20 24																																												
Reg 6	4-Nov-16		20 24																																												
Reg 6	23-Dec-16		20 27	8.46	2108	27.1	8.26	2050	1350	<1	<1	226	226	137	458	47	22	326	11	<0.01	0 001	0.07	0.069		<0.0001		<0.001	<0 001	0.071	0.002	<0 001			<0.005	<0 05		0.2	0.03	0.02	0.05	20 3	18.6	4.29				
Reg 6	18-Jan-17		20 24																																												
Reg 6	14-Feb-17		20 27																																												
Reg 6	9-Mar-17		20 3	8.31	2156	20.8	8.23	2140	1160	<1	<1	197	197	137	462	41	22	350	11	<0.01	0 001	1.7	0.076		<0.0001		<0.001	<0 001	0.017	0.003	0.012			<0.05	0.21		<0.01	<0.01	0.07	19 8	1.17						
Reg 6	5-Apr-17		20 32																																												
Reg 6	10-May-17		20 32																																												
Reg 6	6-Jun-17		20 23	8.65	2126	13.7	8.32	2050	1480	<1	1	194	195	133	452	46	25	378	10	<0.01	0 002		0.055		<0.0001		<0.001	<0 001	0.012	0.003	0.009			<0.05	0.11		<0.01	0.03	10.9	19.4	4.04						
Reg 6	4-Jul-17		20.19																																												
Reg 6	8-Aug-17		20.19																																												
Reg 6	26-Sep-17		20 27	9.06	2450	18.9	8.58	2320	1200	<1	29	219	248	109	510	22	29	457	22	<0.01	0 001		0.028		<0.0001		0.001	<0 001	0.047	0.009	0.047			<0.05	0.27		0.11	0.2	0.07	21.6	5.08						
Reg 6	12-Oct-17		20 23																																												
Reg 6	9-Nov-17		20 29																																												
Reg 6	20-Dec-17		20 3	7.9	2210	41.8	8.25	2090	1080	<1	<1	224	224	156	481	40	16	325	9	<0.01	<0.001		0 05		<0.0001		<0.001	<0 001	0.017	0.003	0 01			<0.05	0.13		0.03	0.1	0.17	21 3	9.27						
Reg 6	11-Jan-18		20 34																																												
Reg 6	7-Feb-18		20.75																																												
Reg 6	27-Mar-18		21 31	8.28	2060	27.1	8.41	2130	1100	<1	10	184	195	182	482	40	16	328	13	<0.01	<0.001		0.052		<0.0001		<0.001	<0 001	0.02	0.002	0.021			<0.05	0.26		<0.01	0.08	0.08	21 3	8.6						
Reg 6	10-Apr-18		20.7																																												
Reg 6	7-May-18		21.65																																												
Reg 6	14-Jun-18		21 92	8.14	2080	15.4	8.21	2020	1080	<1	<1	234	234	135	472	45	20	344	9	<0.01	<0.001		0.043		<0.0001		<0.001	<0 001	0.013	0.002	0.006			<0.05	0.1		<0.01	0.02	0.76	20 8	4.3						
Reg 6	5-Jul-18		22 2																																												
Reg 6	9-Aug-18		22 2																																												
Reg 6	3-Sep-18		22 07	7.69	2076	16.9	8.52	2060	782	<1	14	200	214	130	429	42	20	340	10	<0.01	<0.001		0.048		<0.0001		<0.001	<0 001	0.014	0.002	0.008			<0.05	0.11		<0.01	<0.01	0.07	19.1	0.78						
Reg 6	8-Oct-18		22 02																																												
Reg 6	8-Nov-18		22.16																																												
Reg 6	11-Dec-18		22 36	8.01	2040	29.2	8 5	2060	1150	<1	21	200	220	147	459	50	22	350	11	<0.01	0 001		0.049		<0.0001		<0.001	<0 001	0.013	0.002	0.006			<0.05	0.06		<0.01	<0.01	0.76	20.4	1.47						
Reg 6	8-Jan-19		22.4																																												

				Field Parameters						Major Anions						Major Cations				Total Metals																											
Sample Location	Date	Depth to Ground - mbgl	Depth to Stand - mbtoc	pH - Field	EC - Field - µs/cm	Temp - Field - °C	pH - Lab	EC - Lab - µs/cm	Total Dissolved Solids	Hydroxide Alkalinity as CaCO3 - mg/L	Carbonate Alkalinity as CaCO3 - mg/L	Bicarbonate Alkalinity as CaCO3 - mg/L	Alkalinity - mg/L	Sulfate (SO4) - mg/L	Chloride (Cl) - mg/L	Calcium (Ca) - mg/L	Magnesium (Mg) - mg/L	Sodium (Na) - mg/L	Potassium (K) - mg/L	Aluminium (Al) - mg/L	Arsenic (As) - mg/L	Boron (B) - mg/L	Barium (Ba) - mg/L	Beryllium (Be) - mg/L	Cadmium (Cd) - mg/L	Cobalt (Co) - mg/L	Chromium (Cr) - mg/L	Copper (Cu) - mg/L	Manganese (Mn) - mg/L	Nickel (Ni) - mg/L	Lead (Pb) - mg/L	Selenium (Se) - mg/L	Vanadium (V) - mg/L	Zinc (Zn) - mg/L	Iron (Fe) - mg/L	Mercury (Hg) - mg/L	Ammonia as Nitrogen (N)	Nitrite as N - mg/L	Nitrate as N - mg/L	Nitrite + Nitrate as N - mg/L	Total Anions - meq/L	Total Cations - meq/L	Ionic Balance	TPH C6-C9	TPH C10-C36	TRH C6- C10	TRH C10-C40
ANZECC Guideline - stock drinking water									4000					1000		1000				5	0.5				0.01	1	1	1		1	0.1	0.02		20		0.002			400								
Reg 6	11-Feb-19		22 23																																												
Reg 6	5-Mar-19		22 34	8.2	2044	29.9	7.94	2090	1090	<1	<1	188	188	88	444	40	19	346	10	<0.01	<0.001		0.056		<0.0001		<0.001	<0 001	0.017	0.002	0.011			<0.05	0.13		<0.01	<0.01	0.13	18.1	2.03						
Reg 6	2-Apr-19		22.48																																												
Reg 6	2-May-19		22.61																																												
Reg 6	5-Jun-19		22.7	8.15	2146	22.2	8.19	2100	1100	<1	<1	200	200	144	459	38	18	335	10	<0.01	<0.001		0.055		<0.0001		<0.001	<0 001	0.016	0.006	0 01			<0.05	0.12		0.07	0.12	0.07	19 9	4.55						
Reg 6	3-Jul-19		22.75																																												
Reg 6	5-Aug-19		22.79																																												
Reg 6	5-Sep-19		22 81	7.58	2336	33.4	7.98	2440	1320	<1	<1	201	201	156	508	43	30	378	15	<0.01	0 001		0.057		<0.0001		<0.001	<0 001	0.017	0.017	0.029			0 06	0.12		<0.01	0.02	<0.01	21.6	0.36						
Reg 6	10-Oct-19		22 87																																												
Reg 6	4-Nov-19		22 89																																												
Reg 6	28-Nov-19		22 92	8.01	2062	27.5	8	2060	1060	<1	<1	216	216	148	509	40	18	324	10	<0.01	0 001		0.052		<0.0001		<0.001	<0 001	0.013	0.004	0.008			<0.05	0.11		<0.01	<0.01	0.03	21 8	9.93						
Reg 6	14-Jan-20		24 98																																												
Reg 6	13-Feb-20		22 9																																												
Reg 6	12-Mar-20		22.69	8.45	2025	9.9	8.21	2080	1140	<1	<1	209	209	146	488	42	17	333	11	<0.01	<0.001	0.06	0.063		<0.0001			<0 001	0.07	0.006	<0 001			<0.005	<0 05		0.08	0.09	0.02	0.11	21	18.3	6.93				
Reg 6	7-Apr-20		22.43																																												
Reg 6	12-May-20		22.15																																												
Reg 6	10-Jun-20		22 04	7.7	2042	17.2	7.98	2000	1060	<1	<1	212	212	134	469	40	19	349	10	<0.01	0 001	0.07	0 06		<0.0001			0.001	0.091	0.004	<0 001			0 008	<0 05		0.06	<0.01	0.02	0.02	20 2	19	3.21				
Reg 6	7-Jul-20		21 93																																												
Reg 6	10-Aug-20		21.79																																												
Reg 6	10-Sep-20		21.75	7.89	2046	15.8	7.79	2020	1110	<1	<1	218	218	134	437	42	18	342	9	<0.01	0 001	<0 05	0.048		<0.0001			0.004	0.117	0.002	<0 001			0 008	<0 05		0.06	<0.01	0.03	0.03	19 5	18.7	2.07				
Reg 6	19-Oct-20		21.71																																												
Reg 6	4-Nov-20		21.65																																												
Reg 6	26-Nov-20		21.64	7.98	2005	32.4	7.97	2120	1220	<1	<1	216	216	204	425	48	20	333	9	<0.01	<0.001	0.06	0.042		<0.0001			0.002	0.105	0.004	<0 001			0 013	<0 05		0.05	<0.01	<0.01	<0.01	20.6	18.8	4.57				
Reg 7a																																															
Reg 7a	20-Mar-14		6.61	7.23	1230	21.7	7.83	950	606	<1	<1	374	374	25	84	62	30	108	2	<0.01	0 007	<0 05	0.084		<0.0001		<0.001	0.002	2.53	0.002	<0 001			0 029	1.23		0.1	<0.01	0.05	0.05	10.4	10.3	0.26				
Reg 7a	23-Apr-14		6.19																																												
Reg 7a	27-May-14		6.23																																												
Reg 7a	26-Jun-14		6.28	7.01	846	16.9	7.52	884		<1	<1	369	369	28	64	58	26	103	2	<0.01	0 005	<0 05	0.084		<0.0001		<0.001	<0 001	1.83	<0.001	<0 001			0 013	1.38		0.03	<0.01	0.12	0.12	9.76	9 57	1.03				
Reg 7a	29-Jul-14		6.32																																												
Reg 7a	26-Aug-14		6.37				7.77	871	354	<1	<1	358	358	35	61	55	28	106	2	<0 001	0 006	<0 05	0 08		<0.0001		<0.001	0.003	1.42	0.001	<0 001			0 048	<0 05		0.03	<0.01	0.06	0.06	9.6	9.71	0.54				
Reg 7a	29-Sep-14		6.57																																												
Reg 7a	28-Oct-14		6.58																																												
Reg 7a	27-Nov-14		6.67																																												
Reg 7a	17-Dec-14		6.69	7.6	805	23.8	8.11	853	428	<1	<1	300	300	38	66	45	22	89	2	<0.01	0 004	<0 05	0.072		<0.0001		<0.001	0.002	1.23	0.002	<0 001			0 076	<0 05		0.03	<0.01	0.02	0.02	8.65	7 98	4.04				
Reg 7a	20-Jan-15		6.76																																												
Reg 7a	18-Feb-15		6.85																																												
Reg 7a	17-Mar-15		6.93	7.51	857	22	7.61	834	491	<1	<1	393	393	43	48	56	30	111	2	<0.01	0 008	<0 05	0 09		<0.0001		<0.001	0.002	1.25	0.002	<0 001			0 051	0.69		0.03	<0.01	0.17	0.17	10.1	10.1	0.18				
Reg 7a	21-Apr-15		7.04																																												
Reg 7a	27-May-15		7.19																																												
Reg 7a	29-Jun-15		7.35	7.19	778	20	7.31	793	486	<1	<1	336	336	42	45	55	26	97	2	<0.1	0 008	<0 05	0.084		<0.0001		<0.001	<0 001	0.956	<0.001	<0 001			0 019	0.7		0.01	<0.01	0.02	0.02	8.86	9.15	1.63				
Reg 7a	24-Jul-15		7.41	7.32	1985	19.1																																									
Reg 7a	21-Aug-15		7.58																																												
Reg 7a	18-Sep-15		7.71	7.86	747	20.1	7.41	772	450	<1	<1	297	297	36	55	52	27	104	2	<0.01	0 008	<0 05	0.085		<0.0001		<0.001	<0 001	0.86	<0.001	<0 001			0 037	0.29		0.07	<0.01	0.09	0.09	8.24	9 39	6.54				
Reg 7a	29-Oct-15		7.87																																												
Reg 7a	26-Nov-15		7.93																																												
Reg 7a	29-Dec-15		8.03	7.05	841	23.5	7.79	860	468	<1	<1	332	332	45	53	51	24	94	1	<0.01	0 009	<0 05	0.089		<0.0001		<0.001	<0 001	1.05	0.001	<0 001			0 008	0.7		<0.01	<0.01	<0.01	<0.01	9.06	8.63	2.45				
Reg 7a	15-Jan-16		8.15																																												
Reg 7a	17-Feb-16		8.22																																												
Reg 7a	11-Mar-16		8.29	7.47	778	17.4	7.77	788	418	<1	<1	310	310	31	45	44	24	100	2	<0.01	0 008	<0 05	0.076		<0.0001		<0.001	<0 001	0.711	0.002	<0 001			0 029	0.35		0.04	<0.01	0.02	0.02	8.11	8 57	2.75				
Reg 7a	19-Apr-16		8.42																																												
Reg 7a	11-May-16		8.48																																												
Reg 7a	14-Jun-16		8.65	7.38	786	15	7.77	758	374	<1	<1	300	300	20	40	44	21	86	1	<0.01	0 007	<0 05	0.078		<0.0001		<0.001	<0 001	0.68	0.001	<0 001			0 022	0.31		0.03	<0.01	<0.01	<0.01	7.54	7.69	0.97				
Reg 7a	12-Jul-16		8.62																																												
Reg 7a	8-Aug-16		8.7																																												
Reg 7a	5-Sep-16		7.96	7.25	780	15.7	7.49	790	416	<1	<1	304	304	33	41	50	21	98	1	<0.01	0 006	<0 05	0 09		<0.0001		<0.001	<0 001	0.81	0.002	<0 001			0 019	0.44		0.03	<0.01	0.05	0.05	7.92	8 51	3.59				
Reg 7a	5-Oct-16		6.03																																												
Reg 7a	4-Nov-16		5.76																																												
Reg 7a	15-Dec-16		5.94	7.66	742	16.2	7 8	714	496	<1	<1	296	296	26	46	43	20	79	2	0 06	0 006	<0 05	0.058		<0.0001		0.002	0.003	0.005	0.006	<0 001			0 023	<0 05		0.02	<0.01	0.56	0.56	7.75	7 28	3.15				
Reg 7a	18-Jan-17		6.06																																												
Reg 7a	14-Feb-17		6.25																																												
Reg 7a	9-Mar-17		6.34	7.22	878	17.8	7.81	860	456	<1	<1	305	305	43	58	53	24	92	2	<0.01	0 006	0 3	0.096		<0.0001		<0.001	<0 001	0.001	0.011	0.002			0.43	0.03		<0.01	<0.01	0.14	8.62	0.28						
Reg 7a	3-Apr-17		6.45																																												
Reg 7a	11-May-17		6.61																																												
Reg 7a	6-Jun-17		6.66	7.31	869	14.1	7.67	833	496	<1	<1	311	311	36	58	53	24	98	2	<0.01	0 006		0.093		<0.0001		<0.001	<0 001	0.002	0.003	0.002			0 36	0.02		0.02	0.02	0.07	8.6	1.91						
Reg 7a	4-Jul-17		6.72																																												
Reg 7a	9-Aug-17		6 8																																												
Reg 7a	8-Sep-17		6.81	7.45	806	15.4	7.92	774	452	<1	<1	345	345	26	45	45	20	89	2	<0.01	0 003		0.075		<0.0001		0.001	<0 001	<0.001	0.003	0.002			0 35	0.46		0.04	0.04	0.22	8.7	5.39						
Reg 7a	17-Oct-17		6.93																																												
Reg 7a	8-Nov-17		7.01																																												
Reg 7a	20-Dec-17		7.18	6.79	898	34.5	7.74	850	421	<1	<1	358	358	38	54	52	26	108	2	<0.01	0 005		0.094		<0.0001		0.008	<0 001	0.003	0.001	0.003			0.12	<0 01		<0.01	<0.01	0.08	9.47	0.08						
Reg 7a	9-Jan-18		7.27																																												
Reg 7a	6-Feb-18		7.48																																												
Reg 7a	27-Mar-18		7.75	7.05	852	15.3	7.44	899	506	<1	<1	329	329	47	58	54	24	92	1	<0.01	0 004		0.087		<0.0001		0.008	<0 001	<0.001	0.002	0.002			0.3	0.02		0.07	0.07	0.1	9.19	2.74						
Reg 7a	9-Apr-18		7.84																																												
Reg 7a	7-May-18		8.01																																												
Reg 7a	14-Jun-18		8.18	7.35	790	20.9	7.73	799	427	<1	<1	350	350	34	48	49	23	96	1	<0.01	0 005		0.089		<0.0001		0.004	<0 001	<0.001	<0.001	0.002			0 23	<0 01		13.7	13.7	0.12	9.05	2.93						
Reg 7a	5-Jul-18		8.28																																												
Reg 7a	9-Aug-18		8.46																																												
Reg 7a	10-Sep-18		8.62	7.28	822	22.2	7.69	766	398	<1	<1	295	295	28	46	41	21	89	1	<0.01	0 005		0.077		<0.0001		0.007	<0 001	<0.001	0.002	0.001			0 22	0.02		0.02	0.02	0.11	7.77	0.67						
Reg 7a	8-Oct-18		8.68																																												
Reg 7a	8-Nov-18		8.81																																												
Reg 7a	19-Dec-18		8.97	7.33	794	26	8.51	752	460	<1	30	293	323	36	51	54	25	100	2	<0.01	0 004		0.092		<0.0001		<0.001	<0 001	0.001	0.001	0.002			0 26	0.02		0.04	0.04	0.12	8.64	2.87						
Reg 7a	8-Jan-19		8.98																																												
Reg 7a	11-Feb-19		9.05																																												
Reg 7a	13-Mar-19		9.11	7.28	821	30.5	7.61	784	485	<1	<1	336	336	35	52	48	22	94	1	<0.01	0 003	0 2	0.089		<0.0001		<0.001	<0 001	<0.001	0.001	0.002			0.2	0.06		0.07	0.07	0.1	8.91	3.42						
Reg 7a	2-Apr-19		9.21																																												
Reg 7a	2-May-19		9.16																																												
Reg 7a	5-Jun-19		9.04	7.2	936	22.1	7.85	881	525	<1	<1	320	320	43	60	52	27	96	1	<0.01	0 003		0.096		<0.0001		<0.001	<0 001	<0.001	<0.001	0.002			0 31	<0 01		0.07	0.07	0.1	8.98	0.2						
Reg 7a	4-Jul-19		9.12																																												
Reg 7a	5-Aug-19		9.17																																												
Reg 7a	9-Sep-19		9.25	9.53	862	22.1	7.32	912	510	<1	<1	287	287	36	47	51	25	97	1	<0.01	0 004		0.096		<0.0001		0.007	<0 001	<0.001	0.003	0.002			0 21	<0 01		0.04	0.04	0.09	7.81	6.23						
Reg 7a	10-Oct-19		9.35																																												
Reg 7a	4-Nov-19		9.38																																												
Reg 7a	27-Nov-19		9.34	7.28	839	24.6	7.4	888	482	<1	<1	341	341	39	55	49	24	96	2	<0.01	0 004		0.093		<0.0001		0.004	<0 001	0.001	0.002	0.002			0 09	0.02		0.02	0.02	0.01	9.18	2.97						
Reg 7a	21-Jan-20		9.53																																												
Reg 7a	25-Feb-20		8.77																																												
Reg 7a	12-Mar-20		8.37	7.28	912	22.4	7.29	885	533	<1	<1	376	376	43	59	65	28	100	2	<0.01	0 003	<0 05	0.11		<0.0001			<0 001	0.416	0.002	<0 001			0 064	0.17		0.02	<0.01	<0.01	<0.01	10.1	9 95	0.62				
Reg 7a	7-Apr-20		7.83																																												
Reg 7a	13-May-20		7.05																																												
Reg 7a	10-Jun-20		7.03	6.99	961	9	7.19	968	558	<1	<1	344	344	60	65	62	28	110	2	<0.01	0 002	<0 05	0.123		<0.0001			<0 001	0.353	<0.001	<0 001			0 044	0.1		<0.01	0.02	0.4	0.42	9.96	10.2	1.38				
Reg 7a	7-Jul-20		7.05																																												
Reg 7a	11-Aug-20		7.04																																												
Reg 7a	11-Sep-20		7.11	7.07	984	20.4	7.18	957	551	<1	<1	360	360	60	67	60	27	116	2	<0.01	<0.001	<0 05	0.113		<0.0001			0.001	0.343	0.001	<0 001			0 052	0.13		<0.01	<0.01	0.42	0.42	10 3	10.3	0.09				
Reg 7a	19-Oct-20		7.06																																												
Reg 7a	4-Nov-20		7.08																																												
Reg 7a	7-Dec-20		7.06	7.07	469	27.9	7.4	896	540	<1	<1	343	343	59	60	58	26	103	2	<0.01	<0.001	<0 05	0.109		<0.0001			0.006	0.317	0.002	<0 001			0 064	0.07		<0.01	0.01	0.24	0.25	9.77	9 56	1.08				

Sample Location	Date	Depth to Ground - mbgl	Depth to Stand - mbtoc	Field Parameters			pH - Lab	EC - Lab - µs/cm	Total Dissolved Solids	Major Anions						Major Cations			
				pH - Field	EC - Field - µs/cm	Temp - Field - °C				Hydroxide Alkalinity as CaCO3 - mg/L	Carbonate Alkalinity as CaCO3 - mg/L	Bicarbonate Alkalinity as CaCO3 - mg/L	Alkalinity - mg/L	Sulfate (SO4) - mg/L	Chloride (Cl) - mg/L	Calcium (Ca) - mg/L	Magnesium (Mg) - mg/L	Sodium (Na) - mg/L	Potassium (K) - mg/L
ANZECC Guideline - stock drinking water									4000					1000		1000			
Reg 14																			
Reg 14	18-Mar-14		20 58	7.63	1575	26.9	7.76	1260	959	<1	<1	354	354	36	188	35	14	233	3
Reg 14	23-Apr-14		20 54																
Reg 14	27-May-14		19.67																
Reg 14	25-Jun-14		19.45				7.72	1290		<1	<1	396	396	34	170	38	13	268	4
Reg 14	29-Jul-14		19.4																
Reg 14	27-Aug-14																		
Reg 14	29-Sep-14		22.41																
Reg 14	28-Oct-14		21 2																
Reg 14	27-Nov-14		19 97																
Reg 14	17-Dec-14		19 85	7.85	1198	29.1	8.14	1250	710	<1	<1	347	347	24	181	30	10	205	3
Reg 14	20-Jan-15		20.14																
Reg 14	18-Feb-15		20.67																
Reg 14	17-Mar-15		20.67	8.23	1226	22.9	8.09	1220	758	<1	<1	449	449	30	175	38	12	253	2
Reg 14	21-Apr-15		19 95																
Reg 14	27-May-15		19.77																
Reg 14	29-Jun-15		19.65	8.62	1178	21	7.85	1200	699	<1	<1	380	380	29	164	44	11	239	3
Reg 14	24-Jul-15		19 59																
Reg 14	21-Aug-15		19 57																
Reg 14	24-Sep-15		19 54	8.24	786	17.6	7.85	797	480	<1	<1	287	287	38	59	22	8	167	2
Reg 14	29-Oct-15		20 27																
Reg 14	27-Nov-15		19.74																
Reg 14	29-Dec-15		20	7.26	917	27	7.95	959	535	<1	<1	329	329	48	77	27	8	179	2
Reg 14	15-Jan-16		20.76																
Reg 14	17-Feb-16		21 04																
Reg 14	11-Mar-16		21 24	7.62	995	29.6	8.01	983	504	<1	<1	320	320	40	78	26	10	184	2
Reg 14	18-Apr-16		20 34																
Reg 14	11-May-16		20.14																
Reg 14	14-Jun-16		19 92	8.08	876	17	8.15	871	444	<1	<1	292	292	40	68	25	7	154	2
Reg 14	12-Jul-16		19.79																
Reg 14	5-Aug-16		19.75																
Reg 14	5-Sep-16		19.75	8	886	17.4	7.96	921	519	<1	<1	291	291	45	64	21	7	159	1
Reg 14	5-Oct-16		19.65																
Reg 14	4-Nov-16		19.6																
Reg 14	15-Dec-16		19.76	8.15	888	17.2	8.12	856	600	<1	<1	297	297	36	83	26	7	162	2
Reg 14	18-Jan-17		20 53																
Reg 14	14-Feb-17		20.43																
Reg 14	9-Mar-17		20 23	7.36	972	20.1	7.88	938	660	<1	<1	320	320	47	76	22	8	177	2
Reg 14	5-Apr-17		19.7																
Reg 14	10-May-17		19.72																
Reg 14	6-Jun-17		19 56	8.22	908	14.9	8.34	935	504	<1	5	271	276	34	82	29	8	169	2
Reg 14	3-Jul-17		19.49																
Reg 14	8-Aug-17		19.42																
Reg 14	15-Sep-17		19.77	8.16	916	17.3	8.15	893	419	<1	<1	298	298	41	81	26	7	163	2
Reg 14	12-Oct-17		20 33																
Reg 14	8-Nov-17		19 97																
Reg 14	20-Dec-17		20.15	7.1	938	24.6	8.34	928	576	<1	6	306	312	44	104	26	7	158	2
Reg 14	9-Jan-18		21 27																
Reg 14	6-Feb-18		21.65																
Reg 14	26-Mar-18		20.77	7.14	1002	18.1	7.62	1050	595	<1	<1	325	325	75	102	26	8	178	2
Reg 14	9-Apr-18		20.77																
Reg 14	7-May-18		20.68																
Reg 14	14-Jun-18		21 96	7.4	980	18.4	7.84	978	566	<1	<1	335	335	54	78	24	8	184	2
Reg 14	5-Jul-18		21 04																
Reg 14	9-Aug-18		20 91																
Reg 14	3-Sep-18		20.44	6.9	1024	22.4	8.55	988	520	<1	22	288	310	41	65	22	7	170	1
Reg 14	8-Oct-18		20 96																
Reg 14	8-Nov-18		20 96																
Reg 14	11-Dec-18		21 25	7.51	948	25	8.55	951	588	<1	29	332	361	45	81	26	9	189	2
Reg 14	8-Jan-19		22 07																
Reg 14	11-Feb-19		22 05																
Reg 14	4-Mar-19		22 05	7.67	988	29.4	7.6	993	608	<1	<1	269	269	58	92	26	8	185	2
Reg 14	2-Apr-19		21 33																
Reg 14	2-May-19		21 01																
Reg 14	5-Jun-19		21 03	7.51	1017	23.8	8.22	972	588	<1	<1	305	305	41	88	25	9	177	2
Reg 14	4-Jul-19		21																
Reg 14	5-Aug-19		21 38																
Reg 14	4-Sep-19		20 91	7.22	1223	31.2	7 8	1240	670	<1	<1	265	265	70	157	29	14	202	4
Reg 14	10-Oct-19		21 59																
Reg 14	4-Nov-19		21 24																
Reg 14	26-Nov-19		21.41	7.48	1435	30.9	7.75	1360	713	<1	<1	255	255	243	168	50	12	222	7
Reg 14	14-Jan-20		21.72																
Reg 14	13-Feb-20		21 25																
Reg 14	11-Mar-20		20 85	7.75	994	21.4	7.72	1010	654	<1	<1	337	337	54	114	29	9	175	2
Reg 14	07/04/202		20.64																
Reg 14	12-May-20		20 54																
Reg 14	10-Jun-20		20 5	7.27	1048	19.2	7.58	1040	488	<1	<1	320	320	49	126	24	9	199	2
Reg 14	7-Jul-20		20.45																
Reg 14	11-Aug-20		20.44																
Reg 14	10-Sep-20		20.41	7.45	1034	17	7.47	1060	646	<1	<1	343	343	81	106	28	9	194	2
Reg 14	19-Oct-20		20.65																
Reg 14	4-Nov-20		20 57																
Reg 14	27-Nov-20		21.1	7.52	472	30.5	7.54	1040	694	<1	<1	348	348	78	109	26	8	184	2

Sample Location	Date	Total Metals																Mercury (Hg) - mg/L	Ammonia as Nitrogen (N)	Nitrite as N -mg/L	Nitrate as N - mg/L	Nitrite + Nitrate as N - mg/L	Total Anions - meq/L	Total Cations - meq/L	Ionic Balance	TPH C6-C9	TPH C10-C36	TRH C6- C10	TRH C10-C40
		Aluminium (Al) - mg/L	Arsenic (As) - mg/L	Boron (B) - mg/L	Barium (Ba) - mg/L	Beryllium (Be) - mg/L	Cadmium (Cd) - mg/L	Cobalt (Co) - mg/L	Chromium (Cr) - mg/L	Copper (Cu) - mg/L	Manganese (Mn) - mg/L	Nickel (Ni) - mg/L	Lead (Pb) - mg/L	Selenium (Se) - mg/L	Vanadium (V) - mg/L	Zinc (Zn) - mg/L	Iron (Fe) - mg/L												
ANZECC Guideline - stock drinking water		5	0.5				0.01	1	1	1		1	0.1	0.02		20		0.002			400								
Reg 14																													
Reg 14	18-Mar-14	0.7	0 012	<0 05	0 08		0.0002		<0.001	0.019		0.006	0.008			0 043	3.08		0.13	<0.01	<0.01	<0.01	13.1	13.1	0.09				
Reg 14	23-Apr-14																												
Reg 14	27-May-14																												
Reg 14	25-Jun-14	0 03	0 003	<0 05	0.072		<0.0001		<0.001	0.002		0.004	<0 001			0 015	0.09		0.2	<0.01	0.34	0.34	13.4	14.7	4.62				
Reg 14	29-Jul-14																												
Reg 14	27-Aug-14																												
Reg 14	29-Sep-14																												
Reg 14	28-Oct-14																												
Reg 14	27-Nov-14																												
Reg 14	17-Dec-14	<0.01	0.01	<0 05	0.056		<0.0001		<0.001	<0 001		0.001	<0 001			0 024	<0 05		0.29	<0.01	0.05	0.05	12 5	11.3	5.17				
Reg 14	20-Jan-15																												
Reg 14	18-Feb-15																												
Reg 14	17-Mar-15	<0.01	0.01	0.05	0 05		<0.0001		<0.001	<0 001		0.002	<0 001			0 009	<0 05		0.32	<0.01	0.03	0.03	14 5	13.9	2.12				
Reg 14	21-Apr-15																												
Reg 14	27-May-15																												
Reg 14	29-Jun-15	0 02	0 008	<0 05	0.044		<0.0001		<0.001	0.001		0.001	<0 001			0 01	<0 05		0.25	<0.01	0.05	0.05	12 8	13.6	2.81				
Reg 14	24-Jul-15																												
Reg 14	21-Aug-15																												
Reg 14	24-Sep-15	<0.01	0 004	<0 05	0.041		<0.0001		<0.001	<0 001		0.002	<0 001			0 039	0.07		0.01	<0.01	0.05	0.05	8.19	9 07	5.06				
Reg 14	29-Oct-15																												
Reg 14	27-Nov-15																												
Reg 14	29-Dec-15	<0.01	0 009	<0 05	0.038		<0.0001		<0.001	<0 001		0.002	<0 001			0 006	0.41		0.03	<0.01	0.02	0.02	9.74	9 84	0.46				
Reg 14	15-Jan-16																												
Reg 14	17-Feb-16																												
Reg 14	11-Mar-16	<0.01	0 004	<0 05	0.034		<0.0001		<0.001	<0 001		0.004	<0 001			0 007	0.09		0.04	<0.01	<0.01	<0.01	9.43	10.2	3.78				
Reg 14	18-Apr-16																												
Reg 14	11-May-16																												
Reg 14	14-Jun-16	<0.01	0 004	<0 05	0.044		<0.0001		<0.001	<0 001		0.002	<0 001			0 01	0.12		0.12	<0.01	0.04	0.04	8.58	8 57	0.11				
Reg 14	12-Jul-16																												
Reg 14	5-Aug-16																												
Reg 14	5-Sep-16	<0.01	0 003	<0 05	0.043		<0.0001		<0.001	<0 001		0.002	<0 001			<0.005	0.09		0.16	<0.01	0.04	0.04	8.56	8 56	0.01				
Reg 14	5-Oct-16																												
Reg 14	4-Nov-16																												
Reg 14	15-Dec-16	<0.01	0 004	<0 05	0.041		<0.0001		<0.001	<0 001		0.002	<0 001			<0.005	0.08		0.16	<0.01	0.05	0.05	9.02	8 97	0.3				
Reg 14	18-Jan-17																												
Reg 14	14-Feb-17																												
Reg 14	9-Mar-17	<0.01	0 005	0 3	0.034		<0.0001		<0.001	<0 001		0.007	0.003			0 34	0.05		0.01	0.01	0.28	9.52	0.05						
Reg 14	5-Apr-17																												
Reg 14	10-May-17																												
Reg 14	6-Jun-17	<0.01	0 002		0.042		<0.0001		<0.001	<0 001		0.002	0.004			0.1	0.21		<0.01	<0.01	0.09	8.54	5.39						
Reg 14	3-Jul-17																												
Reg 14	8-Aug-17																												
Reg 14	15-Sep-17	<0.01	0 003		0.039		<0.0001		<0.001	<0 001		0.002	0.003			0 09	0.23		0.03	0.03	0.12	9.09	0.43						
Reg 14	12-Oct-17																												
Reg 14	8-Nov-17																												
Reg 14	20-Dec-17	<0.01	0 003		0.033		<0.0001		<0.001	<0 001		0.001	0.002			0 09	0.18		0.04	0.04	0.08	10.1	6.81						
Reg 14	9-Jan-18																												
Reg 14	6-Feb-18																												
Reg 14	26-Mar-18	<0.01	0 004		0.028		<0.0001		<0.001	<0 001		0.002	0.005			0 28	0.03		0.02	0.02	0.26	10 9	5.72						
Reg 14	9-Apr-18																												
Reg 14	7-May-18																												
Reg 14	14-Jun-18	<0.01	0 003		0 03		<0.0001		<0.001	<0 001		0.003	<0 001			0 37	0.03		<0.01	<0.01	0.25	10	0.54						
Reg 14	5-Jul-18																												
Reg 14	9-Aug-18																												
Reg 14	3-Sep-18	<0.01	0 004		0.032		<0.0001		<0.001	<0 001		0.002	<0 001			0 27	0.05		<0.01	<0.01	0.24	8.88	1.18						
Reg 14	8-Oct-18																												
Reg 14	8-Nov-18																												
Reg 14	11-Dec-18	<0.01	0 003		0.038		<0.0001		<0.001	<0 001		0.003	0.001			0 08	0.03		<0.01	<0.01	0.23	10.4	0.6						
Reg 14	8-Jan-19																												
Reg 14	11-Feb-19																												
Reg 14	4-Mar-19	<0.01	0 003		0.021		<0.0001		<0.001	<0 001		0.003	0.002			<0.05	0.08		<0.01	<0.01	0.16	9.18	4.56						
Reg 14	2-Apr-19																												
Reg 14	2-May-19																												
Reg 14	5-Jun-19	<0.01	0 003		0.032		<0.0001		<0.001	<0 001		0.005	0.006			0 06	0.08		<0.01	<0.01	0.21	9.43	1.61						
Reg 14	4-Jul-19																												
Reg 14	5-Aug-19																												
Reg 14	4-Sep-19	<0.01	0 003		0.034		<0.0001		<0.001	<0 001		0.012	0.011			0.13	0.15		0.02	0.02	0.16	11 2	1.36						
Reg 14	10-Oct-19																												
Reg 14	4-Nov-19																												
Reg 14	26-Nov-19	<0.01	0 003		0.032		<0.0001		<0.001	<0 001		0.009	0.029			<0.05	0.12		<0.01	<0.01	0.1	14 9	5.58						
Reg 14	14-Jan-20																												
Reg 14	13-Feb-20																												
Reg 14	11-Mar-20	<0.01	0 003	<0 05	0.026		<0.0001			<0 001		0.009	<0 001			0 008	<0 05		0.15	<0.01	<0.01	<0.01	11.1	9 85	5.84				
Reg 14	07/04/202																												
Reg 14	12-May-20																												
Reg 14	10-Jun-20	<0.01	0 003	<0 05	0.034		<0.0001			0.001		0.011	<0 001			0 02	<0 05		0.05	<0.01	0.01	0.01	11	10.6	1.49				
Reg 14	7-Jul-20																												
Reg 14	11-Aug-20																												
Reg 14	10-Sep-20	<0.01	0 003	<0 05	0.031		<0.0001			<0 001		0.004	<0 001			0 016	<0 05		0.06	<0.01	0.04	0.04	11 5	10.6	4.07				
Reg 14	19-Oct-20																												
Reg 14	4-Nov-20																												
Reg 14	27-Nov-20	<0.01	0 003	<0 05	0.027		<0.0001			<0 001		0.004	<0 001			0 013	<0 05		0.04	<0.01	0.02	0.02	11.6	10	7.58				

Department of Planning, Housing and Infrastructure

NSW Planning ref: MP11_0047-PA-73

[redacted]
Group Manager - Approvals and Environment
Tarrawonga Coal Pty Ltd
Kamilaroi COUNTRY
PO Box 600
Gunnedah NSW 2380
27/06/2024

Sent via the Major Projects Portal only

Subject: Tarrawonga Coal Mine - Annual Review 2023

Dear [redacted]

I refer to the Tarrawonga Coal Mine Annual Review for the period 1 January 2023 to 31 December 2023, submitted as required by Schedule 5, Condition 4 of MP11_0047 as modified (the consent) to the NSW Department of Planning, Housing and Infrastructure (NSW Planning) on 30 March 2024.

NSW Planning has reviewed the Annual Review and considers it to generally satisfy the reporting requirements of the consent and the NSW Planning Annual Review Guideline (October 2015). Please make publicly available a copy of the 2023 Annual Review on the company's website within 30 days.

Please note that the NSW Planning's acceptance of this Annual Review is not an endorsement of the compliance status of the project.

Should you wish to discuss the matter further, please contact [redacted] Senior Compliance Officer on [redacted] email compliance@planning.nsw.gov.au

Yours sincerely

[redacted]

[redacted]
Team Leader
Compliance

As nominee of the Planning Secretary