NARRABRI MINE

2019 ANNUAL REVIEW

WHITEHAVEN COAL

Table 1: Annual Review Title Block

Name of Operation	Narrabri Mine
Name of Operator	Narrabri Coal Operations Pty Ltd
Development consent / Project Approval #	Project Approval 08_0144
Name of holder of development consent/project approval	Narrabri Coal Operations Pty Ltd
Mining lease #	ML 1609
Name of holder of mining lease	Narrabri Coal Pty Ltd
Water Licence #	Refer to Water Licences in Table 2
Name of holder of water licence	Narrabri Coal Pty Ltd, POSCO INTERNATIONAL Narrabri Investment Pty Ltd, EDF Trading Australia Pty Ltd, J-Power Australia Pty Ltd, Kores Narrabri Pty Ltd and Upper Horn Investments (Australia) Pty Ltd
MOP/RMP start date	1 January 2017
MOP/RMP end date	30 November 2020
Annual Review Commencement Date	1 January 2019
Annual Review Completion Date	31 December 2019

I, Gerald Linde, certify that this audit report is a true and accurate record of the compliance status of the Narrabri Mine for the period 1st January 2019 to 31st December 2019, and that I am authorised to make this statement on behalf of Narrabri Coal Operations 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	**Gerald Linde**
Title of Authorised Reporting Officer	**General Manager – Narrabri Mine**
Signature	
Date	31 / 03 / 2020

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1 STATEMENT OF COMPLIANCE

This Annual Review has been prepared to provide a summary of the environmental performance of the Narrabri Coal Operations (NCO) over the reporting period, 1 January 2019 to 31 December 2019. The compliance status of the mine against relevant approvals was assessed as at the end of the reporting period and is summarised in Table 2.

Table 2: Statement of Compliance

Where all the conditions of the relevant approvals complied with?	Yes/No
Project Approval (PA) 08_0144	No
Mining Operations Plan (MOP)	Yes
Mining Lease (ML) 1609	Yes
Subsidence Management Plan (SMP) Approval 10/9000	Yes
90CA811347	Yes
90WA812891	Yes
90CA802130	Yes
90WA822539	Yes
WAL15922	Yes
WAL12833	Yes
WAL20131	Yes
WAL6762	Yes
WAL2671	Yes
WAL2728	Yes
WAL20152	Yes
WAL29549	Yes
Groundwater Monitoring Bores: 90BL254481-487, 90BL254658-663, 90BL254701, 90BL254958-967, 90BL255167-173, 90BL255216-218, 90BL255769-772, 90BL256060-064, 90BL256344 and 90BL256346	Yes

Any non-compliances during the reporting period are ranked according to the compliance status key in table 3 and are described in brief detailed in Table 4. Section 11 of this Annual Review further explains any non-compliances and mitigation measures implemented or proposed for the following reporting period to prevent re-occurrence and potential adverse effects.

Table 3: Compliance Status Key

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 4: Non-Compliances

Relevant Approval	Cond. #	Condition Description (Summary)	Compliance Status	Comment	Where addressed in Annual Review
PA 08_0144	Schedule 3, Condition 4	The proponent shall prepare and implement Extraction Plans for any second workings to be mined to the satisfaction of the Secretary. Each Extraction Plan must: h) include a Land Management Plan, which has been prepared in consultation with any affected public authorities, to manage the potential impacts and/or environmental consequences of the proposed second workings on land in general	Non-compliant	The Land Management Plan requires permanent cracks greater than 50 mm to be remediated by ripping or filling and cracks greater than 330 mm to be investigated and the subsidence predictions updated. During the Independent Audit there were cracks that exceed 50mm (around 50% of all cracks records provided to the auditor) and most of these have no documented treatment. There are eight cracks out of the 73 provided to the auditor that exceed 330 mm in width. None of these cracks are shown to have been investigated or treated.	6.5 10
PA 08_0144	Schedule 4, Condition 1	The Proponent shall ensure that the noise generated by the project does not exceed the levels set out in Table 1.	Non-compliant	One noise exceedance was recorded at Site N9 on 04 September 2019. The Main Vent Fan was noted as the dominant noise source from the mine. No community complaints were received at the time of the exceedance. The relevant Government agencies were notified as required.	6.1
PA 08_0144 Statement of Commitments	6.4	Record extraction volumes including weekly totals from all pumping bores, and weekly totals from the underground mine and box cut sump.	Non-compliant	Extraction volumes are recorded on a monthly basis.	7.3 10
PA 08_0144 Statement of Commitments	17.2	Prepare or update the following management and monitoring plans; - Salinity Contamination Contingency Plan	Non-compliant	Water quality incidents are addressed in the Water Management Plan and the Pollution Incident Response Management plan (PIRMP), including response and notification, however these do not specifically make reference to saline contamination or specific response requirements as outlined in SoC 7.26.	10

2 INTRODUCTION

This is the thirteenth Annual Review produced for the Narrabri Mine (Figure 1) and has been prepared in accordance with the NSW Department of Planning, Industry and Environment's (DPIE) Integrated Mining Policy – Annual Review Guideline, October 2015. This document has been prepared to satisfy the following requirements:

- The Annual Review requirements of the DPIE under Project Approval (PA) 08_0144 (Schedule 6, Condition 6);
- Environmental Management Report requirements of the Resources Regulator under the Narrabri Mine Mining Lease (ML) 1609; and
- The routine reporting expectations of DPIE-Water.

The Annual Review covers the period between 1 January 2019 to the 31 December 2019. The Annual Review provides information on historical aspects of the Narrabri Mine, longer term trends in environmental monitoring results and information on proposed activities to be undertaken during the following reporting period.

2.1 PROJECT DESCRIPTION

NCO is located within the Narrabri Local Government Area (LGA), approximately 30 km south-southeast of Narrabri, and 10 km north-northwest of Baan Baa (Figure 1). NCO's Mining Lease (ML) 1609 was approved on the 18th of January 2008 in accordance with the provisions of Ming Act 1992 and expires on the 18th of January 2029. The ML encompasses an area of 5,298ha for the predominate purpose of mining for coal.

The current PA 08_0144 Modification 6 will allow the undertaking of mining operations until the 26 July 2031. Modification 5 of PA 08_0144 allows NCO to produce up to 11 Mtpa of ROM coal. The Mining Operation plan is reviewed on a three yearly basis and is current from 1 January 2017 to the 30 November 2020.

NCO is operated by Narrabri Coal Operations Pty Ltd (NCO). NCO is a joint venture between Narrabri Coal Pty Ltd (NCPL), Upper Horn Investments (Australia) Pty Ltd, J-Power Australia Pty Ltd, EDF Trading Australia Pty Limited, Posco International Narrabri Investment Pty Ltd and Kores Narrabri Pty Ltd.

2.2 MINE CONTACTS

The key personnel responsible for operational and environmental management at the Narrabri Mine during the reporting period include:

- *Gerald Linde* – General Manager, retains overall responsibility for all activities and performance at the mine. Contact: (02) 6794 4755.
- *Brent Baker* – Environmental Superintendent, oversees day to day environmental performance across the site. Contact: (02) 6794 4755.

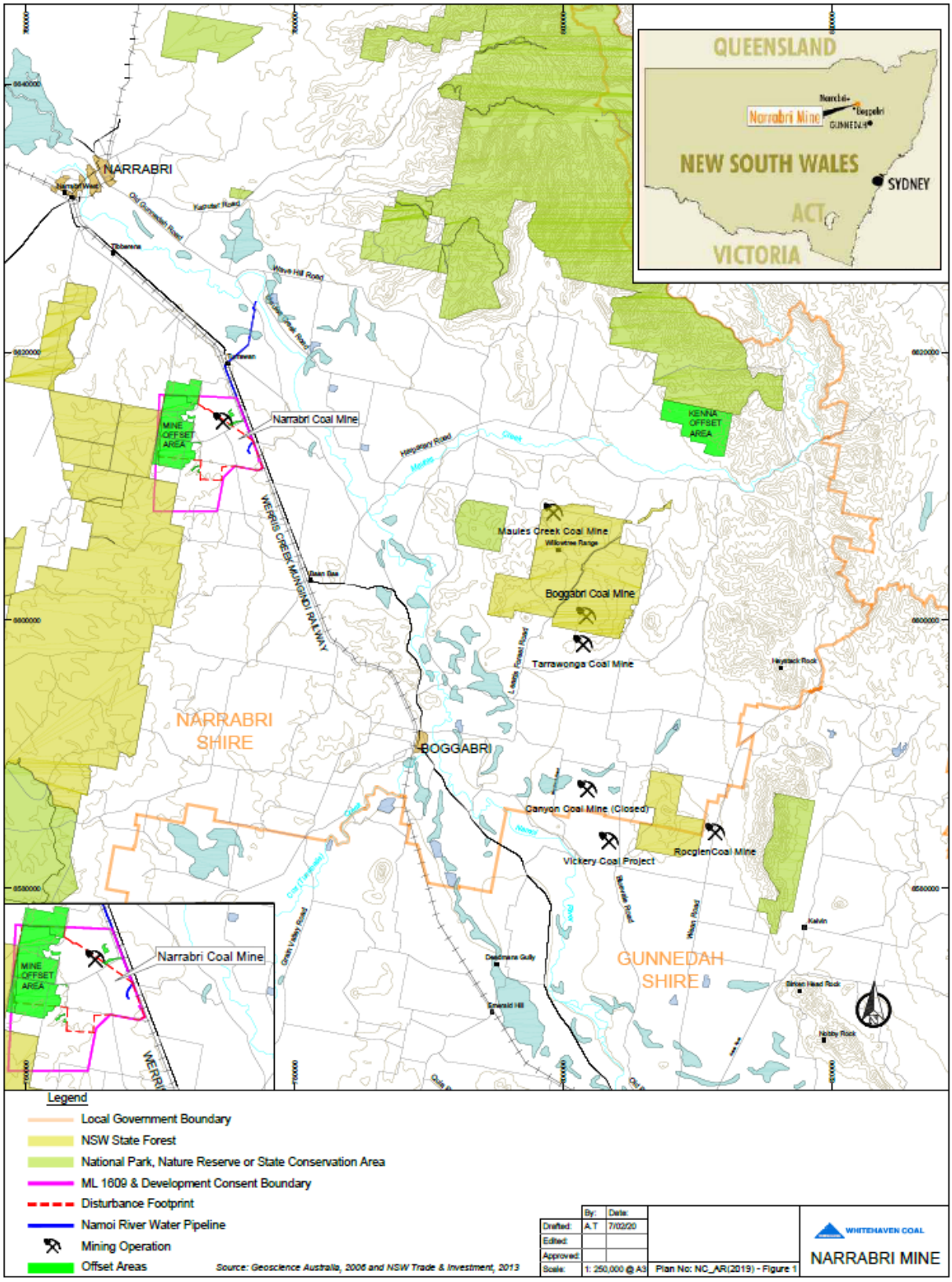

Figure 1: Regional Scale Locality Plan

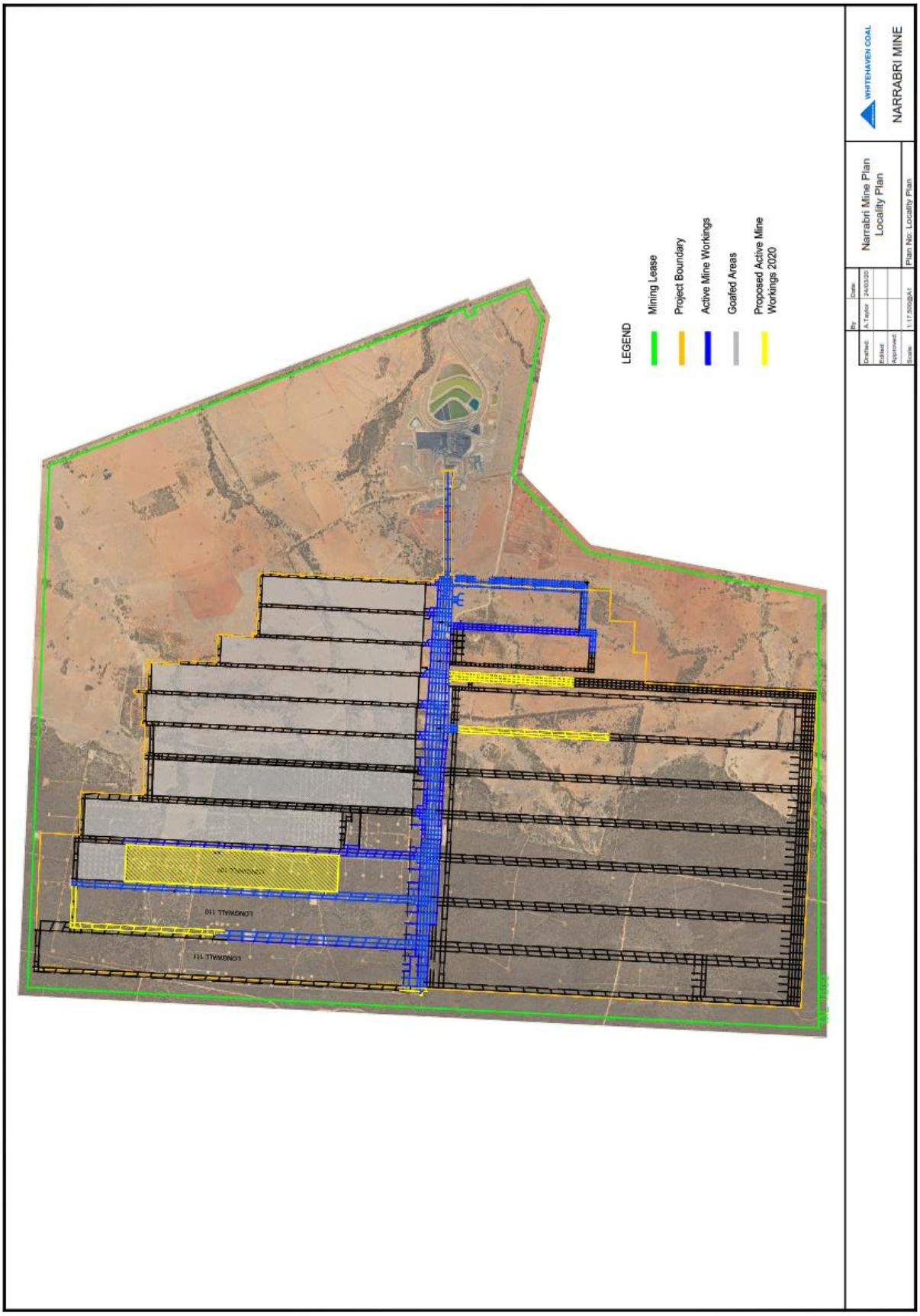

Figure 2: Local Scale Locality Plan

3 APPROVALS

Table 5 provides a summary of the key licences, leases and approvals that have been obtained for the Narrabri Mine to enable the construction and operation of the mine.

Table 5: Licences, Leases and Approvals

Issuing / Responsible Authority	Type of Lease, Licence, Approval	Date of Issue	Expiry	Comments
Minister for Planning	PA 05_0102	13 November 2007	18 January 2029	PA for Stage 1. Surrender of the Stage 1 PA approved on 2 August 2011.
Minister for Planning	PA 05_0102 MOD1	26 March 2010	18 January 2029	Notice of modification under Section 75W of the EP&A Act. PA surrendered, refer above.
DRG (now Resources Regulator within DPI&E)	ML 1609	18 January 2008	18 January 2029	Approval for mining
Environment Protection Authority (EPA)	Environment Protection Licence (EPL) 12789	20 February 2008	Nil – Anniversary: 20 February	For mining operation >5,000,000 T (handled and produced annually)
Narrabri Shire Council (NSC)	Construction Certificate DP 816020 Inspection Report/Permit to Occupy No 2413	17 October 2008 6 August 2009	N/A	Stage 1 Mine Surface Facilities
DPI-Water	90WA822539 / WAL15922 90WA812891 / WAL20131 90WA812891/ WAL12833 90CA802130 / WAL6762 90CA802130 / WAL2671 90CA802130 / WAL2728 90CA802130 / WAL20152 90WA822539 / WAL29549 90BL254481-254487 90BL254658-254663 90BL254701 90BL254958-254967 90BL255167- 255173 90BL255216-255218 90BL255769-255772 90BL256060-256064 90BL256289 90BL256293 90BL256344 90BL256346 90BL256386 90BL256396-256397 90BL256402 90BL256410	Various	Various	GAB – Water supply (248ML) GW – Water supply (150ML) GW – Water supply (67ML) River – High Security (20ML) River (48ML) River (10ML) River (600ML) **Mining (Low Security) (818ML)** Groundwater Monitoring Purposes
WorkCover NSW	Notification for explosives use and storage	5 August 2010	20 July 2020	Licence Number – XSTR100215
Narrabri Shire Council (NSC)	Construction Certificate DP 816020	23 September 2010	N/A	Stage 2 Mine Surface Facilities

Minister for Planning	PA 08_0144	26 July 2010	26 July 2031	PA for Stage 2
	PA 08_0144 MOD1	30 March 2011	26 July 2031	Notice of modification under Section 75W of the EP&A Act to update the subsidence management conditions.
	PA 08_0144 MOD2	21 December 2011	26 July 2031	Notice of modification under Section 75W of the EP&A Act to allow for a one-off road transport of coal to Tarrawonga Coal Mine.
	PA 08_0144 MOD4	22 September 2015	26 July 2031	Notice of modification under Section 75W of the EP&A Act for an expansion of the coal stockpiles.
	PA 08_0144 MOD5	9 December 2015	26 July 2031	Notice of modification under Section 75W of the EP&A Act to widen the longwall face and increase the annual production limit.
	PA 08_0144 MOD6	13 January 2017	26 July 2031	Notice of modification under Section 75W of the EP&A Act to vary the annual reporting timeframe.
Resources Regulator within DPI&E	MOP 2017-2020	1 January 2017	30 November 2020	Details mining and rehabilitation activities during the applicable period.

4 OPERATIONS SUMMARY

4.1 MINING OPERATIONS

During the reporting period underground development continued into longwall panels (LW) LW 109, LW110, LW120 (201[1]) and the 100 Mains. The longwall unit has previously extracted LW101 to LW107. During the reporting period longwall extraction of LW108A was completed and at the end of the reporting period the longwall unit was relocating to LW109.

Table 6 presents the production summary for the previous and current reporting periods and the anticipated production schedule for the next reporting period.

Table 6: Production Summary

Material	Approved limit	Previous reporting period (actual)	This reporting period (actual)	Next Reporting period (forecast)
Waste Rock / Overburden	657,000 m^3 (2010 MOP, Table 3.8)	0	0	0
ROM Coal*	11 Million Tonnes CY (PA 08_0144 Sch. 2, Cond.6) > 5 Million Tonnes produced (EPL 12789)	5.28	5.59	8.26
Reject Material	N/A (Million Tonnes)	0.31	0.24	0.41
Saleable Product**	> 5 Million Tonnes handled (EPL 12789)	4.94	5.49	7.29

* - ROM Coal is total production at the mine site. The difference between ROM Coal and final product is related to changes in stockpile volumes at the mine.
** - Saleable Product is coal railed from site.

4.2 OTHER OPERATIONS

4.2.1 Exploration Activities

Exploration drilling was undertaken during the reporting period to further assist production planning and assess coal reserves within ML 1609 and EL 6243. Nine exploration holes were completed on ML 1609.

4.2.2 Construction

There were no construction activities during the reporting period. Underground development works have been described in Section 4.1.

[1] Naming conventions applied to the Southern longwall panels has been changed on mine plans in line with the following examples: LW120 = LW201, LW119 = LW202, LW118 = LW203.

4.2.3 Hours of Operation

The approved hours of operation are provided in Table 7.

Table 7: Hours of Operation

Activity	Hours / Days
Mining Operations	
Pit Bottom Area development	24 hours / 7 days
Underground mining	24 hours / 7 days
Gas drainage	24 hours / 7 days
Ventilation fan operation	24 hours / 7 days
Coal processing and handling	24 hours / 7 days
Rail loading and transportation	24 hours / 7 days
Surface maintenance	24 hours / 7 days
CHPP reject disposal	24 hours / 7 days[1]
Raw materials / supply delivery	7:00am to 10:00pm / 7 days
1: Reject disposal activities will generally be restricted to 7:00am to 10:00pm, 7 days per week. However, it is possible that the proportion of reject material generated by the CHPP may exceed the predicted average 5% level for short periods. To account for these periods of elevated reject production, contingent hours of operation will be 24 hours / 7 days (when inversion conditions do not prevail).	

4.3 NEXT REPORTING PERIOD

4.3.1 Mine Operations

The planned mine production rate for the next reporting period will be 7.7 Mt of ROM coal and approximately 0.41 Mt of coarse reject material. Longwall extraction of LW109 will continue, with development activities proposed for LW110, LW203 and 100 Mains.

4.3.2 Exploration

Exploration drilling and seismic surveys will continue to be undertaken at the Narrabri Mine. The primary focus of the exploration activities during the next reporting period will be structure/fault definition, with 12 exploration bore holes proposed on ML 1609.

4.3.3 Construction Activities

Proposed construction activities during the reporting period include;

- Construction of an alternative access track to improve truck access for deliveries to site. The site had been cleared for agricultural purposes prior to the commencement of mining activities. The area is included in the current MOP.
- Demolition of abandoned houses on the Mining Lease.
- Security infrastructure at the main access gate.

4.3.4 Mining Fleet Upgrades

There are no planned upgrades to the underground mining fleet during the next reporting period. The Caterpillar bulldozers used on the coal stockpile are planned to be changed out with the new equipment exhibiting lower sound power levels, pending budgetary and commercial agreements.

5 ACTIONS REQUIRED FROM PREVIOUS ANNUAL REVIEW

The 2018 Annual Review and subsequent regulatory correspondence identified the following actions, summarised in Table 8.

Table 8: Actions from the Previous Annual Review (2018)

Action required from Previous Annual Review	Requested By	Action Taken by the Operator	Where discussed in Annual Review
Locality Plans: Include a local scale plan showing the most recent aerial photograph overlayed with the project approval boundary, mining lease boundaries, active mine areas and current mine workings.	DPI&E	Included in 2019 Annual Review	Figure 2
Air Quality: limit the time scale for PM10 results to a five year period.	DPI&E	Included in 2019 Annual Review	Section 6.3
Waste Management: include a comparison to previous four years performance for each waste stream	DPI&E	Included in 2019 Annual Review	Section 6.9
Community contributions: provide further information on contributions specifically made on behalf of Narrabri Mine	DPI&E	Included in 2019 Annual Review	Section 9.2
S240 Directions Notice: issued in relation to the Rejects Emplacement Area 'Capping Assessment & Closure Design' report, for additional testing and reporting submissions to be made by 31 July 2019 and 31 August 2019.	Resources Regulator	NCO completed the additional testing and reporting by the due dates.	N/A

6 ENVIRONMENTAL PERFORMANCE

The following sub-sections report on the environmental performance achieved during the reporting period and provides a summary of the environmental monitoring data compared to data predictions, trends and management measures. Environmental monitoring locations are illustrated on Figure 3.

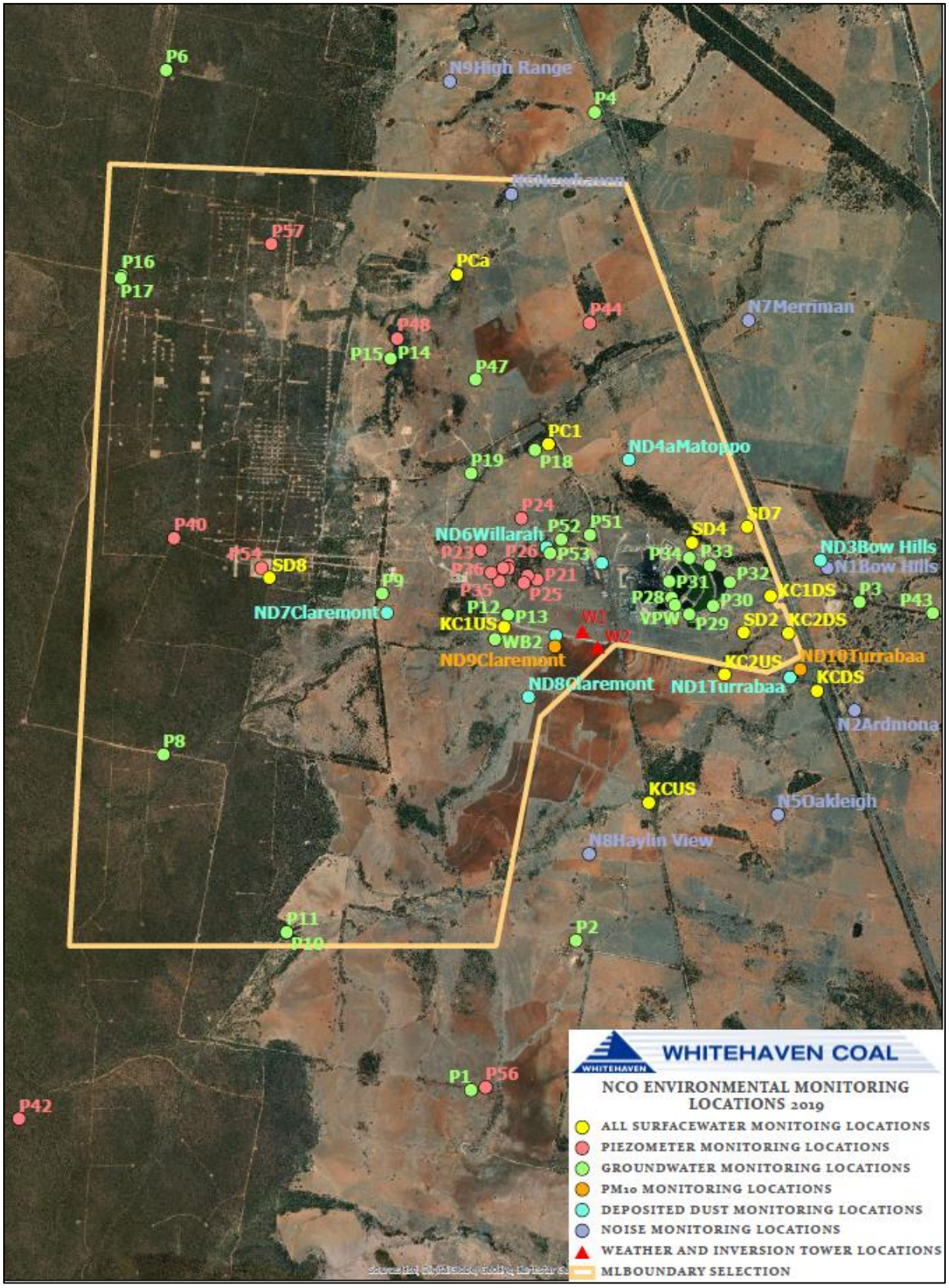

Figure 3: Environmental Monitoring Locations

6.1 NOISE

6.1.1 Environmental Management

Potential noise impacts associated with the Narrabri Mine are managed in accordance with the:

- Noise Criteria and Operating Conditions prescribed under Schedule 4, Conditions 1 to 5 of PA 08_0144;
- EPL 12789 Conditions L3, M7, R4 and E2; and
- NCO has previously prepared the Narrabri Mine Noise Management Plan (NMP) to address the requirements of condition 4, schedule 4 of the PA 08_0144, the NMP was approved by DPIE on the 5 July 2018.

During the reporting period various controls were implemented to manage noise including:

- Investigate received noise complaints;
- Maintenance activities on main vent fan acoustic baffles;
- Investigation of noise attenuation measures applicable to the main vent fan, which included detailed noise modelling on the effectiveness of a noise barrier;
- Investigation of noise attenuation measures applicable to the goaf drainage units;
- Planning and budgeting for replacement bulldozers exhibiting lower SPL's;
- Progressive replacement of all reversing alarms on surface vehicles and machinery to be of the low frequency type;
- The approved hours of operation are adhered to;
- Implement the noise and inversion Trigger Action Response Plan (TARP) for surface coal processing operations;
- Site personnel are required to pay due attention to site weather conditions and modify or stand down from operational activities if directed by mine management; and
- Monitoring of emitted noise levels is undertaken during mining operations to verify compliance with noise criteria and to assess the need, if any, for additional noise attenuation measures.

The Narrabri Mine noise monitoring network includes:

- Continuous monitoring at three real-time monitoring units for management purposes;
- Quarterly attended monitoring at four locations as described in the EPL (N5, N6, N8 and N9); and,
- Quarterly attended monitoring at location N3 as described in the NMP.

Quarterly monitoring is also undertaken at N1, however a private agreement is in place and therefore the results are not included in this AR. Quarterly monitoring is also undertaken at N7, however the property is owned by Narrabri Coal Operations and therefore the results are not included in this AR.

During the reporting period the mine acquired the properties consisting of monitoring locations N5 and N8.

6.1.2 Environmental Performance

Attended Monitoring

Attended noise monitoring is conducted on a quarterly basis during the reporting period by an independent consultant. The attended noise monitoring is used to assess compliance with licence and approval limits for mine contributed noise. A summary of the noise monitoring results is outlined in Table 9 with additional details provided where results were recorded above the criteria at privately-owned residences where a private agreement is not in place.

Table 9: Noise Monitoring Summary

Site		Location	Mod. 5 Max. EA Predicted Levels (dB(A))	Criteria ($L_{Aeq(15\ minute)}$), dB(A))	Quarter 1 (Mine Contribution, dB(A))	Quarter 2 (Mine Contribution, dB(A))	Quarter 3 (Mine Contribution, dB(A))	Quarter 4 (Mine Contribution, dB(A))
N3	NMP	Ardmona	35	35	IA	33	34	**<25**
N5	EPL	Oakleigh	31	35	30	I/A	34	**29**
N6	EPL	Newhaven	<30	35	31	42[1,2]	35	**<30**
N8	EPL	Haylin View	35	35	30	33	30	**24**
N8	NMP	Matilda	32	35	IA	26	29	**IA**
N9	EPL	High Range	35	35	27	43[1,2]	39[1]	30

*NA – Not Applicable as result affected by atmospheric conditions or no INP penalty applies.
IA = Inaudible.
Note 1: 2dB modifying factor correction for low frequency noise has been applied in accordance with the NPfI.
Note 2: Measured during non-compliant weather conditions. Wind speed >3m/s throughout measurement period.

On the 04th September 2019 there was a 4 dB exceedance of the $L_{Aeq(15minute)}$ criterion recorded at monitoring location N9, where the Main Exhaust Ventilation Fan was noted as the dominant noise source from the mine. The exceedance was reported to the EPA and DPI&E as required. As the exceedance was a one-off for the monitoring location the mine did not propose to undertake additional monitoring until the next round (Q4), where results did not record any further exceedance of noise criteria.

Sound Power Testing (SPL)

SPL testing was undertaken on key mobile plant and other fixed equipment during the reporting period, results are summarised on Table 10.

Table 10: SPL Testing Summary

Unit	Equipment Type	Parameter	Modelled SPL (dB)	Result dB
N/A	Main Ventilation Fans	Average	117	**118[3]**
MEU003	Goaf Drainage Unit	Average	102[1]	**101**
MEU004	Goaf Drainage Unit	Average	102[1]	**100**
MEU006	Goaf Drainage Unit	Average	102[1]	**101**
MEU007	Goaf Drainage Unit	Average	102[1]	**105[1,3]**
MEU008	Goaf Drainage Unit	Average	102[1]	**101**
DOZ005	Komatsu D475A Dozer	Dynamic cycle	118	**118**
DZ239	Caterpillar D11R Dozer	Dynamic cycle	118	**120[3]**
DZ401	Caterpillar D9R Dozer	Dynamic cycle	118	**117**
DR020	Bauer BG 20H Drill Rig	In Service	109	**103**
DR082	Schramm Drill Rig (Unshielded)	In Service	109	**117[2]**
DR082	Schramm Drill Rig (Shielded	In Service	109	**109**

1. Gas-drainage units are modelled at 102dB for >10 units however the mine currently only operates 5 units.
2. As per the Statement of Commitments (10.14) noise attenuation is required on surface drills when operating over the SE longwall panels to achieve a sound power level of 109dB. As the drill rigs are not currently operating in this area shielding has not been applied to DR082, however measurements recorded during 2019 using temporary shielding (shipping container) indicate that the 109 dB sound power level is achievable.
3. Refer Section 6.1.1 for controls implemented during the reporting period, and Section 6.1.3 for proposed improvement measures.

6.1.3 Proposed Improvement Measures

A number of improvement measures are proposed for the next reporting period including:

- Continue investigation of noise attenuation measures applicable to the main vent fan. This will include further noise modelling on noise barriers and alternative noise attenuation options;
- Maintenance activities on the exhaust components of all Goaf Drainage Units will be increased in frequency. Following the maintenance SPL measurements will be undertaken to determine if the maintenance is effective in reducing noise levels. If the SPL of MEU007 cannot be reduced via exhaust maintenance activities then a noise attenuation barrier will be installed on the unit;
- Negotiations have commenced with suppliers to replace coal stockpile Caterpillar bulldozers with equipment exhibiting lower SPL's;
- Continue with progressive replacement of reversing alarms on all surface vehicles and machinery to be of the low frequency type.

6.2 BLAST

As there has not been any surface or near-surface blasting at the site during the reporting period, no blast monitoring has been required or conducted.

6.3 AIR QUALITY

6.3.1 Environmental Management

The Narrabri Mine has the potential to impact on air quality at the mine. Air quality impacts at the mine are managed in accordance with the:

- Air quality criteria prescribed under Schedule 4, Condition 6 of the PA 08_0144;
- EPL 12789 Conditions O3, P1 and M2; and
- NCO has prepared an Air Quality Management Plan (AQMP) prepared to satisfy the requirements of PA 08_0144.

Narrabri Mine employs a range of air pollution control measures including:

- Cleared trees and branches will be retained for use in stabilising disturbed areas once they are no longer required;
- Trigger Action Response Plans (TARPs) have been developed for the major dust generating activities onsite which currently includes: the coal processing area; surface drilling activities; and surface civil works;
- All conveyers will be fitted with appropriate cleaning and collection devices to minimise the amount of material falling from the return conveyer belts and are partly enclosed to minimise dust lift-off;
- The coal rotary breaker is enclosed;
- The CHPP and stockpile areas have a fully automated water spray systems, including conveyor belt sprays and stockpile sprays;
- Clear definition of all the site roads and the restriction of vehicles and equipment to the roads. All site roads and hardstand areas are routinely watered by a mobile water cart;
- Progressive rehabilitation of areas of disturbance including topsoil and subsoil stockpiles;
- Maintaining a perimeter amenity bund and windbreaks.

The Narrabri Mine air quality monitoring network is illustrated on Figure 3 and includes:

- PM_{10} levels are measured by two High Volume Air Sampler (HVAS) for a twenty-four hour period every six days. Total Suspended Particulate (TSP) matter is inferred at a ratio of 1:2 from the measured PM_{10} data; and
- a network of eight Dust Deposition Gauges (DDGs), measuring deposited dust and particulates collected monthly.

6.3.2 Environmental Performance

Depositional Dust results for the reporting period (provided in Table 11) indicate that all monitoring locations are below the annual average criteria of 4 g/m^2/month Total Insoluble Solids. It is worth noting that the monitoring locations (with the exception of ND3 for which a Private Agreement is in place) are located on properties owned by the mine. ND3 is included for both offsite impacts in the Modification 5 EA and current monitoring, as outlined in Narrabri Mine's AQMP. The predicted dust levels as outlined in the EA under both scenarios has dust levels at ND3 increasing by 0.1 g/m2/month above the back ground level of 1.9 g/m^2/month. The reporting period average for ND3 was 2.3 g/m^2/month and the long-term average is 1.8 g/m^2/month. The reporting period average is above the predicted level, but below the annual average criteria. During the reporting period there were multiple regional dust storm and bushfire events, during continued drought conditions.

Table 11: Deposited Dust Monitoring Data Summary for the Reporting Period

Site	EPL ID No.	Property Name	PA 08_0144 Annual Average Criteria		Modification 5 EA Levels (g/m^2/month)	Annual Mean Total Insoluble Solids (g/m^2/month)
			Max Increase (g/m^2/month)	Max Total (g/m^2/month)		
ND1	-	Turrabaa	2	4	2.2	**3.6**
ND2	-	Claremont	2	4	1.9	**1.6**
ND3	3	Bow Hills	2	4	2.0	**2.3**
ND4A	-	Matoppo	2	4	2.3	**3.3**
ND5	-	Willarah	2	4	2.9	**4.0**
ND6	-	Willarah	2	4	2.9	**2.3**
ND7	-	Claremont	2	4	1.9	**2.0**
ND8	-	Claremont	2	4	1.9	**2.2**

The HVAS monitoring conducted (**Figure 4** to Figure 7) indicate that the PM_{10} annual averages remain below the applicable criteria of 30 µg/m³ at both PM_{10} monitoring locations, i.e. ND9 and ND10. The results for the PM_{10} monitoring also confirm that the TSP criteria for the mine are within the annual average PM_{10} compliance limit. The DPI&E have previously advised that Whitehaven's method for determining TSP concentrations, i.e. multiplying PM_{10} concentrations by a factor of 2, is satisfactory. Based on the above, the calculated annual average TSP concentrations of 38.6 µg/m³ at ND9 and 50.2 µg/m³ at ND10 are both below the 90 µg/m³ annual average AQ impact assessment TSP criterion.

The prevailing drought conditions (continuing from 2018) and the unprecedented bushfire season smoke haze from mid-October 2019 impacted on regional air quality and resulted in 24 hour limits being exceeded at both monitoring locations on several occasions during late 2019. In accordance with the Project Approval (PA) 08_0144 (Schedule 4, Condition 6) air quality data impacted by extraordinary weather events may be excluded from air quality results. Accordingly this Annual Review has included two graphs of monitoring results for each location;

- The ND9 HVAS PM_{10} monitoring results with the above extraordinary weather events excluded from the data set have been illustrated in **Error! Reference source not found.** while Figure 5 displays the data set inclusive of the above mentioned extraordinary weather events (which occurred during the 2019 reporting year).
- ND10 HVAS PM_{10} monitoring results excluding extraordinary weather events have been displayed in Figure 6 below and Figure 7 displays the dataset inclusive of extraordinary weather events (which occurred during the 2019 reporting period).

PM_{10} levels are monitored on properties close to mining operations as outlined in the Narrabri Mine AQMP. During the reporting period there were multiple exceedances of the 24-hour criterion, particularly during the latter half of the year. These exceedances were attributed to regional dust storm events (ongoing 2018 regional drought) and unprecedented bushfire season smoke haze conditions that were experienced during the reporting period. The exceedances were reported to the DPIE at the time as required by the mines' AQMP with no regulatory action taken during the reporting period. The 24-hour criterion (i.e. 50 µg/m³) was exceeded on the following dates;

- 13 February 2019 with ND9 and ND10 measuring PM_{10} levels of 132.0 µg/m^3 and 214.0 µg/m^3, respectively.
- 17 September 2019 at ND9 and ND10 measured PM_{10} levels of 36.8 µg/m^3 and 50.9 µg/m^3, respectively.
- 17 October 2019 at ND9 measured a PM_{10} level of 57.7 µg/m^3.
- 29 October 2019 at ND10 measured a PM_{10} level of 69.4 µg/m^3.
- 22 November 2019 at ND9 and ND10 measured PM_{10} levels of 91.5 µg/m^3 and 140.0 µg/m^3, respectively.
- 28 November 2019 at ND10 measured a PM_{10} level of 53.8 µg/m^3.
  22 December 2019 at ND9 and ND10 measured PM_{10} levels of 85.7 µg/m^3 and 87.1 µg/m^3, respectively.

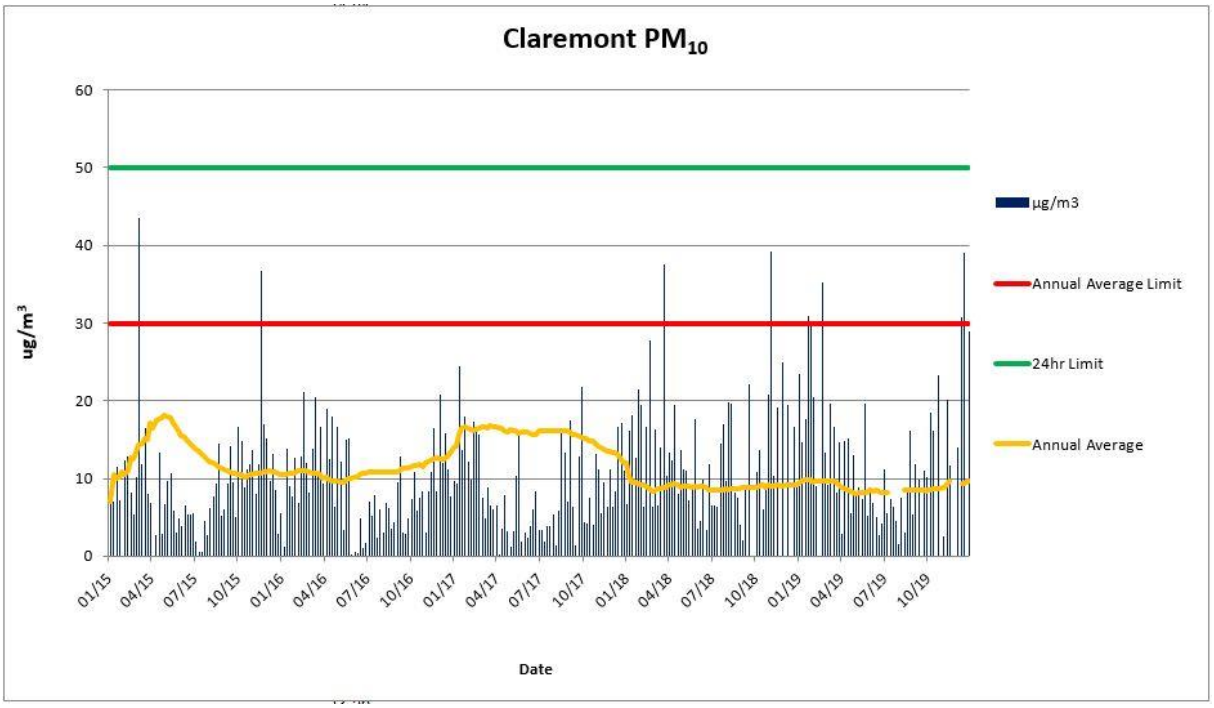

Figure 4: ND9 PM_{10} Results excluding extraordinary weather events

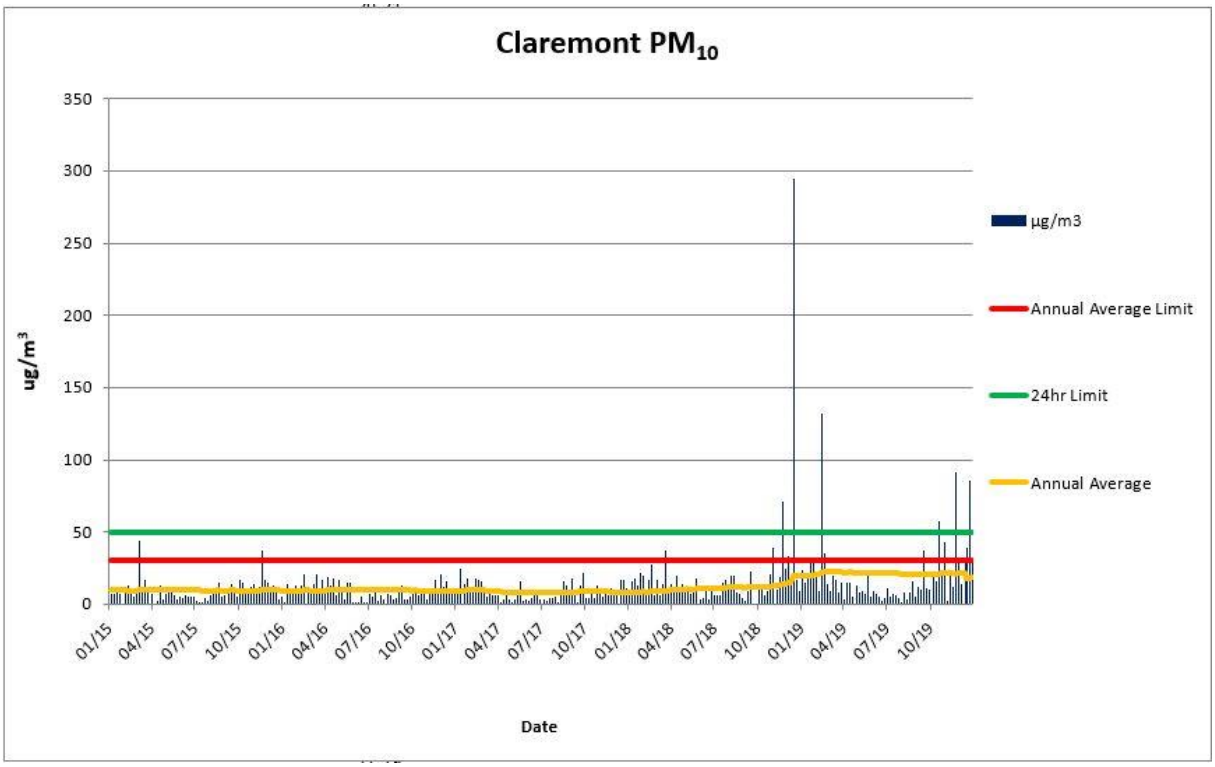

Figure 5: ND9 PM_{10} Results including extraordinary weather events

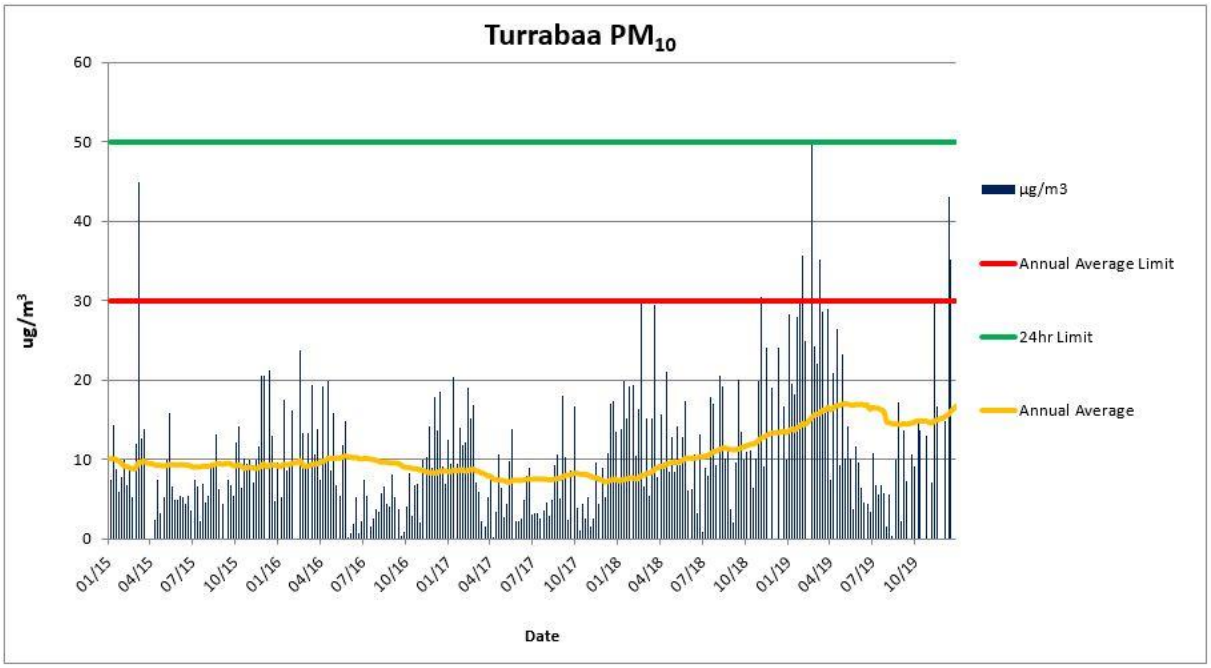

Figure 6: ND10 PM_{10} excluding extraordinary weather events

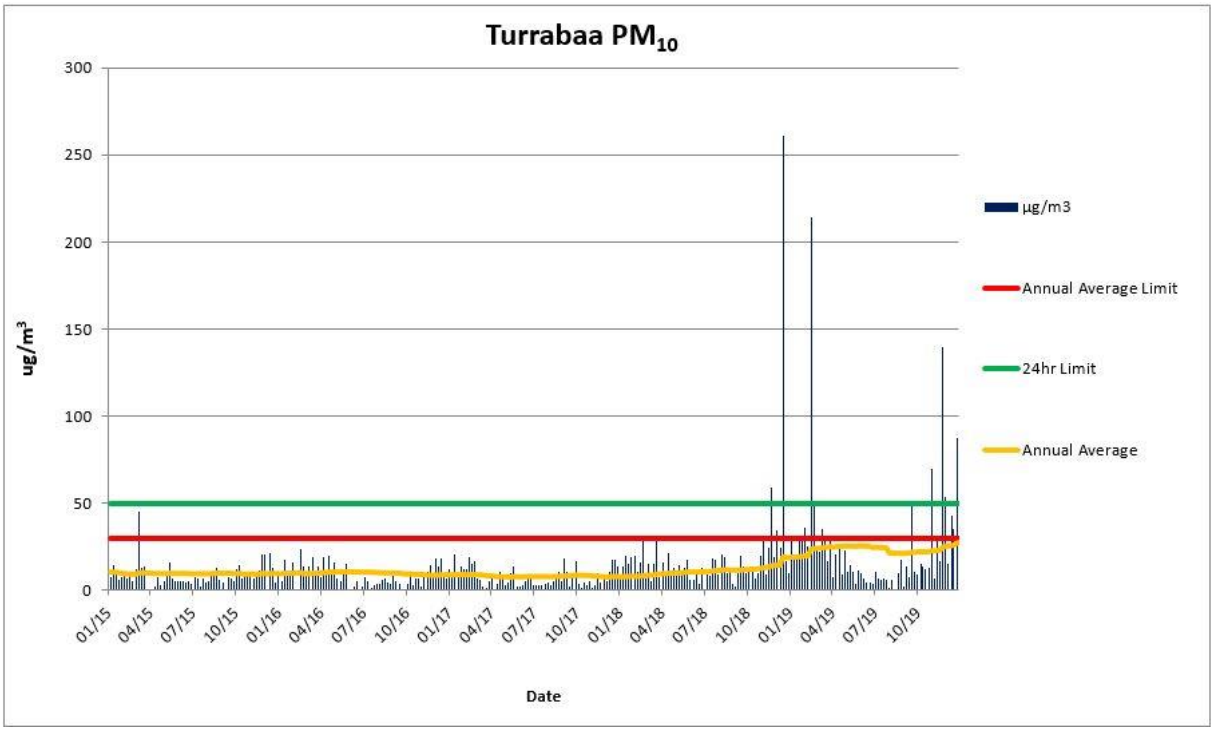

Figure 7: ND10 PM_{10} including extraordinary weather events

6.3.3 Proposed Improvement Measures

In accordance with a Pollution Reduction Study added to the EPL12789, the mine has initiated the following works to be completed during the reporting period;

- A study on the possible use of chemical veneers to suppress dust from coal stockpiles; and
- Undertake a quality control audit of the dust suppression systems (fixed and mobile) in operation at the pit-top area of the mine.

6.4 METEOROLOGICAL DATA

Meteorological monitoring is conducted onsite in accordance with Schedule 4, Condition 8 of PA 08_0144 at the Narrabri Mine meteorological station. Additional weather data is available from other monitoring locations for reference purposes. The location of the Narrabri Mine meteorological station is illustrated on Figure 3. The total rainfall for the reporting period was 206.4 millimetres (mm), which is considerably lower than 2018 recorded total rainfall of 346 mm and the historical average of 658.5 mm.

The minimum temperature during the reporting period was recorded at -2.1°C in June 2019 and the maximum temperature was recorded at 42.9°C in December 2019. The temperature records are slightly above historical averages.

The 2019 reporting period wind data presented similarities that are comparable to data patterns displayed during 2017 and 2018 annual reports.

Inversion conditions are calculated from measurements recorded by the site 60m Inversion Tower. Inversions occur during E, F and G stability categories (these categories represent weak, moderate and strong inversion conditions).

Table 12 summarises the monthly meteorological conditions recorded at the Narrabri Mine station for the reporting period.

The total rainfall for the reporting period was 206.4 millimetres (mm), which is considerably lower than 2018 recorded total rainfall of 346 mm and the historical average of 658.5 mm.

The minimum temperature during the reporting period was recorded at -2.1°C in June 2019 and the maximum temperature was recorded at 42.9°C in December 2019. The temperature records are slightly above historical averages.

The 2019 reporting period wind data presented similarities that are comparable to data patterns displayed during 2017 and 2018 annual reports.

Inversion conditions are calculated from measurements recorded by the site 60m Inversion Tower. Inversions occur during E, F and G stability categories (these categories represent weak, moderate and strong inversion conditions).

Table 12: Summary of Meteorological Conditions

Month	Measured Rain (mm)	Cumulative Rainfall (mm)	Rainfall Days (>1mm)	2m Temperature (˚C)			Wind		Inversion Conditions
				Min	Mean	Max	Av. Speed (m/s)	Predominant Direction	% of Evening/Night Time Period
Jan 2019	12.2	12.2	5	21.1	31.1	41.9	2.5	NW, W	33.4
Feb 2019	1.2	13.4	1	14.3	27.5	40.1	3.1	SE	27.7
Mar 2019	63.0	76.4	8	8.0	25.3	37.9	2.5	SE, NW	42.9
Apr 2019	0.0	76.4	0	7.0	20.7	33.1	2.8	SE	59.8
May 2019	50.2	126.6	3	-1.0	14.8	26.2	2.0	SE	64.0
Jun 2019	2.4	129.0	5	-2.1	11.8	22.7	2.5	SE	66.2
Jul 2019	16.8	145.8	4	-0.6	11.5	22.7	2.2	SE	68.9
Aug 2019	1.2	147.0	2	-0.7	12.6	26.3	2.4	SE, SW, W, NW	65.2
Sep 2019	4.0	151.0	2	2.0	17.1	32.9	2.6	SE, SW, W	59.8
Oct 2019	8.4	159.4	2	4.6	21.6	38.1	2.6	SE	50.1
Nov 2019	46.4	205.8	8	8.3	24.1	39.0	3.0	NW, SW	45.1
Dec 2019	0.6	206.4	1	9.1	28.8	42.9	2.9	SE, W	38.0

6.5 GREENHOUSE GAS

6.5.1 Environmental Management

Greenhouse Gas (GHG) emissions at the Narrabri Mine are managed in accordance with Schedule 4 Conditions 31 and 32 of PA 08_0144 and the Greenhouse Gas Minimisation Plan (GHGMP). The main sources of GHG emissions considered in the GHGMP are:

- Consumption of diesel fuel – Scope 1;

- Consumption of electricity – Scope 2; and
- Fugitive emissions associated with gas drainage and ventilation – Scope 1.

6.5.2 Environmental Performance

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 + Scope 2 GHG emissions attributed to the mine reported for the NGERS 2018-2019 reporting year were 560,699 t CO_2-e. The following sections detail the key GHG contributors for the NGERS 2018-2019 reporting year.

Diesel Usage

Approximately 6,358 kL of Diesel (Stationary and Transport) was consumed equating to 15,349 t CO_2-e GHG Emissions. This is less than the predicted consumption outlined in the EA (MOD5).

Fugitive Emissions

There were an estimated total of 468,257 t CO_2-e fugitive emissions generated from the mine in the 2018-2019 reporting year. This is higher than the EA estimate and is related to additional drainage from the goaf circuit, which is attributable to higher gas concentrations in the coal than has been previously encountered.

Electricity Consumption

Approximately 93,913 MWh power equating to 77,009 t CO_2-e of Scope 2 emissions was consumed by the mine. This is less than the predicted consumption in the EA.

6.5.3 Proposed Improvement Measures

The Greenhouse Gas Minimisation Plan will be reviewed.

As the concentrations of methane in the ventilation and pre-drainage gas streams remain prohibitive for any beneficial use, no additional management measures are to be implemented for fugitive emissions during the next reporting period.

6.6 BIODIVERSITY

6.6.1 Environmental Management

Biodiversity was managed in accordance with:

- Schedule 5, Conditions 1 to 7 of PA 08_0144; and
- the Narrabri Mine Landscape Management Plan (LMP) and Biodiversity Offset Strategy (BOS) prepared to satisfy the requirements of PA 08_0144.

Various treatments were implemented during the reporting period to mitigate impacts of the Narrabri Mine including (but not limited to):

- Weed monitoring and inspections;
- Feral animal monitoring, inspections and control;
- Flora and Fauna monitoring; and
- Fuel load assessment.

6.6.2 Environmental Performance and BOMP Implementation

6.6.2.1 Mine Site Environmental Performance

Weed Management

Weed monitoring and management was undertaken across the mine site during the reporting period. This included treating areas for African Boxthorn, Prickly Pear and Mother-of-Millions.

Feral Animals

A total of six trap sites were set-up and run over a two week period in July 2019 with 23 pigs controlled during the program. This is in comparison to 56 pigs trapped during the previous reporting period.

Annual Extraction Plan Monitoring

The results of annual monitoring undertaken during the reporting period, as required by the Extraction Plan, which includes the LMP, are summarised in Table 13 and Table 14.

Table 13: Biodiversity Management Plan 2019 Monitoring Results

Performance Measures	BMP Performance Criteria	2019 Results
LW101-LW106		
Woodland vegetation (Inland Grey Box EEC) composition and health	Clearing does not exceed the allowable limit of the Project Approval	Clearing was within the limit of the Project Approval (17.65 ha of 24.8 ha).
	Less than 10% change in floristic composition (relative to natural variation found in control areas)	Compared to 2018, all impact and control plots recorded a substantial decrease in native species richness. However, all impact plots were within the natural variation observed at the control plots and were therefore within the performance criteria.
	Less than 10% increase in exotic species numbers and cover	Exotic species richness decreased by 83.3 % at control plot 6 when compared to 2018 surveys results. All impact plots met the performance criteria of a decrease greater than 73.3 %. Exotic cover increased by 50 % at control plot 6 when compared to 2018, whilst all impact plots either showed no variation or decreased in exotic percentage cover in 2019. The performance target was therefore met. Although declared priority weed species richness decreased in 2019, Opuntia stricta (Prickly Pear) was again recorded within plots 12 and 15, whilst Bryophyllum delagoense (Mother of Millions) was recorded in high abundance at plot 6 again in 2019. Both species require ongoing treatment as prescribed in the Rehabilitation Management Plan (RMP).
	No increase in feral animal presence	2019 recorded a decrease of one feral animal species at control sites CW1 with zero feral animals being recorded at impact sites.
Riparian vegetation composition and health	Clearing does not exceed the allowable limit of the Project Approval	Clearing was within the limit of the Project Approval (1.67 of 4.1 ha).
	Less than 10% change in floristic composition (relative to natural variation found in control areas)	Compared to 2018, all impact and control plots recorded a substantial decrease in native species richness. However, all impact plots were within the natural variation observed at the control plots and were therefore within the performance criteria.
	Less than 10% increase in exotic species numbers and cover	Control Plot 5 decreased to zero exotic species richness and cover during 2019. However, impact

Performance Measures	BMP Performance Criteria	2019 Results
		plots did not decrease in exotic species to the same degree. Whilst most plots noted a decrease, plot 13 remained at 1 exotic species, whereas, plot 10 increased by 1. Therefore, plot 10 failed to meet the performance criteria. All plots (but plot 16) met the performance criteria for exotic species cover. No actions are recommended as increases in exotic species richness and cover were very minor, and just two impact plots did not meet the criteria. Two priority weed species were recorded in 2019, which is an increase of one species when compared to 2018. Although the presence of Prickly Pear has reduced to a single plot in 2019 (Plot 13), whereas 2018 survey results recorded this species at 5 sites. Mother of Millions was recorded within plot 1 for the first time since monitoring began.
	No increase in feral animal presence	2019 recorded a decrease of one feral animal species at control sites CC with zero feral animals being recorded at impact sites.
	Less than 20% increase in length of eroding creek	Refer to Land Management Monitoring Report for 2019

Terrestrial fauna habitat for threatened species	Fauna populations do not experience adverse impacts	In 2019 only one of eight woodland sites (MW4) recorded a decease greater than 10% in bird species richness, although this occurred in Autumn. Spring species richness results at MW4, in addition to all other sites met the performance criteria. No sites recorded a decrease greater than 10% in relation to the control sites for abundance during autumn. For the creekline sites, all sites except for one in autumn and spring recorded a decrease of greater than 10% in relation to the controls, with abundance decreasing greater than 10% at two sites during autumn. Therefore, creekline sites did not meet the performance criteria. For microbat species richness, the performance criteria was met at all impact sites, with all sites increasing in counts of both definite and total microbat calls. Two definite threatened microbat species were also recorded in 2019, with an additional four species possibly being recorded.
	Fauna records decrease by greater than 10% (relative to natural variation found in control areas)	
Aquatic macro-invertebrate and macrophyte assemblages	No decline in aquatic habitat quality relatively to natural variation in control areas	Monitoring of ephemeral creeks was discontinued as per the revised BMP (ELA 2015). Monitoring targeted subsidence ponds above LW101 and LW104, as per Narrabri Mine Subsidence Pond Management Plan (ELA 2017). Refer to the Subsidence Pond Monitoring Report (ELA 2019) for results.

LW107-LW110

Woodland and riparian vegetation health and habitat value	Areas of NDVI change greater than 1 standard deviation from the mean change and greater than 0.1 ha in area. Canopy dieback is not substantially greater than that observed during baseline traverses and considered beyond natural seasonal dieback and natural variation due to weather. Data does not indicate declining trend in vegetation and habitat conditions. Less than 10% increase in weed cover in impact quadrats in comparison to control quadrats. Clearing does not exceed the estimated area of clearing assessed by the Stage 2 EA and as updated in Modification 5 (Resource Strategies, 2015) for infrastructure above LW107 to LW110.	NDVI image change assessment identified areas of significant change in photosynthetically active biomass (PAB) (where substantial changes were determined by areas >0.1 ha with ± 1 standard deviations from average). There have been decreases in PAB throughout the site. Most decreases in PAB are a direct result from clearing and compacting of areas for mine infrastructure, particularly in the northern section of LW109. A reduction in overstorey vegetation cover in LW107 and 108 is most likely attributed to weed control or dieback of fragmented vegetation. Other minimal areas of reduction in biomass may be attributed to a reduction in ground cover that is comparable to nearby areas outside the site. Results from the 2019 monitoring period indicated a decline in vegetation health, highlighted through epicormic growth, branch dieback and discolouration when compared to previous monitoring periods. However, results were highly variable within and across longwall zones with no significant differences being observed in 2019, and therefore is likely a stress indicator derived from the dry conditions continuing from 2018 into 2019. Groundcover percentage cover declined when compared to the 2018 survey period, although this too was experienced across all longwall zones. With the lack of discernible trends across longwall zones, this decline in vegetation health is likely derived from the prolonged dry period experienced prior to and during the 2019 survey period. Exotic species cover was similar to previous monitoring periods with just three sites containing exotic species, all of which were observed to be <1 % cover. Clearing is within approved clearing limit.
Observance of trapped Delicate Mouse or Pale-headed Snake within surface cracks	Incidence of Delicate Mouse and/or Pale-headed snake becoming trapped in surface cracks.	There were no incidences of Delicate Mouse or Pale-headed Snake becoming trapped in surface cracks during the 2019 monitoring period.

Extended dry conditions were experienced prior to the 2019 monitoring period. These conditions have likely suppressed plant growth and influenced the decline in species richness and abundance observed within 2019. The significant increases in PAB were mostly derived from the drying of ponds and dams across site which allowed for the sub sequential growth of groundcover vegetation within these areas. Whereas, decreases were attributed to the dieback of overstorey canopy and reshaping of the land for rehabilitation and infrastructure.

Throughout 2019 dry climatic conditions continued from the previous year, resulting in reductions in available flowering vegetation, water and other various food sources. Bird results from the 2019 monitoring period reflect this change with a reduction in species richness and abundance decreasing, yet predominantly keeping within natural variation performance criteria (except for sites previously discussed within the creekline sites). Previous 'wetter' years (including 2016 and 2017) saw greater species richness and abundance, so it can be expected that a drier year would see decreases in these variables. It is expected that monitoring into future years with more favourable climatic conditions will allow for more accurate comparisons to previous years data to assess the effect of mining impact, particularly for creekline sites. Analysis conducted to date conclude that bird species richness and abundance is more responsive to seasonal variation and climatic conditions rather than a preference for particular sites, habitat types or related mining activities.

Table 14: Land Management Plan 2019 Monitoring Results

Performance Measures	Performance Criteria	Comment
LW101-LW106		
Surface cracking		
Surface cracking inspection	Permanent cracks (which do not self-close within one month of longwall face passing) are remediated as soon as practicably possible (and safe to do so) Surface cracking is remediated to prevent erosion and slope instability issues within 6 months of each longwall pass.	Surface cracking was actively remediated as part of this Land Management Plan (LMP) during 2019.
Topographic form (Lidar)		
Landscape morphology	Subsidence across landscape does not exceed subsidence predictions for LW101-LW106.	This was assessed in 2017 and is scheduled for re-assessment in 2020.
Creeklines	No identifiable change in overall drainage pattern.	This was assessed in 2017 and is scheduled for re-assessment in 2020.
Soil moisture and nutrient distribution (EM mapping)		
Soil moisture and nutrient distribution (EM mapping)	Identified areas of EM mapping change (greater than 1 standard deviation from the mean change) investigated in the field to determine the source of the change.	This was assessed in 2016 and is scheduled for re-assessment in 2021.

Performance Measures	Performance Criteria	Comment
Multi-spectral image analysis		
Groundcover (multi-spectral images – erosion and pasture cover)	Identified areas of NDVI change (greater than 1 standard deviation from the mean change) investigated in the field to determine the source of the change.	Areas of NDVI change are largely attributed to land management activities associated with weed control activities or dieback of fragmented vegetation. Land shape variation and increases in pond size also reflect this, particularly above LW104-105 and the SE corner of ponding above LW101. Overstorey vegetation has reduced in places, though this can be attributed to climatic factors. Some areas above LW104 displayed growth in mid-storey vegetation.
Pasture		
Pasture biomass	Less than 20% reduction in pasture biomass in impact zones in comparison to control zones	While two individual zones (the transition zone above LW102 and the maximum subsidence zone above LW105) showed a reduction of more than 20% in pasture biomass, field observations noted that the maximum subsidence zone above LW105 was heavily grazed by macropods at the time of survey. In addition, the control zones were also highly variable ranging from a decrease of (-43%) at control zone 1 to (+51%) at Control Zone 2. For these reasons, NCO is considered compliant with this performance measure. Future surveys under more favourable climatic conditions should provide a more accurate comparison.
Weed species	Weed species identified and managed according to the weed management measures provided in the Rehabilitation Management Plan	NCO has identified areas of high priority weeds and conducted weed management programs in 2019.
Weed cover	Less than 10% increase in weed cover in impact zones in comparison to the control zone	Overall, weed species cover criteria was not met within six of the impact zones. However, weed cover during 2019 remains lower than 2017 survey results, and the impact zones found to not be significantly different to the control sites. Therefore NCO is considered compliant with this performance criteria.

Soil nutrient status		
pH	pH remains within +/- 0.5 pH unit of baseline pH. If soil amelioration is undertaken, pH is to remain within recommended pH range for pasture (5.2-8.0).	This was assessed in 2017 and is scheduled for re-assessment in 2020.
EC	Less than 20% increase in EC in comparison to baseline values.	This was assessed in 2017 and is scheduled for re-assessment in 2020.
Organic matter	Less than 20% reduction in organic matter in comparison to baseline values.	This was assessed in 2017 and is scheduled for re-assessment in 2020.
Nitrogen	Less than 20% reduction in total nitrogen in comparison to baseline values.	This was assessed in 2017 and is scheduled for re-assessment in 2020.
Phosphorous	Less than 20% reduction in phosphorous in comparison to baseline values.	This was assessed in 2017 and is scheduled for re-assessment in 2020.
Creek stability and condition		
Field survey of creek stability and condition	Less than 20% increase in creek erosion (bank and bed) in comparison to control. Less than 20% increase in cross-sectional area in comparison to control cross-sectional area (unless stabilisation works have been undertaken)	Erosion and deposition has occurred at most survey locations; however, this is characteristic of creeks such as Pine Creek and Kurrajong Creek, particularly in a cleared landscape. No area increases above 20% were observed, and most sites showed a decrease in area indicating sediment deposition.
LW107-LW110		
Surface cracking		
Surface cracking Inspection	Permanent cracks (which do not self-close within one month of longwall face passing) are remediated as soon as practicably possible (and safe to do so).	Subsidence cracks were noted within the survey area in undisturbed pockets of vegetation, with disturbance observed to be isolated to groundcover and small shrub species. It is noted that amelioration works may induce more disturbance to the locality and vegetation and that the subsidence cracks, and evidence of further disturbance should continue to be monitored in future surveys. Repair to subsidence cracks along cleared tracks and pads was evident.
	Surface cracking is remediated to prevent erosion and slope instability issues within 6 months of mining of each longwall.	

Topographic form (Lidar)		
Landscape morphology	Subsidence across the landscape does not exceed subsidence predictions for LW107 to LW110.	Maximum total subsidence of LW108 has not exceeded subsidence predictions. Refer Section 6.13.
Creek lines	No identifiable change to overall drainage pattern.	No identifiable change to overall drainage pattern.
Groundcover (multi-spectral images – erosion and pasture cover)	Identified areas of NDVI change (greater than 1 standard deviation from the mean change) investigated in the field to determine the source of the change.	NDVI image change assessment identified areas of significant change in photosynthetically active biomass (PAB) (where substantial changes were determined by areas >0.1 ha with ± 1 standard deviations from average). NDVI change attributed to development of surface infrastructure, and a reduction in overstorey vegetation cover most likely attributed to dieback of fragmented vegetation.
	Site specific management report prepared and recommendations implemented where necessary.	2019 ELA Monitoring Report

Subsidence Pond Monitoring

The results of annual monitoring undertaken during the reporting period, as required by the Subsidence Pond Management Plan (SPMP) are summarised below. Extended dry conditions were experienced in 2019 with the subsidence ponds above LW101 and LW104 evaporating prior to monitoring in spring 2018. This has allowed for analysis of an ephemeral system during a dry period.

- Water quality monitoring was unable to be completed in 2018/19, although previous monitoring has noted suitable results to support biodiversity. As such, when inundation occurs, water quality is expected to return to suitable levels for the ecosystem. As expected, no waterbirds or frogs were recorded during the 2019 survey period.
- Remote sensing analysis of the riparian zone downstream of LW101, undertaken for the Subsidence Pond Management Plan (ELA 2017) concluded that there have been no areas of decline in riparian condition because of the subsidence pond above LW101 withholding water. Data collected from the two riparian monitoring plots in 2019 showed a minor decline in overall health, although this is most likely a consequence of the dry climatic conditions than the development of the LW101 subsidence pond. Further monitoring once conditions improve should further support these findings.
- The 2019 survey period has provided a greater understanding of ecological conditions during extended dry periods. Ongoing monitoring will provide an understanding of ecological changes to the ponds as they transition into functioning ephemeral wetlands.

Pre-Clearing and Clearing Surveys

During the reporting period the mine has undertaken clearing to facilitate surface gas drainage infrastructure works. The ecological works for the clearing consisted of the following activities;

- Threatened Flora Surveys;
- Fauna Pre-clearing Surveys;

- Clearance Supervision; and
- Post-felling inspections.

Prior to the commencement of any clearing activities the limits of clearing are surveyed and physically marked with flagging tape. Targeted threatened flora surveys were conducted prior to clearing activities commencing with all threatened flora identified during these surveys recorded and their locations mapped using hand held GPS units.

Fauna pre-clearance surveys were also conducted and consisted of identifying, marking and documenting suitable fauna habitat features. These features generally include nests, large woody debris and trees bearing hollows, which have the potential to support species such as bats, gliders, possums, reptiles and birds. All trees with habitat features are felled following a clearing protocol and is done in the presence of a qualified ecologist. All trees identified as having habitat features were recorded using a hand-held GPS unit.

Fauna was encountered during clearance works undertaken during the reporting period, including species of birds, mammals and reptiles.

The following threatened flora species were encountered during the clearing works:

- Coolabah Bertya (*Bertya opponens*) – listed as vulnerable under the BC Act and EPBC Act; and
- *Tylophora linearis* – listed as Vulnerable under the BC Act and listed as Endangered under the EPBC Act.

6.6.2.2 BOS Environmental Performance

The Biodiversity Offset Strategy (Eco Logical, 2019) for NCO commits to managing designated offset areas to achieve a 'like for like or better' and 'maintained or improved' biodiversity outcomes on the 1,244ha Kenna BOA located offsite adjacent to the southern boundary of the Kaputar National Park and the 431 ha Onsite (Rosevale, Greylands, Omeo, Greylands Park, Kurrajong Park and Westhaven) BOA located within and adjacent to the west of the NCO mining lease and to the east of Jacks Creek State Forest apart of the large "Pilliga Forest" remnant.

Offset Security Management

During the reporting period, WHC undertook contemporised vegetation mapping and prepared seven Conservation Agreements with the NSW Biodiversity Conservation Trust (BCT) including completion of securement for the Kenna BOA by 1st October 2019. WHC are waiting the BCT to finalise the remaining six Conservation Agreements which will provide in perpetuity securement of the Narrabri Onsite BOAs. WHC have also consulted with DPIE and DoEE as required during the reporting period to keep key regulators abreast of securement progress; including requesting a 12 month extension to the EPBC Approval 2009/5003 Condition 2 current securement timeline of 31st March 2020. Following registration of Conservation Agreements; WHC will prioritise negotiations of those BOAs that NPWS has previously shown interest in being transferred to National Park Estate.

Infrastructure Management

During the reporting period, stockpiles of fencing and other wastes at Kenna BOA were disposed offsite at a licenced waste management facility. Also during the reporting period, 2.2km of new BOA demarcation fencing was constructed along the West Haven, Kurrajong Park and Greylands Road BOA boundaries. The condition of the perimeter BOA fences, gates and signage were maintained to continue restricting unauthorised access and prevent inadvertent livestock grazing.

Seed Management

Routine seed assessments completed for the Kenna & Narrabri Onsite BOAs were impacted by the severe drought conditions that were experienced during 2019. The routine seed assessments aim 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. Because of the drought conditions, additional seed collection opportunities within the Kenna & Narrabri Onsite BOAs were limited. As part of the WHC group wide revegetation planning; the onsite collected seed was supplemented with commercially sourced local and regional provident seed by reputable seed collectors. A local revegetation provider was engaged to propagate the seed to produce Box Gum and non-EEC/CEEC Woodland overstorey species seedlings required for the 2019 revegetation program that was completed for the Kenna BOA.

Revegetation Management

Revegetation ground preparation had been completed during the previous reporting period; therefore during 2019 WHC coordinated two revegetation programs with the understorey revegetation (direct seeding) over 105ha sown in June 2019 including 396kg of native grass seed (19 species), 50kg of native forb seed (9 species) and 792kg of bulking agent (lime). Overstorey revegetation program covered 92ha between May and July 2019 planting with 7,510 hiko seedlings of Eucalyptus albens, Eucalyptus blakelyi, Eucalyptus melliodora, Eucalyptus crebra, Eucalyptus pilligaensis, Eucalyptus populanea and Angophora floribunda. Despite the prevailing drought conditions throughout 2019; routine tree watering and maintenance activities post planting have been successful to ensure that over an 80% survival had been achieved by the end of the reporting period and ensuring that a better than minimum survival is achieved commensurate with the target Box Gum Woodland vegetation structure of the Kenna BOA.

Heritage Management

During the reporting period, heritage site and fencing inspections were completed of the 6 known Aboriginal cultural heritage sites within the Kenna BOA (no known sites within the Narrabri Onsite BOA) with each site maintained with identification/demarcating fencing around the heritage site perimeter and signage to mitigate access and disturbance.

Habitat Management

During the reporting period, no specific habitat management works were undertaken.

Weed Management

WHC coordinated routine formal weed monitoring/inspections undertaken across Kenna and Onsite BOAs in February, May, August and November 2019. The priority weeds for control were noted as general broadleaf weeds (Biosecurity Act 2015 priority and general biosecurity duty species) as well as legacy noxious weeds inherited from previous owners management regimes such African Lovegrass, Mother of Millions, Green Cestrum, African Box Thorn and Common Prickly Pear. The weed monitoring/inspections ensure that timely and prioritised weed control is undertaken on a seasonal basis with the spatial information directly given to spraying contractors to identify what, where, when and how to target appropriate resources across the Biobank BOA for weed control.

During the reporting period, WHC implemented a weed control program with 346ha and 53ha treated across the Kenna and Narrabri Onsite BOAs respectively targeting Broadleaf, Prickly Pear, Green Cestrum, Mother of Millions and African Lovegrass infestations. Only appropriately qualified and

experienced weed contractors (AQF3 accreditation or higher for use of herbicide) were engaged to undertake weed control works for WHC.

Feral Animals Management

WHC coordinated routine formal feral animal monitoring across NCO BOAs in February, May, August and November 2019. The adoption of a "monitor, measure and manage" approach to feral animal management will allow WHC to implement adaptive management in response to changes being measured through monitoring in feral animal abundance specific to the different geographical regions of the NCO BOAs. Feral animal monitoring utilises the relevant methodologies for specific feral animals generally in accordance with the NSW DPI Monitoring Techniques for Vertebrate Pests so that a range of methods can be used such as transects/spotlighting and cameras traps where practicable and relevant to specific offset areas/properties. Monitoring demonstrated that certain animals like Eastern Grey Kangaroos and Feral Pigs can be high in abundance seasonally with all other feral animal species recorded as scarce to low abundance levels across 2019. The feral animal monitoring ensures that timely and prioritised feral animal control is undertaken on a seasonal basis identifying what, where, when and how to target appropriate resources across the NCO BOAs for feral animal management.

During the reporting period, WHC implemented a comprehensive feral animal control program across the Kenna and Onsite BOAs with routine 1080 baiting and pig trapping programs undertaken in March (6 Foxes removed from 72 baits presented and 8 Feral Pigs trapped), June (9 Foxes removed from 72 baits presented and 5 Feral Pigs trapped), September (5 Fox removed from 96 baits presented and 13 Feral Pigs trapped) and December 2019 (12 Foxes and 1 Wild Dog removed from 116 baits presented and 40 Feral Pigs trapped). Night time open range shooting programs were implemented in conjunction with the other routine programs resulting in an additional 2 Feral Pigs, a Fox, a Deer, 25 Hares and a Cat were controlled in 2019. The Feral Goat harvesting during the reporting period resulted in 73 being captured with the Feral Goats then 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.

Soil & Erosion Management

During the reporting period, no specific treatment for soil erosion mitigation works were undertaken.

Grazing Management

Kenna BOA was destocked in September 2016 and during the reporting period grazing was continued to be excluded from all BOAs.

Bushfire Management

In accordance with the BMP, annual fuel load monitoring was undertaken in December 2019 as part of planning and assessment of bushfire hazard and ecological burn strategy in 2020. During the reporting period, the average overall fuel load measured and fire risk for Kenna BOA was 10t/ha (moderate) and moderate fire risk; while for Narrabri Onsite BOA was 20 t/ha (high) ranging low to high fire risk. Other fire management implemented by WHC during the reporting period included the maintenance fire break tracks (27km) to a zero fuel barrier standard at Kenna BOA. WHC also completed a 45ha ecological burn of the Kenna BOA in May 2019. WHC maintains regular communications throughout the reporting period with both the Liverpool Range and Namoi-Gwydir Zone RFS teams around planning of other WHC BOA site ecological burn programs as well as providing WHC emergency contacts. WHC maintains a specialist fire fighting contractor for an oncall engagement during the fire season to respond in the event of a bushfire on WHC BOAs and non-mining lands.

Monitoring Program

Kenna

During the reporting period, the ecological monitoring program of the Kenna BOA included annual spring flora monitoring of 22 plots undertaken in November 2019 and the fauna monitoring of 13 sites undertaken during September 2019. In 2019, the number of sites which met or exceeded the performance criteria for species richness (75% of species richness of respective biometric vegetation type (BVT)) was 13 out of 22 sites. This is a decrease from 19 sites which met or exceeded the performance criteria in 2018. The decrease in the number of sites meeting the performance criteria for species richness is likely due to the intense drought conditions. The number of sites which met or exceeded the performance criteria for overstorey cover (75% of overstorey cover of respective BVT) was 5 out of 22 sites. This is a decrease from 2018 in which 8 sites met the performance criteria. The number of sites meeting or exceeding the performance criteria for mid-storey cover (75% of mid-storey cover of respective BVT) decreased from 16 sites last year to 13 out of the 22 sites. Fourteen out of 22 sites met or exceeded the performance criteria for ground cover grasses (75% of grass cover of respective BVT), which is a decrease from 17 sites that met benchmark last year. The reduction in overstorey, mid-storey and grass cover is likely associated with the intense drought conditions.

Diurnal bird survey results for total species richness was 68, ranging between 13 and 39 at the 13 sites monitored during 2019; which was a decrease from 2018 total diurnal bird species richness of 104 and sites ranging between 21 and 42. Analysis of anabat data for microbat total species richness was 11 definitely recorded species, ranging between 7 and 11 at the 11 sites monitored during 2019; which was consistent with 2018 microbat total species richness results of 12 recorded species, and sites ranging between 6 and 10 at 10 sites.

Onsite

The 2018 monitoring surveys within the Mine BOA identified 99 flora species of which 91 were native (94.5% which is comparable to results from the previous reporting period). One threatened species, Tylophora linearis was positively identified at Site 19 in 2018, however was unable to be located within 2019, most likely due to the prolonged dry period preceding the survey.

During 2019 both native and exotic flora species decreased across all OMZs, with native plant species richness falling outside benchmark criteria for vegetation communities. Most groundcover measurements were outside benchmark criteria with just two communities recording grasses and/or shrubs groundcover percentage cover within benchmark range. Although groundcover measurements have likely worsened in 2019 due to the prolonged dry conditions that preceded the flora survey, as conditions improve these are expected to alter towards a better trajectory. Native overstorey cover has now been recorded within benchmark criteria at three of five communities, whilst mid-storey has been recorded at four of five. No land management can change condition as a result of a lack of rainfall. Time and improved climatic conditions should further improve the quality of vegetation within these areas.

A complete flora species list is included as **Appendix A** and photo monitoring records are included as **Appendix B** as required by the BOS and the associated management plans.

During the 2019 monitoring surveys 51 fauna species, including 44 birds, three mammals (all invasive species- fox, cat, feral pig) and four reptile species were recorded within the Mine BOA monitoring sites. Three threatened species, listed as vulnerable under the NSW Biodiversity Conservation Act 2016 (BC Act), were observed or positively identified during surveys. Fauna monitoring in 2019 largely recorded

decreases in both species' richness and abundance across fauna classes. Less observations of reptile species were also made in 2019. Although this is likely attributed to the preceding dry conditions experienced prior to the 2019 fauna surveys. As such, biodiversity of fauna within the BOA is predicted to improve, providing climatic conditions improve in 2020. A complete fauna species list is included as **Appendix C** as required by the BOS and the associated management plans.

Recommendations from the annual BOA monitoring (Biodiversity Offset – Spring 2018 Monitoring Report, ELA 2019) undertaken in accordance with the BOS include:

- In order is establish greater consistency in subsequent surveys, ELA recommend that the flora base plots are shortened to 50 m. This will allow plots to avoid roads and remain within the vegetation community.
- ELA also recommend ensuring markers (e.g. star-pickets) are in place at the end of each 50 m transect to ensure that the transect follows the same line each year. This recommendation has been adopted at the Kenna BOA in 2018 and would allow for comparisons to be made between sites.
- For targeted flora surveys in future years, it may be preferable to set up a precisely defined area (e.g. 10 x 40 m plot) with each corner permanently staked, in which all targeted plants are counted. This would ensure that plants are counted within the exact same area and allow for the meaningful comparison of data from subsequent surveys.

6.6.3 Proposed Improvement Measures

- Review the monitoring requirements in the BOS as per the above recommendations.
- Continue the weed and feral animal control programs and subsequent monitoring.

6.7 ABORIGINAL CULTURAL HERITAGE

6.7.1 Environmental Management

Aboriginal Cultural Heritage is managed in accordance with the Aboriginal Cultural Heritage Management Plan (ACHMP), which was prepared to satisfy Schedule 4, Condition 23, and the Statement of Commitments (SoC) detailed in the PA 08_0144. The ACHMP was submitted for review during the previous reporting period in 2018 to the Registered Aboriginal Parties (RAPs), the DPI&E and The NSW Biodiversity and Conservation Division (BCD, formerly known as the NSW Office of Environment and Heritage- OEH). During the reporting period the mine updated the ACHMP to address comments from these groups and submitted the plan to DPI&E. The ACHMP was approved on the 3 October 2019.

6.7.2 Environmental Performance

Soil Disturbance Monitoring

As required by the ACHMP, any soil disturbance work within 100 m of a drainage line or in areas not already cleared for agriculture requires the presence of the RAPs to ensure no sites/objects of Aboriginal Cultural Heritage origin are disturbed by clearing activities. The mine has extended this to include all soil disturbance work until the ACHMP and site induction material are updated.

Archaeological Salvage Program

No sites were identified as requiring salvage during the reporting period.

Ongoing Consultation

Narrabri Mine maintains contact with a representative of the RAPs in order to ensure appropriate engagement with the Aboriginal community prior to surface disturbance activity. This will continue throughout the life of the operation.

Prior to the ACHMP approval in 2019 the document was distributed to the RAPs to provide any additional comments, following review by BCD.

Previously Unidentified Sites

No new sites were recorded during the reporting period.

6.7.3 Proposed Improvement Measures

The mine will revise the Aboriginal Cultural Heritage induction/training package.

6.8 HISTORIC HERITAGE

There are no items of historic heritage identified in the mining area and hence no specific management measures are required.

6.9 TRANSPORT

6.9.1 Environmental Management

Traffic impacts associated with the Narrabri Mine are managed in accordance with Schedule 4, Conditions 25 to 27 of the PA 08_0144.

6.9.2 Environmental Performance

The portion of Greylands Road that traverses the mining area has been purchased by the mine and is no longer accessible to the public. Inspections of the road are undertaken during active subsidence as required by the Extraction Plan. Scratch Road, in the western portion of the mining lease, has not been utilised to construct mining related infrastructure and as such no agreement has been developed with Narrabri Shire Council (NSC) for the use of this road.

The mine constructed the intersection to the mine in consultation with both NSC and Roads and Maritime Services (RMS). The RMS has advised the mine that the ongoing maintenance of the intersection is the responsibility of the RMS.

6.9.3 Proposed Improvement Measures

No additional improvement measures are proposed during the next reporting period. The mine will continue to liaise with RMS and NSC as required.

6.10 WASTE MANAGEMENT

6.10.1 Environmental Management

Narrabri Mine aims to implement all reasonable and feasible measures to minimise waste and ensure it is appropriately stored, handled and disposed. Waste materials at the mine are managed in accordance with:

- Schedule 4, Condition 33 of PA 08_0144;
- the Narrabri Mine Waste Management Plan (Waste MP) prepared to satisfy the requirements of PA 08_0144;
- the Pollution Incident Response Management Plan (PIRMP); and
- the legal and strategic framework for managing wastes in NSW.

Narrabri Mine waste streams include general waste, underground waste, oil & greases, recyclables (steel and paper/cardboard), drill cuttings and effluent.

6.10.2 Environmental Performance

Waste Streams

Inspections of waste management practices are carried out to ensure general, hydrocarbon and recyclable waste is segregated. Additional segregation of general waste occurs at the licenced contractor's facility to ensure the maximum amount of material can be recycled. Data on waste streams are collated using information provided by the licenced contractors. These records have been included in Figure 8 which shows waste stream volumes over a 5 year period. It should be noted that the licensed waste contractor changed halfway through 2018. This has resulted in an improvement to available waste records, most notably the 'Septic' disposal volumes.

A total of approximately 2,296 tonnes (t) of general waste was removed during the reporting period, of which approximately 88% was transported to the licenced contractors facility for further segregation. These figures are comparable to the previous reporting period. Approximately 14 tonnes of cardboard/paper, 252 tonnes of timber and 397 tonnes of steel were recycled during the reporting period. Approximately 73,900 L of used oils were collected and recycled during the reporting period by an authorised contractor, which has increased from the previous reporting period.

Effluent from the sewage and ablutions facilities at the mine is managed through a Sewage Treatment Plant (STP) with a Continuous Extended Aeration Process. The plant is made up of a series of industrial plastic tanks. Each tank provides a separate function in order to treat the sewage for the required quality and quantity. The system processed on average 39,000 L per day during the reporting period. During the STP process a waste product (sludge) is collected weekly and transported by licensed contractor to the Tamworth Treatment Works. During the reporting period a total of 556,200L was collected and transported off-site.

Drilling cuttings from exploration, gas drainage and service borehole drilling activities is excavated from sumps and disposed of in the REA or consolidated with excavated soil to backfill the sump (where minor amounts of cuttings are present). An area at the REA has been established to allow excess water from the drill cuttings to decant off and then the cuttings are incorporated into the REA.

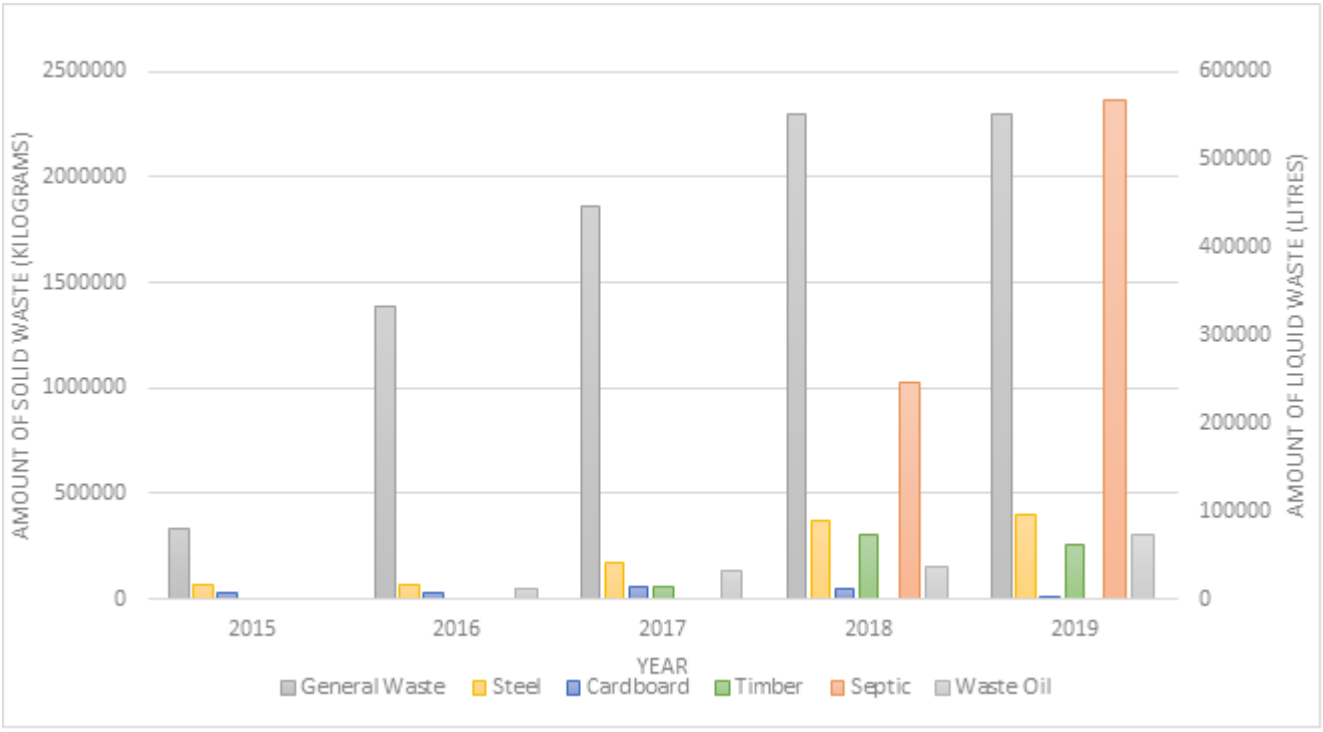

Figure 8: Comparison of waste streams over the previous 5 years

Waste Incident

During the reporting period incorrect waste disposal of used underground self-rescuer emergency breathing cannisters were disposed of into the General Waste stream at the mine, which were subsequently disposed of into the Narrabri Landfill facility. The cannisters formed part of breathing apparatus used by Narrabri Coal during a training program at the mine. The NSW EPA believes that between 112 and 140 cannisters were disposed of at the Narrabri landfill site between 2 April and 18 April 2019, which coincided with small fires occurring within the landfill. The NSW EPA reasonably suspects that the cannisters are hazardous waste, which contain potassium dioxide and sodium chlorate which combust when exposed to moisture and were considered to be the source of the small fires at the site. The NSW EAP issued a clean-up notice to Narrabri Coal on 30 April 2019, and in response to the direction to take clean-up action, contractors were commissioned by Narrabri Coal to prepare a remediation / clean-up plan and undertake clean-up actions at the site. The clean-up actions consisted of the following activities;

- Manually sorting through waste within the affected general solid waste cell at the site, reported within the clean-up notice to be of an approximate volume of 670 m³.
- 15 cannisters were retrieved in total during both the sorting process through visual identification and the use of a metal detector.
- All retrieved cannisters were placed in an appropriate dangerous goods transport package for disposal at a licenced hazardous waste treatment facility for destruction. All remaining waste generated during the sorting process was returned to the general solid waste cell.

It is understood that up to approximately 97 cannisters potentially remain in the general solid waste cell at the site, and according to the clean-up notice, have the potential to harm human health and the environment due to the release of combustion gases when exposed to moisture, and the subsequent

ongoing risk of fire. Narrabri Coal Operations are continuing to collaborate with Narrabri Shire Council and the EPA in the resolution of this issue.

Following the incident the mine revised the Waste Management Plan and updated Waste Management training packages.

6.10.3 Proposed Improvement Measures

Waste Management training packages will continue to be refined, with an additional training package developed to focus on Hazardous Waste.

Narrabri Mine will continue to monitor wastes on a regular basis to effectively manage waste generated by the operation and maximise recycling efficiencies.

6.11 VISUAL & LIGHTING

6.11.1 Environmental Management

Visual amenity and lighting impacts associated with the Narrabri Mine are managed in accordance with Schedule 4, Conditions 28 and 29 of the PA 08_0144. Various onsite measures have been implemented during previous reporting periods to mitigate visual impacts of the mine including (but not limited to):

- construction of an amenity bund on the southern and western boundaries of the site to obscure views from the south and west;
- the train load-out bin, CHPP, secondary crusher and rotary breaker buildings are manufactured from a green ColorBond® type sheeting;
- use of directional lighting in lieu of general area lighting;
- consideration of fixed versus mobile lighting, locations and orientation;
- fixed lighting designed and procured in accordance with *Australian Standard (AS) 4282 – 1997: Control of Obtrusive Effects of Outdoor Lighting* (AS4282); and
- visual lighting inspections as required.

6.11.2 Environmental Performance

No direct community complaints were received during the reporting period relating to the visual amenity or lighting associated with the mine. However through consultation with a complainant on other matters the mine committed to undertake an investigation to ensure its lighting complies with Project Approval conditions. NCO engaged EMM Consulting to undertake the review. The report *Lighting Review-Narrabri Mine* was finalised and provided to NCO in mid July 2019. The lighting review found that operations at Narrabri Mine met the requirements of PA 08_0144 (Condition 29 Schedule 3 and Statement of Commitments Item 14.1) with respect to external lighting.

6.11.3 Proposed Improvement Measures

No additional improvement measures are proposed during the next reporting period.

Management measures described above will continue to be implemented.

6.12 BUSHFIRE

6.12.1 Environmental Management

Bushfire hazards and risks associated with the Narrabri Mine are managed in accordance with Schedule 5, Condition 4 of PA 08_0144, i.e. the Rehabilitation Management Plan (RMP) that forms part of the Landscape Management Plan (LMP). Various treatments have been implemented during the reporting period and previous periods to manage and control potential bushfire risks including:

- implementation of the Bushfire Prevention Standard and Bushfire Emergency Response Procedure;
- Supervisors providing bushfire ratings prior to contractors working on site and providing regular updates on bushfires nearby;
- implementing bushfire Trigger Action Plans (TARPs) and PIRMP;
- participation by Whitehaven Coal personnel in the Narrabri Rural Bushfire Brigade meetings;
- implementation of various bushfire hazard controls , including Hot Work areas/permits, the mine is a non-smoking site and maintenance of equipment/infrastructure;
- monitoring of fuel loads occurred in the Narrabri Mine offset area known as 'Kenna";
- implementing onsite training programs; and,
- maintenance of the roads and tracks within the Narrabri Mine ML was undertaken prior to the bushfire season. Roads and tracks can act as firebreaks and help to facilitate access across the site.

6.12.2 Environmental Performance

No bushfires occurred adjacent to or within the Narrabri Mine ML 1609 area during the reporting period.

6.12.3 Proposed Improvement Measures

No additional improvement measures are proposed during the next reporting period.

Management measures described above will continue to be implemented during the next reporting period.

6.13 MINE SUBSIDENCE

6.13.1 Environmental Management

During the reporting period longwall extraction of LW108A was completed and at the end of the reporting period the longwall unit was relocating to LW109. The extraction height averaged 4.3 m and the depth of cover ranged between 250 m and 290 m.

6.13.1.1 Subsidence Monitoring

Subsidence monitoring was conducted in accordance with the approved Extraction Plan. Subsidence remained within predicted ranges for all matter except maximum compressive strain (Table 15).

6.13.2 Environmental Performance

Electricity Transmission Lines

The 11 kV power line that traverses LW101 to LW105 has been decommissioned and as such, the Essential Energy Management Plan and its monitoring requirements are no longer in effect.

Telecommunications Infrastructure

No telecommunications infrastructure exists within the Extraction Plan area for LW101 to LW108.

Public Roads

The one public road within the mining area, known as Greylands Road, was purchased by the mine during the previous reporting period and is no longer accessible to the public. Repairs required for traffic-ability for mine personnel were undertaken as required.

Land Surface

No ponding occurred in LW108 during the reporting period due to the hot dry weather experienced at the site. Land rehabilitation activities (ploughing and seeding) of subsidence affected areas was undertaken during the reporting period, however establishment of vegetation was limited as the soil conditions were unfavourable due to dry conditions.

Buildings and Other Structures

No buildings or sheds were undermined during the reporting period.

Water Storage Dams and Contour Banks

No known farm dams or contour banks were undermined during the reporting period.

Fences and gates

Various fences and gates were undermined during the reporting period. Narrabri Mine has excluded all stock from the active mining area by erecting a fence outside of the subsidence zone to the east of LW101. Any fences/gates required post-mining will be re-instated.

Mine Infrastructure

Pipelines connecting gas drainage wells and the Personal Emergency Device (PED) cable were undermined during the reporting period however no impacts were recorded on this infrastructure. All gas drainage infrastructure in the active mining area is inspected and maintained to ensure subsidence does not adversely impact this equipment. Narrabri Mine also decommissions gas drainage infrastructure when it is no longer required.

6.13.2.1 Comparison against Predictions

Table 15 outlines the predicted subsidence and the measured subsidence parameters at the end of the reporting period for the most recently mined panel being LW108. For more details on the subsidence monitoring lines refer to the Whitehaven Coal website.

Table 15: Subsidence Parameters – Predicted and Measured

Monitoring Line	Type	Maximum Total Subsidence (m)	Maximum Total Tilt (mm/m)	Maximum Total Tensile Strain (mm/m)	Maximum Total Compressive Strain (mm/m)	Angle of Draw (˚, Degrees)
LW108 North	Observed	2.64	36.3	16.2	38.9	27.1
	Predicted	2.75	38	15	20	32.1

Based on Table 15, subsidence prediction exceedances did not occur during the reporting period. The results are summarised below:

- The maximum subsidence measurements for the LW108 North monitoring line was within the predicted range.
- The maximum tilt measurements were within the predicted range for LW108 North.
- The maximum tensile strain measurements were above the maximum predicted range for LW108.
- The maximum compressive strain measurements were above the maximum predicted range for LW108.

The centreline subsidence results indicate that the Garrawilla Volcanics and Basalt Sill have not reduced subsidence through spanning behaviour. The maximum subsidence is also considered closer to 63% of the average mining height of 4.3 m.

6.13.2.2 Incidents

No mine emergency response procedures were activated because of subsidence during the reporting period.

6.13.3 Proposed Improvement Measures

The subsidence monitoring deliverables of the Extraction Plan LW107-LW110 will be reviewed.

7 WATER MANAGEMENT

7.1 WATER SUPPLY

A pipeline from the Namoi River is the main source of raw water supply for the Narrabri Mine. Table 16 summarises the water taken by the mine during the 2019 water year, i.e. the 2019 financial year.

Table 16: Narrabri Mine Water Take

Water Licence #	Water Sharing Plan	Water Source and Management Zone	Temporary Transfer (ML)	Annl Use limit	Passive Take / Inflows	Active Pumping by Narrabri Mine	Total Take
WAL 12833	Upper and Lower Namoi Groundwater Sources	Upper Namoi Zone 5 Namoi Valley (Gin's Leap to Narrabri) Groundwater Source	120	134	110[1]	67	122[1]
WAL 20131	Upper and Lower Namoi Groundwater Sources	Upper Namoi Zone 5 Namoi Valley (Gin's Leap to Narrabri) Groundwater Source	70	300		209	264[1]
WAL15922	NSW Great Artesian Basin Groundwater Source	Southern Recharge Groundwater Source	-	322.4	179	0	322.4[2]
WAL 29549	NSW Murray Darling Basin Porous Rock Groundwater Sources	Gunnedah – Oxley Basin MDB Groundwater Source	-	1,022.5	1009[3]	658[4]	380[4]
WAL 2671	Upper Namoi and Lower Namoi Regulated River Water Sources	Lower Namoi Regulated River Water Source	-	60	91	0	0
WAL 6762	Upper Namoi and Lower Namoi Regulated River Water Sources	Lower Namoi Regulated River Water Source (High security)	-	20		20	20
WAL 2728	Upper Namoi and Lower Namoi Regulated River Water Sources	Lower Namoi Regulated River Water Source	-	12.5		0	0
WAL 20152	Upper Namoi and Lower Namoi Regulated River Water Sources	Lower Namoi Regulated River Water Source	-	750		0	91

[1] 110ML passive take split between WAL 12833 and WAL 20131 Total Take

[2] Water Statement from NSW Water records 322.4 ML groundwater usage. No active pumping from Narrabri Mine was undertaken. Passive take calculated from approved groundwater model is 179ML.

[3] Predicted Annual Inflow Volume.

[4] 658ML was recorded from meter readings at the nominated works (mine box-cut pump), however the annual inflow that was calculated as the Total Take from mining activities from Narrabri Coal during 2019 is 380 ML. The calculation is the total aquifer interference volume taking into consideration the inputs of raw water supply from Dam D, as well as losses from the moisture content of coal extracted and ventilation humidity.

7.2 SURFACE WATER MANAGEMENT

7.2.1 Environmental Management

The Narrabri Mine water management system aims to ensure there are no adverse impacts on receiving water quality, to allow for early detection of any potential impacts and develop appropriate corrective actions. Potential impacts to surface water quality are managed in accordance with:

- Schedule 4, Conditions 10 to 17 of PA 08_0144;
- EPL 12789 Conditions P1, L1, L2 and M2; and
- the Narrabri Mine Water Management Plan (WMP) and the Extraction Plan – Water Management Plan (EP–WMP) prepared to satisfy the requirements of PA 08_0144.

During the reporting period various controls strategies were implemented to manage surface water quality including:

- Separation of clean water, i.e. surface water runoff where water quality is not affected by mining operations, by using diversion drains/contour banks;
- Collection of water from disturbed areas in sediment control dams, i.e. SD1-SD6;
- Containment of water potentially affected by coal or other substances, e.g. hydrocarbons, either from the underground operation or as runoff from the surface facilities/coal processing area, i.e. SB1-SB4;
- The use of appropriate erosion and sediment controls, including silt fences, rock checks and other measures as required;
- No uncontrolled discharge of mine water off-site;
- Maintaining an up-to-date water balance to ensure on-site water demands are satisfied whilst minimising offsite water impacts; and
- Regular sampling and inspections of the onsite and surrounding surface water system (no sampling occurred as drought conditions resulted in no surface water).

Surface water monitoring locations are illustrated on Figure 2.

7.2.2 Environmental Performance

Surface Water Quality

Routine surface water monitoring is conducted around the site with surrounding ephemeral creeks sampled when flowing for pH, Electrical Conductivity (EC), Oil & Grease (O&G) and Total Suspended Solids (TSS). These creeks were not sampled during the reporting period as there was insufficient rainfall for a sustained flow event. No non-compliances relevant to surface water management were recorded during the reporting period.

Onsite Water Quality

Narrabri Mine monitors ‘saline water’ defined in the WMP as water pumped from the underground workings. The water quality sampling of any ‘saline water’ conducted during the reporting period has been characterised as coal contact water and all results are shown in Appendix D as required by the

WMP, refer to results for the 'Box Cut' sampling location. All saline water is contained onsite and either processed via a Water Conditioning Plant (WCP) or reused in operational areas of the mine. The subsequent brine produced from the WCP is stored in lined dams within the rail loop.

Wet Weather Discharge Monitoring

No wet weather discharges occurred during the reporting period.

Subsidence Surface Water Impacts

Refer to Sections 6.6.2 and 6.13.2 of this report.

7.2.3 Proposed Improvement Measures

No improvement measures are proposed during the next reporting period. The surface water monitoring program and management measures described above will continue to be implemented during the next reporting period consistent with the approved WMP.

7.3 GROUNDWATER

7.3.1 Environmental Management

Groundwater at the Narrabri Mine is managed in accordance with the WMP prepared to satisfy the requirements of the PA 08_0144. Currently groundwater monitoring is conducted at sites located within and surrounding the mine as illustrated on Figure 3 and as outlined in Table 17.

Table 17: Groundwater Monitoring Summary

Location	Parameters	Frequency
All Standpipes P1,P2, P3, P4, P5, P6,P7,P8, P9, P10, P11,P12, P13, P14, P15, P16,P17,P18, P19, P28, P29, P30, P31, P32, P33, P34, P39, P43, P47, P51, P52, P53, WB1, WB2, WB3a, WB3b, WB4, WB5a, WB5b, WB6a, WB6b, WB7 and WB8	Water level EC pH TDS Metals Anions and Cations	Monthly (water level, pH and EC) Annually (full water quality)
Vibrating Wire Piezometers P23, P24, P25, P35, P36, P37, P40, P42, P44, P45, P46, P48, P54, P55, P56 and P57	Water Level	Daily (Data Logger)
Mine water pumped into and out of the mine	EC pH TDS Metals Anion and Cations Discharge Rate	Daily (flow rate) Monthly (full water quality)

7.3.2 Environmental Performance

Annual Hydrogeological Review

An annual hydrogeological review was undertaken by Groundwater Exploration Services in March 2020 for the period 1 January 2019 to 31 December 2019. The results of the review are summarised below. Parameters recorded as part of the scheduled groundwater monitoring for this reporting period are provided in Appendix E as required by the WMP.

Groundwater Inflows

To date, since monitoring records have been maintained, the total annual groundwater inflow to the workings has not exceeded the Access Licence Category (Mining) License (Approval 90WA822539) of 818ML/year. The annual inflow that was calculated to be extracted from mining activities from Narrabri Coal during 2019 is 380 ML. The calculation is the total aquifer interference volume taking into consideration the inputs of raw water supply from pond D, as well as losses from the moisture content of coal extracted and ventilation humidity.

Groundwater Levels

Water levels monitored during the 2019 reporting period generally did not exhibit any notable rise or fall in groundwater levels associated with strata subsidence effects from longwall mining activities and associated subsidence which is in excess of what has previously been predicted.

Significant depressurisation of the Hoskissons Coal Seam and the Arkarula Formation has been observed during and after extraction of longwall panels LW101 – LW108. This notable depressurisation was observed in numerous groundwater monitoring records, particularly close to mine workings as indicated in P40 and more recently in P57. During late 2018, P40 instrumentation failed due to mining related stresses. However, this is not an unusual phenomenon in underground mining environments given the proximity to mining activities and the pressure reductions observed are consistent with predictions that have been made. The most notable groundwater level changes which have occurred as a result of mining activities have been recorded within standpipe piezometers monitoring the Garrawilla Volcanics. This is best illustrated in the records of P13 and P16. The groundwater model report (Hydrosimulations 2018) does not show drawdowns specifically within the Garrawilla Volcanics but does for the overlying Purlawaugh and underlying Napperby formations. From this, it can be inferred that the impacts seen in this area for the Garrawilla is in line with those predictions and therefore these results are not unexpected. The groundwater pressure reduction could also be attributed to the below average rainfall trends which have been experienced over the past three years.

Groundwater Quality

No adverse changes to groundwater quality within the mining area associated with underground mining activities have been observed or reported, with no distinctive increase in salinity, no distinctive lowering of pH and no reduction in water quality with regards to dissolved metals or nutrients have been reported during the 2019 reporting period.

A notable change was detected within the monitoring well network surrounding the evaporation / storage ponds. Most notable the rise in water level, although slight, and the elevated salinity that has been recorded in P30. P30 is adjacent to storage Pond C, which stores brine concentrate. This elevated salinity recording in P30 is the most significant outlier in terms of groundwater chemistry for the mining operation in 2019.

Compensatory Water Supply

No compensatory water has been required as no privately-owned water supplies have been affected.

7.3.3 Proposed Improvement Measures

The groundwater monitoring program and management measures described above will continue to be implemented during the next reporting period.

An investigation will be undertaken in the 2020 reporting period of the evaporation pond monitoring bore network. The investigation will include:

- Detailed geochemical analysis to estimate mass balance and mixing trends of potential leakage in P30 and other monitoring piezometers to assess the source as well as potential rates and volumes of any potential leakage.
- Undertake test of physical parameters of monitoring points to assess permeability layers lining the evaporation/storage ponds is maintained.
- Report on findings and provide further recommendations for additional investigative and/or corrective actions.

7.4 SITE WATER BALANCE

Table 18 presents an estimate of the volume of stored water at the beginning and end of the reporting period (i.e. calendar year).

Table 18: Stored Water

	Volumes Held (m^3)		Available Storage Capacity at the end of the Reporting Period (m^3)
	Start of Reporting Period	**At end of Reporting Period**	
Clean Water (in Storage Dams)	2,265	0	106,800
Dirty Water (in Sediment Basins)	31,898	0	107,500
Evaporation Ponds*	514,748	412,590	268,380
* = Additional 40ML of storage in containment bund in rail loop.			
Note: $1m^3$ = 1,000L			

All extraction was within Water Licence limits. The revised Surface Water Assessment (Narrabri Mine Modification 5 Surface Water Assessment, WRM 2015) predicts the mine would require a raw water supply of 37 ML for year 2019 however the mine imported 532 ML for the year. The Surface Water Assessment also predicted that 30ML would be released offsite during 2019 and 0 ML was released. The Groundwater Assessment (Narrabri Mine Modification Groundwater Assessment, Heritage Computing 2015) predicts that during 2019 1,015 ML would be dewatered from the mine however only 625 ML was dewatered from the mine. This indicates that the mine is still in water deficit. The Groundwater Assessment also predicted that the mine will be in water surplus, i.e. is producing more water than it requires for operation, around 2019. Other Surface Water Assessment predictions against actual volumes is summarised below:

- 84 ML of reclaim water predicted to be used in the stockpile sprays, 169 ML was used for the reporting period;
- 193 ML of reclaim water predicted to be required for the CHPP, 199 ML was required for the reporting period; and
- 324 ML of filtered water predicted to be used underground, 499 ML of filtered water was required for the reporting period.

8 REHABILITATION

The rehabilitation objectives for the Narrabri Mine are described in Schedule 5, Conditions 1 to 4 of PA 08_0144. The MOP summarises the key elements for rehabilitation as well as providing a description of activities and mine landforms.

8.1 REHABILITATION PERFORMANCE DURING THE REPORTING PERIOD

8.1.1 Status of Mining and Rehabilitation

Significant rehabilitation activities were undertaken over the disturbed areas above LW101-107 during the reporting period, with approximately 88 hectares taken from the disturbance stage to Active Rehabilitation. Rehabilitation activities undertaken during the reporting period included: decommissioning drill holes; filling in sumps associated with drilling activities; grading landforms and re-spreading topsoil/subsoil; fertilising and seeding topsoiled areas; and weed management.

Refer to Table 19. Rehabilitation of 88 ha of drilling pads and gas drainage infrastructure sites was undertaken during the reporting period. This rehabilitation has occurred up to and including surface areas above LW101-107 and is progressing closely behind the underground extraction area. The ploughing and seeding of areas is limited to the disturbance areas required for surface infrastructure and the mine has progressed the rehabilitation of these sites and will continue to monitor rehabilitation performance to determine if additional seeding is required.

8.1.2 Post Rehabilitation Land Uses

The rehabilitation completion criteria will be consistent with the description in the Landscape Management Plan. The area in the west of ML 1609 will be returned to native woodland and the area in the east of the ML will be returned to the relevant land capability class.

8.1.3 Rehabilitation Performance Indicators

Table 19 summarises the rehabilitation status for the Narrabri Mine, also refer to Figure 9. Note that areas for each 'Main Area Type' have been redistributed in this AR to align with definitions in the *Annual Review Guideline* (DP&E 2015).

Table 19: Rehabilitation Status

Mine Area Type	Previous Reporting Period (Actual)	This Reporting Period (Actual)	Next Reporting Period 2019 (Forecast)
A. Total mine footprint	254	408[1]	432
B. Total active disturbance	120	279[1]	293
C. Land being prepared for rehabilitation	62	29	28
D. Land under active rehabilitation	72	100[2]	111
E. Completed rehabilitation	0	0	0

[1]Total Mine Footprint and Total Active Disturbance areas increased due to correction of errors in mapping from previous reporting periods, which had excluded approximately 151ha from aspects including- Category D-Land Under Active Rehabilitation, topsoil & subsoil stockpiles and the Pit-Top Area.

[2]Land under active rehabilitation- the 72ha reported in the previous reporting period had incorrectly included 24ha of tree seedlings planted adjacent to the entrance road to the mine, and 46ha of temporary stabilised stockpiles, Pit & Dam Walls and Road Shoulders. This 72ha has been excluded from this reporting period figures. Therefore the total rehabilitation undertaken during the reporting period is actually 88 hectares, not the 28 ha increase that can be calculated from above table.

8.1.4 Decommissioning and Demolition Activities

No decommissioning activities were undertaken during the reporting period outside of the reclaiming of gas drainage infrastructure, which is re-used where possible.

8.1.5 Other Rehabilitation Activities

Rehabilitation activities associated with exploration activities have been undertaken during the reporting period.

8.1.6 Departmental Sign-off of Rehabilitated Areas

Departmental sign-off was not requested during the reporting period.

8.1.7 Variations in Activities against MOP/RMP

There were no variations to the mines' MOP during the reporting period.

8.1.8 Monitoring

Internal rehabilitation/revegetation monitoring undertaken to date has primarily been limited to inspections of roads/creeks impacted by subsidence, water management structures, soil stockpiles and seeded areas for evidence of instability/erosion or poor germination, and borehole sealing. This process will continue over the life of the mine, with the extent and nature of activities undertaken being consistent with the relevant MOP, Extraction Plan, Landscape Management Plan and other relevant management plans prepared in satisfaction of PA 08_0144.

8.1.9 Trials, Research Projects and Initiatives

No rehabilitation trials or research were undertaken during the reporting period.

8.1.10 Key Issues to Achieving Successful Rehabilitation

The key issues to achieving successful rehabilitation include:

- Poor quality or lack of volume of topsoil;
- Loss or alteration to existing habitats due to subsidence, erosion, weeds and/or pests;
- Alteration of drainage lines due to subsidence;
- Contaminated land occurring onsite;
- Ongoing greenhouse gas emissions due to inadequate sealing of mine entries etc;
- Loss of agricultural resources due to mining disturbance; and
- Discharge of saline or contaminated water.

In cases where the performance is sub-optimal, additional management measures will be implemented (e.g. replanting, repairing landform and water management features, application of mulch/fertilisers, feral animal and weed control etc.).

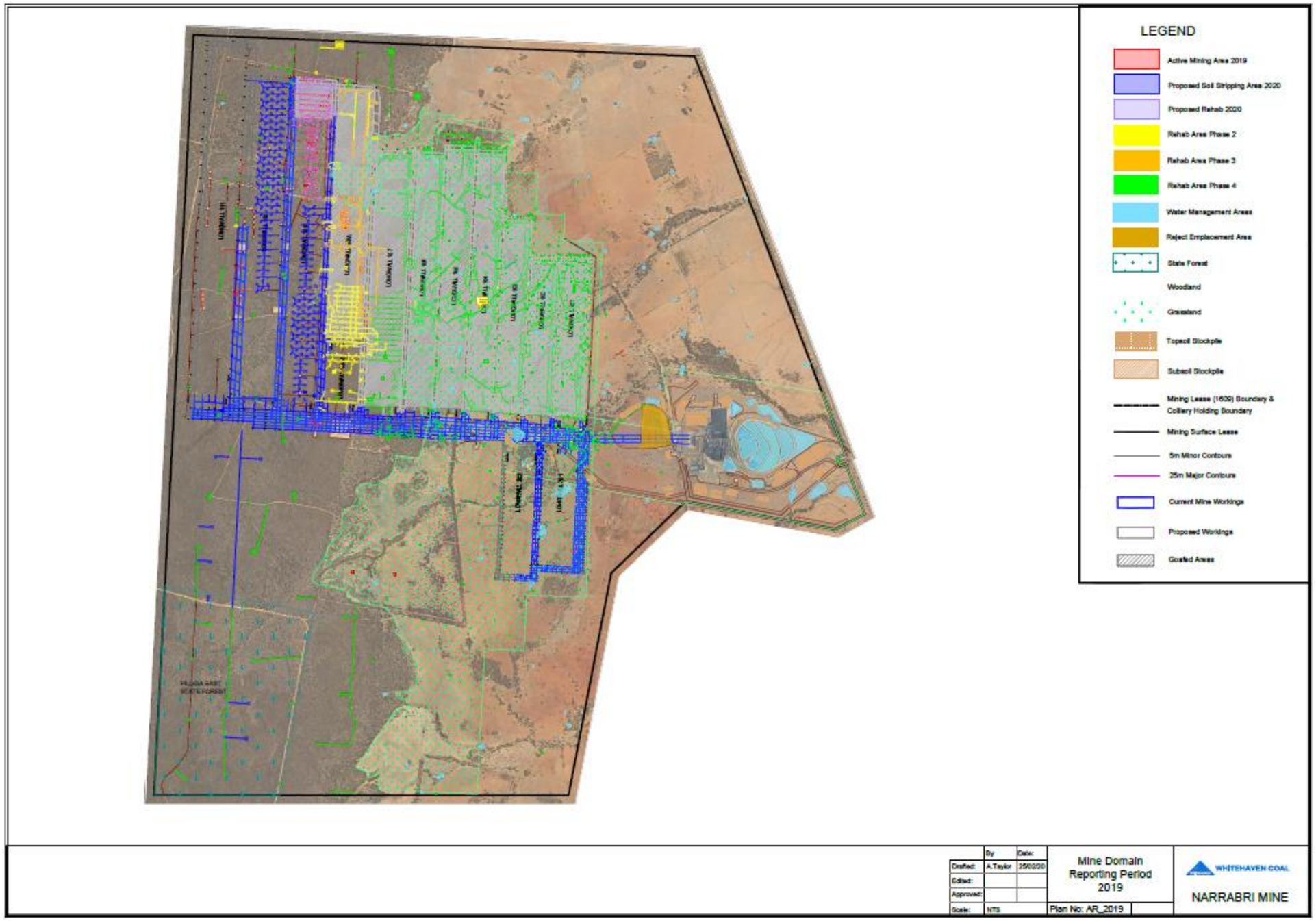

Figure 9: Mine Domains Reporting Period 2019

8.2 ACTIONS FOR THE NEXT REPORTING PERIOD

Houses on mine-owned land that are no longer required or that have been affected by subsidence will be decommissioned during the next reporting period. Any decommissioning works will be undertaken in accordance with the relevant standards and approvals.

Weed and pest animal control programs and monitoring will continue.

The rehabilitation actions for the next reporting period are detailed in the approved MOP, which covers the period to December 2020.

Additional testing of material emplaced and to be emplaced within the REA was undertaken during the reporting period. Once the review is finalised and the final capping strategy approved, staged rehabilitation of the REA can commence.

8.2.1 Proposed Research and Rehabilitation for 2020

An electronic GIS based monitoring platform will be established and utilised for routine site monitoring of rehabilitation.

9 COMMUNITY

Social impacts and opportunities associated with the Narrabri Mine are managed in accordance with PA 08_0144 and the Statement of Commitments (SoC) (Appendix 3 of PA 08_0144).

9.1 COMMUNITY ENGAGEMENT ACTIVITIES

In accordance with Schedule 6, Condition 9 of PA 08_0144, a Community Consultative Committee (CCC) has been formed and operating since 2008. The committee comprises representatives of Narrabri Shire Council, Narrabri Mine and the community. Since its inception, the CCC has met quarterly. The CCC met four times during the reporting period on the 6 March 2019, the 26 June 2019, the 11 September 2019 and the 4 December 2019.

Narrabri Mine representatives continue to maintain contact with neighbours near the mine site. These contacts not only provide a means of information dissemination, but also enable Narrabri Mine to ascertain and address any potential issues, which may arise from time to time. In addition, information relating to the mine is available: on the Whitehaven website; via the complaints hotline; as part of sponsorship of local community events and groups; and at meetings as required with neighbours and a range of stakeholders including government and non-government agencies.

9.2 COMMUNITY CONTRIBUTIONS & INITIATIVES

As well as attending functions, WHC and Narrabri Mine also contributed to the community by providing approximately $577,316 in financial support and sponsorship to various community events and initiatives during the reporting period, which included those listed in **Table 20**.

Table 20: Donations to organisations in the Narrabri locality during 2019

Organisation	Description	Amount granted
Narrabri & District Chamber of Commerce	2018 Narrabri Street Carnival Sponsorship	$2,500
Narrabri Show Society	2019 Narrabri Show Sponsorship	$4,000
Private Individual	Donation to attend NSW Swimming Championships	$500
Nosh Narrabri Committee	2019 Nosh	$16,500
Narrabri & District Chamber of Commerce	2019 Membership	$180
Narrabri Jockey Club	2019 Narrabri Race Meeting	$2,000
Clontarf Foundation	Narrabri High School 2019 Donation	$40,000
NW Courier - Narrabri	Community Charities - Tipping Competition	$180
Rotary Club of Narrabri	2019 North West Science & Engineering Challenge	$3,000
Narrabri Local Aboriginal Land Council	2019 NAIDOC Week Celebrations Donation	$1,000
NW Courier - Narrabri	Community Charities - Tipping Competition	$240
Eulah Creek Recreation Reserve Trust	Eulah Creek Vintage Machinery Day	$200
Narrabri & District Chamber of Commerce	2019 Narrabri Business Awards	$12,000
NW Courier - Narrabri	Community Charities - Tipping Competition	$540
Private Individual	Country NSW Rugby Union Under 14's	$500
Narrabri Shire Council	2019 STEM Investigation Awards	$350
Life Without Barriers Narrabri	2019 Ball Donation	$1,000
Killarney Bike Classic Committee	2019 Killarney Bike Classic Sponsorship	$500
Winanga-Li Aboriginal Child & Family Centre	Nandewar Wedgetails 2019 Aboriginal Knockout Sponsorship	$5,000
Narrabri Public School P & C Association	2019 Spring Fete Donation	$250
Forest Coach Lines Pty Ltd	Maules Creek Bus Tour	$720
NW Courier - Narrabri	Community Charities - Tipping Competition	$240
Private Individual	Donation Rugby Union Tour	$500
Private Individual	Sponsorship for Rugby Union	$500
Narrabri & District Chamber of Commerce	Sponsorship - Back to the Bri Festival	$10,000
Narrabri & District Chamber of Commerce	Donation Narrabri Community Fund Ultrasound	$12,000
Narrabri High School	2019 Presentation Night Donation	$250
NW Courier - Narrabri	Community Charities - Tipping Competition	$60

Country Education Foundation of Australia	Education Scholarship Donation	$10,000
Narrabri Local Aborginal Land Council	Aborginal Cricket Sponsorship	$1,500
Narrabri Community Radio	Sponsorship	$1,000

9.3 COMMUNITY COMPLAINTS

Narrabri Mine maintains a designated complaints line, with messages checked on a daily basis by site personnel. In the event of a complaint, details pertaining to the complainant, complaint and action taken are recorded on the complaints form.

During the reporting period, sixty complaints were made to the mine from eight different complainants. One complaint was received from email via EPA, and all other complaints were received on the designated complaints line. A summary of the complaints (by category) received during the reporting period are detailed in Table 21. A Complaints Register summarising the complaints is also available on the Whitehaven Coal website.

Table 21: Summary of Community Complaints and Enquiries

Complaint	Complaint Category	Method
1	Dust	Phone (complaints line)
2	Dust	Phone (complaints line)
3	Not specified	Phone (complaints line)
4	Noise	Phone (complaints line)
5	Noise	Phone (complaints line)
6	Noise	Phone (complaints line)
7	Air quality	Phone (complaints line)
8	Noise	Phone (complaints line)
9	Noise	Phone (complaints line)
10	Noise and odour	Phone (complaints line)
11	Noise	Phone (complaints line)
12	Noise	Phone (complaints line)
13	Noise	Phone (complaints line)
14	Noise	Phone (complaints line)
15	Noise	Phone (complaints line)
16	Odour	Email from EPA
17	Noise	Phone (complaints line)
18	Noise	Phone (complaints line)
19	Noise	Phone (complaints line)
20	Odour	Phone (complaints line)

21	Noise	Phone (complaints line)
22	Noise	Phone (complaints line)
23	Noise	Phone (complaints line)
24	Noise	Phone (complaints line)
25	Noise	Phone (complaints line)
26	Noise	Phone (complaints line)
27	Noise	Phone (complaints line)
28	Noise	Phone (complaints line)
29	Noise	Phone (complaints line)
30	Noise	Phone (complaints line)
31	Noise	Phone (complaints line)
32	Noise	Phone (complaints line)
33	Odour	Phone (complaints line)
34	Noise	Phone (complaints line)
35	Noise	Phone (complaints line)
36	Noise	Phone (complaints line)
37	Noise	Phone (complaints line)
38	Noise	Phone (complaints line)
39	Noise	Phone (complaints line)
40	Noise	Phone (complaints line)
41	Noise	Phone (complaints line)
42	Noise	Phone (complaints line)
43	Noise	Phone (complaints line)
44	Noise	Phone (complaints line)
45	Noise	Phone (complaints line)
46	Noise	Phone (complaints line)
47	Noise	Phone (complaints line)
48	Noise	Phone (complaints line)
49	Noise	Phone (complaints line)
50	Noise	Phone (complaints line)
51	Noise	Phone (complaints line)
52	Noise	Phone (complaints line)
53	Noise	Phone (complaints line)
54	Noise	Phone (complaints line)

55	Noise	Phone (complaints line)
56	Noise	Phone (complaints line)
57	Noise	Phone (complaints line)
58	Noise	Phone (complaints line)
59	Noise	Phone (complaints line)
60	Dust	Phone (complaints line)

9.3.1 Complaint Trends

A total number of sixty complaints were received during the 2019 reporting period which is a higher peak that has been seen in the past, refer to Figure 10. It is worth noting that 52 of the 60 complaints received were from the same complainant. Narrabri Coal continue to engage with this complainant to resolve their concerns.

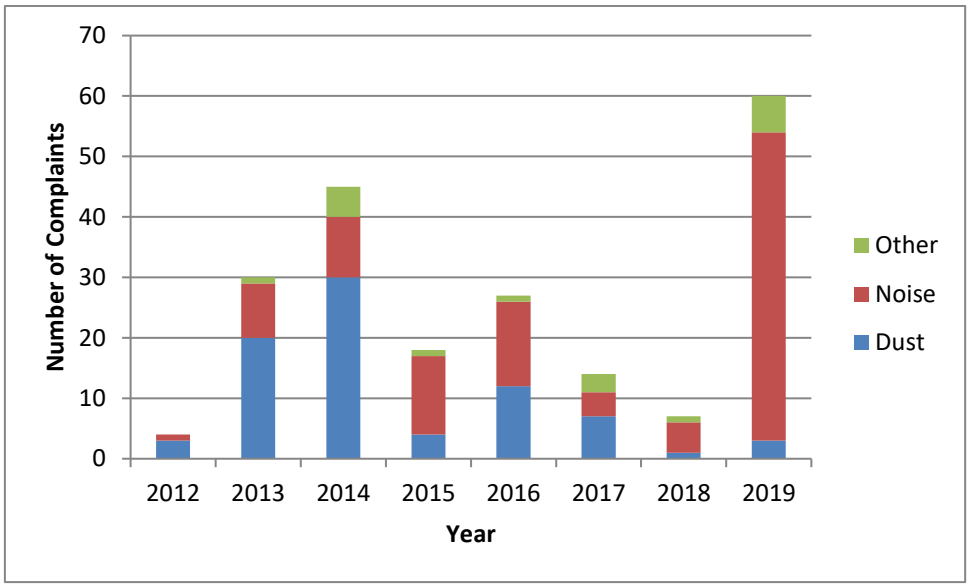

Figure 10: Complaints Trend

9.3.2 Actions & Proposed Improvements

Community complaints primarily related to noise concerns. Actions taken in response to complaints included a range of measures not limited to the following:

- Investigations into specific mining activities;
- Undertake attended noise monitoring;
- Reviewing real time monitoring data and operational activities;
- Analysis of meteorological data;
- Implemented corrective actions;
- Communicating learnings and issues to operational personnel; and
- Community Consultation.

Proposed improvements for the next reporting period in relation to noise include those items identified in Section 12.

10 INDEPENDENT AUDIT

10.1 INDEPENDENT ENVIRONMENTAL AUDIT

An Independent Environmental Audit (IEA) was completed during the reporting period that covered the period 1 December 2016 through 4 December 2019. The IEA identified six non-compliances (one duplicate), four administrative non-compliances and recorded six observations against the conditions of consent and the implementation of management plans. Table 21 below outlines how the outstanding actions are being addressed. In accordance with Schedule 6, Condition 7 of PA 08_0144 the next IEA will be commissioned by 13 September 2022. The full 2019 IEA report and NCO's response action plan are available on the WHC – Narrabri web page.

Table 22: 2019 Independent Audit – Non-conformance Actions Summary

Condition/Plan	Proposed Action	Status
3.4 / PA 08_0144	NCO to review the subsidence monitoring of the Extraction Plan LW107-LW110 and develop a monitoring guideline for implementation.	30 April 2020
4.1 / PA 08_0144 L3.1 / EPL 12789 (duplicate)	NCO have undertaken further investigations into additional Main Exhaust Vent Fan attenuation measures and will continue to implement all reasonable and feasible best practice noise mitigation measures as they are identified.	Complete
4.4 / PA 08_0144	The mine will continue to implement the Noise Management Plan. Improvement opportunities will be reported on in the relevant Annual Review.	Complete
O1.1 / EPL 12789	No further action is required on the Penalty Notice. NCO are continuing discussions with EPA and Narrabri Shire Council regarding the Narrabri Landfill incident.	Complete
E2 / EPL 12789	NCO will develop and implement a complaints handling procedure.	30 April 2020

11 INCIDENTS AND NON-COMPLIANCES DURING THE REPORTING PERIOD

11.1 NON-COMPLIANCES

The compliance status of the Narrabri Mine against relevant approvals during the reporting period was assessed in Section 1 as at the end of the reporting period (i.e. 31 December 2019). Further details of any non-compliance and actions undertaken or proposed for the following reporting period is summarised in Table 23.

Table 23: Non-Compliance Details and Proposed Action Plan

Non - Compliance	Date / Location	Cause	Action Plan	Due Date
Three noise exceedances recorded during quarterly ambient noise monitoring in the reporting period	N6, June 2019 (wind > 3 m/s) N9, June 2019 (wind > 3 m/s) N9, 4 September 2019	Targeted independent acoustic survey advice considered the exceedances were likely attributable to the Main Exhaust Ventilation Fan.	NCO is investigating a number of noise attenuation measures applicable to the Main Exhaust Ventilation Fan.	Ongoing
EPA issued a Penalty Notice on 14 June 2019 related to coal dust blowing off the Pit Top working area on the 5 January 2019 (Rotary Breaker – Transfer Tower area CCTV).	5 January 2019, community complainant video. EPA Penalty Notice Advice letter received on 14 June 2019.	Stockpile water sprays management, chutes and operational TARP were in use. Prolonged drought and 24hr wind gusts of 5 to 12 m/s as prevailing conditions.	EPA issued a Pollution Reduction Study via variation of NCO's EPL on the 3 December 2019.	15 June 2020
EPA issued a Clean-Up Notice related to the disposal of mine emergency rescue breather units at Narrabri landfill between 2 April and 18 April 2019.	2-18 April 2019	Waste management stream awareness/misunderstanding.	Additional waste management training being developed. Complete clean-up in consultation with EPA and Narrabri Shire Council.	June 2020

11.2 REPORTABLE INCIDENTS OR EXCEEDANCES

Details of reportable monitoring exceedances or incidents are included below:

- Noise exceedance, as detailed in Section 6.1.2, was reported to the EPA and DPIE during the reporting period.

11.3 REGULATORY ACTIONS

The following official cautions or warning letters, penalty notices or prosecution proceedings were issued to the mine during the reporting period:

- EPA issued Clean-Up Notices 1579963 on 23 May 2019, and a subsequent Variation Notice 1580984 on 13 June 2019, in relation to Hazardous Waste Disposal resulting in Fire at Narrabri Shire Council Landfill.
- EPA issued a Penalty Notice on 14 June 2019 for failure to operate in a competent manner, related to coal dust emissions.
- Resources Regulator issued a Suspension Notice on 22 August 2019 for Exploration Licence 6243, regarding clearing of tracks not in accordance with the Activity Approval.
- Resources Regulator issued an Official Caution on 29 October 2019 in relation to EL6243, for failure to provide evidence of washing down all machinery prior to entering site to manage ecological impacts (i.e. reduce potential for spread of weeds).
- EPA issued an Official Caution on 14 November 2019 for the late submission of an Annual Return for EPL12789.

12 ACTIVITIES TO BE COMPLETED IN THE NEXT REPORTING PERIOD

Activities to be completed in the next reporting period to improve the environmental or community performance of the Narrabri Mine, in addition to those separately identified in Section 11 include:

- Continue investigation of noise attenuation measures applicable to the main vent fan. This will include further noise modelling on noise barriers and alternative noise attenuation options;
- Maintenance activities on the exhaust components of all Goaf Drainage Units will be increased in frequency. Following the maintenance SPL measurements will be undertaken to determine if the maintenance is effective in reducing noise levels. If the SPL of MEU007 cannot be reduced via exhaust maintenance activities then a noise attenuation barrier will be installed on the unit.
- Negotiations have commenced with suppliers to replace coal stockpile Caterpillar bulldozers with equipment exhibiting lower SPL's.
- Continue with progressive replacement of reversing alarms on all surface vehicles and machinery to be of the low frequency type.
- Complete a study on the possible use of chemical veneers to suppress dust from coal stockpiles.
- Undertake a quality control audit of the dust suppression systems (fixed and mobile) in operation at the pit-top area of the mine.
- The Greenhouse Gas Minimisation Plan will be reviewed.
- The mine will revise the Aboriginal Cultural Heritage induction/training package.
- Waste Management training packages will continue to be refined, with an additional training package developed to focus on Hazardous Waste.
- The subsidence monitoring deliverables of the Extraction Plan LW107-LW110 will be reviewed.
- Review the monitoring methodology for the on-site Biodiversity Offset Areas to address the EcoLogical 2019 monitoring report recommendations.
- An investigation will be undertaken in the 2020 reporting period of the evaporation pond monitoring bore network.
- Houses on mine-owned land that are no longer required or that have been affected by subsidence will be decommissioned during the next reporting period. Any decommissioning works will be undertaken in accordance with the relevant standards and approvals.
- An electronic GIS based monitoring platform will be established and utilised for routine site monitoring of rehabilitation.
- Review and revision of various Environmental Management Plans.

- Seeking approval to relevant approval modifications or amendments.
- Continued community liaison and engagement with local stakeholders.

Appendix A – *Flora Species List*

Scientific Name	Common Name	Native / Exotic	S12 Rep	S13	S13 Rep	S14	S14 Rep	S15	S15 Rep	S16	S16 Rep	S17	S17 Rep	S18	S18 Rep	S19	S19 Rep
Acacia burrowii	Burrow's wattle	Native								2		3	3		2		
Acacia deanei	Green wattle, Dean's wattle	Native	2				1		1								1
Acacia gladiformis	Sword wattle	Native									1						
Acacia ixiophylla	Sticky leaved wattle	Native					1										
Acacia leiocalyx	Lamb's Tail Wattle	Native				3							1	1	1	2	
Acacia penninervis	Mountain hickory	Native									3						
Allocasuarina luehmannii	Bulloak	Native														2	
Allocasuarina sp.		Native					1				1				1		
Alphitonia excelsa	Red Ash	Native										2	1				
Alstonia constricta	Quinine Bush, Bitter Bark	Native											1				
Aristida caput-medusae	Many-headed Wiregrass	Native			1		2		1			1	2			3	2
aristida personata	Purple Wire-grass	Native	2		2		2	3	3	3	2	3	2	1			2
Austrostipa ramosissima	Stout Bamboo Grass	Native	3	1	1					2						3	
Austrostipa scabra	Speargrass	Native	2	1	1		3			3			2			2	2
Boronia glabra		Native									1						
Brachychiton populneus	Kurrajong	Native	1														

Brunoniella australis	Blue Trumpet	Native		1			2									1	
Bryophyllum delagoense	Mother of millions	Exotic	2	2	1												
Callitris endlicheri	Black Cypress Pine	Native								2				3			1
Callitris glaucophylla	White Cypress Pine	Native							2		2		1				3
Calytrix tetragona	Common Fringe-myrtle	Native								3							
Capparis mitchellii	Native Orange	Native		1													
Cassytha glabella	Slender Devils Twine	Native				2											
Casuarina cristata	Belah	Native	3														
cheilanthes sieberi	Mulga Fern	Native					1	1	1	2	1	1	2	1		1	1
Chrysocephalum semipapposum	Clustered Everlasting, Yellow Buttons	Native								3	3						
Cleistochloa rigida		Native				4							1		1		
Corymbia trachyphloia	White / Brown Bloodwood	Native				3					3		3	2	3		
Cryptandra amara	Bitter cryptandra	Native								1							
Cuscuta sp.	Dodder	Native					1										
Cymbopogon refractus	Barbed Wire Grass	Native					2	2	3	1	1	1	1			3	2
cynodon dactylon	Common Couch	Native							1								
Dampiera sp.		Native													1		
denhamia cunninghamii		Native														1	1
Dianella revoluta	Blue Flax-Lily	Native					2				1						2
dianella sp.		Native								1							

Digitiaria sp.		Native					2				1						
Dodonaea viscosa	Sticky Hop-bush	Native					3										
Dodonaea viscosa subs p. spatulata		Native															1
Echium plantagineum	Paterson's Curse	Exotic						1	3								
Einadia trigonos	Fishweed	Native		1													
Enchylaena tomentosa	Ruby Saltbush	Native		1													1
Entolasia stricta	Wiry panic	Native									1						
Eragrostis curvula	African Lovegrass	Exotic						1	1								
Eragrostis leptostachya	Paddock Lovegrass	Native		1													
Eremophila mitchellii	Budda	Native		3	2												
Eucalyptus beyeriana	Beyer's Ironbark	Native													2	3	3
Eucalyptus chloroclada	Dirty Gum, Red Gum	Native								3							
Eucalyptus crebra	Narrow-leaved ironbark	Native				2	3										2
Eucalyptus dwyeri	Dwyer's Red Gum	Native									1		2				
Eucalyptus fibrosa	Red Ironbark, Broad-leaved ironbark	Native				3						1	3	2			
Eucalyptus microcarpa	Grey Box, Inland Box	Native	3	3	3				1								
Eucalyptus viridis	Green Mallee	Native														1	1
Exocarpos cupressiformis	Cherry Ballart	Native									1						

Gahnia aspera	Rough Saw-sedge	Native					1			2	2					1	1
Geijera parviflora	Wilga	Native	2	2	3											1	1
Glandularia aristigera	Mayne's Pest	Native						1	2								
Goodenia rotunaifolia		Native				1	1								1		
Grevillea floribunda		Native									2						
hibiscus sturtii	Hill Hibiscus	Native											1			1	1
Homoranthus flavescens		Native								2	3	1	1				2
Hypochaeris radicata	Catsear	Exotic	1														
Hypochaeris albiflora	White flatweed	Exotic						1									
Indigofera australis	Australian Indigo	Native															1
Lepidosperma laterale	Variable Sword-sedge	Native				1					2						
Lomandra confertifolia	Mat-rush	Native	2			1											
Lomandra filiformis	Wattle Mat-rush	Native		1													
Lomandra multiflora	Many-flowered Mat-rush	Native					1			1	1		1			1	1
Macrozamia glaucophylla		Native								1							
Maireana enchylaenoides	Wingless Bluebush	Native		1													
Maireana microphylla	Small-leaf Bluebush	Native	1	2	1												

marsdenia viridiflora	Native Pear	Native								3	1	2					1
Melaleuca uncinata	Broombush	Native					1										
Melichrus erubescens	Ruby Urn Heath	Native				1				1					1		
Melichrus urceolatus	Urn Heath	Native								2	1						
Mentha diemenica	Slender Mint	Native					1										
Microlaena stipoides	Weeping Grass	Native										1					
Olearia decurrens	Clammy Daisy-bush	Native														3	
Opuntia stricta	Common Prickly Pear	Exotic	1					1		1			1				
parsonsia eucalyptophylla	Gargaloo	Native		1												1	
Paspalidium gracile	Slender Panic	Native		1									1				2
Patersonia sp.		Native								1							
Phebalium squamulosum	Scaly Phebalium	Native				4	3			1		2	3	3	3	1	
Philotheca ciliata		Native				3	3			3	2	3	3	3	3		2
Plantago debilis		Native	1														
Rumex brownii	Swamp Dock	Native						1									
Rytidosperma sp.		Native		3													
schoenus ericetorum	Heath Bog-rush	Native												1			
Sclerolaena birchii	Galvinized Burr	Native		2													
Senna artemisioides	Silver Cassia	Native								1							
sida corrugata	Corrugated Sida	Native					1										

Sida sp.		Native								1						1	1
Solanum ferocissimum	Spiny Potato Bush	Native											1			2	
Solanum parvifolium		Native	2		1							3				3	2
Solanum jucundum		Native														3	1
Themeda avenaceus		Native								1							
Thyridolepis mitchelliana		Native					2					1	1				
Wahlenbergia sp.		Native						1									
Walwhalleya proluta		Native										1					

Appendix B – *Photo Monitoring Points*

Appendix B Flora Photo Monitoring Points

Figure 1: Mine BOA Site 12 Rep 2019

Figure 2: Mine BOA Site 13 2019

Figure 3: Mine BOA Site 13 Rep 2019

Figure 4: Mine BOA Site 14 2019

Figure 5: Mine BOA Site 14 Rep 2019

Figure 6: Mine BOA Site 15 2019

Figure 7: Mine BOA Site 15 2019

Figure 8: Mine BOA Site 16 2019

Figure 9: Mine BOA Site 16 Rep 2019

Figure 10: Mine BOA Site 17 2019

Figure 11: Mine BOA Site 17 Rep 2019

Figure 12: Mine BOA Site 18 2019

Figure 13: Mine BOA Site 18 Rep 2019

Figure 14: Mine BOA Site 19 2019

Figure 15: Mine BOA Site 19 2019

Appendix C – *Fauna Species List*

Common name	Scientific name	Status	S12	S13	S14	S15	S16	S17	S18
Diurnal Birds									
Apostlebird	Struthidea cinerea		x			x	x		
Australian Magpie	Cracticus tibicen		x	x		x	x	x	
Australian Raven	Corvus coronoides		x			x	x	x	x
Australian Ringneck	Barnardius zonarius				x	x	x		
Australian Wood Duck	Chenonetta jubata			x					
Bar-shouldered Dove	Geopelia humeralis							x	
Black-faced Cuckoo-shrike	Coracina novaehollandiae					x			x
Brown-headed Honeyeater	Melithreptus brevirostris					x			
Cockatiel	Nymphicus hollandicus		x	x					
Common Bronzewing	Phaps chalcoptera		x		x	x	x		
Crested Pigeon	Ocyphaps lophotes		x			x			
Eastern Yellow Robin	Eopsaltria australis				x		x	x	x
Galah	Eolophus roseicapillus		x	x	x	x	x	x	
Golden whistler	Pachycephala pectoralis								x
Grey Butcherbird	Cracticus torquatus			x					x
Grey Shrike-thrush	Colluricincla harmonica					x			
Grey-crowned Babbler	Pomatostomus temporalis	Vulnerable population - BC Act	x			x	x		

Laughing Kookaburra	Dacelo novaeguineae				x	x			
Magpie-lark	Grallina cyanoleuca		x	x		x	x		
Nankeen Kestrel	Falco cenchroides		x						
Noisy Friarbird	Philemon corniculatus							x	
Noisy Miner	Manorina melanocephala		x	x		x		x	
Olive-backed Oriole	Oriolus sagittatus					x			x
Peaceful Dove	Geopelia striata							x	
Pied Currawong	Strepera graculina				x	x	x	x	
Red Wattlebird	Anthochaera carunculata		x						
Red-capped Robin	Petroica goodenovii							x	
Red-rumped Parrot	Psephotus haematonotus		x						
Restless Flycatcher	Myiagra inquieta					x			
Rufous Whistler	Pachycephala rufiventris				x	x		x	
Singing Honeyeater	Lichenostomus virescens							x	x
Speckled Warbler	Pyrrholaemus sagittatus	Vulnerable - BC Act				x		x	
Striated Thornbill	Acanthiza lineata				x				
Sulphur-crested Cockatoo	Cacatua galerita		x	x					
Weebill	Smicrornis brevirostris						x		
Western Gerygone	Gerygone fusca					x	x		x

White-breasted Woodswallow	Artamus leucorynchus					x			
White-eared Honeyeater	Lichenostomus leucotis					x			
White-winged Chough	Corcorax melanorhamphos		x			x			
Willie Wagtail	Rhipidura leucophrys		x	x		x	x		
Yellow Thornbill	Acanthiza nana					x	x	x	
Yellow-rumped Thornbill	Acanthiza chrysorrhoa				x	x	x	x	
Crepuscular birds									
Tawny Frogmouth	Podargus strigoides								
Reptiles									
Eastern Bearded Dragon	Pogona barbata			2		1	1		
Eastern Spiny-tailed Gecko	Strophurus intermedius		2		1				
Lace Monitor	Varanus varius		1						
Robust Velvet Gecko	Nebulifera robusta				2				1
Mammals									
European Red Fox	Vulpes vulpes	Feral	1						
Feral Cat	Felis catus	Feral					1		
Feral Pig	Sus scrofa	Feral				1			1

Scientific Name	Common Name	Longwall 107					
		Site 1	Site 2	Site 3	Site 4	Site 5	Total
Amphibia							
Limnodynastes terraereginae	Northern Banjo frog	-	-	-	-	-	-
Neobatrachus sudelli	Sudells Frog	-	-	-	-	2	2
Platyplectrum ornatum	Ornate Burrowing Frog	-	-	-	-	-	-
Mammalia							
Antechinus flavipes	Yellow-footed Antechinus	2	8	7	3	2	22
Reptilia							
Pseudonaja textilis	Eastern-brown Snake	-	-	-	-	-	-
Ctenotus allotropis	B-b. W-snouted Ctenotus	-	-	1	-	1	2
Diporiphora nobbi	Nobbi Dragon	2	-	-	-	-	2
Egernia striolata	Tree Skink	-	-	-	-	-	-
Diplodactylus vittatatus	Wood or Stone Gecko	-	-	-	-	1	1
Moretha boulengeri	Boulenger's Skink	-	-	-	-	1	1
Lerista bougainvillii	Bougainvie's Skink	-	-	-	-	-	
Lerista timida	Timid Slider	-	-	-	-	-	-
Lygisaurus foliorum	Iridescent Litter Skink	-	-	-	-	-	-
Pygopus lepidopus	Common Scaly Foot	-	-	-	-	-	-

Parasuta dwyeri	Dwyer's Snake	-	-	-	-	-	-

Scientific Name	Common Name	Longwall 108						
		Site 6	Site 7	Site 8	Site 9	Site 10	Site 11	Total
Amphibia								
Limnodynastes terraereginae	Northern Banjo frog	-	-	-	-	1	-	1
Neobatrachus sudelli	Sudells Frog	-	-	-	-	-	-	0
Platyplectrum ornatum	Ornate Burrowing Frog	-	-	1	-	-	-	1
Mammalia								
Antechinus flavipes	Yellow-footed Antechinus	1	7	1	-	6	2	17
Reptilia								
Pseudonaja textilis	Eastern-brown Snake	-	-	-	-	-	-	0
Ctenotus allotropis	B-b. W-snouted Ctenotus	-	-	-	-	-	-	0
Diporiphora nobbi	Nobbi Dragon	-	-	1	1	-	1	3
Egernia striolata	Tree Skink	-	1	-	-	-	-	1
Diplodactylus vittatatus	Wood or Stone Gecko	-	1	-	-	-	-	1
Moretha boulengeri	Boulenger's Skink	-	1	-	-	-	1	2
Lerista bougainvillii	Bougainvie's Skink	-	-	-	-	-	-	0
Lerista timida	Timid Slider	-	-	-	-	-	-	0
Lygisaurus foliorum	Iridescent Litter Skink	-	-	-	-	-	-	0

Pygopus lepidopus	Common Scaly Foot	-	-	-	-	-	-	0
Parasuta dwyeri	Dwyer's Snake	-	-		-	-	-	0

Scientific Name	Common Name	Longwall 109					
		Site 12	Site 13	Site 14	Site 15	Site 16	Total
Amphibia							
Limnodynastes terraereginae	Northern Banjo frog	-	-	-	-	-	-
Neobatrachus sudelli	Sudells Frog	1	-	-	-	-	1
Platyplectrum ornatum	Ornate Burrowing Frog	-	-	-	-	-	-
Mammalia							
Antechinus flavipes	Yellow-footed Antechinus	-	1	-	-	1	2
Reptilia							
Pseudonaja textilis	Eastern-brown Snake	-	-	-	-	1	1
Ctenotus allotropis	B-b. W-snouted Ctenotus	-	-	1	-	-	1
Diporiphora nobbi	Nobbi Dragon	-	-	-	1	-	1
Egernia striolata	Tree Skink	1	-	-	-	-	1
Diplodactylus vittatatus	Wood or Stone Gecko	-	-	-	-	-	-
Moretha boulengeri	Boulenger's Skink	-	-	1	-	-	1
Lerista bougainvillii	Bougainvie's Skink	-	2	1	-	1	4
Lerista timida	Timid Slider	-	-	-	2	-	2

Lygisaurus foliorum	Iridescent Litter Skink	-	-	-	1	-	1
Pygopus lepidopus	Common Scaly Foot	-	-	-	1	-	1
Parasuta dwyeri	Dwyer's Snake	-	-	-	-	1	1

Appendix D – *Surface Water Data*

Sample No.	Date	Sample Location	pH	Electrical Conductivity (µS/cm)	Total Suspended Solids (mg/L)	Grease & Oil (mg/L)	Total Organic Carbon (TOC)	Comments
ES1500920-001	15 January 2015	OX CUT SUM	8.77	7160	242	<5	<1	
ES1501810-001	27 January 2015	SB1	9.25	7980	48	7	<1	
ES1501810-002	27 January 2015	SB2	9.24	2320	31	6	12	
ES1501810-003	27 January 2015	SB3	9.74	21100	60	6	150	
ES1501810-004	27 January 2015	SD1	8.27	591	125	5	16	
ES1501810-005	27 January 2015	SD2	8.63	467	48	<5	8	
ES1501810-006	27 January 2015	SD3	9.21	553	31	6	15	
ES1501810-007	27 January 2015	SD4	8.93	1570	50	5	12	
ES1501810-008	27 January 2015	SD5	8.81	430	27	6	10	
ES1501810-009	27 January 2015	SD6	9.09	1920	14	<5	23	
ES1504572-001	23 February 2015	A1	9.15	8170	<5	<5	200	
ES1504572-002	23 February 2015	A2	9.73	9940	77	8	363	Water level very low
ES1504572-003	23 February 2015	A3	9.29	20300	17	<5	1820	
ES1504572-004	23 February 2015	B1	8.65	741	<5	<5	12	
ES1504572-005	23 February 2015	B2	9.94	23600	180	5	2360	
ES1504572-006	23 February 2015	C	9.57	26100	23	<5	2160	
ES1504572-007	23 February 2015	D	8.6	883	6	<5	4	
ES1504686-001	25 February 2015	SB1	9.1	8150	135	<5	8	
ES1504686-002	25 February 2015	SB2	9.42	2510	11	5	17	
ES1504686-003	25 February 2015	SB3	9.78	11200	322	<5	108	
ES1504686-004	25 February 2015	SD1	8.49	643	44	<5	15	Water level low
ES1504686-005	25 February 2015	SD2	8.85	472	31	<5	8	
ES1504686-006	25 February 2015	SD3	9.17	546	28	6	15	
ES1504686-007	25 February 2015	SD4	9.1	1650	39	<5	10	
ES1504686-008	25 February 2015	SD5	8.82	482	40	<5	8	
ES1504686-009	25 February 2015	SD6	9.1	1850	15	<5	21	
ES1505066-001	27 February 2015	BOX CUT	8.36	9020	283	<15	386	
ES1507239-001	26 March 2015	SB1	9.16	7800	265	11	134	
ES1507239-002	26 March 2015	SB2	9.77	2180	50	<5	9	
ES1507239-003	26 March 2015	SB3	9.95	12700	44	9	330	
ES1507239-004	26 March 2015	SD1	8.26	440	15	6	18	
ES1507239-005	26 March 2015	SD2	8.3	344	14	<5	16	
ES1507239-006	26 March 2015	SD3	8.74	520	26	<5	17	
ES1507239-007	26 March 2015	SD4	9.01	1500	89	<5	12	
ES1507239-008	26 March 2015	SD5	8.49	417	28	9	12	
ES1507239-009	26 March 2015	SD6	9.04	1910	67	6	32	
ES1507436-001	30 March 2015	BOX CUT	8.5	7010	3590	16	<1	
ES1507568-001	31 March 2015	A1	9.13	7450	5	<5	189	
ES1507568-002	31 March 2015	A2	9.73	7840	32	<5	740	
ES1507568-003	31 March 2015	A3	9.09	17000	61	<5	1700	
ES1507568-004	31 March 2015	B1	8.71	647	<5	<5	<1	
ES1507568-005	31 March 2015	B2	9.84	23900	36	<5	22	
ES1507568-006	31 March 2015	C	9.51	25500	28	<5	6	
ES1507568-007	31 March 2015	D	8.4	827	<5	<5	3	
ES1520294-001	22 April 2015	A1	9.04	6520	22	<5	<1	
ES1520294-002	22 April 2015	A2	9.24	6680	14	<5	6	
ES1520294-003	22 April 2015	A3	8.91	13800	72	<5	10	
ES1520294-004	22 April 2015	B1	8.64	680	6	<5	1	
ES1520294-005	22 April 2015	B2	10.10	16800	128	<5	100	
ES1520294-006	22 April 2015	C	9.70	23800	31	<5	40	
ES1520294-007	22 April 2015	D	8.55	652	6	5	<1	
ES1520408-001	23 April 2015	SB1	9.59	2530	88	5	7	
ES1520408-002	23 April 2015	SB2	9.72	1600	13	<5	13	
ES1520408-003	23 April 2015	SB3	9.44	2820	136	6	5	
ES1520408-004	23 April 2015	SD1	7.66	232	19	6	11	
ES1520408-005	23 April 2015	SD2	7.91	239	<5	<5	8	
ES1520408-006	23 April 2015	SD3	7.76	326	13	6	14	
ES1520408-007	23 April 2015	SD4	8.22	748	26	<5	10	
ES1520408-008	23 April 2015	SD5	7.72	183	16	<5	10	
ES1520408-009	23 April 2015	SD6	8.92	1420	46	<5	15	
ES1522286-001	19 May 2015	A1	9.25	6850	20	<5	3	
ES1522286-002	19 May 2015	A2	9.58	6890	31	<5	10	
ES1522286-003	19 May 2015	A3	9.06	14500	21	<5	1310	
ES1522286-004	19 May 2015	B1	8.60	619	<5	<5	6	
ES1522286-005	19 May 2015	B2	10.10	22400	139	<5	2530	Water level low
ES1522286-006	19 May 2015	C	9.72	15400	101	<5	1930	
ES1522286-007	19 May 2015	D	8.65	685	5	<5	7	
ES1522402-001	20 May 2015	SB1	9.1	7380	19	<5	<1	
ES1522402-002	20 May 2015	SB2	9.71	1650	<5	<5	14	
ES1522402-003	20 May 2015	SB3	9.66	4180	37	8	19	
ES1522402-004	20 May 2015	SD1	8.04	292	22	<5	12	
ES1522402-005	20 May 2015	SD2	9.36	249	6	<5	8	
ES1522402-006	20 May 2015	SD3	7.94	367	18	<5	17	
ES1522402-007	20 May 2015	SD4	8.63	903	10	11	10	
ES1522402-008	20 May 2015	SD5	8.35	236	35	<5	9	
ES1522402-009	20 May 2015	SD6	8.89	1510	7	<5	19	
ES1524645-001	23 June 2015	A1	9.05	6450	14	11	<1	
ES1524645-002	23 June 2015	A2	9.37	6760	32	10	20	

ES1524645-003	23 June 2015	A3	9.01	10200	380	5	52	
ES1524645-004	23 June 2015	B1	8.53	581	<5	<5	3	Small fish in pond
ES1524645-005	23 June 2015	B2	10.10	20800	63	<5	299	
ES1524645-006	23 June 2015	C	9.81	22200	38	6	274	
ES1524645-007	23 June 2015	D	8.38	674	<5	<5	4	
ES1524749-001	24 June 2015	SB1	8.93	6450	38	<5	<1	
ES1524749-002	24 June 2015	SB2	9.67	1470	6	10	14	
ES1524749-003	24 June 2015	SB3	9.46	3540	23	7	17	
ES1524749-004	24 June 2015	SD1	7.86	284	<5	<5	12	
ES1524749-005	24 June 2015	SD2	8.14	251	6	11	8	
ES1524749-006	24 June 2015	SD3	7.67	340	<5	<5	13	
ES1524749-007	24 June 2015	SD4	8.79	851	<5	12	7	
ES1524749-008	24 June 2015	SD5	7.99	216	<5	5	9	
ES1524749-009	24 June 2015	SD6	8.82	1370	6	5	18	
ES1524749-010	24 June 2015	BOX CUT	8.59	7560	4150	20	<1	
ES1527134-001	28 July 2015	SB1	9.09	6550	16	<5	<1	
ES1527134-002	28 July 2015	SB2	9.46	1490	<5	19	18	
ES1527134-003	28 July 2015	SB3	9.23	4040	132	7	36	
ES1527134-004	28 July 2015	SD1	8.02	311	22	6	8	
ES1527134-005	28 July 2015	SD2	8.19	267	5	<5	7	
ES1527134-006	28 July 2015	SD3	8.28	363	<5	16	10	
ES1527134-007	28 July 2015	SD4	9.07	952	<5	<5	10	
ES1527134-008	28 July 2015	SD5	8.25	242	<5	<5	7	
ES1527134-009	28 July 2015	SD6	8.77	1400	<5	<5	21	
ES1527134-011	28 July 2015	BOX CUT	8.73	7140	3860	18	<10	
ES1527330-001	30 July 2015	A1	9.13	6620	166	6	<1	
ES1527330-002	30 July 2015	A2	9.35	7090	32	9	8	
ES1527330-003	30 July 2015	A3	8.68	8850	5	<5	<1	
ES1527330-004	30 July 2015	B1	8.62	520	<5	<5	<1	
ES1527330-005	30 July 2015	B2	10.30	22200	86	9	74	
ES1527330-006	30 July 2015	C	9.85	23100	43	7	58	
ES1527330-007	30 July 2015	D	8.37	671	6	<5	2	
ES1529288-001	25 August 2015	SD5	6.77	115	57	10	19	
ES1529288-002	25 August 2015	SD2	7.12	98	13	8	15	
ES1529425-001	26 August 2015	SB1	9.33	2560	71	<5	<1	
ES1529425-002	26 August 2015	SB2	9.69	1230	<5	<5	15	
ES1529425-003	26 August 2015	SB3	9.34	3130	16	<5	5	
ES1529425-004	26 August 2015	SD1	7.79	179	31	<5	10	
ES1529425-005	26 August 2015	SD2	7.73	180	58	6	7	
ES1529425-006	26 August 2015	SD3	7.68	463	19	<5	38	
ES1529425-007	26 August 2015	SD4	8.43	485	38	<5	8	
ES1529425-008	26 August 2015	SD5	7.53	104	32	6	8	
ES1529425-009	26 August 2015	SD6	8.77	1220	47	<5	11	
ES1529425-010	26 August 2015	BOX CUT	8.76	5830	175	<5	<1	
ES1529580-001	27 August 2015	A1	9.27	6510	12	<5	221	
ES1529580-002	27 August 2015	A2	9.07	6560	39	<5	6	
ES1529580-003	27 August 2015	A3	8.96	7070	26	7	9	
ES1529580-004	27 August 2015	B1	8.41	435	<5	<5	<1	
ES1529580-005	27 August 2015	B2	10.20	21200	74	6	88	
ES1529580-006	27 August 2015	C	9.67	23600	45	6	55	
ES1529580-007	27 August 2015	D	8.48	590	<5	<5	5	
ES1531925-001	22 September 2015	A1	9.19	6510	7	9	7	
ES1531925-002	22 September 2015	A2	9.02	6830	30	8	5	
ES1531925-003	22 September 2015	A3	9.4	7230	9	6	4	
ES1531925-004	22 September 2015	B1	9.00	405	<5	<5	<1	
ES1531925-005	22 September 2015	B2	10.90	21500	126	<5	60	
ES1531925-006	22 September 2015	C	9.66	22200	14	<5	36	
ES1531925-007	22 September 2015	D	8.76	567	<5	<5	<1	
ES1532077-001	23 September 2015	SB1	9.16	6990	171	<5	29	
ES1532077-002	23 September 2015	SB2	9.54	1390	21	<5	20	
ES1532077-003	23 September 2015	SB3	9.32	3440	19	<5	18	
ES1532077-004	23 September 2015	SD1	8.22	220	8	<5	9	
ES1532077-005	23 September 2015	SD2	7.43	173	12	<5	9	
ES1532077-006	23 September 2015	SD3	8.39	334	<5	<5	9	
ES1532077-007	23 September 2015	SD4	9.01	668	5	<5	10	
ES1532077-008	23 September 2015	SD5	8.02	124	13	<5	8	
ES1532077-009	23 September 2015	SD6	8.87	1370	14	<5	15	
ES1532077-015	23 September 2015	BOX CUT	8.8	7520	708	<5	32	
ES1534739-001	27 October 2015	SB1	9.31	5860	63	8	2	
ES1534739-002	27 October 2015	SB2	9.55	1500	20	8	21	
ES1534739-003	27 October 2015	SB3	9.48	4770	40	7	27	
ES1534739-004	27 October 2015	SD1	8.13	282	45	10	9	
ES1534739-005	27 October 2015	SD2	8.23	198	23	11	9	
ES1534739-006	27 October 2015	SD3	8.65	384	8	9	9	
ES1534739-007	27 October 2015	SD4	9.69	750	5	10	12	
ES1534739-008	27 October 2015	SD5	8.14	169	27	<5	10	
ES1534739-009	27 October 2015	SD6	8.94	1500	43	9	25	
ES1534739-015	27 October 2015	BOX CUT	8.68	7180	920	27	1	
ES1537283-001	25 November 2015	SB1	9.3	8500	18	<5	<1	
ES1537283-002	25 November 2015	SB2	9.52	1420	<5	<5	18	
ES1537283-003	25 November 2015	SB3	9.49	4530	16	<5	18	

ES1537283-004	25 November 2015	SD1	8.06	297	5	<5	10	
ES1537283-005	25 November 2015	SD2	8.07	236	<5	<5	8	
ES1537283-006	25 November 2015	SD3	7.84	445	72	<5	10	
ES1537283-007	25 November 2015	SD4	8.92	684	30	<5	11	Dam level low, pump on
ES1537283-008	25 November 2015	SD5	8.24	172	62	<5	12	
ES1537283-009	25 November 2015	SD6	8.97	1350	<5	<5	11	
ES1537283-010	25 November 2015	BOX CUT	8.68	7580	1940	<5	<1	
ES1537409-001	26 November 2015	A1	9.26	7240	8	<5	10	
ES1537409-002	26 November 2015	A2	9.04	7860	90	<5	5	
ES1537409-003	26 November 2015	A3	9.22	9500	8	8	7	
ES1537409-004	26 November 2015	B1	8.66	551	6	11	6	
ES1537409-005	26 November 2015	B2	10.40	26600	271	10	92	
ES1537409-006	26 November 2015	C	9.74	23500	57	7	77	
ES1537409-007	26 November 2015	D	8.78	634	32	18	6	
ES1538530-001	9 December 2015	SB1	9.18	8580	272	<5	118	Earthworks nearby
ES1538530-002	9 December 2015	SB2	9.37	1560	<5	<5	25	
ES1538530-003	9 December 2015	SB3	9.43	5440	13	<5	27	
ES1538530-004	9 December 2015	SD1	8.08	341	<5	<5	12	
ES1538530-005	9 December 2015	SD2	8.35	257	<5	<5	11	
ES1538530-006	9 December 2015	SD3	8.45	459	7	<5	10	
ES1538530-007	9 December 2015	SD4	8.81	832	26	-	15	
ES1538530-008	9 December 2015	SD5	8.01	201	28	-	14	
ES1538530-009	9 December 2015	SD6	9.02	1510	21	<5	28	
ES1538530-010	9 December 2015	BOX CUT	8.64	7300	1830	<5	18	
ES1538584-001	10 December 2015	A1	9.22	7360	<5	28	6	
ES1538584-002	10 December 2015	A2	9.8	7710	124	10	12	
ES1538584-003	10 December 2015	A3	9.05	8760	117	7	11	
ES1538584-004	10 December 2015	B1	8.58	553	<5	<5	9	
ES1538584-005	10 December 2015	B2	10.40	29200	346	11	196	High EC, water level very low
ES1538584-006	10 December 2015	C	9.70	23900	73	6	58	High EC
ES1538584-007	10 December 2015	D	8.49	661	7	<5	7	
	13 January 2016	SB1	-	-	-	-	-	Only black mud, earthworks nearby
ES1600922-001	13 January 2016	SB2	8.97	1590	21	9	19	
ES1600922-002	13 January 2016	SB3	9.41	5370	16	<5	23	
ES1600922-003	13 January 2016	SD1	8.84	463	6	13	11	
ES1600922-004	13 January 2016	SD2	8.96	359	9	<5	8	
ES1600922-005	13 January 2016	SD3	8.45	474	14	<5	9	
ES1600922-006	13 January 2016	SD4	8.65	880	53	10	11	
ES1600922-007	13 January 2016	SD5	8.45	242	8	6	10	
ES1600922-008	13 January 2016	SD6	8.99	1500	9	7	23	
ES1600922-013	13 January 2016	BOX CUT	8.51	5290	2350	13	22	
ES1600970-001	14 January 2016	A1	9.22	7860	<5	<5	6	
ES1600970-002	14 January 2016	A2	9.1	7710	42	<5	9	
ES1600970-003	14 January 2016	A3	9.03	7940	34	<5	8	
ES1600970-004	14 January 2016	B1	8.65	619	<5	<5	5	
ES1600970-005	14 January 2016	B2	10.10	36000	230	<5	3840	
ES1600970-006	14 January 2016	C	9.50	24100	74	6	65	
ES1600970-007	14 January 2016	D	8.56	744	28	<5	7	
-	17 February 2016	SB1	-	-	-	-	-	Dry
ES1603652-001	17 February 2016	SB2	9.5	4940	28	8	<1	
-	17 February 2016	SB3	-	-	-	-	-	Dry
ES1603652-002	17 February 2016	SD1	8.39	488	32	<5	10	
ES1603652-003	17 February 2016	SD2	8.38	340	32	<5	6	
ES1603652-004	17 February 2016	SD3	5.86	549	40	<5	8	
ES1603652-005	17 February 2016	SD4	8.75	1280	69	<5	5	
ES1603652-006	17 February 2016	SD5	8.41	312	31	<5	8	
ES1603652-007	17 February 2016	SD6	8.98	1640	18	<5	7	
ES1603652-008	17 February 2016	BOX CUT	8.67	8300	1410	13	<1	
ES1603857-001	18 February 2016	A1	9.41	8200	16	10	73	
ES1603857-002	18 February 2016	A2	9.16	8090	25	<5	48	
ES1603857-003	18 February 2016	A3	8.96	8420	47	<5	492	
ES1603857-004	18 February 2016	B1	8.70	688	<5	<5	1	
ES1603857-005	18 February 2016	B2	10.30	62300	50	13	7760	
ES1603857-006	18 February 2016	C	9.84	19900	71	<5	1480	
ES1603857-007	18 February 2016	D	8.54	771	28	12	7	
ES1605303-001	8 March 2016	A1	9.2	8540	<5	50	72	
ES1605303-002	8 March 2016	A2	9.04	8520	43	25	69	
ES1605303-003	8 March 2016	A3	9.3	8430	21	25	66	
ES1605303-004	8 March 2016	B1	8.80	668	5	11	4	
ES1605303-005	8 March 2016	B2	10.10	90100	156	24	1820	
ES1605303-006	8 March 2016	C	9.58	27500	40	27	221	
ES1605303-007	8 March 2016	D	9.05	888	44	16	4	
-	9 March 2016	SB1	-	-	-	-	-	Dry
ES1605414-001	9 March 2016	SB2	9.48	5600	60	23	37	
-	9 March 2016	SB3	-	-	-	-	-	Dry
ES1605414-002	9 March 2016	SD1	8.61	548	48	38	13	
ES1605414-003	9 March 2016	SD2	8.74	394	34	14	8	
ES1605414-004	9 March 2016	SD3	8.82	606	33	16	10	
ES1605414-005	9 March 2016	SD4	9.69	2470	167	11	43	Water level low
ES1605414-006	9 March 2016	SD5	8.5	364	28	12	10	
ES1605414-007	9 March 2016	SD6	9.15	1820	20	19	23	

ES1605414-008	9 March 2016	BOX CUT	8.73	5500	268	28	<1	
ES1607989-001	12 April 2016	A1	9.17	8300	<5	<5	14	
ES1607989-002	12 April 2016	A2	8.99	7870	68	<5	364	
ES1607989-003	12 April 2016	A3	8.9	7560	163	<5	393	
ES1607989-004	12 April 2016	B1	8.66	695	<5	<5	9	
-	12 April 2016	B2	-	-	-	-	-	Dry
ES1607989-005	12 April 2016	C	9.68	26900	103	11	12	High EC
ES1607989-006	12 April 2016	D	8.41	834	21	17	1	
-	13 April 2016	SB1	-	-	-	-	-	Dry
ES1608080-001	13 April 2016	SB2	9.48	5910	36	59	29	
-	13 April 2016	SB3	-	-	-	-	-	Dry
ES1608080-002	13 April 2016	SD1	8.78	589	26	98	20	
ES1608080-003	13 April 2016	SD2	8.88	456	28	76	11	
ES1607993-001	12 April 2016	SD3	8.69	650	28	<5	17	
-	13 April 2016	SD4	-	-	-	-	-	Dry
ES1608080-004	13 April 2016	SD5	8.66	402	27	<5	12	
ES1608080-005	13 April 2016	SD6	9.15	1940	19	37	34	
ES1607993-003	12 April 2016	BOX CUT	8.59	6280	518	<10	460	
ES1611129-001	23 May 2016	SD6	9.22	2080	23	<5	36	
ES1611129-002	23 May 2016	BOX CUT	8.9	8690	1930	<5	217	
ES1611233-001	24 May 2016	SB1	9.2	11400	12	<5	177	
ES1611233-002	24 May 2016	SB2	9.52	5910	40	<5	43	
-	24 May 2016	SB3	-	-	-	-	-	Dry
ES1611233-003	24 May 2016	SD1	8.6	622	233	<5	25	
ES1611233-004	24 May 2016	SD2	9.5	451	25	<5	15	
ES1611233-005	24 May 2016	SD3	8.69	722	20	<5	16	
-	24 May 2016	SD4	-	-	-	-	-	Dry
ES1611233-006	24 May 2016	SD5	9.1	405	16	<5	10	
ES1611332-001	25 May 2016	A1	9.22	7380	8	<5	4	
ES1611332-002	25 May 2016	A2	9.04	8450	12	<5	<1	
ES1611332-003	25 May 2016	A3	8.87	8910	22	<5	6	
ES1611332-004	25 May 2016	B1	8.64	604	<5	<5	<1	
-	25 May 2016	B2	-	-	-	-	-	Under construction
ES1611332-005	25 May 2016	C	9.89	27400	34	8	4	
ES1611332-006	25 May 2016	D	8.4	846	25	<5	3	
ES1613724-001	22 June 2016	A1	9.1	7730	7	<5	4	
ES1613724-002	22 June 2016	A2	9.4	8860	66	<5	6	
ES1613724-003	22 June 2016	A3	8.85	9380	12	<5	5	
ES1613724-004	22 June 2016	B1	8.69	577	22	<5	38	
	22 June 2016	B2	-	-	-	-	-	Under construction
ES1613724-005	22 June 2016	C	9.79	25700	45	6	581	
ES1613724-006	22 June 2016	D	8.59	795	12	<5	61	
ES1613734-003	22 June 2016	BOX CUT	8.85	8170	141	6	9	
ES1613766-001	23 June 2016	SB1	8.93	10600	67	7	698	
ES1613766-002	23 June 2016	SB2	9.48	4240	51	<5	30	
ES1613766-003	23 June 2016	SB3	8.98	2020	36	<5	13	
ES1613766-004	23 June 2016	SD1	8.06	412	23	<5	18	
ES1613766-005	23 June 2016	SD2	7.94	313	26	<5	10	
ES1613766-006	23 June 2016	SD3	8.55	574	15	<5	17	
ES1613766-007	23 June 2016	SD4	8.16	1130	24	10	9	
ES1613766-008	23 June 2016	SD5	7.11	82	72	<5	15	
ES1613766-009	23 June 2016	SD6	9.07	1760	62	<5	23	
ES1616076-001	21 July 2016	SB1	9.18	7960	176	19	136	
ES1616076-002	21 July 2016	SB2	9.2	1190	203	<5	38	
ES1616079-001	21 July 2016	A1	9.02	7910	26	<5	46	
ES1616079-002	21 July 2016	A2	8.93	7900	94	<5	8	
ES1616079-003	21 July 2016	A3	8.94	7440	130	<5	18	
ES1616079-004	21 July 2016	B1	8.48	522	8	<5	2	
	21 July 2016	B2	-	-	-	-	-	Under construction
ES1616079-005	21 July 2016	C	9.78	25400	72	<5	2100	
ES1616079-006	21 July 2016	D	8.31	745	7	<5	3	
ES1616331-001	25 July 2016	SD6	8.97	1340	151	<5	20	
ES1616331-002	25 July 2016	BOX CUT	8.54	9570	2710	<5	21	
ES1616390-001	26 July 2016	SB3	9.38	3560	10	<5	17	
ES1616390-002	26 July 2016	SD1	7.98	297	<5	<5	18	
ES1616390-003	26 July 2016	SD2	7.86	269	<5	<5	13	
ES1616390-004	26 July 2016	SD3	8.19	439	<5	<5	12	
ES1616390-005	26 July 2016	SD4	8.28	986	8	<5	10	
ES1616390-006	26 July 2016	SD5	7.89	156	13	<5	12	
ES1616390-007	26 July 2016	SB4	9.03	1160	7	<5	3	
ES1618785-001	24 August 2016	A1	9.25	7950	41	<20	20	
ES1618785-002	24 August 2016	A2	8.94	7540	148	<5	12	
ES1618785-003	24 August 2016	A3	8.85	7480	338	<5	17	
ES1618785-004	24 August 2016	B1	8.67	496	22	<5	3	
	24 August 2016	B2	-	-	-	-	-	Under construction
ES1618785-005	24 August 2016	C	9.85	23200	38	<5	2080	
ES1618785-006	24 August 2016	D	8.7	598	9	<5	<1	
ES1621640-001	26 September 2016	SD6	8.27	857	46	<5	18	
ES1621762-001	27 September 2016	SB1	9.08	6390	58	<5	14	
ES1621762-002	27 September 2016	SB2	9.26	2060	14	<5	15	
ES1621762-003	27 September 2016	SB3	9.23	4570	7	<5	13	

ES1621762-004	27 September 2016	SD1	8.11	478	<5	<5	16	
ES1621762-005	27 September 2016	SD2	7.65	181	<5	<5	14	
ES1621762-006	27 September 2016	SD3	7.68	1240	6	<5	16	
ES1621762-007	27 September 2016	SD4	8.28	587	6	<5	5	
ES1621762-008	27 September 2016	SD5	7.29	127	<5	<5	17	
ES1621762-009	27 September 2016	SB4	9.12	3240	5	<5	3	
ES1621762-013	27 September 2016	Box Cut (New	8.5	8820	2500	<5	10	
ES1621893-001	28 September 2016	A1	9.12	7400	8	<5	6	
ES1621893-002	28 September 2016	A2	8.94	7260	33	<5	10	
ES1621893-003	28 September 2016	A3	8.79	8060	67	<5	11	
ES1621893-004	28 September 2016	B1	8.46	465	<5	<5	3	
ES1621893-005	28 September 2016	B2	9.03	6160	12	<5	8	
ES1621893-006	28 September 2016	C	9.83	22900	45	<5	41	
ES1621893-007	28 September 2016	D	8.29	494	45	<5	7	
ES1624027-001	24 October 2016	SD6	8.9	936	69	<5	24	
ES1624027-003	24 October 2016	SB3	9.6	5410	16	<5	17	
ES1624169-001	25 October 2016	SB1	9.7	6950	20	<5	9	
ES1624169-002	25 October 2016	SB2	9.8	2450	21	<5	16	
ES1624169-003	25 October 2016	SD2	7.8	205	22	<5	13	
ES1624169-004	25 October 2016	SD1	8.4	502	<5	<5	11	
ES1624169-005	25 October 2016	SD3	7.3	546	9	<5	12	
ES1624169-006	25 October 2016	SD4	8.9	803	10	<5	8	
ES1624169-007	25 October 2016	SD5	7.5	155	<5	<5	15	
ES1624169-008	25 October 2016	SB4	9.4	3210	9	<5	3	
ES1624169-013	25 October 2016	Box Cut	8.9	8780	1060	<5	136	
ES1624321-001	26 October 2016	A1	8.9	7440	16	<5	3	
ES1624321-002	26 October 2016	A2	8.95	7850	11	<5	6	
ES1624321-003	26 October 2016	A3	8.89	8040	32	<5	1	
ES1624321-004	26 October 2016	B1	8.57	508	<5	<5	4	
ES1624321-005	26 October 2016	B2	8.99	7150	20	<5	6	
ES1624321-006	26 October 2016	C	9.47	23700	56	<5	878	
ES1624321-007	26 October 2016	D	8.47	449	5	<5	6	
ES1626862-001	23 November 2016	SB1	9.15	9980	107	<5	41	
ES1626862-002	23 November 2016	SB2	9.38	2940	11	<5	15	
ES1626862-003	23 November 2016	SD3	8.51	520	8	<5	8	
ES1626862-004	23 November 2016	SD4	9.27	958	32	<5	9	
ES1626866-001	23 November 2016	A1	9.01	7780	13	<5	14	
ES1626866-002	23 November 2016	A2	8.92	7900	50	<5	10	
ES1626866-003	23 November 2016	A3	8.87	8150	13	<5	7	
ES1626866-004	23 November 2016	B1	8.56	490	<5	<5	4	
ES1626866-005	23 November 2016	B2	9.28	7430	30	<5	20	
ES1626866-006	23 November 2016	C	9.62	24200	50	<5	<1	
ES1626866-007	23 November 2016	D	8.62	414	14	<5	80	
ES1627003-001	24 November 2016	SB3	9.52	7750	10	<5	22	
ES1627003-002	24 November 2016	SD1	8.31	582	8	<5	10	
ES1627003-003	24 November 2016	SD2	8.2	233	186	<5	11	
ES1627003-004	24 November 2016	SD5	8.07	199	40	<5	14	
ES1627003-005	24 November 2016	SD6	8.79	1080	20	<5	16	
ES1627003-011	24 November 2016	Box Cut (New	8.8	8870	138	<5	32	
ES1627003-012	24 November 2016	SB4	9.33	3580	13	<5	5	
ES1629327-001	19 December 2016	SB1	9.9	8890	12	20	5	
ES1629327-002	19 December 2016	SB2	9.8	3430	40	13	23	
ES1629327-003	19 December 2016	SB3	9.8	8020	16	<5	20	
ES1629327-005	19 December 2016	Box Cut (New	9.2	10500	1050	13	99	
ES1629456-001	20 December 2016	SD1	8.4	661	31	<5	18	
ES1629456-002	20 December 2016	SD2	8.7	433	235	<5	15	
ES1629456-003	20 December 2016	SD3	8.9	552	40	<5	10	
ES1629456-004	20 December 2016	SD5	8.3	258	38	<5	16	
ES1629456-005	20 December 2016	SD6	9.2	1200	11	<5	19	
ES1629456-010	20 December 2016	SB4	9.9	3740	46	<5	6	
ES1629583-001	21 December 2016	A1	9.7	7970	7	<5	8	
ES1629583-002	21 December 2016	A2	9.3	8520	<5	<5	10	
ES1629583-003	21 December 2016	A3	9.7	8530	<5	<5	8	
ES1629583-004	21 December 2016	B1	8.6	522	<5	<5	8	
ES1629583-005	21 December 2016	B2	9.9	8130	22	<5	24	
ES1629583-006	21 December 2016	C	10.1	24000	70	7	212	
ES1629583-007	21 December 2016	D	8.7	436	17	<5	22	
ES1701784-001	24 January 2017	SB1	9.5	8670	22	<5	10	
ES1701784-002	24 January 2017	SB2	9.8	4110	47	<5	31	
ES1701784-003	24 January 2017	SB3	9.9	8720	<5	6	25	
ES1701784-008	24 January 2017	Box Cut (New	9.2	7290	1590	<5	92	
ES1701905-001	25 January 2017	SD1	8.7	797	109	<5	16	
ES1701905-002	25 January 2017	SD2	8.8	924	2330	<5	33	Water level low
ES1701905-003	25 January 2017	SD3	9.1	978	36	<5	13	
ES1701905-004	25 January 2017	SD5	8.4	335	60	<5	13	
ES1701905-005	25 January 2017	SD6	9.2	1390	57	<5	19	
ES1701905-006	25 January 2017	SB4	9.44	4670	13	<5	7	
ES1702098-001	30 January 2017	A1	9.6	8830	12	<5	21	
ES1702098-002	30 January 2017	A2	9.5	8790	71	<5	10	
ES1702098-003	30 January 2017	A3	9.4	9640	18	<5	14	
ES1702098-004	30 January 2017	B1	8.5	429	8	<5	42	

ES1702098-005	30 January 2017	B2	9.7	9120	22	<5	30	
ES1702098-006	30 January 2017	C	9.9	25600	78	<5	2	
ES1702098-007	30 January 2017	D	8.9	523	46	<5	39	
ES1703999-001	20 February 2017	SB3	10.1	9920	41	<5	54	
ES1703999-002	20 February 2017	SD6	9.4	1550	24	<5	30	
ES1704141-001	21 February 2017	SB1	9.7	11100	8	<5	15	
ES1704141-002	21 February 2017	SB2	9.9	4830	59	<5	44	
ES1704141-003	21 February 2017	SD1	8.8	927	138	<5	49	
ES1704141-004	21 February 2017	SD3	8.7	821	31	<5	8	
ES1704141-005	21 February 2017	SD5	8.3	422	56	<5	23	
ES1704141-006	21 February 2017	SB4	9.9	5090	<5	<5	8	
ES1704141-007	21 February 2017	Box Cut	9.2	6110	87	<5	34	
ES1704357-001	23 February 2017	A1	9.4	9290	14	<5	8	
ES1704357-002	23 February 2017	A2	9.1	8040	147	<5	31	
ES1704357-003	23 February 2017	A3	9.4	9870	5	<5	8	
ES1704357-004	23 February 2017	B1	8.5	461	<5	<5	8	
ES1704357-005	23 February 2017	B2	9.6	10500	24	<5	35	
ES1704357-006	23 February 2017	C	9.9	26500	40	<5	61	
ES1704357-007	23 February 2017	D	8.2	359	21	<5	12	
ES1707309-001	27 March 2017	SB3	9.9	5870	20	<5	36	
ES1707309-002	27 March 2017	SD6	9.2	1250	39	<5	22	
ES1707309-003	27 March 2017	SB4	9.7	4670	14	<5	24	
ES1707309-005	27 March 2017	ox Cut (New	8.9	7590	1390	33	132	
ES1707467-001	28 March 2017	SB1	9.9	6970	58	<5	16	
ES1707467-002	28 March 2017	SB2	9.8	3980	21	<5	28	
ES1707467-003	28 March 2017	SD1	8.2	717	173	<5	16	
ES1707467-004	28 March 2017	SD2	6.5	279	<5	<5	15	
ES1707467-005	28 March 2017	SD3	8.8	712	<5	<5	14	
ES1707467-006	28 March 2017	SD4	8.3	994	38	<5	11	
ES1707467-007	28 March 2017	SD5	7.9	348	28	<5	14	
ES1707557-001	29 March 2017	A1	9.6	8920	43	<5	8	
ES1707557-002	29 March 2017	A2	9.5	7140	626	<5	7	
ES1707557-003	29 March 2017	A3	9.7	9790	8	<5	12	
ES1707557-004	29 March 2017	B1	9.2	534	<5	<5	7	
ES1707557-005	29 March 2017	B2	10.3	10200	18	<5	45	
ES1707557-006	29 March 2017	C	10.1	26200	121	<5	<1	
ES1707557-007	29 March 2017	D	8.9	419	18	<5	11	
ES1709758-001	24 April 2017	SB3	10.1	6740	10	<5	31	
ES1709758-002	24 April 2017	SB4	9.9	4820	9	<5	7	
ES1709943-001	26 April 2017	SB1	9.8	8050	85	16	240	
ES1709943-002	26 April 2017	SB2	9.9	3970	37	<5	173	
ES1709943-003	26 April 2017	SD1	8.7	905	212	<5	<1	
ES1709943-004	26 April 2017	SD2	7.6	396	82	<5	11	
ES1709943-005	26 April 2017	SD3	8.9	778	47	<5	13	
ES1709943-006	26 April 2017	SD4	8.5	1710	70	<5	10	
ES1709943-007	26 April 2017	SD5	9.6	362	198	<5	24	
ES1709943-008	26 April 2017	SD6	9.4	1340	18	<5	15	
ES1709943-009	26 April 2017	Box Cut	8.9	4790	534	<5	198	
ES1710019-001	27 April 2017	A1	9.9	8800	<5	<5	8	
ES1710019-002	27 April 2017	A2	9.6	8370	12	6	7	
ES1710019-003	27 April 2017	A3	9.8	9750	6	8	8	
ES1710019-004	27 April 2017	B1	8.8	555	<5	<5	6	
ES1710019-005	27 April 2017	B2	10.2	10700	7	7	32	
ES1710019-006	27 April 2017	C	10.2	27000	74	5	71	
ES1710019-007	27 April 2017	D	8.7	541	18	<5	12	
ES1713133-001	29 May 2017	SB1	10.2	7930	30	6	8	
ES1713133-002	29 May 2017	SD1	8	548	73	16	19	
ES1713133-003	29 May 2017	SD2	7.3	242	7	7	13	
ES1713133-004	29 May 2017	SD5	9.1	309	155	<5	33	
ES1713133-005	29 May 2017	SD6	9.4	1270	31	<5	22	
ES1713220-001	30 May 2017	SB2	10.1	3290	40	<5	30	
ES1713220-002	30 May 2017	SB3	10.3	5710	102	<5	19	
ES1713220-003	30 May 2017	SD3	7.8	558	42	<5	20	
ES1713220-004	30 May 2017	SD4	8.6	633	212	<5	6	
ES1713220-005	30 May 2017	SB4	10.2	4520	20	<5	8	
ES1713220-006	30 May 2017	Box Cut	9.1	7620	2700	<5	45	
ES1713336-001	31 May 2017	A1	9.9	8130	13	<5	10	
ES1713336-002	31 May 2017	A2	9.5	7760	101	<5	6	
ES1713336-003	31 May 2017	A3	9.8	9060	9	<5	4	
ES1713336-004	31 May 2017	B1	9.9	1120	<5	<5	6	
ES1713336-005	31 May 2017	B2	10.2	10200	8	<5	27	
ES1713336-006	31 May 2017	C	10.4	22800	21	<5	52	
ES1713336-007	31 May 2017	D	8.5	655	16	<5	8	
ES1715692-001	26 June 2017	SD6	9.6	1290	17	<5	18	
ES1715692-002	26 June 2017	SB4	10.7	4640	6	<5	9	
ES1715889-001	27 June 2017	SB1	9.5	8430	12	<5	5	
ES1715889-002	27 June 2017	SB2	10.1	3280	42	<5	28	
ES1715889-003	27 June 2017	SB3	9.9	6050	74	<5	15	
ES1715889-004	27 June 2017	SD3	8.6	773	43	<5	14	
ES1715889-005	27 June 2017	SD4	8.4	947	14	<5	7	
ES1715889-010	27 June 2017	Box Cut	9.1	7380	5060	<5	73	

ES1715930-001	28 June 2017	SD1	7.6	605	42	<5	14	
ES1715930-002	28 June 2017	SD2	7.9	262	8	<5	13	
ES1715930-003	28 June 2017	SD5	6.4	140	12	<5	10	
ES1716080-001	29 June 2017	A1	9.5	7930	92	<5	6	
ES1716080-002	29 June 2017	A2	9.5	6210	536	<5	9	
ES1716080-003	29 June 2017	A3	9.5	8150	150	<5	9	
ES1716080-004	29 June 2017	B1	8.3	685	<5	<5	5	
ES1716080-005	29 June 2017	B2	10.3	9010	856	<5	18	
ES1716080-006	29 June 2017	C	10.4	22100	1660	<5	65	
ES1716080-007	29 June 2017	D	8.4	769	18	<5	4	
ES1718432-001	25 July 2017	SB3	10.2	6650	67	<5	26	
ES1718432-002	25 July 2017	SD6	9.3	1190	148	<5	19	
ES1718432-003	25 July 2017	SB4	9.9	4530	11	<5	9	
ES1718432-004	25 July 2017	Box Cut	9.2	8270	1200	8	40	
ES1718538-001	26 July 2017	SB1	9.5	10500	12	<5	10	
ES1718538-002	26 July 2017	SB2	10.4	2830	44	<5	31	
ES1718538-003	26 July 2017	SD1	7.9	521	28	<5	17	
ES1718538-004	26 July 2017	SD2	7.8	278	<5	<5	11	
ES1718538-005	26 July 2017	SD3	8.9	742	18	<5	12	
ES1718538-006	26 July 2017	SD4	9.4	1110	5	<5	9	
ES1718538-007	26 July 2017	SD5	8.3	277	157	<5	20	
ES1718675-001	27 July 2017	A1	9.9	7990	<5	<5	5	
ES1718675-002	27 July 2017	A2	9.3	8570	134	<5	8	
ES1718675-003	27 July 2017	A3	9.6	8720	6	<5	8	
ES1718675-004	27 July 2017	B1	8.8	875	<5	<5	2	
ES1718675-005	27 July 2017	B2	10.1	9570	7	<5	19	
ES1718675-006	27 July 2017	C	10.4	25000	34	<5	128	
ES1718675-007	27 July 2017	D	8.2	787	<5	<5	3	
ES1721601-001	29 August 2017	SB3	10.4	8730	46	<5	39	
ES1721712-001	30 August 2017	SB1	9.3	10300	11	<5	4	
ES1721712-002	30 August 2017	SB2	9.9	3040	40	<5	22	
ES1721712-003	30 August 2017	SB4	9.9	5070	14	<5	11	
ES1721712-004	30 August 2017	SD1	7.9	594	32	<5	17	
ES1721712-005	30 August 2017	SD2	8.7	314	6	<5	11	
ES1721712-006	30 August 2017	SD3	8.4	681	8	<5	13	
ES1721712-007	30 August 2017	SD4	9.8	1400	12	<5	9	
ES1721712-008	30 August 2017	SD5	8.4	329	160	<5	23	
ES1721712-009	30 August 2017	SD6	9.5	1330	22	<5	20	
ES1721712-010	30 August 2017	Box Cut	8.9	7570	877	<5	<1	
ES1721873-001	31 August 2017	A1	9.2	9020	9	<5	9	
ES1721873-002	31 August 2017	A2	9.1	9490	112	<5	5	
ES1721873-003	31 August 2017	A3	9.3	9680	11	<5	11	
ES1721873-004	31 August 2017	B1	7.8	589	<5	<5	2	
ES1721873-005	31 August 2017	B2	9.6	10200	9	<5	20	
ES1721873-006	31 August 2017	C	9.9	25500	23	<5	46	
ES1721873-007	31 August 2017	D	8.7	771	7	<5	27	
ES1723718-001	20 September 2017	A1	9.7	9080	6	<5	2	
ES1723718-002	20 September 2017	A2	9.3	8970	33	<5	8	
ES1723718-003	20 September 2017	A3	9.6	9490	12	<5	11	
ES1723718-004	20 September 2017	B1	8.4	587	<5	<5	2	
ES1723718-005	20 September 2017	B2	9.8	9980	8	<5	18	
ES1723718-006	20 September 2017	C	10.1	25800	54	<5	50	
ES1723718-007	20 September 2017	D	8.7	754	14	<5	4	
ES1724396-001	27 September 2017	SB1	9.4	9820	11	<5	10	
ES1724396-002	27 September 2017	SB2	9.8	3080	8	<5	26	
ES1724396-003	27 September 2017	SB3	9.9	10100	19	<5	35	
ES1724396-004	27 September 2017	SB4	9.7	5210	8	<5	9	
ES1724396-005	27 September 2017	SD1	7.9	656	80	<5	16	
ES1724396-006	27 September 2017	SD2	8.3	349	8	<5	12	
ES1724396-007	27 September 2017	SD3	8.7	711	15	<5	12	
ES1724396-008	27 September 2017	SD4	9.1	1660	30	<5	15	
ES1724396-009	27 September 2017	SD5	9	387	212	<5	32	
ES1724396-010	27 September 2017	SD6	9.3	1360	26	<5	22	
ES1724396-018	27 September 2017	Box Cut	9.3	7940	1590	<5	71	
ES1726820-001	25 October 2017	SB3	9.4	9280	39	<5	33	
ES1726957-001	26 October 2017	SB1	9.1	8390	40	<5	15	
ES1726957-002	26 October 2017	SB2	9.7	3050	22	<5	26	
ES1726957-003	26 October 2017	SB4	9.5	5340	12	<5	11	
ES1726957-004	26 October 2017	SD1	8.1	741	40	<5	16	
ES1726957-005	26 October 2017	SD2	8	390	<5	<5	10	
ES1726957-006	26 October 2017	SD3	8.9	1020	8	<5	15	
ES1726957-007	26 October 2017	SD4	9.3	1880	14	<5	11	
ES1726957-008	26 October 2017	SD5	8.8	382	168	<5	43	
ES1726957-009	26 October 2017	SD6	9.2	1420	<5	<5	21	
ES1726957-010	26 October 2017	Box Cut	8.5	6290	40	<5	14	
ES1727189-001	30 October 2017	A1	9.6	9450	20	<5	11	
ES1727189-002	30 October 2017	A2	9.5	8360	7	<5	7	
ES1727189-003	30 October 2017	A3	9.6	7890	88	<5	21	
ES1727189-004	30 October 2017	B1	8.3	702	9	<5	2	
ES1727189-005	30 October 2017	B2	9.8	14000	31	<5	41	
ES1727189-006	30 October 2017	C	10.3	26400	147	<5	83	

ES1727189-007	30 October 2017	D	8.2	797	18	<5	1	
ES1730057-001	28 November 2017	SB3	9.9	8790	38	<5	38	
ES1730057-002	28 November 2017	SD6	10.2	1540	8	<5	29	
ES1730327-001	29 November 2017	SB1	9.2	6960	80	<5	25	
ES1730327-002	29 November 2017	SB2	9.8	2910	12	<5	27	
ES1730327-003	29 November 2017	SD1	8.7	849	16	<5	17	
ES1730327-004	29 November 2017	SD2	9	427	<5	<5	12	
ES1730327-005	29 November 2017	SD3	8.9	783	14	<5	15	
ES1730327-006	29 November 2017	SD4	9.4	2130	11	<5	13	
ES1730327-007	29 November 2017	SD5	8.5	435	11	<5	26	
ES1730327-008	29 November 2017	SB4	9.6	5460	9	<5	12	
ES1730327-009	29 November 2017	Box Cut	8.9	7630	1660	<5	241	
ES1730406-001	30 November 2017	A1	9.3	8430	22	<5	8	
ES1730406-002	30 November 2017	A2	9.1	7670	13	<5	4	
ES1730406-003	30 November 2017	A3	9.1	7660	50	<5	16	
ES1730406-004	30 November 2017	B1	8.5	703	<5	<5	2	
ES1730406-005	30 November 2017	B2	9.2	16400	29	<5	32	
ES1730406-006	30 November 2017	C	9.6	27200	1060	<5	143	
ES1730406-007	30 November 2017	D	8.4	821	8	<5	5	
ES1732269-001	18 December 2017	SD5	8.6	487	72	<5	17	
ES1732269-002	18 December 2017	SD6	9.7	1584	23	<5	30	
ES1732447-001	19 December 2017	SB1	9.3	8160	80	11	29	
ES1732447-002	19 December 2017	SB2	9.7	3060	24	<5	25	
ES1732447-003	19 December 2017	SB3	9.8	8250	52	<5	50	
ES1732447-004	19 December 2017	SB4	9.8	6030	60	<5	10	
ES1732447-005	19 December 2017	SD1	8.8	894	80	<5	17	
ES1732447-006	19 December 2017	SD2	8.8	458	25	<5	11	
ES1732447-007	19 December 2017	SD3	9	802	40	<5	18	
ES1732447-008	19 December 2017	SD4	9.8	2210	40	<5	14	
ES1732447-013	19 December 2017	BOX CUT	8.7	7430	2420	<5	189	
ES1732579-001	20 December 2017	A1	9.5	8540	<5	<5	5	
ES1732579-002	20 December 2017	A2	9.2	7850	9	<5	6	
ES1732579-003	20 December 2017	A3	9.1	8160	75	<5	11	
ES1732579-004	20 December 2017	B1	8.7	745	<5	<5	2	
ES1732579-005	20 December 2017	B2	9.3	15850	20	<5	30	
ES1732579-006	20 December 2017	C	9.8	27640	75	<5	60	
ES1732579-007	20 December 2017	D	7.8	732	16	<5	6	
ES1803428-001	30 January 2018	SD6	9.7	1900	34	<5	36	
ES1803428-006	30 January 2018	BOX CUT	9.7	9270	21700	<5	2090	
ES1803201-001	25 January 2018	A1	8.8	9530	563	<5	93	
ES1803201-002	25 January 2018	A2	8.6	9260	10	<5	8	
ES1803201-003	25 January 2018	A3	8.4	9290	132	<5	29	
ES1803201-004	25 January 2018	B1	8	831	<5	<5	3	
ES1803201-005	25 January 2018	B2	8.7	23500	49	<5	43	
ES1803201-006	25 January 2018	C	9.2	30300	74	<5	79	
ES1803201-007	25 January 2018	D	7.8	836	32	<5	5	
ES1803594-001	31 January 2018	SB1	9.3	8610	61	<5	9	
ES1803594-002	31 January 2018	SB2	9.7	3320	69	<5	23	
ES1803594-003	31 January 2018	SB3	9.6	9980	53	<5	84	
ES1803594-004	31 January 2018	SB4	9.6	6870	41	<5	15	Water level low
ES1803594-005	31 January 2018	SD1	8.9	1290	45	<5	32	Water level low
ES1803594-006	31 January 2018	SD2	8.8	593	24	<5	17	
ES1803594-007	31 January 2018	SD3	9	1040	82	<5	27	
ES1803594-008	31 January 2018	SD4	9.5	3050	57	<5	32	Water level low
ES1803594-009	31 January 2018	SD5	8.8	632	62	<5	27	
ES1805799-001	22 February 2018	A1	9.6	10000	<5	<5	7	
ES1805799-002	22 February 2018	A2	9.3	9620	7	<5	6	
ES1805799-003	22 February 2018	A3	9.2	9480	46	<5	16	
ES1805799-004	22 February 2018	B1	8.9	760	<5	<5	4	
ES1805799-005	22 February 2018	B2	9.6	27500	94	<5	50	
ES1805799-006	22 February 2018	C	9.9	21300	139	<5	80	
ES1805799-007	22 February 2018	D	8.9	582	31	<5	12	
ES1806209-001	26 February 2018	BOX CUT	9	7470	1720	28	326	
ES1806273-001	27 February 2018	SB1	9.7	8270	44	<5	18	
ES1806273-002	27 February 2018	SB2	9.7	3730	21	<5	23	
ES1806273-003	27 February 2018	SB3	9.9	10300	128	<5	48	
ES1806273-004	27 February 2018	SB4	9.9	7620	36	<5	21	
ES1806273-005	27 February 2018	SD1	9.4	1430	76	<5	38	Water level low
ES1806273-006	27 February 2018	SD2	9.3	656	63	<5	18	
ES1806273-007	27 February 2018	SD3	9.6	1480	60	<5	29	
ES1806273-008	27 February 2018	SD4	9.8	3340	57	<5	22	
ES1806273-009	27 February 2018	SD5	8.9	711	84	<5	25	
ES1806273-010	27 February 2018	SD6	9.5	2180	29	<5	32	
ES1809042-001	26 March 2018	SB3	9.9	9630	86	<5	69	
ES1809042-002	26 March 2018	SD6	9.8	2150	28	<5	41	
ES1809255-001	27 March 2018	SB1	9.6	9840	20	<5	12	
ES1809255-002	27 March 2018	SB2	9.8	4090	44	<5	57	
ES1809255-003	27 March 2018	SB4	9.9	11600	14	<5	24	
ES1809255-004	27 March 2018	SD1	9.9	1980	255	<5	96	Water level low
ES1809255-005	27 March 2018	SD2	9.8	797	123	<5	42	
ES1809255-006	27 March 2018	SD3	9.7	1780	522	<5	52	

ES1809255-007	27 March 2018	SD4	9.9	4890	113	<5	41	
ES1809255-008	27 March 2018	SD5	9.6	910	116	<5	56	
ES1809255-012	27 March 2018	BOX CUT	9.1	5840	8550	<5	101	
ES1809373-001	28 March 2018	A1	9.6	8970	5	<5	6	
ES1809373-002	28 March 2018	A2	9.4	8160	12	<5	8	
ES1809373-003	28 March 2018	A3	9.3	7960	41	<5	35	
ES1809373-004	28 March 2018	B1	9.3	997	<5	<5	5	
ES1809373-005	28 March 2018	B2	9.7	24300	119	<5	51	
ES1809373-006	28 March 2018	C	9.9	32600	340	<5	36	
ES1809373-007	28 March 2018	D	8.7	8870	22	<5	207	
ES1811723-001	23 April 2018	SB3	9.9	12200	46	<5	73	
ES1811723-002	23 April 2018	SD6	9.9	2720	50	<5	50	
ES1811723-003	23 April 2018	BOX CUT	9.1	6620	6590	<5	47	
ES1811866-001	24 April 2018	SB1	9.9	10600	7	<5	21	
ES1811866-002	24 April 2018	SB2	9.8	4120	42	<5	28	
ES1811866-003	24 April 2018	SB4	9.9	1700	69	<5	31	Water level low
ES1811866-004	24 April 2018	SD1	9.9	2680	213	<5	108	Water level low
ES1811866-005	24 April 2018	SD2	9.8	906	418	5	48	
ES1811866-006	24 April 2018	SD3	9.5	2340	1080	<5	59	
ES1811866-007	24 April 2018	SD4	9.6	7390	427	<5	55	Water level low
ES1811866-008	24 April 2018	SD5	9.4	1140	146	<5	47	
ES1812017-001	26 April 2018	A1	9.6	9120	8	<5	7	
ES1812017-002	26 April 2018	A2	9.4	8420	18	<5	12	
ES1812017-003	26 April 2018	A3	9.2	7930	127	<5	53	
ES1812017-004	26 April 2018	B1	9.1	837	36	<5	3	
ES1812017-005	26 April 2018	B2	9.7	25700	137	<5	34	
ES1812017-006	26 April 2018	D	8.6	826	18	<5	5	
ES1812017-007	26 April 2018	C	9.9	28300	60	<5	77	
ES1815199-001	24 May 2018	A1	9.8	8720	8	<5	12	
ES1815199-002	24 May 2018	A2	9.7	8170	50	<5	12	
ES1815199-003	24 May 2018	A3	9.6	7930	268	<5	31	
ES1815199-004	24 May 2018	B1	8.9	786	8	<5	3	
ES1815199-005	24 May 2018	B2	9.9	24000	87	<5	46	
ES1815199-006	24 May 2018	C	9.9	34500	36	<5	81	
ES1815199-007	24 May 2018	D	9.6	1020	35	<5	5	
ES1815538-001	28 May 2018	SB3	9.9	12100	63	<5	68	
ES1815538-002	28 May 2018	SB4	10	26000	1450	<5	2060	Water level low, difficult to get sample
ES1815538-003	28 May 2018	SD6	9.9	2580	56	<5	41	
ES1815538-004	28 May 2018	BOX CUT	9.3	6050	13300	23	313	
ES1815667-001	29 May 2018	SB1	9.8	8290	113	29	92	
ES1815667-002	29 May 2018	SB2	9.9	3710	24	<5	37	
ES1815667-003	29 May 2018	SD1	10.1	3940	598	<5	237	Water level low
ES1815667-004	29 May 2018	SD2	9.7	987	200	<5	60	Water level low
ES1815667-005	29 May 2018	SD3	9.3	2610	809	<5	78	Water level low
ES1815667-006	29 May 2018	SD5	9.9	1340	702	<5	78	Water level low
ES1818683-001	25 June 2018	SB3	9.6	11400	226	<5	84	
ES1818683-002	25 June 2018	SD6	9.4	2680	43	<5	52	
ES1818683-003	25 June 2018	BOX CUT	8.7	7010	17800	<5	30	
ES1818823-001	26 June 2018	SB1	9.3	8170	34	<5	10	
ES1818823-002	26 June 2018	SB2	9.5	3690	23	<5	33	
ES1818823-003	26 June 2018	SB4	9.9	34200	317	<5	2680	Water level low
ES1818823-004	26 June 2018	SD2	9.2	1050	219	<5	41	Water level low
ES1818823-005	26 June 2018	SD3	9.2	3320	161	<5	102	Water level low
ES1818823-006	26 June 2018	SD5	8.8	494	12	<5	18	Water level low
ES1818976-001	27 June 2018	A1	9.2	8260	6	<5	10	
ES1818976-002	27 June 2018	A2	9	8040	37	<5	8	
ES1818976-003	27 June 2018	A3	9	8070	247	<5	10	
ES1818976-004	27 June 2018	B1	8.7	830	<5	<5	3	
ES1818976-005	27 June 2018	B2	9.5	22400	59	<5	234	
ES1818976-006	27 June 2018	C	9.8	34800	34	<5	45	
ES1818976-007	27 June 2018	D	8.4	860	16	<5	13	
ES1821823-001	24 July 2018	SB3	9.4	9720	634	12	32	
ES1821823-002	24 July 2018	SD6	9.5	2840	90	<5	46	Water level low
ES1822106-001	25 July 2018	SB1	9.4	8730	42	<5	18	
ES1822106-002	25 July 2018	SB2	9.6	3410	24	<5	31	
ES1822106-003	25 July 2018	SD2	9.5	1100	98	<5	45	Water level low
ES1822106-004	25 July 2018	SD3	9.6	4230	3250	<5	137	Water level low
ES1822106-005	25 July 2018	SD5	8.7	508	10	<5	16	
ES1822106-007	25 July 2018	BOX CUT	9.1	7580	4220	15	18	
ES1822346-001	30 July 2018	A1	9.2	8270	14	<5	16	
ES1822346-002	30 July 2018	A2	9.1	8220	20	<5	10	
ES1822346-003	30 July 2018	A3	8.8	8620	132	<5	16	
ES1822346-004	30 July 2018	B1	8.2	768	<5	<5	3	
ES1822346-005	30 July 2018	B2	9.5	24800	86	<5	57	
ES1822346-006	30 July 2018	C	9.8	34200	48	<5	90	
ES1822346-007	30 July 2018	D	9.4	1320	5	<5	4	
ES1825239-001	23 August 2018	SB1	9.6	8590	52	<5	33	
ES1825239-002	23 August 2018	SB2	9.7	3230	29	<5	31	
ES1825239-003	23 August 2018	SB3	9.9	10200	31	<5	42	
ES1825239-004	23 August 2018	SD2	9.8	1240	183	<5	74	Water level low
ES1825239-005	23 August 2018	SD3	9.7	3980	223	<5	137	Water level low

ES1825239-006	23 August 2018	SD5	8.8	536	25	<5	18	
ES1825239-007	23 August 2018	SD6	9.7	2830	63	6	51	Water level low
ES1822106-009	23 August 2018	BOX CUT	8.7	6930	2760	6	50	
ES1825756-001	29 August 2018	A1	9.2	8230	131	6	17	
ES1825756-002	29 August 2018	A2	9.1	8160	40	<5	10	
ES1825756-003	29 August 2018	A3	8.9	7980	93	<5	10	
ES1825756-004	29 August 2018	B1	8.1	717	<5	7	2	
ES1825756-005	29 August 2018	B2	9.5	25400	96	9	45	
ES1825756-006	29 August 2018	C	10.1	35600	472	6	197	
ES1825756-007	29 August 2018	D	9.3	722	14	6	10	
ES1828355-001	24 September 2018	SB1	9.8	8680	16	<5	12	
ES1828355-002	24 September 2018	SB2	9.9	3260	29	<5	42	
ES1828355-003	24 September 2018	SB3	10.1	10500	61	<5	48	
ES1828355-004	24 September 2018	SD6	9.8	3410	18	6	46	
ES1828355-005	24 September 2018	BOX CUT	9.2	8320	2000	13	335	
ES1828483-001	25 September 2018	SD3	10.1	6310	215	10	245	Water level low
ES1828483-002	25 September 2018	SD5	8.7	619	36	<5	22	
ES1828627-001	26 September 2018	A1	9.6	8230	22	<5	10	
ES1828627-002	26 September 2018	A2	9.4	7650	16	<5	6	
ES1828627-003	26 September 2018	A3	9.3	7630	33	<5	7	
ES1828627-004	26 September 2018	B1	8.4	901	<5	<5	8	
ES1828627-005	26 September 2018	B2	9.9	25000	123	<5	45	
ES1828627-006	26 September 2018	C	10	36700	18	<5	4370	
ES1828627-007	26 September 2018	D	9.8	1050	26	<5	12	
ES1831694-001	24 October 2018	A1	9.7	8310	20	7	6	
ES1831694-002	24 October 2018	A2	9.5	8030	28	7	12	
ES1831694-003	24 October 2018	A3	9.3	8620	66	<5	2	
ES1831694-004	24 October 2018	B1	8.7	957	<5	<5	4	
ES1831694-005	24 October 2018	B2	9.8	25720	64	<5	9	
ES1831694-006	24 October 2018	C	9.9	37310	106	<5	5	
ES1831694-007	24 October 2018	D	8.5	794	48	<5	7	
ES1832272-001	29 October 2018	SB1	9.6	8870	20	<5	15	
ES1832272-002	29 October 2018	SB2	9.8	3480	21	<5	29	
ES1832272-003	29 October 2018	SB3	9.7	9760	44	<5	59	
ES1832272-004	29 October 2018	SD4	9.9	5220	24	<5	18	
ES1832272-005	29 October 2018	SD5	8.3	774	92	<5	36	
ES1832272-006	29 October 2018	SD6	9.7	3970	204	<5	73	
ES1832272-007	29 October 2018	SB4	10.1	16400	13	<5	68	Dam water level low
ES1832272-010	29 October 2018	BOX CUT	7.9	9130	4340	12	372	
ES1834946-001	21 November 2018	A1	9.1	8960	67	<5	13	
ES1834946-002	21 November 2018	A2	9	8820	22	<5	<1	
ES1834946-003	21 November 2018	A3	8.9	9070	62	<5	283	
ES1834946-004	21 November 2018	B1	8.4	825	66	<5	7	
ES1834946-005	21 November 2018	B2	9.3	25500	204	<5	19	
ES1834946-006	21 November 2018	C	9.8	38800	141	<5	95	
ES1834946-007	21 November 2018	D	8.7	639	46	<5	16	
ES1835580-001	27 November 2018	SB1	9.4	8020	72	<5	162	
ES1835580-002	27 November 2018	SB2	9.2	3420	14	<5	19	
ES1835580-003	27 November 2018	SB3	9.6	8750	17	<5	203	
ES1835580-004	27 November 2018	SD4	9.4	1180	39	<5	2	Dam water level low
ES1835580-005	27 November 2018	SD5	8.5	678	141	<5	26	
ES1835580-006	27 November 2018	SD6	9.6	4350	38	<5	59	Dam water level low
ES1835580-007	27 November 2018	SB4	9.9	11900	43	<5	23	Dam water level low
ES1835580-010	27 November 2018	BOX CUT	8.8	9710	18400	9	7	
ES1837816-001	13 December 2018	A1	9.4	9150	22	<5	10	
ES1837816-002	13 December 2018	A2	9.2	9020	18	<5	6	
ES1837816-003	13 December 2018	A3	9.3	8760	81	<5	2	
ES1837816-004	13 December 2018	B1	8.2	785	<5	<5	6	
ES1837816-005	13 December 2018	B2	9.5	25000	52	6	156	
ES1837816-006	13 December 2018	C	9.9	36800	110	<5	313	
ES1837816-007	13 December 2018	D	8.8	602	102	<5	12	
ES1838279-001	17 December 2018	SD6	9.9	5080	28	19	89	Dam water level low
ES1838279-002	17 December 2018	SD5	9.4	559	546	<5	27	Dam water level low
ES1838362-001	18 December 2018	SB1	9.7	7880	64	<5	13	
ES1838362-002	18 December 2018	SB2	9.6	3390	8	<5	36	
ES1838362-003	18 December 2018	SB3	9.8	7450	106	<5	45	
ES1838362-004	18 December 2018	SB4	9.9	10200	58	<5	55	Dam water level low
ES1838362-005	18 December 2018	SD4	9.7	1560	25	<5	3	
ES1838362-011	18 December 2018	Box Cut	9.2	7860	7080	<5	30	
ES1902572-001	24 January 2019	SB1	9.35	10500	21	<5	10	
ES1902572-002	24 January 2019	SB2	9.28	4440	33	<5	38	
ES1902572-003	24 January 2019	SB3	9.57	11000	150	<5	34	
ES1902572-004	24 January 2019	SD4	9.03	4260	1340	<5	27	Dam water level low
ES1902572-005	24 January 2019	SD6	9.58	9440	68	<5	214	
ES1902572-006	24 January 2019	SB4	10	39200	2800	<5	184	
ES1902572-009	24 January 2019	Box Cut	8.7	8330	7720	19	65	
ES1906112-001	26 February 2019	SB1	9.9	10400	53	<5	48	
ES1906112-002	26 February 2019	SB2	9.8	5030	54	<5	36	
ES1906112-003	26 February 2019	SB3	10.3	15400	215	<5	183	
ES1906112-004	26 February 2019	SD6	10.2	17800	448	6	855	
ES1906112-005	26 February 2019	W103 Pondir	10.5	7230	386	<5	140	

ES1906112-006	26 February 2019	Box Cut	8.9	6790	3260	38	208	
ES1909186-001	25 March 2019	SB3	9.9	17500	139	<5	68	
ES1909354-001	26 March 2019	SB1	9.26	10300	2360	<5	32	
ES1909354-002	26 March 2019	SB2	9.9	5830	15	<5	51	
ES1909354-003	26 March 2019	Box Cut	9.4	7870	2360	7	33	
ES1911294-001	10 April 2019	SB1	9.9	8730	26	6	2	
ES1911294-002	10 April 2019	SB2	9.8	5210	32	6	26	
ES1911294-003	10 April 2019	SB3	10.2	10400	66	<5	40	
ES1911294-004	10 April 2019	SB4	10.4	6890	691	<5	50	
ES1911294-005	10 April 2019	SD1	9.2	1890	233	6	58	
ES1911294-006	10 April 2019	SD2	9.8	256	391	7	16	
ES1911294-007	10 April 2019	SD4	9.2	769	680	<5	10	
ES1911294-008	10 April 2019	SD5	8.1	507	407	<5	20	
ES1911294-009	10 April 2019	SD6	10.1	11500	8760	<5	227	
ES1911294-010	10 April 2019	LW102 North	7.9	255	966	<5	21	
ES1911294-011	10 April 2019	LW102 South	9.1	274	1050	<5	11	
ES1911294-012	10 April 2019	W103 Pondir	8.5	441	1990	<5	34	
ES1911294-013	10 April 2019	LW104 North	8.9	214	348	<5	12	
ES1911294-014	10 April 2019	LW105 North	7.4	194	246	<5	42	
ES1911294-015	10 April 2019	Box Cut	9.4	6070	4370	56	2	
ES1913101-001	30 April 2019	A1	9.1	9340	12	<5	<1	
ES1913101-002	30 April 2019	A2	8.9	9320	<5	<5	2	
ES1913101-003	30 April 2019	A3	8.7	7890	882	16	3	
ES1913101-004	30 April 2019	B1	8.3	994	<5	5	3	
ES1913101-005	30 April 2019	B2	9.2	29700	272	<5		
ES1913101-006	30 April 2019	C	9.6	43500	208	<5		
ES1913101-007	30 April 2019	D	8.1	846	26	9	<1	
ES1916301-001	21 May 2019	lain Supply 4	8.11	515	<5			No Grease & oil / TOC given in results
ES1916269-001	27 May 2019	A1	9.4	7950	22	<5		
ES1916269-002	27 May 2019	A2	9.1	6830	65	<5		
ES1916269-003	27 May 2019	A3	8.9	6960	67	<5		
ES1916269-004	27 May 2019	B1	7.4	834	<5	<5	<1	
ES1916269-005	27 May 2019	B2	9.6	29600	40	<5		
ES1916269-006	27 May 2019	C	9.9	46800	98	<5		
ES1916269-007	27 May 2019	D	8.7	1150	9	<5	3	
ES1916448-001	28 May 2019	SD1	8.5	1330	1120	<5	27	
ES1916448-002	28 May 2019	SD2	8.4	378	322	<5	8	
ES1916448-003	28 May 2019	SD5	7.8	639	478	<5	14	
ES1916448-004	28 May 2019	SD6	9.9	4030	2320	<5	55	
ES1916634-001	29 May 2019	SB1	9.6	8760	127	10	<1	
ES1916634-002	29 May 2019	SB2	9.8	5140	48	<5	30	
ES1916634-003	29 May 2019	SB3	9.7	6970	38	<5	28	
ES1916634-004	29 May 2019	SB4	10.3	10600	24	6	25	
ES1916634-005	29 May 2019	SD3	9.1	1950	49	<5	28	
ES1916634-006	29 May 2019	SD4	9.3	1460	32	<5	5	
ES1916634-007	29 May 2019	LW102 North	8.2	686	925	<5	11	
ES1916634-008	29 May 2019	LW102 South	8.8	359	132	<5	8	
ES1916634-009	29 May 2019	L103 Pondin	8.3	631	33	<5	9	
ES1916634-010	29 May 2019	106 North	7.2	252	24	<5	28	
ES1916634-011	29 May 2019	Box Cut	9.1	5840	4070	29	13	
ES1919928-001	26 June 2019	SB1	9.4	8230	91	<5	26	
ES1919928-002	26 June 2019	SB3	9.8	8620	113	<5	42	
ES1919928-003	26 June 2019	SB4	9.9	13900	136	<5	110	
ES1919928-004	26 June 2019	SD2	9.1	443	18	<5	13	
ES1919928-005	26 June 2019	SD5	8.7	728	96	<5	19	
ES1919928-006	26 June 2019	SD6	9.9	6340	147	<5	133	
ES1919928-007	26 June 2019	LW102 North	8.2	418	20	<5	17	
ES1919928-008	26 June 2019	LW102 South	8.6	227	60	<5	10	
ES1919928-009	26 June 2019	W103 Pondir	8.5	719	30	<5	13	
ES1920158-001	27 June 2019	A1	9.6	8650	10	<5	88	
ES1920158-002	27 June 2019	A2	9.3	8330	32	<5	42	
ES1920158-003	27 June 2019	A3	9.3	8390	486	<5	80	
ES1920158-004	27 June 2019	B1	8.7	965	<5	<5	4	
ES1920158-005	27 June 2019	B2	9.9	29700	59	<5		
ES1920158-006	27 June 2019	C	9.8	42400	65	<5		
ES1920158-007	27 June 2019	D	8.8	931	11	<5	3	
ES1923240-001	23 July 2019	SB1	9.13	7350	1000	15	<1	
ES1923240-002	23 July 2019	SB3	9.03	8250	42	<5	<1	
ES1923240-003	23 July 2019	SB4	9.72	14000	54	<5	42	
ES1923241-001	23 July 2019	A1	9.4	8130	43	<5	38	
ES1923241-002	23 July 2019	A2	9.5	7510	53	<5	25	
ES1923241-003	23 July 2019	A3	9.6	8150	210	<5	30	
ES1923241-004	23 July 2019	B1	7.8	845	<5	<5	<1	
ES1923241-005	23 July 2019	B2	9.9	29800	43	<5		
ES1923241-006	23 July 2019	C	9.9	33500	98	<5		
ES1923241-007	23 July 2019	D	7.7	840	6	<5	<1	
ES1923240-001	23 July 2019	SB1	6.9	8100	1000	16	<1	
ES1923240-002	23 July 2019	SB3	9.6	9850	42	<5	<1	
ES1923240-003	23 July 2019	SB4	9.9	15200	54	<5	42	
ES1923240-001	23 July 2019	SB1	9.13	7350	1000	16	<1	
ES1923240-002	23 July 2019	SB3	9.03	8250	42	<5	<1	Duplicate

ES1923240-003	23 July 2019	SB4	9.72	14000	54	<5	42	
ES1923395-001	24 July 2019	SB2	9.8	4940	56	<5	61	
ES1923395-002	24 July 2019	SD4	9.6	-	18	<5	7	
ES1923395-003	24 July 2019	SD5	8.5	743	78	<5	18	
ES1923395-004	24 July 2019	SD6	9.9	8150	428	<5	207	
ES1923395-005	24 July 2019	W102 NORT	8	418	30	<5	14	
ES1923395-006	24 July 2019	W102 SOUT	8.3	226	107	<5	10	
ES1923395-007	24 July 2019	W103 Pondi	8.7	711	47	<5	11	
ES1923395-008	24 July 2019	BOX CUT	9.2	5870	116000	223	39	
ES1927354-001	27 August 2019	A1	9.5	7940	32	<5	14	
ES1927354-002	27 August 2019	A2	9.4	7600	108	<5	17	
ES1927354-003	27 August 2019	A3	8.5	9410	128	<5	14	
ES1927354-004	27 August 2019	B1	8.1	840	8	<5	2	
ES1927354-005	27 August 2019	B2	9.9	30300	205	<5	1960	
ES1927354-006	27 August 2019	C	9.7	34300	106	5	8	
ES1927354-007	27 August 2019	D	7.8	830	16	<5	5	
ES1927538-001	28 August 2019	SB1	9.4	7720	110	9	22	
ES1927538-002	28 August 2019	SB2	9.8	4740	107	5	56	
ES1927538-003	28 August 2019	SB3	9.7	9730	28	<5	<1	
ES1927538-004	28 August 2019	SB4	9.9	23200	23	<5	<1	
ES1927538-005	28 August 2019	SD4	9.9	2440	14	<5	8	
ES1927538-006	28 August 2019	W102 NORT	8.5	627	23	<5	17	
ES1927538-007	28 August 2019	W102 SOUT	8.1	252	26	<5	12	
ES1927538-008	28 August 2019	W103 PONDI	8.7	839	8	<5	11	
ES1927538-009	28 August 2019	BOX CUT	8.9	8240	2380	14	<1	
ES1930921-001	23 September 2019	A1	9.7	8410	29	<5	2	
ES1930921-002	23 September 2019	A2	9.5	8320	23	<5	7	
ES1930921-003	23 September 2019	A3	9.3	7560	4890	<5	784	
ES1930921-004	23 September 2019	B1	8.6	921	7	<5	3	
ES1930921-005	23 September 2019	B2	9.9	33800	72	<5	----	
ES1930921-006	23 September 2019	C	9.9	43900	60	<5	----	
ES1930921-007	23 September 2019	D	8.8	889	<5	<5	4	
ES1931122-001	24 September 2019	SB1	9.7	8120	120	<5	28	
ES1931122-002	24 September 2019	SB2	9.8	5270	70	<5	42	
ES1931122-003	24 September 2019	SB3	9.9	12200	98	<5	----	
ES1931122-004	24 September 2019	SB4	9.9	48400	123	<5	----	
ES1931122-005	24 September 2019	SD2	9.8	753	31	<5	38	
ES1931122-006	24 September 2019	SD4	9.9	3670	116	<5	19	
ES1931122-007	24 September 2019	W102 NORT	8.6	798	252	<5	27	
ES1931122-008	24 September 2019	W102 SOUT	8.3	318	336	<5	21	
ES1931122-009	24 September 2019	W103 PONDI	8.8	1060	26	<5	17	
ES1931122-010	24 September 2019	BOX CUT	8.9	5290	1240	34	138	
ES1935029-001	23 October 2019	A1	9.6	8650	30	8	<1	
ES1935029-002	23 October 2019	A2	9.5	8410	27	<5	4	
ES1935029-003	23 October 2019	A3	9.3	8630	104	<5	<1	
ES1935029-004	23 October 2019	B1	8.8	985	<5	<5	3	
ES1935029-005	23 October 2019	B2	9.8	35000	42	<5	----	
ES1935029-006	23 October 2019	C	9.9	44800	43	6	----	
ES1935029-007	23 October 2019	D	8.8	895	90	<5	3	
ES1935744-001	29 October 2019	SB1	9.9	9360	138	<5	17	
ES1935744-002	29 October 2019	SB2	9.8	6150	47	<5	68	
ES1935744-003	29 October 2019	SB3	9.9	16400	198	7	93	
ES1935744-004	29 October 2019	SD4	9.9	1910	842	<5	114	
ES1935744-005	29 October 2019	W102 SOUT	9	614	1760	<5	32	
ES1935744-006	29 October 2019	W103 PONDI	9.4	1720	52	<5	21	
ES1935744-007	29 October 2019	BOX CUT	9.3	9270	3530	31	30	
ES1938554-001	20 November 2019	A1	9.4	8930	20	<5	<1	
ES1938554-002	20 November 2019	A2	9.4	8640	39	<5	<1	
ES1938554-003	20 November 2019	A3	8.9	8390	336	<5	<1	
ES1938554-004	20 November 2019	B1	8.6	1020	<5	<5	3	
ES1938554-005	20 November 2019	B2	9.6	28500	311	<5	3620	
ES1938554-006	20 November 2019	C	9.7	47100	126	<5	4750	
ES1938554-007	20 November 2019	D	8.4	908	27	<5	<1	
ES1939590-001	28 November 2019	SB1	9.7	8630	95	6	52	
ES1939590-002	28 November 2019	SB2	9.9	6820	30	9	58	
ES1939590-003	28 November 2019	SB3	9.8	13000	80	<5	108	
ES1939590-004	28 November 2019	SB4	9.9	11800	97	<5	68	
ES1939590-005	28 November 2019	SD2	9.4	2880	256	<5	148	
ES1939590-006	28 November 2019	SD4	9.6	5290	12	<5	23	
ES1939590-007	28 November 2019	W102 NORT	8.1	682	350	<5	54	
ES1939590-008	28 November 2019	W102 SOUT	8.4	269	418	<5	16	
ES1939590-009	28 November 2019	W103 PONDI	9.1	1180	845	<5	22	
ES1939590-010	28 November 2019	BOX CUT	8.9	8290	4070	9	21	
ES1941480-001	12 December 2019	A1	9.3	9830	11	<5	10	
ES1941480-002	12 December 2019	A2	9.1	9700	44	<5	----	
ES1941480-003	12 December 2019	A3	9.3	10000	24	<5	----	
ES1941480-004	12 December 2019	B1	8.7	1090	6	<5	<1	
ES1941480-005	12 December 2019	B2	9.5	39900	76	<5	----	
ES1941480-006	12 December 2019	C	9.2	48600	38	<5	<1	
ES1941480-007	12 December 2019	D	8.6	960	19	<5	40	
ES1942251-001	18 December 2019	SB1	9.9	11000	56	<5	36	

ES1942251-002	18 December 2019	SB2	9.8	8450	46	<5	74	
ES1942251-003	18 December 2019	SB3	9.9	19800	164	<5	1660	
ES1942251-004	18 December 2019	V103 PONDI	9.5	1730	470	6	27	
ES1942251-005	18 December 2019	BOX CUT	9.2	10000	5840	17	35	

Appendix E – *Groundwater Data*

Site ID	Piezometer / Water Bore	Date	Time	Depth to Water - mbgl	Depth to Stand - mbtoc	Field Parameters			Total Metals															Mercury (Hg) - mg/L	pH Lab	EC - Lab - µs/cm	Major Cations				Total Cations - meq/L	Major Anions						Total Anions - meq/L	Ionic Balance	Ammonia as Nitrogen (N)	Nitrite as N - mg/L	Nitrate as N - mg/L	NOX as N - mg/L	Total Dissolved Solids
						pH - Field	EC - Field - µs/cm	Temp - Field - °C	Aluminium (Al) - mg/L	Arsenic (As) - mg/L	Barium (Ba) - mg/L	Beryllium (Be) - mg/L	Cadmium (mg/L)	Chromium (Cr) - mg/L	Cobalt (Co) - mg/L	Copper (Cu) - mg/L	Iron (Fe) - mg/L	Lead (Pb) - mg/L	Manganese (Mn) - mg/L	Nickel (Ni) - mg/L	Vanadium (V) - mg/L	Zinc (Zn) - mg/L				Calcium (Ca) - mg/L	Magnesium (Mg) - mg/L	Sodium (Na) - mg/L	Potassium (K) - mg/L		Chloride (Cl) - mg/L	Sulfate (SO4) - mg/L	Hydroxide Alkalinity as CaCO3 - mg/L	Carbonate Alkalinity as CaCO3 - mg/L	Bicarbonate Alkalinity as CaCO3 - mg/L	Alkalinity - mg/L							
ANZECC Guideline - stock drinking water									*5*	*0.5*			*0.01*	*1*	*1*	*1*		*0.1*		*1*		*20*	*0.002*			*1000*					*1000*									*1500*	*400*		*4000*
P1	**NG1**	**12-Mar-15**	900	20.45	21.43	7.5	3780	21.6	0.04	<0.001	0.388	<0.001	<0.0001	<0.001	<0.001	0.014	0.1	0.01	0.026	0.007	<0.01	0.059	<0.0001	8	3910	23	30	926	24	44.5	676	37	<1	<1	1100	1100	41.8	3.08	0.02	<0.01	0.71	0.71	1860
		05-Jun-15	1105	20.71	21.69	7.4	3690	21.4																																			
Depth	**50**	**10-Sep-15**	1400	20.19	21.17	7.5	3740	22.9	0.02	<0.001	0.388	<0.001	<0.0001	<0.001	<0.001	0.007	0.06	<0.001	0.08	0.002	<0.01	0.037	<0.0001	7.83	3970	32	51	1010	23	50.3	722	34	<1	<1	1010	1010	41.2	9.86	0.43	<0.01	0.54	0.54	2180
Format.	**Garrawilla**	**14-Dec-15**	1415	20.64	21.62	7.5	3750	23																																			
		09-Mar-16	1355	20.64	21.62	7.6	3770	23.2	0.04	<0.001	0.397	<0.001	<0.0001	<0.0001	<0.001	0.019	0.06	0.002	0.326	0.005	<0.01	0.062	<0.0001	7.89	3960	24	26	840	23	40.5	654	38	<1	<1	1050	1050	40.2	0.26	0.28	<0.01	0.33	0.33	2000
		31-May-16	915	20.70	21.68	7.5	3810	21.1																																			
		28-Sep-16	1325	20.58	21.56	7.5	3630	21.9	0.06	0.001	0.436	<0.001	<0.0001	<0.001	<0.001	0.008	0.08	<0.001	0.326	0.004	<0.01	0.07	<0.0001	7.9	3760	24	23	820	21	39.3	635	28	<1	<1	1080	1080	40.1	1.02	0.45	<0.01	0.38	0.38	1930
		27-Oct-16	1215	20.86	21.84	7.5	3510	22.5																																			
		25-Nov-16	1120	21.16	22.14	7.6	3580	21.8																																			
		21-Dec-16	1300	21.32	22.3	7.6	3520	22.3																																			
		20-Jan-17	1345	21.12	22.1	7.6	3680	22.5																																			
		22-Feb-17	1350	21.30	22.28	7.5	3720	22.4																																			
		28-Mar-17	1440	21.41	22.39	7.7	4210	22.5																																			
		27-Apr-17	1345	21.36	22.34	7.7	4140	22.7																																			
		30-May-17	1340	21.26	22.24	7.6	3840	21.1																																			
		29-Jun-17				No access to property																																					
		28-Jul-17	1240	21.14	22.12	7.6	3790	21.5																																			
		29-Aug-17	1415	21.25	22.23	7.7	3820	21.6																																			
		26-Sep-17	1415	21.50	22.48	7.7	3830	22.5	0.01	<0.001	0.47	<0.001	<0.0001	<0.001	<0.001	0.002	<0.05	0.003	0.352	0.002	<0.01	0.032	<0.0001	8.01	3890	31	34	814	21	40.3	621	25	<1	<1	1050	1050	39	1.6	0.37	<0.01	0.23	0.23	2180
		27-Oct-17	1220	21.89	22.87	7.7	3910	22.2																																			
		27-Nov-17	1410	22.06	23.04	7.6	3850	20.8																																			
		21-Dec-17	1220	22.27	23.25	7.5	3820	22.7																																			
		05-Feb-18	1015	21.99	22.97	7.5	3890	22.1																																			
		20-Feb-18	1340	28.97	29.95	7.6	3880	22																																			
		28-Mar-18	1445	21.73	22.71	7.7	3880	22.7																																			
		30-Apr-18	1430	21.63	22.61	7.7	3850	22.1																																			
		25-May-18	1315	21.88	22.86	7.7	3860	21.4																																			
		26-Jun-18	1440	21.95	22.93	7.7	3660	21.4																																			
		30-Jul-18	1320	22.03	23.01	7.7	3710	21.5																																			
		30-Aug-18	1345	22.04	23.02	7.6	3550	21.6																																			
		26-Sep-18	1355	22.07	23.05	7.7	3740	21.9	0.03	<0.001	0.416	<0.001	<0.0001	<0.001	<0.001	0.003	0.06	0.002	0.039	<0.001	<0.01	0.007	<0.0001	7.97	4070	22	26	792	21	38.2	718	30	<1	<1	919	919	39.2	1.31	0.04	<0.01	0.84	0.84	2370
		29-Oct-18	1430	21.89	22.87	7.8	3700	22.4																																			
		29-Nov-18				No access to property																																					
		20-Dec-18				No access to property																																					
		24-Jan-19				No access to property																																					
		25-Feb-19				No access to property																																					
		19-Mar-19				No access to property																																					
		26-Apr-19				No access to property																																					
		31-May-19				No access to property																																					
		24-Jun-19				No access to property NCO to advise																																					
		29-Jul-19				No access to property NCO to advise																																					
		23-Aug-19				No access to property NCO to advise																																					
		23-Sep-19				No access to property NCO to advise																																					
		28-Oct-19				No access to property NCO to advise																																					
		29-Nov-19	1200			No access to property - both gates locked with new locks. NCO to advise																																					
		16-Dec-19	1430						0.22	0.001	0.54	<0.001	0.0003	<0.001	0.004	0.076	0.95	0.065	0.672	0.006	<0.01	0.173	<0.0001	7.86	4040	24	26	806	21	38.9	728	25	<1	<1	896	896	39	0.03	0.83	0.3	<0.01	0.01	2230
P2	**NG2**	**12-Mar-15**	930	28.71	29.62	6.9	19230	22.9	0.18	<0.001	0.346	<0.001	<0.0001	0.005	0.002	0.024	1.43	0.015	1.64	0.012	<0.01	0.151	<0.0001	7.32	20300	162	418	4170	90	226	6000	305	<1	<1	2470	2470	225	0.24	2.66	<0.01	0.31	0.31	**12100**
		04-Jun-15	1300	28.66	29.57	6.8	19290	21.6																																			
Depth	**50**	**10-Sep-15**	1320	28.75	29.66	6.7	19320	23.5	<0.10	<0.010	0.393	<0.010	<0.0010	<0.010	<0.010	<0.010	1.37	<0.010	1.7	<0.010	<0.10	0.169	<0.0001	6.9	20800	194	391	4180	85	226	6100	338	<1	<1	3880	3880	257	6.41	3.52	0.02	0.02	0.04	**12100**
Format.	**Napperby**	**15-Dec-15**	1230	28.83	29.74	6.9	19860	22.6																																			
		08-Mar-16	1350	28.96	29.87	7	19270	24.7	0.04	<0.001	0.354	<0.001	<0.0001	<0.001	0.001	0.024	0.62	0.002	1.58	0.014	<0.01	0.162	<0.0001	7.69	21000	134	328	3250	65	177	5450	373	<1	<1	2560	2560	213	9.26	1.67	0.1	0.23	0.33	**12000**
		01-Jun-16	900	28.85	29.76	6.9	17520	21.1																																			
		27-Sep-16	1015	28.76	29.67	6.8	17560	22.3	0.07	<0.001	0.399	<0.001	<0.0001	<0.001	<0.001	0.002	1.16	<0.001	1.9	0.006	<0.01	0.086	<0.0001	6.91	20500	168	425	3920	82	216	5060	255	<1	<1	3150	3150	211	1.14	2.72	0.06	0.08	0.14	**12800**
		26-Oct-16	1430	28.79	29.7	6.8	17650	22.3																																			
		25-Nov-16	1340	28.78	29.69	6.8	17420	22.1																																			
		19-Dec-16	1340	28.79	29.7	6.7	17910	22.8																																			
		24-Jan-17	1320	28.84	29.75	6.8	18100	23.2																																			
		21-Feb-17	1445	28.81	29.72	6.8	17920	22.7																																			
		28-Mar-17	1415	28.72	29.63	6.9	18740	22.6																																			
		20-Apr-17	1430	28.78	29.69	6.8	18860	22.8																																			
		30-May-17	1230	28.76	29.67	6.8	17960	22.3																																			
		27-Jun-17	1425	28.76	29.67	6.8	18150	21.8																																			
		25-Jul-17	1420	28.78	29.69	6.9	18790	22																																			
		28-Aug-17	1250	28.85	29.76	6.8	18470	21.9																																			
		25-Sep-17	1230	28.85	29.76	6.8	19340	21.6	0.04	<0.001	0.361	<0.001	<0.0001	<0.001	0.001	0.003	0.78	<0.001	1.79	0.004	<0.01	0.024	<0.0001	7.5	21200	180	438	4340	85	236	5240	323	<1	<1	2820	2820	211	5.62	3.55	<0.01	0.06	0.06	**13400**
		27-Oct-17	1150	28.82	29.73	6.8	19240	22.4																																			
		24-Nov-17	1435	28.83	29.74	6.8	19570	22.8																																			
		19-Dec-17	1410	28.83	29.74	6.7	19510	23.4																																			
		31-Jan-18	1300	28.92	29.83	6.7	19420	22.8																																			
		20-Feb-18	1315	28.79	29.7	6.8	19230	22.1																																			
		27-Mar-18	1400	28.79	29.7	6.8	19170	22.7																																			
		26-Apr-18	1350	28.93	29.84	6.8	19110	21.9																																			
		25-May-18	1215	28.81	29.72	6.8	19050	21.5																																			
		25-Jun-18	1450	28.92	29.83	6.8	19170	21.6																																			
		25-Jul-18	1435	29.06	29.97	6.8	19400	21.9																																			
		29-Aug-18	1315	28.92	29.83	6.8	19500	21.7																																			
		26-Sep-18	1320	28.96	29.87	6.8	19100	21.4	0.17	<0.001	0.309	<0.001	<0.0001	<0.001	0.003	0.011	0.76	0.012	1.61	0.008	<0.01	0.064	<0.0001	7.12	21800	155	371	3840	80	207	6000	364	<1	<1	2500	2500	227	4.48	2.79	0.01	0.4	0.41	**14800**
		29-Oct-18	1335	28.85	29.76	6.9	19080	22.4																																			
		26-Nov-18	1500	28.78	29.69	6.9	19100	22.5																																			
		20-Dec-18	1400	28.82	29.73	6.9	19180	22.4																																			
		24-Jan-19	1255	28.78	29.69	6.9	18970	23.5																																			
		28-Feb-19	1335	28.84	29.75	6.9	19100	22.8																																			
		25-Mar-19	1410	28.74	29.65	7	19730	22.7																																			
		26-Apr-19	1340	28.89	29.8	7	19240	22.4																																			
		31-May-19	1415	28.95	29.86	7	19350	21.8																																			
		24-Jun-19	1440	28.93	29.84	7	19400	21.4																																			
		29-Jul-19	1310	28.82	29.73	7.1	19490	21.5																																			
		23-Aug-19	1305	28.84	29.75	7	18850	21.7																																			
		23-Sep-19	1400	28.80	29.71	6.8	19580	22.5	0.22	<0.001	0.346	<0.001	<0.0001	0.001	0.01	0.012	0.56	0.008	1.8	0.014	<0.01	0.078	<0.0001	7.24	21300	182	428	4160	83	227	6110	365	<1	<1	2630	2630	232	1.11	4.29	<0.01	0.05	0.05	**12500**
		28-Oct-19	1325	28.81	29.72	6.8	19460	22.9																																			
		27-Nov-19	1200	28.73	29.64	6.7	19780	22.8																																			
		16-Dec-19	1400	28.76	29.67	6.8	19850	22.8																																			
P3	**NG3**	**12-Mar-15**	1050	9.81	10.74	6.9	17380	22.3	0.02	<0.001	0.088	<0.001	<0.0001	0.007	0.004	0.021	0.26	0.004	0.262	0.013	<0.01	0.196	<0.0001	7.46	18600	318	544	3690	49	222	5250	**1260**	<1	<1	1330	1330	201	5.06	0.11	<0.01	0.07	0.07	**11800**
		03-Jun-15	900	9.85	10.78	6.8	18010	20.6																																			
Depth	**45**	**08-Sep-15**	910	9.77	10.7	6.9	17300	20.3	0.05	0.001	0.132	<0.001	<0.0001	<0.001	<0.001	0.012	0.86	0.004	0.295	0.01	<0.01	0.285	<0.0001	7.54	18600	290	390	3000	47	178	4440	**1080**	<1	<1	1160	1160	171	2.09	0.19	<0.01	0.01	0.01	**12100**
Format.	**Pamboola**	**09-Dec-15**	1200	9.82	10.75	7	18180	21.9																																			
		08-Mar-16	1220	9.80	10.73	7.1	17570	23.6	0.09	<0.001	0.091	<0.001	0.0001	<0.001	<0.001	0.068	0.3	0.004	0.115	0.01	<0.01	0.226	<0.0001	7.72	18900	285	451	3170	45	190	5270	**1390**	<1	<1	1130	1130	200	2.53	0.03	<0.01	0.82	0.82	**12600**
		02-Jun-16	1030	9.82	10.75	7.1	17340	20.2																																			
		27-Sep-16	1115	9.77	10.7	7.1	16670	22.8	0.09	<0.001	0.087	<0.001	0.0002	<0.001	<0.001	0.034	0.22	0.002	0.143	0.012	<0.01	0.242	<0.0001	7.58	18600	283	493	3330	42	201	4780	**1390**	<1	<1	1350	1350	191	2.5	<0.01	<0.01	0.63	0.63	**11800**
		27-Oct-16	1035	9.81	10.74	7.1	16590	22.5																																			
		25-Nov-16		9.75	10.68	7.1	16430	22.6																																			
		21-Dec-16	1115	9.74	10.67	7	16720	22.3																																			
		20-Jan-17	1220	9.77	10.7	7.1	16690	22.6																																			
		21-Feb-17				No access																																					
		29-Mar-17	1350	9.65	10.58	7.1	15870	22.1																																			
		27-Apr-17	1015	9.75	10.68	7	16490	20.5																																			
		30-May-17	1110	9.73	10.66	7	16240	19.8																																			
		27-Jun-17	1115	9.76	10.69	7	16310	19.9																																			
		28-Jul-17	1030	9.73	10.66	7.1	16520	20																																			

Site ID	Piezometer / Water Bore	Date	Time	Depth to Water - mbgl	Depth to Stand - mbtoc	Field Parameters			Total Metals															Mercury (Hg) - mg/L	pH Lab	EC - Lab - µs/cm	Major Cations				Total Cations - meq/L	Major Anions						Total Anions - meq/L	Ionic Balance	Ammonia as Nitrogen (N)	Nitrite as N - mg/L	Nitrate as N - mg/L	NOX as N - mg/L	Total Dissolved Solids
						pH - Field	EC - Field - µs/cm	Temp - Field - °C	Aluminium (Al) - mg/L	Arsenic (As) - mg/L	Barium (Ba) - mg/L	Beryllium (Be) - mg/L	Cadmium (mg/L)	Chromium (Cr) - mg/L	Cobalt (Co) - mg/L	Copper (Cu) - mg/L	Iron (Fe) - mg/L	Lead (Pb) - mg/L	Manganese (Mn) - mg/L	Nickel (Ni) - mg/L	Vanadium (V) - mg/L	Zinc (Zn) - mg/L				Calcium (Ca) - mg/L	Magnesium (Mg) - mg/L	Sodium (Na) - mg/L	Potassium (K) - mg/L		Chloride (Cl) - mg/L	Sulfate (SO4) - mg/L	Hydroxide Alkalinity as CaCO3 - mg/L	Carbonate Alkalinity as CaCO3 - mg/L	Bicarbonate Alkalinity as CaCO3 - mg/L	Alkalinity - mg/L							
ANZECC Guideline - stock drinking water									*5*	*0.5*			*0.01*	*1*	*1*	*1*		*0.1*		*1*		*20*	*0.002*			*1000*						*1000*								*1500*	*400*		*4000*
		28-Aug-17	1040	9.75	10.68	7	17320	20.3																																		
		25-Sep-17	1110	9.64	10.57	7.1	17320	22.1	0.03	<0.001	0.084	<0.001	0.0001	<0.001	0.001	0.02	0.18	<0.001	0.182	0.01	<0.01	0.191	<0.0001	7.63	19900	282	472	3280	44	197	4920	**1120**	<1	<1	948	948	181	4.15	0.02	<0.01	0.68	0.68	**10500**
		27-Oct-17	1045	9.70	10.63	7.1	17140	22.4																																		
		28-Nov-17	1125	9.78	10.71	6.9	17560	22																																		
		20-Dec-17	1015	9.71	10.64	6.9	17720	22.3																																		
		31-Jan-18	1000	9.80	10.73	6.8	18130	22.1																																		
		27-Feb-18	1000	9.76	10.69	6.8	18020	21.7																																		
		28-Mar-18	1020	9.77	10.7	6.8	18100	21.6																																		
		26-Apr-18	1025	9.76	10.69	6.8	18270	21.7																																		
		28-May-18	1025	9.80	10.73	6.8	17680	20.9																																		
		25-Jun-18				No access																																				
		30-Jul-18	930	9.77	10.7	6.9	17440	20.8																																		
		30-Aug-18	915			6.8	17150	20.8																																		
		26-Sep-18	1010	9.75	10.68	6.9	17330	20.3	0.05	<0.001	0.072	<0.001	<0.0001	<0.001	0.004	0.013	0.54	0.001	0.195	0.009	<0.01	0.105	<0.0001	7.36	20000	259	398	2790	38	168	5490	**1180**	<1	<1	1140	1140	202	9.24	0.03	<0.01	0.21	0.21	**8900**
		30-Oct-18	900	9.76	10.69	6.9	18490	21.9																																		
		29-Nov-18	1100	9.72	10.65	6.9	18560	21.6																																		
		20-Dec-18	1035	9.73	10.66	6.9	18900	22.6																																		
		31-Jan-19				No access																																				
		25-Feb-19				No access																																				
		25-Mar-19				No access																																				
		26-Apr-19				No access																																				
		30-May-19	1020	9.92	10.85	6.9	17100	21.1																																		
		26-Jun-19	940	9.87	10.8	6.9		20.6																																		
		30-Jul-19	900	9.88	10.81	6.9	17750	20.9																																		
		29-Aug-19	920	9.90	10.83	6.9	17790	21.2																																		
		26-Sep-19	930	9.90	10.83	6.8	17690	21.5	0.06	<0.001	0.076	<0.001	<0.0001	<0.001	0.006	0.008	0.44	0.007	0.156	0.011	<0.01	0.104	<0.0001	7.63	19200	302	499	3390	44	205	5090	1340	<1	<1	1150	1150	194	2.57	0.11	<0.01	0.12	0.12	11600
		29-Oct-19	845	9.92	10.85	6.8	17720	21.6																																		
		28-Nov-19	920	1083.07	1084	6.8	17760	21.8																																		
		18-Dec-19	920	9.92	10.85	6.8	15730	21.4																																		
P4	**NG4**	**11-Mar-15**	1245	17.86	18.74	6.6	23460	24.4	0.59	<0.010	0.166	<0.010	<0.0010	<0.010	0.013	0.03	2.65	0.025	2.58	0.014	<0.10	0.111	<0.0001	7.23	24400	223	553	4580	90	258	7540	**1620**	<1	<1	2170	2170	290	5.79	4.67	0.08	3.74	3.82	**15700**
		04-Jun-15	1400	17.91	18.79	6.7	23370	21.9																																		
Depth	**30**	**09-Sep-15**	1035	17.76	18.64	6.6	25280	21.8	<0.10	<0.010	0.103	<0.010	<0.0010	<0.010	<0.010	<0.010	2.17	<0.010	1.87	<0.010	<0.10	0.084	<0.0001	7.19	26400	221	513	4200	81	238	5640	**1660**	<1	<1	2200	2200	238	0.06	3.48	<0.01	0.29	0.29	**16900**
Format.	**Napperby**	**09-Dec-15**	1135	17.75	18.63	6.5	25400	22.8																																		
		08-Mar-16	1150	17.73	18.61	7	23970	23.3	0.17	<0.010	0.153	<0.010	<0.0010	<0.010	<0.010	0.058	0.65	<0.010	2.38	0.011	<0.10	0.365	<0.0001	7.46	26000	242	593	4800	91	272	6930	**1860**	<1	<1	1890	1890	272	0.02	2.45	0.23	6.51	6.74	**17600**
		01-Jun-16	1220	17.68	18.56	7	23560	21.7																																		
		26-Sep-16	1430	17.55	18.43	6.9	24270	21.5	0.1	0.002	0.114	<0.001	0.0002	<0.001	0.012	0.029	0.43	0.008	2.55	0.016	<0.01	0.346	<0.0001	7.23	25800	276	670	5070	92	292	7400	**1560**	<1	<1	2390	2390	289	0.46	2.56	<0.01	0.53	0.53	**16800**
		26-Oct-16	1325	17.59	18.47	6.8	24120	21.9																																		
		23-Nov-16	1310	17.48	18.36	6.7	24050	23.1																																		
		19-Dec-16	1315	17.53	18.41	6.7	24140	23																																		
		24-Jan-17	1055	17.52	18.4	6.7	24250	22.8																																		
		21-Feb-17	1330	17.54	18.42	6.9	24010	22.2																																		
		28-Mar-17	1315	17.46	18.34	6.7	23810	23.2																																		
		20-Apr-17	1320	17.51	18.39	6.7	23940	22.5																																		
		24-May-17	1355	17.49	18.37	6.6	24230	22.7																																		
		30-Jun-17	1210	17.48	18.36	6.6	24120	21.3																																		
		28-Jul-17	1110	17.48	18.36	6.5	24860	21.2																																		
		28-Aug-17	1115	17.50	18.38	6.5	23960	21.8																																		
		25-Sep-17	1145	17.45	18.33	6.6	24480	22.1	0.02	<0.001	0.076	<0.001	<0.0001	<0.001	0.013	0.001	2.98	<0.001	1.71	0.008	<0.01	0.018	<0.0001	5.05	28100	218	591	4840	87	272	6820	**1550**	<1	<1	326	326	231	8.16	1.42	<0.01	<0.01	<0.01	**17600**
		27-Oct-17	1115	17.42	18.3	6.7	24560	22.7																																		
		28-Nov-17	930	17.41	18.29	6.6	24760	22.6																																		
		21-Dec-17	940	17.38	18.26	6.6	24560	23.4																																		
		25-Jan-18	1330	17.36	18.24	6.6	24370	23.6																																		
		20-Feb-18	1145	17.34	18.22	6.7	24410	22.9																																		
		27-Mar-18	1340	17.38	18.26	6.7	24450	22.8																																		
		24-Apr-18	1250	17.44	18.32	6.6	24200	22.4																																		
		28-May-18	1055	17.41	18.29	6.6	24890	21.5																																		
		25-Jun-18	1330	17.44	18.32	6.6	24698	22.2																																		
		30-Jul-18	1010	17.38	18.26	6.9	24480	21.2																																		
		27-Aug-18	930	17.35	18.23	6.9	24160	21.6																																		
		20-Sep-18	1300	17.40	18.28	6.9	24900	22	0.86	0.002	0.091	<0.001	<0.0001	0.003	0.012	0.039	4.32	0.038	1.51	0.011	<0.01	0.167	<0.0001	7.32	26200	199	572	4860	87	271	8350	**1730**	<1	<1	1960	1960	311	6.9	1.21	<0.01	0.27	0.27	**20100**
		29-Oct-18	1210	17.26	18.14	6.9	24720	22.8																																		
		29-Nov-18	1130	17.27	18.15	6.8	24500	22																																		
		14-Dec-18	1245	17.26	18.14	6.8	24930	22.7																																		
		25-Jan-19	1145	17.27	18.15	6.7	23860	23.9																																		
		28-Feb-19	1220	17.31	18.19	6.7	24320	22.7																																		
		28-Mar-19	1345	17.27	18.15	6.7	24180	22.5																																		
		26-Apr-19	1220	17.30	18.18	6.8	24250	22.6																																		
		31-May-19	915	17.35	18.23	6.8	242500	21.9																																		
		24-Jun-19	1335	17.38	18.26	6.8	24100	21.3																																		
		29-Jul-19	1135	17.44	18.32	6.8	24310	20.9																																		
		23-Aug-19	1150	17.32	18.2	6.8	24750	21.7																																		
		23-Sep-19	1215	17.36	18.24	6.7	24800	23.1	0.13	<0.001	0.106	<0.001	<0.001	0.002	0.008	0.006	1.67	0.003	1.36	0.008	<0.01	0.171	<0.0001	7.32	27000	182	632	5240	96	291	8020	**1830**	<1	<1	1940	1940	303	1.95	0.91	<0.01	0.19	0.19	**1690**
		28-Oct-19	1215	17.26	18.14	6.8	24400	22.7																																		
		27-Nov-19	930	17.18	18.06	6.8	25320	21.2																																		
		16-Dec-19	930	17.10	17.98	6.8	25720	22.3																																		
P5	**NG5**	**11-Mar-15**	1310	22.60	23.54	6.6	26480	25.8	<0.10	<0.010	0.241	<0.010	<0.0010	<0.010	0.016	<0.010	<0.50	<0.010	2.06	0.03	<0.10	<0.050	<0.0001	7.25	27100	247	534	5340	84	291	8900	932	<1	<1	2340	2340	317	4.38	2.73	<0.01	0.1	0.1	**17200**
		03-Jun-15	1035	22.86	23.8	6.7	26120	19.8																																		
Depth	**30**	**10-Sep-15**	1115	22.74	23.68	6.6	26830	22.7	<0.10	<0.010	0.189	<0.010	<0.0010	<0.010	0.01	<0.010	<0.50	<0.010	1.7	0.018	<0.10	0.07	<0.0001	6.97	27800	257	466	5230	78	281	8660	812	<1	<1	2190	2190	305	4.17	3.38	<0.01	<0.01	<0.01	**17000**
Format.	**Pamboola**	**09-Dec-15**	1230	22.71	23.65	6.6	27340	22.6																																		
		09-Mar-16	1120	22.68	23.62	6.8	26310	24.1	0.52	0.002	0.236	<0.001	0.0001	0.001	0.008	0.073	1.26	0.007	1.78	0.018	<0.01	0.154	<0.0001	7.59	809	237	498	4910	82	268	7780	950	<1	<1	2160	2160	282	2.55	5.45	0.04	0.1	0.14	**16900**
		01-Jun-16	1240	22.67	23.61	6.7	25410	21.8																																		
		26-Sep-16	1400	22.81	23.75	6.6	25710	22.9	0.08	0.002	0.163	<0.001	<0.0001	<0.001	0.012	0.014	0.14	0.002	2.16	0.035	<0.01	0.093	<0.0001	7.3	27300	240	593	5420	81	299	8400	964	<1	<1	2320	2320	303	0.81	1.75	<0.01	0.64	0.64	**17500**
		26-Oct-16	1050	22.73	23.67	6.6	25610	23.1																																		
		23-Nov-16	1055	22.69	23.63	6.7	25440	22.9																																		
		19-Dec-16	1055	22.87	23.81	6.7	25270	23.4																																		
		20-Jan-17	1100	22.92	23.86	6.6	25380	23.4																																		
		21-Feb-17	1100	22.98	23.92	6.6	25790	23.1																																		
		28-Mar-17	1100	23.00	23.94	6.7	25560	22.9																																		
		20-Apr-17	1110	23.03	23.97	6.7	25380	22.1																																		
		24-May-17	1120	22.91	23.85	6.6	25560	22.3																																		
		30-Jun-17	1140	22.93	23.87	6.9	24730	20.4																																		
		25-Jul-17	1145	23.00	23.94	6.7	25660	22.7																																		
		24-Aug-17	1135	23.00	23.94	6.8	25290	22.4																																		
		21-Sep-17	1135	23.06	24	6.8	25520	23.1	0.18	0.001	0.166	<0.001	<0.0001	<0.001	0.014	0.005	0.41	<0.001	1.75	0.024	<0.01	0.038	<0.0001	7.35	26800	226	549	5470	80	296	8270	918	<1	<1	2440	2440	301	0.79	3.33	<0.01	0.08	0.08	**16400**
		25-Oct-17	1140	23.26	24.2	6.9	25460	23.1																																		
		24-Nov-17	1130	23.31	24.25	6.7	26100	23.7																																		
		19-Dec-17	1120	23.32	24.26	6.6	25900	23.3																																		
		25-Jan-18	1115	23.30	24.24	6.7	25400	24																																		
		20-Feb-18	1120	23.27	24.21	6.7	25710	22.8																																		
		27-Mar-18	1110	23.26	24.2	6.6	25690	22.3																																		
		24-Apr-18	1220	23.18	24.12	6.5	25420	22.9																																		
		28-May-18	1120	23.43	24.37	6.6	25610	21.8																																		
		25-Jun-18	1115	23.45	24.39	6.8	26030	21.2																																		
		25-Jul-18	1115	23.41	24.35	6.7	25850	21.8																																		
		27-Aug-18	1010	23.38	24.32	6.6	25320	22.2																																		
		20-Sep-18	1140	23.44	24.38	6.6	25300	22.8	0.34	0.002	0.196	<0.001	<0.0001	<0.001	0.014	0.016	1.27	0.004	1.54	0.022	<0.01	0.1	<0.0001	6.94	26200	200	468	4770	72	258	8770	785	<1	<1	2040	2040	304	8.3	3.39	<0.01	0.16	0.16	**20000**
		29-Oct-18	1140	23.38	24.32	6.8	25180	23																																		
		26-Nov-18	1140	23.38	24.32	6.8	24800	22.9																																		
		14-Dec-18	1215	23.31	24.25	6.8	25780	23.9																																		
		25-Jan-19	1200	23.12	24.06	6.8	24130	24.2																																		

Site ID	Piezometer / Water Bore	Date	Time	Depth to Water - mbgl	Depth to Stand - mbtoc	Field Parameters			Total Metals																Mercury (Hg) - mg/L	pH Lab	EC - Lab - µs/cm	Major Cations				Total Cations - meq/L	Major Anions						Total Anions - meq/L	Ionic Balance	Ammonia as Nitrogen (N)	Nitrite as N - mg/L	Nitrate as N - mg/L	NOX as N - mg/L	Total Dissolved Solids
						pH - Field	EC - Field - µs/cm	Temp - Field - °C	Aluminium (Al) - mg/L	Arsenic (As) - mg/L	Barium (Ba) - mg/L	Beryllium (Be) - mg/L	Cadmium (mg/L)	Chromium (Cr) - mg/L	Cobalt (Co) - mg/L	Copper (Cu) - mg/L	Iron (Fe) - mg/L	Lead (Pb) - mg/L	Manganese (Mn) - mg/L	Nickel (Ni) - mg/L	Vanadium (V) - mg/L	Zinc (Zn) - mg/L				Calcium (Ca) - mg/L	Magnesium (Mg) - mg/L	Sodium (Na) - mg/L	Potassium (K) - mg/L		Chloride (Cl) - mg/L	Sulfate (SO4) - mg/L	Hydroxide Alkalinity as CaCO3 - mg/L	Carbonate Alkalinity as CaCO3 - mg/L	Bicarbonate Alkalinity as CaCO3 - mg/L	Alkalinity - mg/L							
ANZECC Guideline - stock drinking water									*5*	*0.5*			*0.01*	*1*	*1*	*1*		*0.1*		*1*		*20*	*0.002*			*1000*					*1000*								*1500*	*400*		*4000*
		25-Feb-19	1150	23.12	24.06	6.8	24260	23.2																																	
		25-Mar-19	1150	23.11	24.05	6.8	23800	22.9																																	
		26-Apr-19	1140	22.93	23.87	6.9	24680	22.7																																	
		28-May-19	1140	22.94	23.88	6.8	24660	22.5																																	
		24-Jun-19	1040	22.96	23.9	6.9	24400	21.5																																	

Site ID	Piezometer / Water Bore	Date	Time	Depth to Water - mbgl	Depth to Stand - mbtoc	Field Parameters			Total Metals															Mercury (Hg) - mg/L	pH Lab	EC - Lab - µs/cm	Major Cations				Total Cations - meq/L	Major Anions						Total Anions - meq/L	Ionic Balance	Ammonia as Nitrogen (N)	Nitrite as N - mg/L	Nitrate as N - mg/L	NOX as N - mg/L	Total Dissolved Solids
						pH - Field	EC - Field - µs/cm	Temp - Field - °C	Aluminium (Al) - mg/L	Arsenic (As) - mg/L	Barium (Ba) - mg/L	Beryllium (Be) - mg/L	Cadmium (mg/L)	Chromium (Cr) - mg/L	Cobalt (Co) - mg/L	Copper (Cu) - mg/L	Iron (Fe) - mg/L	Lead (Pb) - mg/L	Manganese (Mn) - mg/L	Nickel (Ni) - mg/L	Vanadium (V) - mg/L	Zinc (Zn) - mg/L				Calcium (Ca) - mg/L	Magnesium (Mg) - mg/L	Sodium (Na) - mg/L	Potassium (K) - mg/L		Chloride (Cl) - mg/L	Sulfate (SO4) - mg/L	Hydroxide Alkalinity as CaCO3 - mg/L	Carbonate Alkalinity as CaCO3 - mg/L	Bicarbonate Alkalinity as CaCO3 - mg/L	Alkalinity - mg/L							
ANZECC Guideline - stock drinking water									*5*	*0.5*			*0.01*	*1*	*1*	*1*		*0.1*		*1*		*20*	*0.002*			*1000*						*1000*								*1500*	*400*		*4000*
		29-Jul-19	910	22.98	23.92	6.9	25230	21.1																																		
		23-Aug-19	1115	23.03	23.97	6.9	25190	21.6																																		
		26-Sep-19	1120	23.03	23.97	6.9	26750	21.4	0.17	0.002	0.162	<0.001	<0.0001	<0.001	0.012	0.008	1.44	0.006	1.51	0.018	<0.01	0.051	<0.0001	7.56	27500	231	529	5120	79	280	7480	936	<1	<1	2160	2160	274	1.11	3.06	<0.01	0.22	0.22	17200
		28-Oct-19	940	23.20	24.14	6.8	26540	22.3																																		
		27-Nov-19	1000	23.17	24.11	6.9	26470	22.9																																		
		16-Dec-19	955	23.21	24.15	6.8	26050	23.6																																		
P6	NG6	12-Mar-15	1115			Dry																																			
		04-Jun-15	1120			Dry																																			
Depth	90	09-Sep-15	1100			Dry																																			
Format.	Pilliga Sand.	09-Dec-15	920			Dry																																			
		08-Mar-16	915			Dry																																			
		01-Jun-16	1025			Dry																																			
		28-Sep-16	915			Dry																																			
		26-Oct-16	1120			Dry																																			
		23-Nov-16	1120			Dry																																			
		19-Dec-16	1120			Dry																																			
		24-Jan-17	900			Dry																																			
		21-Feb-17	1130			Dry																																			
		28-Mar-17	1130			Dry																																			
		20-Apr-17	1140			Dry																																			
		24-May-17	1150			Dry																																			
		27-Jun-17	1150			Dry																																			
		25-Jul-17	1215			Dry																																			
		24-Aug-17	1200			Dry																																			
		21-Sep-17	1200			Dry																																			
		25-Oct-17	1210			Dry																																			
		24-Nov-17	1155			Dry																																			
		19-Dec-17	1145			Dry																																			
		25-Jan-18	1140			Dry																																			
		27-Feb-18	1025			Dry																																			
		27-Mar-18	1135			Dry																																			
		26-Apr-18	1100			Dry																																			
		25-May-18	920			Dry																																			
		25-Jun-18	1140			Dry																																			
		25-Jul-18	1145			Dry																																			
		29-Aug-18	1030			Dry																																			
		20-Sep-18	1210			Dry																																			
		30-Oct-18	940			Dry																																			
		26-Nov-18	1220			Dry																																			
		20-Dec-18	1110			Dry																																			
		24-Jan-19	925			Dry																																			
		28-Feb-19	915			Dry																																			
		28-Mar-19	1225			Dry																																			
		30-Apr-19	915			Dry																																			
		28-May-19	1215			Dry																																			
		24-Jun-19	1120			Dry																																			
		29-Jul-19	950			Dry																																			
		29-Aug-19	950			Dry																																			
		23-Sep-19	900			Dry																																			
		28-Oct-19	1010			Dry																																			
		28-Nov-19	950			Dry																																			
		16-Dec-19	1020			Dry																																			
P7	NG7	12-Mar-15	1130	63.21	64.15	7	302	24.1	1.23	<0.001	0.047	<0.001	<0.0001	0.006	0.003	0.01	2.01	0.009	0.05	0.006	<0.01	0.1	<0.0001	6.08	218	2	3	35	3	1.95	40	3	<1	<1	24	24	1.67		0.02	<0.01	0.13	0.13	120
		04-Jun-15	1140	63.03	63.97	7	346	23.5																																		
Depth	90	09-Sep-15	1130	63.03	63.97	7	195	22.4	0.06	<0.001	0.028	<0.001	<0.0001	0.001	0.002	0.007	0.35	0.009	0.011	0.002	<0.01	0.048	<0.0001	5.97	170	3	3	30	3	1.78	27	6	<1	<1	22	22	1.33	----	0.05	<0.01	0.07	0.07	112
Format.	Pilliga Sand.	09-Dec-15	950	63.03	63.97	6.9	153	21.6																																		
		08-Mar-16	945	63.08	64.02	6.1	173	22.1	0.06	<0.001	0.03	<0.001	<0.0001	0.001	0.002	0.015	0.09	0.001	0.007	0.002	<0.01	0.072	<0.0001	6.14	146	1	1	23	2	1.18	29	4	<1	<1	16	16	1.22	----	0.03	<0.01	0.14	0.14	100
		01-Jun-16	1050	62.10	63.04	6.1	256	20.3																																		
		28-Sep-16	1015	62.49	63.43	6	198	21.9	1.03	<0.001	0.048	<0.001	0.0002	0.007	0.002	0.184	1.85	**0.208**	0.06	0.007	<0.01	0.367	<0.0001	6.13	202	3	2	31	3	1.74	34	7	<1	<1	30	30	1.7	----	0.03	<0.01	0.24	0.24	120
		26-Oct-16	1150	63.04	63.98	6	288	21.9																																		
		23-Nov-16	1150	63.02	63.96	6.1	295	21.8																																		
		19-Dec-16	1150	62.99	63.93	6.1	310	22.2																																		
		24-Jan-17	930	63.07	64.01	6.2	389	22.3																																		
		21-Feb-17	1200	63.13	64.07	6.2	402	22.1																																		
		28-Mar-17	1200	63.04	63.98	6.3	415	22.5																																		
		20-Apr-17	1210	63.14	64.08	6.4	435	22.2																																		
		24-May-17	1215	63.02	63.96	6.3	510	21.8																																		
		27-Jun-17	1220	63.06	64	6.3	512	21.7																																		
		25-Jul-17	1245	63.08	64.02	6.2	393	21.5																																		
		24-Aug-17	1230	63.03	63.97	6.2	415	21.4																																		
		21-Sep-17	1230	63.03	63.97	6.2	247	22	0.35	<0.001	0.033	<0.001	<0.0001	0.002	0.002	0.004	0.7	0.009	0.019	0.002	<0.01	0.018	<0.0001	5.65	197	4	4	42	2	2.41	39	3	<1	<1	23	23	1.62	----	0.02	<0.01	0.12	0.12	142
		25-Oct-17	1235	63.01	63.95	6.3	296	22.3																																		
		24-Nov-17	1225	63.05	63.99	6.3	288	22.1																																		
		19-Dec-17	1215	63.03	63.97	6.3	339	22.2																																		
		25-Jan-18	1210	63.04	63.98	6.3	357	22.5																																		
		27-Feb-18	1050	63.09	64.03	6.3	403	22.4																																		
		27-Mar-18	1200	63.06	64	6.4	451	21.8																																		
		26-Apr-18	1130	63.07	64.01	6.5	460	21.7																																		
		25-May-18	955	63.13	64.07	6.5	465	21.2																																		
		25-Jun-18	1210	63.14	64.08	6.4	468	21.3																																		
		25-Jul-18	1215	63.05	63.99	6.4	374	21.6																																		
		29-Aug-18	1100	63.08	64.02	6.2	280	21																																		
		20-Sep-18	1040	63.07	64.01	6.3	256	20.6	0.52	<0.001	0.032	<0.001	<0.0001	0.002	0.002	0.002	0.67	0.004	0.025	0.002	<0.01	0.022	<0.0001	5.96	232	2	3	30	2	1.7	38	7	<1	<1	15	15	1.52	----	0.02	<0.01	0.15	0.15	153
		30-Oct-18	1010	63.11	64.05	6.4	387	20.9																																		
		26-Nov-18	1250	62.99	63.93	6.4	395	20.5																																		
		20-Dec-18	1140	63.05	63.99	6.5	430	20.6																																		
		24-Jan-19	1000	63.09	64.03	6.2	237	22.4																																		
		28-Feb-19	945	63.18	64.12	6.3	310	22.3																																		
		28-Mar-19	1250	63.16	64.1	6.4	370	22.1																																		
		30-Apr-19	945	63.20	64.14	6.5	395	22																																		
		28-May-19	1250	63.07	64.01	6.4	310	20.9																																		
		24-Jun-19	1150	63.06	64	6.4	305	20.3																																		
		29-Jul-19	1000	63.09	64.03	6.2	310	20.5																																		
		29-Aug-19	1020	63.10	64.04	6.4	340	20.7																																		
		23-Sep-19	945	63.15	64.09	6.4	200	22.8	0.38	<0.001	0.038	<0.001	<0.0001	0.008	0.002	0.014	0.58	0.029	0.028	0.002	<0.01	0.348	<0.0001	6.26	155	1	2	22	2	1.22	30	5	<1	<1	24	24	1.43	----	0.03	0.06	0.33	0.39	93
		28-Oct-19	1040	63.12	64.06	6.5	280	22.9																																		
		28-Nov-19	1020	63.10	64.04	6.6	310	21.9																																		
		16-Dec-19	1045	63.09	64.03	6.7	275	22.2																																		
P8	NC-110S	12-Mar-15	1230	50.30	51.34	7.2	675	23.4	0.51	<0.001	0.407	<0.001	<0.0001	<0.001	0.003	0.014	0.88	0.005	0.565	0.002	<0.01	0.04	<0.0001	7.47	671	18	5	120	10	6.79	49	11	<1	<1	271	271	7.03	1.78	0.35	<0.01	0.16	0.16	303
		04-Jun-15	1230	50.28	51.32	7.2	576	20.7																																		
Depth	65	09-Sep-15	1240	50.31	51.35	7	427	22.3	0.19	<0.001	0.094	<0.001	<0.0001	<0.001	<0.001	0.006	0.49	0.002	0.115	<0.001	<0.01	0.073	<0.0001	7.21	409	26	13	69	6	5.52	42	10	<1	<1	129	129	3.97	16.3	0.07	<0.01	1.32	1.32	226
Format.	Purlawaugh	09-Dec-15	1105	50.33	51.37	7	447	21.2																																		
		08-Mar-16	1105	50.34	51.38	6.7	459	21.9	0.81	<0.001	0.209	<0.001	<0.0001	0.001	0.004	0.028	2.57	0.01	0.855	0.003	<0.01	0.138	<0.0001	7.21	476	19	6	74	7	4.84	48	8	<1	<1	143	143	4.38	4.99	0.15	<0.01	0.4	0.4	283
		01-Jun-16	1150	50.37	51.41	6.9	488	19.8																																		
		28-Sep-16	1120	50.25	51.29	6.8	498	20.5	0.73	0.003	0.263	<0.001	<0.0001	0.002	0.005	0.035	3.34	0.017	0.904	0.019	<0.01	0.136	<0.0001	7.12	507	22	6	75	8	5.06	46	8	<1	<1	178	178	5.02	0.35	0.15	<0.01	0.62	0.62	252
		26-Oct-16	1255	50.29	51.33	7	558	21.8																																		
		23-Nov-16	1235	50.32	51.36	7	637	21.2																																		
		19-Dec-16	1240	50.33	51.37	7	587	21.7																																		
		24-Jan-17	1030	50.33	51.37	6.9	580	21.3																																		
		21-Feb-17	1300	50.38	51.42	6.9	593	21.5																																		

Site ID	Piezometer / Water Bore	Date	Time	Depth to Water - mbgl	Depth to Stand - mbtoc	Field Parameters			Total Metals															Major Cations					Major Anions													
						pH - Field	EC - Field - µs/cm	Temp - Field - °C	Aluminium (Al) - mg/L	Arsenic (As) - mg/L	Barium (Ba) - mg/L	Beryllium (Be) - mg/L	Cadmium (mg/L)	Chromium (Cr) - mg/L	Cobalt (Co) - mg/L	Copper (Cu) - mg/L	Iron (Fe) - mg/L	Lead (Pb) - mg/L	Manganese (Mn) - mg/L	Nickel (Ni) - mg/L	Vanadium (V) - mg/L	Zinc (Zn) - mg/L	Mercury (Hg) - mg/L	pH Lab	EC - Lab - µs/cm	Calcium (Ca) - mg/L	Magnesium (Mg) - mg/L	Sodium (Na) - mg/L	Potassium (K) - mg/L	Total Cations - meq/L	Chloride (Cl) - mg/L	Sulfate (SO4) - mg/L	Hydroxide Alkalinity as CaCO3 - mg/L	Carbonate Alkalinity as CaCO3 - mg/L	Bicarbonate Alkalinity as CaCO3 - mg/L	Alkalinity - mg/L	Total Anions - meq/L	Ionic Balance	Ammonia as Nitrogen (N)	Nitrite as N - mg/L	Nitrate as N - mg/L	NOX as N - mg/L	Total Dissolved Solids
ANZECC Guideline - stock drinking water									*5*	*0.5*			*0.01*	*1*	*1*	*1*		*0.1*		*1*		*20*	*0.002*			*1000*						*1000*								*1500*	*400*		*4000*
		28-Mar-17	1250	50.32	51.36	6.8	958	21.2																																		
		20-Apr-17	1250	50.42	51.46	6.7	756	21.7																																		
		24-May-17	1320	50.33	51.37	6.7	694	20.8																																		
		27-Jun-17	1315	50.40	51.44	6.7	617	19.9																																		
		25-Jul-17	1345	50.41	51.45	6.7	624	20																																		
		24-Aug-17	1320	50.39	51.43	6.7	621	20.6																																		
		21-Sep-17	1325	50.39	51.43	6.5	612	21.8	0.17	0.003	0.276	<0.001	<0.0001	<0.001	0.004	0.016	2.49	0.014	1.28	0.003	<0.01	0.117	<0.0001	7.07	612	24	7	92	8	5.98	64	6	<1	<1	211	211	6.15	1.37	0.18	<0.01	0.02	0.02	364
		25-Oct-17	1325	50.37	51.41	6.5	620	22																																		
		24-Nov-17	1320	50.40	51.44	6.6	623	21.9																																		
		19-Dec-17	1305	50.39	51.43	6.6	618	22																																		
		25-Jan-18	1300	50.38	51.42	6.7	759	21.9																																		
		27-Feb-18	1150	50.41	51.45	6.7	682	21.2																																		
		27-Mar-18	1300	50.57	51.61	6.8	713	21.2																																		
		26-Apr-18	1230	50.41	51.45	6.8	720	21.2																																		
		25-May-18	1050	50.44	51.48	6.7	715	20.7																																		
		25-Jun-18	1300	50.52	51.56	6.9	725	20.2																																		
		25-Jul-18	1315	50.47	51.51	6.9	657	20.4																																		
		29-Aug-18	1200	50.46	51.5	6.9	680	20.5																																		
		26-Sep-18	1150	50.44	51.48	6.8	615	20	0.16	0.001	0.283	<0.001	<0.0001	<0.001	<0.001	0.02	0.9	0.013	0.69	0.002	<0.01	0.099	<0.0001	6.99	654	24	6	95	7	6	62	8	<1	<1	172	172	5.35	5.73	0.11	<0.01	0.06	0.06	446
		30-Oct-18	1100	50.48	51.52	6.8	620	20.3																																		
		26-Nov-18	1345	50.37	51.41	6.8	605	20.4																																		
		20-Dec-18	1240	50.40	51.44	6.7	729	21.4																																		
		24-Jan-19	1110	50.44	51.48	6.6	665	22.1																																		
		28-Feb-19	1050	50.51	51.55	6.5	660	21.4																																		
		28-Mar-19	950	50.49	51.53	6.6	674	21.9																																		
		30-Apr-19	1040	50.48	51.52	6.5	695	20.7																																		
		28-May-19	1410	50.46	51.5	6.6	625	20.3																																		
		24-Jun-19	1300	50.54	51.58	6.5	660	19.6																																		
		29-Jul-19	1100	50.51	51.55	6.6	655	19.9																																		
		24-Jan-03	1120	50.53	51.57	6.6	245	20.2																																		
		23-Sep-19	1120	50.54	51.58	6.6	705	22.4	3.13	0.003	0.284	<0.001	0.0001	0.009	0.003	0.079	5.01	0.151	0.369	0.01	<0.01	0.516	<0.0001	7.06	740	27	8	109	8	3.82	80	9	<1	<1	200	200	6.44	3.82	0.54	<0.01	0.34	0.34	431
		28-Oct-19	1140	50.58	51.62	6.8	840	21.2																																		
		28-Nov-19	1100	50.61	51.65	6.9	795	21.3																																		
		16-Dec-19	1130	50.57	51.61	7	595	21.8																																		
P9	**GWB5S**	**13-Mar-15**	1100	20.91	21.72	6.7	21190	23.7	1.13	0.002	0.09	<0.001	0.0002	0.014	0.002	0.073	5.34	0.028	0.17	0.011	<0.01	0.288	<0.0001	6.98	22000	355	475	4130	53	238	6860	**1810**	<1	<1	709	709	245	1.58	1.64	<0.01	0.44	0.44	**14000**
		03-Jun-15	1215	21.40	22.21	6.9	20160	21.5																																		
Depth	**30**	**08-Sep-15**	1305	23.41	24.22	6.9	19870	22.1	0.59	<0.010	0.077	<0.010	<0.0010	<0.010	<0.010	<0.010	6.73	<0.010	0.151	<0.010	<0.10	0.055	<0.0001	7.55	21600	354	340	3190	45	186	5250	**1610**	<1	<1	677	677	195	2.53	1.91	<0.01	0.02	0.02	**14400**
Format.	**Purlawaugh**	**14-Dec-15**	1050	24.01	24.82	7	19820	23.4																																		
		09-Mar-16	1145	24.32	25.13	7.2	20930	23.2	0.55	0.001	0.73	<0.0001	<0.0001	0.003	0.001	0.034	5.5	0.006	0.176	0.005	<0.01	0.114	<0.0001	7.51	22100	401	443	3710	50	219	6040	**1900**	<1	<1	770	770	225	1.41	1.9	0.04	<0.01	0.02	**14000**
		02-Jun-16	1130	24.89	25.7	7.2	20760	21.1																																		
		26-Sep-16	1100	24.87	25.68	7.1	18540	22.1	0.23	0.001	0.072	<0.001	<0.0001	0.001	<0.001	0.012	3.79	0.002	0.151	0.003	<0.01	0.126	<0.0001	7.47	21800	412	498	3850	48	230	6350	**1790**	<1	<1	812	812	233	0.53	1.54	<0.01	0.42	0.42	**14400**
		25-Oct-16	1050	25.12	25.93	7	18630	22.4																																		
		24-Nov-16	1055	24.95	25.76	7	18790	22.6																																		
		20-Dec-16	1040	25.08	25.89	7.1	18630	23.4																																		
		25-Jan-17	1045	25.11	25.92	7	19200	23.2																																		
		22-Feb-17	1150	25.40	26.21	6.9	19290	23.5																																		
		29-Mar-17	1020	25.47	26.28	6.8	19270	22.6																																		
		26-Apr-17	1125	25.48	26.29	6.7	19350	22.7																																		
		29-May-17	1120	25.55	26.36	6.7	19450	21.7																																		
		29-Jun-17	1235	25.66	26.47	6.6	19240	21.8																																		
		26-Jul-17	1045	25.66	26.47	6.7	19320	22																																		
		29-Aug-17	1040	25.79	26.6	6.7	19840	22																																		
		26-Sep-17	1020	25.68	26.49	6.9	19740	22.4	0.48	<0.001	0.047	<0.001	<0.0001	<0.001	<0.001	0.006	5.56	0.002	0.15	0.002	<0.01	0.042	<0.0001	7.56	22800	334	454	3870	52	224	6020	**1680**	<1	<1	606	606	217	1.54	1.64	<0.01	0.14	0.14	**15600**
		26-Oct-17	1020	25.64	26.45	6.9	19290	22.8																																		
		27-Nov-17	1030	25.69	26.5	6.7	19920	22.4																																		
		20-Dec-17	1135	25.66	26.47	6.8	19820	22.8																																		
		30-Jan-18	1025	25.68	26.49	6.8	19870	23.3																																		
		28-Feb-18	1000	25.71	26.52	6.8	19730	22.3																																		
		28-Mar-18	1150	25.76	26.57	6.7	19980	22.9																																		
		30-Apr-18	1015	25.79	26.6	6.7	20180	22.2																																		
		29-May-18	1015	25.79	26.6	6.6	20650	21.9																																		
		26-Jun-18	1230	25.82	26.63	6.8	20180	21.7																																		
		26-Jul-18	1150	25.80	26.61	6.8	20110	21																																		
		30-Aug-18	1025	25.91	26.72	6.7	20250	21.5																																		
		25-Sep-18	1000	25.93	26.74	6.7	20100	21.1	0.05	<0.001	0.029	<0.001	<0.0001	<0.001	<0.001	0.005	5.64	0.002	0.133	<0.001	<0.01	0.026	<0.0001	6.9	21900	349	465	3900	51	227	7030	**1820**	<1	<1	598	598	248	4.53	1.82	<0.01	0.08	0.08	**16800**
		30-Oct-18	1220	25.95	26.76	6.8	20180	22.9																																		
		28-Nov-18	1100	25.88	26.69	6.8	20420	22.7																																		
		21-Dec-18	955	25.91	26.72	6.8	20100	23.2																																		
		31-Jan-19	1005	25.99	26.8	6.8	20750	23.4																																		
		28-Feb-19	1120	26.06	26.87	6.8	20940	23.1																																		
		28-Mar-19	1015	25.92	26.73	6.8	20870	22.9																																		
		30-Apr-19	1155	26.07	26.88	6.9	20570	22.3																																		
		31-May-19	1035	26.09	26.9	6.9	19750	20.9																																		
		25-Jun-19	1010	26.12	26.93	6.7	19850	21.3																																		
		30-Jul-19	1200	26.08	26.89	6.9	19760	22.4																																		
		28-Aug-19	950	26.12	26.93	6.9	19800	22.1																																		
		24-Sep-19	1035	26.14	26.95	7	20870	22.8	0.02	<0.001	0.04	<0.001	<0.0001	<0.001	<0.001	0.002	4.95	0.001	0.136	<0.001	<0.01	0.057	<0.0001	7.09	22000	370	452	3820	48	224	6650	**1880**	<1	1	607	607	239	3.24	1.82	<0.01	0.15	0.15	**13900**
		29-Oct-19	1015	26.17	26.98	7	19950	22.8																																		
		28-Nov-19	1225	26.18	26.99	6.9	20100	23																																		
		16-Dec-19	1150	26.07	26.88	6.8	21240	23.2																																		
P10	**NC-030D**	**12-Mar-15**	1000	22.51	23.49	7.6	7040	23.6	0.11	<0.001	0.592	<0.001	<0.0001	0.001	<0.001	0.028	0.4	0.011	1.56	0.005	<0.01	0.093	<0.0001	7.98	7350	142	108	1460	25	80.1	1970	200	<1	<1	644	644	72.6	4.9	1.06	<0.01	0.28	0.28	3990
		04-Jun-15	1330	22.69	23.67	7.6	8080	21.3																																		
Depth	**130**	**09-Sep-15**	1325	22.58	23.56	7.5	8700	21.6	0.33	<0.001	0.731	<0.001	<0.0001	<0.001	<0.001	0.018	0.8	0.009	2.42	0.004	<0.01	0.237	<0.0001	7.8	9350	179	106	1460	22	81.7	2090	247	<1	<1	777	777	79.6	1.28	1.44	<0.01	0.02	0.02	**5350**
Format.	**Napperby**	**15-Dec-15**	1300	22.34	23.32	7.5	8610	22.6																																		
		08-Mar-16	1320	21.51	22.49	7.8	7330	24.4	0.21	<0.001	0.598	<0.001	<0.0001	<0.001	<0.001	0.02	0.8	0.009	1.97	0.006	<0.01	0.174	<0.0001	7.99	8810	180	111	1480	21	83	2360	281	<1	<1	677	677	85.9	1.74	1.27	<0.01	0.07	0.07	**5070**
		01-Jun-16	925	22.49	23.47	7.8	7260	20.5																																		
		27-Sep-16			too wet																																						
		26-Oct-16	1355	22.46	23.44	7.4	7110	22.1	0.04	<0.001	0.627	<0.001	<0.0001	<0.001	<0.001	<0.001	0.19	<0.001	2.04	0.002	<0.01	0.024	<0.0001	7.88	5730	115	75	988	16	55.3	1430	119	<1	<1	533	533	53.5	1.68	1.38	<0.01	0.02	0.02	3230
		23-Nov-16	1400	22.70	23.68	7.5	7180	22.8																																		
		19-Dec-16	1405	21.26	22.24	7.6	7540	22.3																																		
		24-Jan-17	1230	21.97	22.95	7.5	7110	22.6																																		
		21-Feb-17	1415	21.99	22.97	7.5	6960	22.3																																		
		28-Mar-17	1350	21.71	22.69	7.7	6810	21.6																																		
		20-Apr-17	1350	21.75	22.73	7.6	6810	22																																		
		30-May-17	1150	21.56	22.54	7.7	6980	20.2																																		
		27-Jun-17	1345	21.41	22.39	7.6	6820	20.6																																		
		25-Jul-17	1445	21.60	22.58	7.6	6870	21																																		
		28-Aug-17	1225	21.57	22.55	7.4	7540	20.7																																		
		21-Sep-17	1400	21.65	22.63	7.4	8910	22.6	0.55	<0.001	0.491	<0.001	<0.0001	0.002	<0.001	0.051	1.29	0.045	3.44	0.004	<0.01	0.29	<0.0001	7.83	9880	207	151	1900	25	106	2710	321	<1	<1	919	919	101	2.19	1.1	<0.01	0.01	0.01	**5460**
		25-Oct-17	1400	21.74	22.72	7.4	8830	22.5																																		
		24-Nov-17	1350	21.67	22.65	7.4	8820	22.6																																		
		19-Dec-17	1335	21.86	22.84	7.4	7750	23.1																																		
		31-Jan-18	1220	21.35	22.33	7.4	7820	23																																		
		27-Feb-18	1235	21.98	22.96	7.4	7900	22.3																																		
		27-Mar-18	1425	21.56	22.54	7.4	7720	22.3																																		
		26-Apr-18	1310	21.63	22.61	7.4	8270	21.4																																		
		25-May-18	1125	22.20	23.18	7.5	9120	21.4																																		
		25-Jun-18	1405	22.20	23.18	7.3	8920	21.4																																		
		25-Jul-18	1350	21.96	22.94	7.3	8870	21.9																																		
		29-Aug-18	1230	22.05	23.03	7.3	8520	21.7																																		

Site ID	Piezometer / Water Bore	Date	Time	Depth to Water - mbgl	Depth to Stand - mbtoc	Field Parameters			Total Metals															Mercury (Hg) - mg/L	pH Lab	EC - Lab - µs/cm	Major Cations				Total Cations - meq/L	Major Anions						Total Anions - meq/L	Ionic Balance	Ammonia as Nitrogen (N)	Nitrite as N - mg/L	Nitrate as N - mg/L	NOX as N - mg/L	Total Dissolved Solids
						pH - Field	EC - Field - µs/cm	Temp - Field - °C	Aluminium (Al) - mg/L	Arsenic (As) - mg/L	Barium (Ba) - mg/L	Beryllium (Be) - mg/L	Cadmium (mg/L)	Chromium (Cr) - mg/L	Cobalt (Co) - mg/L	Copper (Cu) - mg/L	Iron (Fe) - mg/L	Lead (Pb) - mg/L	Manganese (Mn) - mg/L	Nickel (Ni) - mg/L	Vanadium (V) - mg/L	Zinc (Zn) - mg/L				Calcium (Ca) - mg/L	Magnesium (Mg) - mg/L	Sodium (Na) - mg/L	Potassium (K) - mg/L		Chloride (Cl) - mg/L	Sulfate (SO4) - mg/L	Hydroxide Alkalinity as CaCO3 - mg/L	Carbonate Alkalinity as CaCO3 - mg/L	Bicarbonate Alkalinity as CaCO3 - mg/L	Alkalinity - mg/L							
ANZECC Guideline - stock drinking water									*5*	*0.5*			*0.01*	*1*	*1*	*1*		*0.1*		*1*		*20*	*0.002*			*1000*					*1000*								*1500*	*400*		*4000*
		26-Sep-18	1230	22.07	23.05	7.1	9100	21.1	0.06	<0.001	0.296	<0.001	<0.0001	<0.001	<0.001	0.002	0.59	0.003	3.76	0.002	<0.01	0.022	<0.0001	6.96	11200	205	128	1640	22	92.7	3020	372	<1	<1	743	743	108	7.54	0.92	<0.01	0.03	0.03	**6360**
		29-Oct-18	1245	22.40	23.38	7.5	8710	21.9																																		
		26-Nov-18	1425	21.00	21.98	7.4	9330	21.8																																		
		20-Dec-18	1315	21.09	22.07	7.5	9390	23																																		
		24-Jan-19	1205	22.49	23.47	7.4	9420	22.7																																		
		28-Feb-19	12.55	22.47	23.45	7.4	9100	21.9																																		
		25-Mar-19	1435	22.29	23.27	7.4	9470	22.1																																		
		26-Apr-19	1250	22.21	23.19	7.3	9870	21.9																																		
		31-May-19	1335	22.27	23.25	7.4	9720	21.3																																		
		24-Jun-19	1405	22.38	23.36	6.5	9250	20.4																																		
		29-Jul-19	1210	22.49	23.47	7.4	9380	21.2																																		
		23-Aug-19	1220	22.60	23.58	7.3	9520	21.2																																		
		23-Sep-19	1250	22.47	23.45	7.4	9850	21.6	0.1	<0.001	0.499	<0.001	<0.0001	0.002	0.024	0.011	1.66	0.011	3.71	0.003	<0.01	0.045	<0.0001	7.64	10700	189	157	1880	27	111	3100	415	<1	<1	762	762	111	3	0.98	<0.01	0.03	0.03	**5740**
		28-Sep-19	1300	22.53	23.51	7.4	9900	22.3																																		
		27-Nov-19	1155	22.58	23.56	7.5	9720	21.4																																		
		16-Dec-19	1340	22.70	23.68	7.5	8830	22.7																																		
P11	NC-030S	12-Mar-15	1020	18.76	19.75	7.5	6920	24.8	0.22	<0.001	0.346	<0.001	<0.0001	0.004	0.022	0.06	1.72	0.027	4.08	0.168	<0.01	0.138	<0.0001	7.75	4880	162	77	724	8	46.1	1410	23	<1	<1	271	271	45.7	0.49	0.5	<0.01	0.05	0.05	2600
		04-Jun-15	1340	19.22	20.21	7.4	4950	21.5																																		
Depth	50	09-Sep-15	1345	19.55	20.54	7.4	4820	21.2	0.23	<0.001	0.386	<0.001	<0.0001	0.003	0.022	0.026	2.05	0.011	4.74	0.17	<0.01	0.124	<0.0001	7.62	5170	167	79	723	8	46.5	1280	17	<1	<1	258	258	41.6	5.53	0.53	<0.01	<0.01	<0.01	3230
Format.	Napperby	15-Dec-15	1310	19.90	20.89	7.5	4230	22.5																																		
		08-Mar-16	1250	20.23	21.22	7.4	4880	24.4	0.08	<0.001	0.365	<0.001	<0.0001	<0.001	0.02	0.021	1.6	0.005	5	0.164	<0.01	0.106	<0.0001	7.85	5130	180	84	766	8	49.4	1320	18	<1	<1	230	230	42.2	7.87	0.42	<0.01	<0.01	<0.01	3470
		01-Jun-16	945	20.42	21.41	7.5	4450	20.4																																		
		27-Sep-16			too wet																																					
		26-Oct-16	1410	20.74	21.73	7.4	4100	22.2	0.02	<0.001	0.293	<0.001	<0.0001	<0.001	0.009	0.002	1.8	<0.001	3.48	0.15	<0.01	0.023	<0.0001	7.72	3980	113	57	560	7	34.9	1080	39	<1	<1	289	289	37	3.04	0.52	<0.01	<0.01	<0.01	2500
		23-Nov-16	1420	21.08	22.07	7.5	3540	22.4																																		
		19-Dec-16	1425	21.47	22.46	7.5	3930	22.7																																		
		24-Jan-17	1250	21.88	22.87	7.3	4200	23.1																																		
		21-Feb-17	1400	22.23	23.22	7.4	4460	21																																		
		28-Mar-17	1410	22.39	23.38	7.5	4250	22.2																																		
		20-Apr-17	1410	22.62	23.61	7.2	4330	21.9																																		
		30-May-17	1210	22.60	23.59	7.3	4410	20.1																																		
		27-Jun-17	1400	22.85	23.84	7.2	4710	20.8																																		
		25-Jul-17	1500	23.17	24.16	7.2	5180	21.2																																		
		28-Aug-17	1210	23.51	24.5	7.2	5310	20.5																																		
		21-Sep-17	1425	23.87	24.86	7.1	5640	22.3	0.2	0.001	0.445	<0.001	<0.0001	0.002	0.027	0.02	1.7	0.013	5.86	0.183	<0.01	0.101	<0.0001	7.51	5980	196	85	774	6	50.6	1740	4	<1	<1	258	258	54.3	3.55	0.38	0.04	0.18	0.22	3220
		25-Oct-17	1420	24.19	25.18	7.2	5660	22.3																																		
		24-Nov-17	1415	24.03	25.02	7.2	5780	22.5																																		
		19-Dec-17	1350	24.73	25.72	7.2	5430	22.8																																		
		31-Jan-18	1240	24.76	25.75	7.2	5450	22.6																																		
		27-Feb-18	1250	23.68	24.67	7.2	5610	21.9																																		
		27-Mar-18	1440	25.89	26.88	7.1	6010	22.5																																		
		26-Apr-18	1325	25.93	26.92	7.1	5990	21.5																																		
		25-May-18	1150	25.39	26.38	7	6210	21.1																																		
		25-Jun-18	1425	25.42	26.41	7.2	5910	21.2																																		
		25-Jul-18	1410	25.60	26.59	7.1	5920	21.8																																		
		29-Aug-18	1250	25.90	26.89	7.1	5430	21.5																																		
		26-Sep-18	1250	25.93	26.92	7	6140	21.2	0.04	0.002	0.491	<0.001	<0.0001	<0.001	0.024	0.003	5.17	0.002	8.16	0.186	<0.01	0.017	<0.0001	7.32	6810	230	117	1010	10	65.3	1860	4	<1	<1	208	208	56.7	7.04	0.15	<0.01	0.02	0.02	**4270**
		29-Oct-18	1310	26.03	27.02	7.4	6080	22.1																																		
		26-Nov-18	1440	26.40	27.39	7.3	6430	21.9																																		
		20-Dec-18	1335	26.76	27.75	7.3	6370	23.1																																		
		24-Jan-19	1225	26.71	27.7	7.4	7840	23.6																																		
		25-Mar-19	1310	26.71	27.7	7.4	6480	21.7																																		
		25-Mar-19	1450	26.95	27.94	7.3	6330	21.9																																		
		26-Apr-19	1310	26.89	27.88	7.2	6430	21.7																																		
		31-May-19	1350	26.94	27.93	7.2	6930	21																																		
		24-Jun-19	1420	26.73	27.72	7.2	6280	20.6																																		
		29-Jul-19	1240	27.12	28.11	7.2	6310	21.1																																		
		29-Aug-19	1240	27.81	28.8	7.2	6060	21.1																																		
		23-Sep-19	1320	28.06	29.05	7.2	6340	21.1	0.31	0.002	0.499	<0.001	<0.0001	0.002	0.022	0.011	1.66	0.011	8.47	0.215	<0.01	0.087	<0.001	7.29	6800	238	112	937	7	62	1990	8	<1	<1	241	241	61.1	0.74	0.25	<0.01	0.03	0.03	**3990**
		28-Oct-19	1245	28.43	29.42	7.2	6350	22.4																																		
		27-Nov-19	1210	28.46	29.45	7.2	6510	21.7																																		
		16-Dec-19	1320	28.65	29.64	7.3	6250	22.9																																		
P12	NC-098D	13-Mar-15	1130	42.23	43.04	7.6	3220	25.4	0.17	0.012	0.093	<0.001	<0.0001	<0.001	0.006	0.012	1.05	0.001	0.576	0.015	<0.01	0.045	<0.0001	7.79	3260	42	35	864	10	42.8	431	17	<1	<1	1190	1190	36.3	8.2	0.76	<0.01	0.04	0.04	1660
		03-Jun-15	1310	42.30	43.11	7.7	3140	20.9																																		
Depth	90	09-Sep-15	925	42.38	43.19	7.6	3110	21.1	0.33	0.016	0.096	<0.001	<0.0001	0.001	0.006	0.012	1.83	0.004	0.666	0.016	<0.01	0.059	<0.0001	8.01	3270	38	22	704	8	34.5	319	17	<1	<1	1120	1120	31.7	4.18	0.72	<0.01	<0.01	<0.01	1740
Format.	Napperby	14-Dec-15	940	42.50	43.31	7.6	3140	22.9																																		
		09-Mar-16	1240	42.46	43.27	7.7	3120	24.5	0.05	0.017	0.111	<0.001	<0.0001	<0.001	0.006	0.02	1.74	0.002	0.866	0.018	<0.01	0.038	<0.0001	7.98	3250	41	25	680	8	33.9	407	20	<1	<1	1140	1140	34.7	1.2	0.73	0.02	0.09	0.11	1780
		02-Jun-16	1055	42.57	43.38	7.7	3060	21.2																																		
		26-Sep-16	940	42.55	43.36	7.6	3030	22.1	0.68	0.014	0.088	<0.001	<0.0001	0.001	0.007	0.003	1.52	0.003	0.369	0.019	<0.01	0.064	<0.0001	7.96	3190	36	22	638	8	31.6	400	15	<1	<1	1240	1240	36.4	7.12	0.58	<0.01	<0.01	<0.01	1730
		25-Oct-16	920	42.59	43.4	7.6	3020	21.8																																		
		24-Nov-16	940	42.60	43.41	7.6	3040	21.6																																		
		20-Dec-16	915	42.60	43.41	7.6	3090	22.2																																		
		25-Jan-17	940	42.63	43.44	7.6	3110	22.6																																		
		22-Feb-17	1025	42.68	43.49	7.7	3070	22.6																																		
		29-Mar-17	900	42.62	43.43	7.6	3180	22.1																																		
		26-Apr-17	1020	42.64	43.45	7.7	3160	22.7																																		
		29-May-17	945	42.76	43.57	7.7	3130	22.4																																		
		29-Jun-17	1320	42.73	43.54	7.7	3100	22.1																																		
		26-Jul-17	920	42.98	43.79	7.7	3130	21.3																																		
		29-Aug-17	915	43.04	43.85	7.8	3160	21																																		
		26-Sep-17	910	43.16	43.97	7.8	3170	22.4	0.12	0.012	0.078	<0.001	<0.0001	<0.001	0.005	0.006	0.96	0.004	0.505	0.017	<0.01	0.014	<0.0001	8.14	3210	30	19	622	7	30.3	405	14	<1	<1	1120	1120	34.1	5.9	0.68	<0.01	<0.01	<0.01	1930
		26-Oct-17	915	43.45	44.26	7.7	3180	23.2																																		
		27-Nov-17	920	43.20	44.01	7.6	3240	22.1																																		
		20-Dec-17	1035	43.62	44.43	7.6	3180	22.3																																		
		30-Jan-18	930	43.75	44.56	7.7	3200	22.7																																		
		28-Feb-18	915	43.86	44.67	7.6	3180	22.4																																		
		28-Mar-18	1100	43.75	44.56	7.7	3190	22.9																																		
		30-Apr-18	935	44.81	45.62	7.9	3180	21.8																																		
		29-May-18	925	45.92	46.73	7.9	3090	21.7																																		
		26-Jun-18	1250	48.00	48.81	7.6	3360	21.7																																		
		26-Jul-18	1110	47.44	48.25	7.6	3400	20.9																																		
		30-Aug-18	935	46.89	47.7	7.7	3150	20.9																																		
		25-Sep-18	845	46.59	47.4	7.9	3050	19.8	0.05	0.015	0.092	<0.001	<0.0001	<0.001	0.019	0.001	1.15	0.005	0.678	0.044	<0.01	0.013	<0.0001	7.82	3610	44	39	804	9	40.6	433	17	<1	<1	1000	1000	32.8	10.6	0.7	<0.01	0.13	0.13	1960
		30-Oct-18	1130	46.34	47.15	7.8	3060	22																																		
		28-Nov-18	1000	46.07	46.88	7.7	3100	21.8																																		
		21-Dec-18	900	45.98	46.79	7.7	3070	22																																		
		31-Jan-19	915	45.96	46.77	7.6	3100	22.1																																		
		28-Feb-19	1150	45.79	46.6	7.8	3210	23.1																																		
		28-Mar-19	845	45.73	46.54	7.8	3170	22.9																																		
		30-Apr-19	1100	45.64	46.45	7.7	3210	22.7																																		
		31-May-19	945	45.56	46.37	7.6	3320	20.6																																		
		25-Jun-19	915	45.46	46.27	7.6	3230	20.9																																		
		30-Jul-19	1245	45.50	46.31	7.6	3300	20.8																																		
		28-Aug-19	900	45.48	46.29	7.6	3480	20.9																																		
		24-Sep-19	915	45.52	46.33	7.8	3320	23	0.03	0.014	0.091	<0.001	<0.0001	<0.001	0.011	0.002	1.25	0.003	0.612	0.037	<0.01	0.018	<0.0001	8.15	3350	25	21	778	8	37	447	16	<1	<1	1000	1000	32.9	5.86	0.67	0.01	0.03	0.04	1870
		29-Sep-19	915	45.50	46.31	7.6	3120	22.9																																		
		28-Nov-19	1135	45.63	46.44	7.7	3220	22.9																																		
		16-Dec-19	1230	45.29	46.10	7.7	3180	22.9																																		
P13	NC-098S	13-Mar-15	1200	12.40	13.27	7.9	1592	25.7	0.41	0.001	0.079	<0.001	<0.0001	0.016	<0.001	0.019	0.63	0.003	0.022	0.017	<0.01	0.097	<0.0001	7.89	1620	93	71	239	3	21	165	273	<1	<1	339	339	17.1	10.1	0.05	<0.01	3.6	3.6	846
		03-Jun-15	1330	12.36	13.23	7.9	1487	20.5																																		

Site ID	Piezometer / Water Bore	Date	Time	Depth to Water - mbgl	Depth to Stand - mbtoc	Field Parameters			Total Metals																Mercury (Hg) - mg/L	pH Lab	EC - Lab - µs/cm	Major Cations				Total Cations - meq/L	Major Anions						Total Anions - meq/L	Ionic Balance	Ammonia as Nitrogen (N)	Nitrite as N - mg/L	Nitrate as N - mg/L	NOX as N - mg/L	Total Dissolved Solids
						pH - Field	EC - Field - µs/cm	Temp - Field - °C	Aluminium (Al) - mg/L	Arsenic (As) - mg/L	Barium (Ba) - mg/L	Beryllium (Be) - mg/L	Cadmium (mg/L)	Chromium (Cr) - mg/L	Cobalt (Co) - mg/L	Copper (Cu) - mg/L	Iron (Fe) - mg/L	Lead (Pb) - mg/L	Manganese (Mn) - mg/L	Nickel (Ni) - mg/L	Vanadium (V) - mg/L	Zinc (Zn) - mg/L						Calcium (Ca) - mg/L	Magnesium (Mg) - mg/L	Sodium (Na) - mg/L	Potassium (K) - mg/L		Chloride (Cl) - mg/L	Sulfate (SO4) - mg/L	Hydroxide Alkalinity as CaCO3 - mg/L	Carbonate Alkalinity as CaCO3 - mg/L	Bicarbonate Alkalinity as CaCO3 - mg/L	Alkalinity - mg/L							
ANZECC Guideline - stock drinking water									*5*	*0.5*			*0.01*	*1*	*1*	*1*		*0.1*		*1*		*20*	*0.002*			*1000*					*1000*											*4000*
Depth	30	09-Sep-15	945	11.77	12.64	7.8	1464	20.2	0.06	<0.001	0.069	<0.001	<0.0001	<0.001	<0.001	0.013	0.3	<0.001	0.013	0.007	<0.01	0.048	<0.0001	7.7	1520	86	82	173	3	18.6	150	294	<1	<1	274	274	15.8	8.15	0.04	<0.01	3.43	3.43	927
Format.	Garrawilla	14-Dec-15	1000	11.19	12.06	7.7	1476	22.1																																			
		09-Mar-16	1300	11.88	12.75	7.8	1568	22.6	<0.01	<0.001	0.069	<0.001	<0.0001	<0.001	<0.001	0.017	<0.05	<0.001	0.004	0.008	<0.01	0.052	<0.0001	7.84	1610	88	76	189	3	18.9	174	321	<1	<1	287	287	17.3	4.45	0.06	<0.01	3.61	3.61	1000
		02-Jun-16	1045	12.62	13.49	7.8	1423	20.6																																			
		26-Sep-16	1010	11.48	12.35	7.5	1376	21.1	0.21	<0.001	0.076	<0.001	<0.0001	<0.001	<0.001	0.012	0.45	0.003	0.034	0.007	<0.01	0.069	<0.0001	7.73	1400	99	79	118	2	16.6	106	336	<1	<1	264	264	15.3	4.27	0.02	<0.01	1.71	1.71	914
		25-Oct-16	945	10.89	11.76	7.4	1337	21																																			
		24-Nov-16	1000	10.45	11.32	7.3	1373	21.1																																			
		20-Dec-16	930	10.43	11.3	7.4	1375	21.8																																			
		25-Jan-17	1000	10.74	11.61	7.5	1381	21.7																																			
		22-Feb-17	1050	11.04	11.91	7.5	1405	22.1																																			
		29-Mar-17	920	11.19	12.06	7.5	1410	21.6																																			
		26-Apr-17	1040	11.19	12.06	7.7	1423	21.4																																			
		29-May-17	1005	11.22	12.09	7.7	1472	20.7																																			
		29-Jun-17	1305	11.24	12.11	7.7	1450	20.6																																			
		26-Jul-17	940	11.05	11.92	7.8	1440	20.4																																			
		29-Aug-17	935	11.11	11.98	7.8	1457	20.2																																			
		26-Sep-17	930	11.31	12.18	7.7	1452	20.7	0.04	<0.001	0.067	<0.001	<0.0001	<0.001	<0.001	0.021	0.08	0.001	0.018	0.007	<0.01	0.054	<0.0001	7.97	1540	81	70	124	2	15.2	111	325	<1	<1	263	263	15.2	0.31	0.04	<0.01	1.92	1.92	910
		26-Oct-17	940	11.50	12.37	7.6	1463	21.7																																			
		27-Nov-17	945	11.81	12.68	7.8	1468	21.3																																			
		20-Dec-17	1050	11.99	12.86	7.9	1575	23.4																																			
		30-Jan-18	945	12.34	13.21	7.9	1452	22.1																																			
		28-Feb-18	930	12.72	13.59	7.9	1443	21.9																																			
		28-Mar-18	1125	12.85	13.72	8	1450	22.7																																			
		30-Apr-18	955	13.06	13.93	8.1	1478	20.6																																			
		29-May-18	945	13.19	14.06	8.1	1467	20.6																																			
		26-Jun-18	1310	13.33	14.2	8.1	1506	20.3																																			
		26-Jul-18	1125	13.45	14.32	8	1513	20.8																																			
		30-Aug-18	950	13.60	14.47	8	1500	20.9																																			
		25-Sep-18	910	13.69	14.56	7.8	1810	19.6	0.1	<0.001	0.083	<0.001	<0.0001	<0.001	0.001	0.005	0.22	0.002	0.048	0.005	<0.01	0.017	<0.0001	7.55	2020	60	104	278	3	23.7	331	88	<1	<1	413	413	19.4	9.97	0.03	<0.01	2.5	2.5	1040
		30-Oct-18	1145	13.81	14.68	7.8	1892	22.1																																			

Site ID	Piezometer / Water Bore	Date	Time	Depth to Water - mbgl	Depth to Stand - mbtoc	Field Parameters			Total Metals															Mercury (Hg) - mg/L	pH Lab	EC - Lab - µs/cm	Major Cations				Total Cations - meq/L	Major Anions						Total Anions - meq/L	Ionic Balance	Ammonia as Nitrogen (N)	Nitrite as N - mg/L	Nitrate as N - mg/L	NOX as N - mg/L	Total Dissolved Solids
						pH - Field	EC - Field - µs/cm	Temp - Field - °C	Aluminium (Al) - mg/L	Arsenic (As) - mg/L	Barium (Ba) - mg/L	Beryllium (Be) - mg/L	Cadmium (mg/L)	Chromium (Cr) - mg/L	Cobalt (Co) - mg/L	Copper (Cu) - mg/L	Iron (Fe) - mg/L	Lead (Pb) - mg/L	Manganese (Mn) - mg/L	Nickel (Ni) - mg/L	Vanadium (V) - mg/L	Zinc (Zn) - mg/L				Calcium (Ca) - mg/L	Magnesium (Mg) - mg/L	Sodium (Na) - mg/L	Potassium (K) - mg/L		Chloride (Cl) - mg/L	Sulfate (SO4) - mg/L	Hydroxide Alkalinity as CaCO3 - mg/L	Carbonate Alkalinity as CaCO3 - mg/L	Bicarbonate Alkalinity as CaCO3 - mg/L	Alkalinity - mg/L							
ANZECC Guideline - stock drinking water									*5*	*0.5*			*0.01*	*1*	*1*	*1*		*0.1*		*1*		*20*	*0.002*			*1000*						*1000*								*1500*	*400*		*4000*
		28-Nov-18	1015	13.89	14.76	7.6	1980	21.3																																		
		21-Dec-18	920	13.96	14.83	7.9	1910	21.8																																		
		31-Jan-19	935	14.12	14.99	7.4	1950	21.5																																		
		28-Feb-19	1210	14.19	15.06	7.5	1975	22.1																																		
		28-Mar-19	910	14.29	15.16	7.4	2020	23.1																																		
		30-Apr-19	1115	14.28	15.15	7.5	2010	21.6																																		
		31-May-19	1005	14.11	14.98	7.3	1930	20.2																																		
		25-Jun-19	935	13.98	14.85	7.3	2010	20.3																																		
		30-Jul-19	1230	13.89	14.76	7.4	1995	20.5																																		
		28-Aug-19	920	13.98	14.85	7.4	1960	20.9																																		
		24-Sep-19	945	13.97	14.84	7.6	2030	22.1	0.01	<0.001	0.079	<0.001	<0.0001	<0.001	<0.001	0.002	<0.05	<0.001	0.011	0.003	<0.01	0.02	<0.0001	8.09	2180	52	110	216	3	21.1	377	71	<1	<1	458	458	21.3	0.34	<0.01	<0.01	2.66	2.66	1100
		29-Oct-19	940	14.05	14.92	7.6	2040	22																																		
		29-Nov-19	1155	14.18	15.05	7.7	2080	21.8																																		
		16-Dec-19	1210	14.30	15.17	7.7	1915	22.1																																		
P14	NC-100D	12-Mar-15	1415			Dry																																		
		03-Jun-15	1155	60.13	60.49	12.7	9230	21.3																																		
Depth	78	08-Sep-15	1250	60.96	61.32	Insufficient to sample																																				
Format.	Napperby	14-Dec-15	1110		19.84																																				
		10-Mar-16	1330			Dry																																				
		02-Jun-16				Dry																																				
		26-Sep-16				Dry																																				
		25-Oct-16				Dry																																				
		24-Nov-16				Dry																																				
		20-Dec-16				Dry																																				
		24-Jan-17				Dry - Blocked @ 10.2m (piezo undermined and blocked)																																				
		23-Feb-17	920			Dry - Blocked @ 10.2m (piezo undermined and blocked)																																				
		29-Mar-17				Dry - Blocked @ 10.2m (piezo undermined and blocked)																																				
		26-Apr-17				Dry - Blocked @ 10.2m (piezo undermined and blocked)																																				
		29-May-17				Dry - Blocked @ 10.2m (piezo undermined and blocked)																																				
		29-Jun-17				Dry - Blocked @ 10.2m (piezo undermined and blocked)																																				
		26-Jul-17				Dry - Blocked @ 10.2m (piezo undermined and blocked)																																				
		29-Aug-17				Dry - Blocked @ 10.2m (piezo undermined and blocked)																																				
		26-Sep-17				Dry - Blocked @ 10.2m (piezo undermined and blocked)																																				
		26-Oct-17				Dry - Blocked @ 10.2m (piezo undermined and blocked)																																				
		27-Nov-17				Dry - Blocked @ 10.2m (piezo undermined and blocked)																																				
		20-Dec-17				Dry - Blocked @ 10.2m (piezo undermined and blocked)																																				
		30-Jan-18				Dry - Blocked @ 10.2m (piezo undermined and blocked)																																				
		28-Feb-18				Dry - Blocked @ 10.2m (piezo undermined and blocked)																																				
		28-Mar-18				Dry - Blocked @ 10.2m (piezo undermined and blocked)																																				
		30-Apr-18				Dry - Blocked @ 10.2m (piezo undermined and blocked)																																				
		29-May-18				Dry - Blocked @ 10.2m (piezo undermined and blocked)																																				
		26-Jun-18				Dry - Blocked @ 10.2m (piezo undermined and blocked)																																				
		26-Jul-18				Dry - Blocked @ 10.2m (piezo undermined and blocked)																																				
		30-Aug-18				Dry - Blocked @ 10.2m (piezo undermined and blocked)																																				
		25-Sep-18				Dry - Blocked @ 10.2m (piezo undermined and blocked)																																				
		30-Oct-18				Dry - Blocked @ 10.2m (piezo undermined and blocked)																																				
		28-Nov-18				Dry - Blocked @ 10.2m (piezo undermined and blocked)																																				
		20-Dec-18				Dry - Blocked @ 10.2m (piezo undermined and blocked)																																				
		31-Jan-19				Dry - Blocked @ 10.2m (piezo undermined and blocked)																																				
		28-Feb-19				Dry - Blocked @ 10.2m (piezo undermined and blocked)																																				
		28-Mar-19				Dry - Blocked @ 10.2m (piezo undermined and blocked)																																				
		30-Apr-19				Dry - Blocked @ 10.2m (piezo undermined and blocked)																																				
		31-May-19				Dry - Blocked @ 10.2m (piezo undermined and blocked)																																				
		25-Jun-19				Dry - Blocked @ 10.2m (piezo undermined and blocked)																																				
		23-Aug-19				Dry - Blocked @ 10.2m (piezo undermined and blocked)																																				
		23-Sep-19				Dry - Blocked @ 10.2m (piezo undermined and blocked)																																				
		29-Oct-19				Dry - Blocked @ 10.2m (piezo undermined and blocked)																																				
		28-Nov-19				Dry - Blocked @ 10.2m (piezo undermined and blocked)																																				
		18-Dec-19				Dry - Blocked @ 10.2m (piezo undermined and blocked)																																				
P15	NC-100S	12-Mar-15	1400	26.54	26.85	Insufficent to sample																																				
		03-Jun-15	1140	18.45	18.76	6.1	1215	21.1																																		
Depth	30	08-Sep-15	1230	17.12	17.43	6.1	1063	21.9	**30.6**	0.074	0.54	0.006	0.0007	0.087	0.048	0.105	587	0.078	1.55	0.229	0.34	0.358	0.0016	6.34	1070	7	6	230	6	11	259	29	<1	<1	104	104	9.99	4.8	0.44	<0.01	0.17	0.17	992
Format.	Garrawilla	14-Dec-15	1120	28.29	28.6	Insufficent to sample																																				
		10-Mar-16	1335			Dry																																				
		02-Jun-16				Dry																																				
		26-Sep-16				Dry																																				
		25-Oct-16				Dry																																				
		24-Nov-16				Dry																																				
		20-Dec-16				Dry																																				
		24-Jan-17				Dry - Blocked @ 19m (piezo undermined and blocked)																																				
		23-Feb-17	930			Dry - Blocked @ 19m (piezo undermined and blocked)																																				
		29-Mar-17				Dry - Blocked @ 19m (piezo undermined and blocked)																																				
		26-Apr-17				Dry - Blocked @ 19m (piezo undermined and blocked)																																				
		29-May-17				Dry - Blocked @ 19m (piezo undermined and blocked)																																				
		29-Jun-17				Dry - Blocked @ 19m (piezo undermined and blocked)																																				
		26-Jul-17				Dry - Blocked @ 19m (piezo undermined and blocked)																																				
		29-Aug-17				Dry - Blocked @ 19m (piezo undermined and blocked)																																				
		26-Sep-17				Dry - Blocked @ 19m (piezo undermined and blocked)																																				
		26-Oct-17				Dry - Blocked @ 19m (piezo undermined and blocked)																																				
		27-Nov-17				Dry - Blocked @ 19m (piezo undermined and blocked)																																				
		20-Dec-17				Dry - Blocked @ 19m (piezo undermined and blocked)																																				
		30-Jan-18				Dry - Blocked @ 19m (piezo undermined and blocked)																																				
		28-Feb-18				Dry - Blocked @ 19m (piezo undermined and blocked)																																				
		28-Mar-18				Dry - Blocked @ 19m (piezo undermined and blocked)																																				
		30-Apr-18				Dry - Blocked @ 19m (piezo undermined and blocked)																																				
		29-May-18				Dry - Blocked @ 19m (piezo undermined and blocked)																																				
		26-Jun-18				Dry - Blocked @ 19m (piezo undermined and blocked)																																				
		26-Jul-18				Dry - Blocked @ 19m (piezo undermined and blocked)																																				
		30-Aug-18				Dry - Blocked @ 19m (piezo undermined and blocked)																																				
		25-Sep-18				Dry - Blocked @ 19m (piezo undermined and blocked)																																				
		30-Oct-18				Dry - Blocked @ 19m (piezo undermined and blocked)																																				
		28-Nov-18				Dry - Blocked @ 19m (piezo undermined and blocked)																																				
		20-Dec-18				Dry - Blocked @ 19m (piezo undermined and blocked)																																				
		31-Jan-19				Dry - Blocked @ 19m (piezo undermined and blocked)																																				
		28-Feb-19				Dry - Blocked @ 19m (piezo undermined and blocked)																																				
		28-Mar-19				Dry - Blocked @ 19m (piezo undermined and blocked)																																				
		30-Apr-19				Dry - Blocked @ 19m (piezo undermined and blocked)																																				
		31-May-19				Dry - Blocked @ 19m (piezo undermined and blocked)																																				
		25-Jun-19				Dry - Blocked @ 19m (piezo undermined and blocked)																																				
		30-Jul-19				Dry - Blocked @ 19m (piezo undermined and blocked)																																				
		23-Aug-19				Dry - Blocked @ 19m (piezo undermined and blocked)																																				
		23-Sep-19				Dry - Blocked @ 19m (piezo undermined and blocked)																																				
		29-Oct-19				Dry - Blocked @ 19m (piezo undermined and blocked)																																				
		28-Nov-19				Dry - Blocked @ 19m (piezo undermined and blocked)																																				
		18-Dec-19				Dry - Blocked @ 19m (piezo undermined and blocked)																																				
P16	NC-119D	12-Mar-15	1150	47.37	48.21	7.1	3980	23.1	0.12	<0.001	0.275	<0.001	<0.0001	0.002	<0.001	0.01	2.13	0.006	0.253	0.005	<0.01	0.132	<0.0001	7.51	4080	32	17	693	40	34.2	782	2	<1	<1	825	825	38.6	6.11	126	0.01	0.06	0.07	1590
		04-Jun-15	1200	47.41	48.25	7.2	3940	22.6																																		
Depth	146	09-Sep-15	1200	46.62	47.46	6.1	274	21.9	**16.9**	0.003	0.071	<0.001	<0.0001	0.016	0.004	0.094	19.8	**0.151**	0.186	0.026	0.03	1.35	<0.0001	6.13	244	4	2	37	6	2.13	46	6	<1	<1	37	37	2.16	----	3.33	0.01	0.81	0.82	184
Format.	Garrawilla	09-Dec-15	1020	47.76	48.6	6.1	421	20.8																																		
		08-Mar-16	1020	47.04	47.88	6.9	501	22.2	2.55	0.001	0.064	<0.001	0.0001	0.004	0.002	0.144	6.32	0.089	0.298	0.019	<0.01	4.35	<0.0001	6.97	501	6	3	67	7	3.64	74	1	<1	<1	93	93	3.97	4.32	14.7	0.1	0.87	0.97	290

Site ID	Piezometer / Water Bore	Date	Time	Depth to Water - mbgl	Depth to Stand - mbtoc	Field Parameters			Total Metals															Mercury (Hg) - mg/L	pH Lab	EC - Lab - µs/cm	Major Cations				Total Cations - meq/L	Major Anions						Total Anions - meq/L	Ionic Balance	Ammonia as Nitrogen (N)	Nitrite as N - mg/L	Nitrate as N - mg/L	NOX as N - mg/L	Total Dissolved Solids
						pH - Field	EC - Field - µs/cm	Temp - Field - °C	Aluminium (Al) - mg/L	Arsenic (As) - mg/L	Barium (Ba) - mg/L	Beryllium (Be) - mg/L	Cadmium (mg/L)	Chromium (Cr) - mg/L	Cobalt (Co) - mg/L	Copper (Cu) - mg/L	Iron (Fe) - mg/L	Lead (Pb) - mg/L	Manganese (Mn) - mg/L	Nickel (Ni) - mg/L	Vanadium (V) - mg/L	Zinc (Zn) - mg/L				Calcium (Ca) - mg/L	Magnesium (Mg) - mg/L	Sodium (Na) - mg/L	Potassium (K) - mg/L		Chloride (Cl) - mg/L	Sulfate (SO4) - mg/L	Hydroxide Alkalinity as CaCO3 - mg/L	Carbonate Alkalinity as CaCO3 - mg/L	Bicarbonate Alkalinity as CaCO3 - mg/L	Alkalinity - mg/L							
ANZECC Guideline - stock drinking water									*5*	*0.5*			*0.01*	*1*	*1*	*1*		*0.1*		*1*		*20*	*0.002*			*1000*						*1000*									*1500*	*400*		*4000*
		01-Jun-16	1110	47.19	48.03	6.9	582	20.7																																		
		28-Sep-16	1045	47.50	48.34	6.7	951	21	0.68	<0.001	0.066	<0.001	<0.0001	0.002	0.001	0.03	6.34	0.036	0.206	0.013	<0.01	0.863	<0.0001	6.91	1010	7	4	154	10	9.42	191	1	<1	<1	194	194	9.28	0.73	25	0.04	0.13	0.17	448
		26-Oct-16	1220	47.69	48.53	6.7	972	21.3																																		
		23-Nov-16	1210	47.91	48.75	6.7	980	21.5																																		
		19-Dec-16	1210	48.10	48.94	6.7	899	21.6																																		
		24-Jan-17	955	48.24	49.08	6.7	915	21.7																																		
		21-Feb-17	1225	48.67	49.51	6.8	921	21.8																																		
		28-Mar-17	1225	48.92	49.76	6.7	942	22.1																																		
		20-Apr-17	1230	49.08	49.92	6.7	960	21.8																																		
		24-May-17	1245	49.35	50.19	6.8	1165	21.4																																		
		27-Jun-17	1245	50.34	51.18	6.8	1210	21.3																																		
		25-Jul-17	1310	50.60	51.44	6.8	1240	21																																		
		24-Aug-17	1245	51.72	52.56	6.8	1316	21																																		
		21-Sep-17	1250	52.07	52.91	6.7	1256	22.3	4.54	0.001	0.066	<0.001	0.0002	0.007	0.002	0.146	7.56	**0.201**	0.384	0.018	<0.01	3.58	<0.0001	7.46	1250	13	7	143	15	11.4	201	7	<1	<1	332	332	12.4	4.01	50.6	0.07	1.2	1.27	421
		25-Oct-17	1255	52.40	53.24	6.7	1340	22.4																																		
		24-Nov-17	1245	52.89	53.73	6.7	1270	22.3																																		
		19-Dec-17	1235	53.12	53.96	6.7	1310	22.3																																		
		25-Jan-18	1230	53.38	54.22	6.7	1350	22.8																																		
		27-Feb-18	1115	53.65	54.49	6.7	1371	22.6																																		
		27-Mar-18	1220	53.86	54.7	6.7	1380	21.9																																		
		26-Apr-18	1150	54.03	54.87	6.7	1387	21.8																																		
		25-May-18	1015	54.36	55.2	6.7	1430	20.8																																		
		25-Jun-18	1230	54.57	55.41	6.8	1380	21.4																																		
		25-Jul-18	1240	54.75	55.59	6.8	1270	21.7																																		
		29-Aug-18	1125	55.00	55.84	6.8	1320	21.3																																		
		26-Sep-18	1110	54.98	55.82	6.8	1590	19.9	4.74	0.003	0.078	<0.001	<0.0001	0.008	0.004	0.126	7.48	**0.348**	0.551	0.024	0.01	3.39	<0.0001	7.68	1690	18	11	247	21	13.1	309	14	<1	<1	317	317	15.3	7.94	59.2	0.07	2.79	2.86	687
		30-Oct-18	1035	55.00	55.84	6.8	1600	20.4																																		
		28-Nov-18	1315	57.96	58.8	6.8	1640	20.6																																		
		20-Dec-18	1205	59.19	60.03	6.8	1710	20.6																																		
		24-Jan-19	1030	60.40	61.24	6.8	1680	21.8																																		
		28-Feb-19	1212	60.93	61.77	6.9	1710	21.7																																		
		28-Mar-19	1315	60.91	61.75	6.9	1740	21.8																																		
		30-Apr-19	1010	61.64	62.48	6.9	1810	21.9																																		
		28-May-19	1320	61.68	62.52	6.7	1735	20.4																																		
		24-Jun-19	1220	62.46	63.3	6.6	1740	20.1																																		
		29-Jul-19	1025	62.99	63.83	6.6	1790	20.2																																		
		29-Aug-19	1050	63.18	64.02	6.7	1810	20.4																																		
		23-Sep-19	1020	63.60	64.44	6.7	1710	22.9	3.72	0.004	0.112	<0.001	<0.0001	0.017	0.004	0.062	5.92	**0.342**	0.524	0.022	0.01	1.87	<0.0001	7.29	1780	22	10	226	20	16.3	326	15	<1	<1	286	286	15.2	3.49	56	0.08	7.37	7.45	789
		28-Oct-19	1105	63.87	64.71	6.7	1690	23																																		
		28-Nov-19	1025	65.36	66.2	6.7	1780	22.8																																		
		16-Dec-19	1105	65.06	65.9	6.7	1810	22.9																																		
P17	NC-119S	12-Mar-15	1200			Dry																																		
		04-Jun-15	1210			Dry																																		
Depth	56	09-Sep-15	1215			Dry																																		
Format.	Purlawaugh	09-Dec-15	1035			Dry																																		
		08-Mar-16	1035			Dry																																		
		01-Jun-16	1125			Dry																																		
		28-Sep-16	1050			Dry																																		
		26-Oct-16	1230			Dry																																		
		23-Nov-16	1220			Dry																																		
		19-Dec-16	1220			Dry																																		
		24-Jan-17	1005			Dry																																		
		21-Feb-17	1235			Dry																																		
		28-Mar-17	1235			Dry																																		
		20-Apr-17	1235			Dry																																		
		24-May-17	1255			Dry																																		
		27-Jun-17	1255			Dry																																		
		25-Jul-17	1320			Dry																																		
		24-Aug-17	1255			Dry																																		
		21-Sep-17	1300			Dry																																		
		25-Oct-17	1300			Dry																																		
		24-Nov-17	1255			Dry																																		
		19-Dec-17	1245			Dry																																		
		25-Jan-18	1240			Dry																																		
		27-Feb-18	1125			Dry																																		
		27-Mar-18	1230			Dry																																		
		26-Apr-18	1200			Dry																																		
		25-May-18	1025			Dry																																		
		25-Jun-18	1240			Dry																																		
		25-Jul-18	1250			Dry																																		
		29-Aug-18	1135			Dry																																		
		26-Sep-18	1120			Dry																																		
		30-Oct-18	1040			Dry																																		
		26-Nov-18	1320			Dry																																		
		20-Dec-18	1210			Dry																																		
		24-Jan-19	1040			Dry																																		
		28-Feb-19	1020			Dry																																		
		28-Mar-19	1325			Dry																																		
		30-Apr-19	1015			Dry																																		
		28-May-19	1330			Dry																																		
		24-Jun-19	1230			Dry																																		
		29-Jul-19	1035			Dry																																		
		29-Aug-19	1055			Dry																																		
		23-Sep-19	1035			Dry/Stick up																																		
		10-Oct-19	1115			Dry/Stick up																																		
		28-Nov-19	1035			Dry/Stick up																																		
		16-Dec-19	1110			Dry/Stick up																																		
P18	NC-122	11-Mar-15	1210			Dry																																		
		03-Jun-15	1050			Dry																																		
Depth	146	08-Sep-15	1140			Dry																																		
Format.	Hoskissons	14-Dec-15	1200			Dry																																		
		10-Mar-16	1235			Dry																																		
		02-Jun-16	1200			Dry																																		
		26-Sep-16	1200			Dry																																		
		25-Oct-16	1125			Dry																																		
		24-Nov-16	1135			Dry																																		
		20-Dec-16	1125			Dry																																		
		25-Jan-17	1110			Dry																																		
		23-Feb-17	945			Dry																																		
		29-Mar-17	1055			Dry																																		
		26-Apr-17	1210			Dry																																		
		29-May-17	1200			Dry																																		
		29-Jun-17	1220			Dry																																		
		26-Jul-17	1135			Dry																																		
		29-Aug-17	1130			Dry																																		
		26-Sep-17	1110			Dry																																		
		26-Oct-17	1040			Dry																																		
		27-Nov-17	1110			Dry																																		
		20-Dec-17	1205			Dry																																		
		30-Jan-18	1045			Dry																																		

Site ID	Piezometer / Water Bore	Date	Time	Depth to Water - mbgl	Depth to Stand - mbtoc	Field Parameters			Total Metals															Mercury (Hg) - mg/L	pH Lab	EC - Lab - µs/cm	Major Cations				Total Cations - meq/L	Major Anions						Total Anions - meq/L	Ionic Balance	Ammonia as Nitrogen (N)	Nitrite as N - mg/L	Nitrate as N - mg/L	NOX as N - mg/L	Total Dissolved Solids
						pH - Field	EC - Field - µs/cm	Temp - Field - °C	Aluminium (Al) - mg/L	Arsenic (As) - mg/L	Barium (Ba) - mg/L	Beryllium (Be) - mg/L	Cadmium (mg/L)	Chromium (Cr) - mg/L	Cobalt (Co) - mg/L	Copper (Cu) - mg/L	Iron (Fe) - mg/L	Lead (Pb) - mg/L	Manganese (Mn) - mg/L	Nickel (Ni) - mg/L	Vanadium (V) - mg/L	Zinc (Zn) - mg/L				Calcium (Ca) - mg/L	Magnesium (Mg) - mg/L	Sodium (Na) - mg/L	Potassium (K) - mg/L		Chloride (Cl) - mg/L	Sulfate (SO4) - mg/L	Hydroxide Alkalinity as CaCO3 - mg/L	Carbonate Alkalinity as CaCO3 - mg/L	Bicarbonate Alkalinity as CaCO3 - mg/L	Alkalinity - mg/L							
ANZECC Guideline - stock drinking water									*5*	*0.5*			*0.01*	*1*	*1*	*1*		*0.1*		*1*		*20*	*0.002*			*1000*						*1000*								*1500*	*400*		*4000*
		28-Feb-18	1035			Dry																																				
		28-Mar-18	1200			Dry																																				
		30-Apr-18	1035			Dry																																				
		29-May-18	1035			Dry																																				
		26-Jun-18	1205			Dry																																				
		26-Jul-18	1220			Dry																																				
		30-Aug-18	1035			Dry																																				
		25-Sep-18	1030			Dry																																				
		30-Oct-18	1300			Dry																																				
		28-Nov-18	1140			Dry																																				
		21-Dec-18	1050			Dry																																				
		31-Jan-19	1055			Dry																																				
		27-Feb-19	1140			Dry																																				
		28-Mar-19	1055			Dry																																				
		30-Apr-19	1230			Dry																																				
		31-May-19	1110			Dry																																				
		25-Jun-19	1105			Dry																																				
		31-Jul-19	1000			Dry																																				
		28-Aug-19	1035			Dry																																				
		24-Sep-19	1125			Dry																																				
		29-Oct-19	1110			Dry																																				
		28-Nov-19	1305			Dry																																				
		18-Dec-19	1035			Dry																																				
P19	NC-123R	11-Mar-15	1230	20.80	21.28	7.4	3760	23.6	0.66	0.003	0.116	<0.001	0.0001	0.002	0.003	0.014	0.82	0.004	0.767	0.005	<0.01	0.062	<0.0001	7.64	4530	30	65	643	33	35.7	825	38	<1	<1	1170	1170	47.4	14.2	116	0.51	2.81	3.32	2000
		03-Jun-15	1100	20.68	21.16	7.4	3940	20.8																																			
Depth	187	08-Sep-15	1150	20.96	21.44	7.4	3930	22.9	0.05	0.001	0.114	<0.001	<0.0001	<0.001	0.001	0.005	0.21	0.001	0.654	0.002	<0.01	0.022	<0.0001	7.7	4070	44	69	646	29	36.7	577	33	<1	<1	887	887	34.7	2.81	110	2.45	0.93	3.38	1910
Format.	Pamboola	14-Dec-15	1215	20.65	21.13	7.5	3530	22.3																																			
		10-Mar-16	1250	20.72	21.2	7.6	3460	23.5	0.16	0.002	0.093	<0.001	<0.0001	0.001	0.002	0.012	0.54	0.002	0.65	0.002	<0.01	0.05	<0.0001	7.66	3360	29	47	509	30	28.2	587	45	<1	<1	749	749	32.5	7.02	0.1	1.24	<0.01	0.9	1690
		02-Jun-16	1215	20.76	21.24	7.6	3490	21.8																																			
		26-Sep-16	1220	20.43	20.91	7.5	2690	22.5	0.36	0.002	0.059	<0.001	<0.0001	0.001	0.002	0.008	0.54	0.002	0.502	0.003	<0.01	0.051	<0.0001	7.72	2650	31	49	516	28	28.7	470	45	<1	<1	547	547	25.1	6.68	62.6	2.16	7.09	9.25	1340
		25-Oct-16	1140	20.58	21.06	7.4	3710	22.4																																			
		24-Nov-16	1145	20.80	21.28	7.5	2680	22.6																																			
		20-Dec-16	1135	20.79	21.27	7.6	2500	22.8																																			
		25-Jan-17	1120	20.90	21.38	7.6	2440	22.8																																			
		23-Feb-17	1000	20.84	21.32	7.5	2580	21.9																																			
		29-Mar-17	1110	20.94	21.42	7.5	2640	23.3																																			
		26-Apr-17	1200	20.92	21.4	7.5	2770	23																																			
		29-May-17	1210	20.89	21.37	7.5	2770	22.5																																			
		29-Jun-17	1225	20.91	21.39	7.4	2620	21.1																																			
		26-Jul-17	1140	20.92	21.4	7.4	2950	22.1																																			
		29-Aug-17	1125	20.99	21.47	7.4	2770	22.2																																			
		26-Sep-17	1100	21.07	21.55	7.5	2830	22.7	0.05	0.001	0.053	<0.001	<0.0001	<0.001	0.001	0.006	0.13	<0.001	0.514	0.002	<0.01	0.026	<0.0001	7.81	2900	43	63	594	30	33.9	495	46	<1	<1	519	519	25.3	14.6	54.5	0.18	12.9	13.1	1470
		26-Oct-17	1100	21.13	21.61	7.5	2890	23.4																																			
		27-Nov-17	1100	21.18	21.66	7.4		22.8																																			
		20-Dec-17	1155	21.21	21.69	7.4	2730	23.8																																			
		30-Jan-18	1100			7.4	2750	23																																			
		28-Feb-18	1025	21.15	21.63	7.4	2680	22.8																																			
		28-Mar-18	1220	21.11	21.59	7.5	2260	23.3																																			
		30-Apr-18	1055	21.12	21.6	7.5	2600	22.6																																			
		29-May-18	1050	21.17	21.65	7.4	2630	22.4																																			
		26-Jun-18	1155	21.24	21.72	7.4	2980	22																																			
		26-Jul-18	1235	21.29	21.77	7.3	2520	22.4																																			
		30-Aug-18	1050	21.31	21.79	7.3	2480	21.9																																			
		25-Sep-18	1050	21.26	21.74	7.4	3190	22.1	0.3	0.001	0.1	<0.001	<0.0001	0.002	0.002	0.005	0.57	0.001	0.717	0.004	<0.01	0.022	<0.0001	7.39	3900	34	59	570	29	32.1	648	34	<1	<1	690	690	32.8	1.06	73.6	0.09	5.7	5.79	1540
		30-Oct-18	1255	21.24	21.72	7.4	2750	23.1																																			
		28-Nov-18	1145	21.25	21.73	7.2	3260	23.1																																			
		21-Dec-18	1045	21.25	21.73	7.3	3280	23.4																																			
		31-Jan-19	1050			7.4	2560	24																																			
		27-Feb-19	11:45	21.25	21.73	7.3	3270	23.1																																			
		28-Mar-19	1110	22.22	22.7	7.1	3360	22.8																																			
		30-Apr-19	1240	21.16	21.64	7.1	3420	22.3																																			
		31-May-19	1125	21.12	21.6	7.1	3380	21.8																																			
		25-Jun-19	1100	21.32	21.8	7.1	2870	21.8																																			
		31-Jul-19	950	21.14	21.62	7.2	2880	21.9																																			
		28-Aug-19	1030	21.19	21.67	7.3	2860	22.8																																			
		24-Sep-19	1150	21.30	21.78	7.3	3010	22.8	0.7	0.001	0.084	<0.001	<0.0001	0.004	0.002	0.006	1.25	0.002	0.596	0.006	<0.01	0.029	<0.0001	7.63	1620	26	52	523	31	29.1	606	35	<1	1	571	571	29.2	0.19	46.7	0.08	10.3	10.4	1620
		29-Oct-19	1100	21.35	21.83	7.4	3650	22.7																																			
		28-Nov-19	1300	21.37	21.85	7.2	4160	22.8																																			
		18-Dec-19	1025	21.43	21.91	7.3	3890	22.6																																			
P20	NC-127	Cemented up - No longer monitored																																									
Depth	162																																										
Format.	Arkarula																																										
P30		11-Mar-15	1040		0.93	Dry																																					
		03-Jun-15	945		0.93	Dry																																					
Depth	25	08-Sep-15	1025		0.93	Dry																																					
Format.	Napperby	14-Dec-15	1300		0.93	Dry																																					
		10-Mar-16	1010		0.93	Dry																																					
		31-May-16	1030		0.93	Dry																																					
		27-Sep-16	1240		0.93	Dry																																					
		25-Oct-16	1345		0.93	Dry																																					
		24-Nov-16	1330		0.93	Dry																																					
		20-Dec-16	1400		0.93	Dry																																					
		25-Jan-17	1250		0.93	Dry																																					
		23-Feb-17	1215		0.93	Dry																																					
		30-Mar-17	1045		0.93	Dry																																					
		26-Apr-17	1435		0.93	Dry																																					
		29-May-17	1405		0.93	Dry																																					
		28-Jun-17	1155		0.93	Dry																																					
		26-Jul-17	1415	15.27	16.20	No sample, about 15cm of muddy slime																																					
		29-Aug-17	1340		0.93	Dry																																					
		26-Sep-17	1350		0.93	Dry																																					
		26-Oct-17	1350		0.93	Dry																																					
		27-Nov-17	1335		0.93	Dry																																					
		20-Dec-17	1425		0.93	Dry																																					
		30-Jan-18	1340		0.93	Dry																																					
		28-Feb-18	1235		0.93	Dry																																					
		28-Mar-18	1420		0.93	Dry																																					
		30-Apr-18	1315		0.93	Dry																																					
		29-May-18	1215		0.93	Dry																																					
		26-Jun-18	1025		0.93	Dry																																					
		30-Jul-18	1205	15.12	16.05	7.3	18230	20.3																																			
		30-Aug-18	1310	14.40	15.33	7.1	19760	21.5																																			
		25-Sep-18	1335	14.49	15.42	Insufficient water to sample																																					
		26-Oct-18	1100	14.44	15.37	7	25050	21.5																																			
		28-Nov-18	1400	14.22	15.15	7.1	24320	22.1																																			
		21-Dec-18	1310	14.31	15.24	7	25060	23.6																																			
		31-Jan-19	1310	14.34	15.27	7.1	24320	22.8																																			
		27-Feb-19	930	14.31	15.24	7	25420	22.2																																			
		28-Mar-19	1400	14.29	15.22	7.4	25150	22.3																																			

Site ID	Piezometer / Water Bore	Date	Time	Depth to Water - mbgl	Depth to Stand - mbtoc	Field Parameters			Total Metals																	pH Lab	EC - Lab - µs/cm	Major Cations				Total Cations - meq/L	Major Anions						Total Anions - meq/L	Ionic Balance	Ammonia as Nitrogen (N)	Nitrite as N - mg/L	Nitrate as N - mg/L	NOX as N - mg/L	Total Dissolved Solids
						pH - Field	EC - Field - µs/cm	Temp - Field - °C	Aluminium (Al) - mg/L	Arsenic (As) - mg/L	Barium (Ba) - mg/L	Beryllium (Be) - mg/L	Cadmium (mg/L)	Chromium (Cr) - mg/L	Cobalt (Co) - mg/L	Copper (Cu) - mg/L	Iron (Fe) - mg/L	Lead (Pb) - mg/L	Manganese (Mn) - mg/L	Nickel (Ni) - mg/L	Vanadium (V) - mg/L	Zinc (Zn) - mg/L	Mercury (Hg) - mg/L			Calcium (Ca) - mg/L	Magnesium (Mg) - mg/L	Sodium (Na) - mg/L	Potassium (K) - mg/L		Chloride (Cl) - mg/L	Sulfate (SO4) - mg/L	Hydroxide Alkalinity as CaCO3 - mg/L	Carbonate Alkalinity as CaCO3 - mg/L	Bicarbonate Alkalinity as CaCO3 - mg/L	Alkalinity - mg/L							
ANZECC Guideline - stock drinking water									*5*	*0.5*			*0.01*	*1*	*1*	*1*		*0.1*		*1*		*20*	*0.002*			*1000*						*1000*									*1500*	*400*		*4000*
		30-Apr-19	1425	14.21	15.14	7.3	24980	22.1																																			
		31-May-19	1315	14.15	15.08	7.4	23770	21.9																																			
		25-Jun-19	1350	14.18	15.11	7.5	21610	21																																			
		31-Jul-19	1255	14.08	15.01	7.4	20760	20.9																																			
		31-Aug-19	1300	14.03	14.96	7.3	20750	21.8																																			
		25-Sep-19	1200	14.02	14.95	7.1	25120	21.9	0.55	0.003	0.152	<0.001	<0.0001	0.001	0.006	0.006	0.9	0.027	0.749	0.014	<0.01	0.04	<0.0001	7.97	27700	301	698	5120	26	296	10400	1930	<1	<1	586	586	345	7.71	0.66	0.01	1.11	1.12	18300
		29-Oct-19	1315	14.04	14.97	7.1	26200	22.4																																			
		29-Nov-19	1055	13.85	14.78	7.1	25800	22.3																																			
		18-Dec-19	1235	13.82	14.75	7.1	23700	22.4																																			
P29		**11-Mar-15**	1110	6.54	7.47	8	3970	22.4	0.07	0.004	0.093	<0.001	<0.0001	<0.001	<0.001	0.006	0.3	0.008	0.005	0.002	<0.01	0.041	<0.0001	8.29	4120	14	29	1120	11	52.1	544	155	<1	<1	1460	1460	47.7	4.3	0.04	<0.01	0.6	0.6	2250
		03-Jun-15	1005	6.27	7.2	8	3830	20																																			
Depth	**25**	**08-Sep-15**	1050	5.96	6.89	8.3	3650	20	0.06	0.002	0.074	<0.001	<0.0001	<0.001	<0.001	0.003	0.13	0.006	0.002	<0.001	<0.01	0.023	<0.0001	8.32	3780	10	23	948	5	43.8	405	125	<1	15	1220	1230	38.6	6.2	0.09	<0.01	0.59	0.59	2290
Format.	**Napperby**	**14-Dec-15**	1320	5.64	6.57	8.3	4150	22.9																																			
		10-Mar-16	1045	5.47	6.4	8.2	4460	21.6	0.05	0.002	0.085	<0.001	<0.0001	<0.001	<0.001	0.012	0.11	0.003	0.004	<0.001	<0.01	0.017	<0.0001	8.08	4710	13	30	959	4	44.9	851	136	<1	<1	1040	1040	47.6	2.94	5.7	<0.01	7.65	7.65	2800
		02-Jun-16	1030	5.45	6.38	7.9	4670	20.7																																			
		26-Sep-16	1255	5.08	6.01	8	4400	21.2	0.04	0.003	0.061	<0.001	<0.0001	<0.001	<0.001	0.002	0.07	0.007	0.002	<0.001	<0.01	0.02	<0.0001	8.54	4680	13	26	1010	4	46.8	758	126	<1	95	951	1040	44.8	2.18	<0.01	<0.01	8.35	8.35	2480
		25-Oct-16	1355	4.97	5.9	8.3	4430	21																																			
		24-Nov-16	1340	4.95	5.88	8.4	4530	21.1																																			
		20-Dec-16	1350	4.96	5.89	8.4	9690	21.3																																			
		25-Jan-17	1240	5.05	5.98	8.3	4910	22.2																																			
		23-Feb-17	1205	5.04	5.97	8.3	5160	21.5																																			
		29-Mar-17	1040	6.05	6.98	8.3	5340	22.3																																			
		26-Apr-17	1425	5.11	6.04	8.4	5340	21.4																																			

Site ID	Piezometer / Water Bore	Date	Time	Depth to Water - mbgl	Depth to Stand - mbtoc	Field Parameters			Total Metals															Mercury (Hg) - mg/L	pH Lab	EC - Lab - µs/cm	Major Cations				Total Cations - meq/L	Major Anions						Total Anions - meq/L	Ionic Balance	Ammonia as Nitrogen (N)	Nitrite as N - mg/L	Nitrate as N - mg/L	NOX as N - mg/L	Total Dissolved Solids
						pH - Field	EC - Field - µs/cm	Temp - Field - °C	Aluminium (Al) - mg/L	Arsenic (As) - mg/L	Barium (Ba) - mg/L	Beryllium (Be) - mg/L	Cadmium (mg/L)	Chromium (Cr) - mg/L	Cobalt (Co) - mg/L	Copper (Cu) - mg/L	Iron (Fe) - mg/L	Lead (Pb) - mg/L	Manganese (Mn) - mg/L	Nickel (Ni) - mg/L	Vanadium (V) - mg/L	Zinc (Zn) - mg/L				Calcium (Ca) - mg/L	Magnesium (Mg) - mg/L	Sodium (Na) - mg/L	Potassium (K) - mg/L		Chloride (Cl) - mg/L	Sulfate (SO4) - mg/L	Hydroxide Alkalinity as CaCO3 - mg/L	Carbonate Alkalinity as CaCO3 - mg/L	Bicarbonate Alkalinity as CaCO3 - mg/L	Alkalinity - mg/L							
ANZECC Guideline - stock drinking water									*5*	*0.5*			*0.01*	*1*	*1*	*1*		*0.1*		*1*		*20*	*0.002*			*1000*					*1000*								*1500*	*400*		*4000*
		29-May-17	1355	5.01	5.94	8.5	5470	21.2																																	
		29-Jun-17	1145	4.94	5.87	8.4	5380	21																																	
		26-Jul-17	1405	4.97	5.9	8.6	5490	20.6																																	
		29-Aug-17	1335	4.99	5.92	8.6	5540	20.6																																	
		26-Sep-17	1340	4.97	5.9	8.8	5680	22	<0.01	0.002	0.087	<0.001	<0.0001	<0.001	<0.001	0.003	<0.05	0.006	<0.001	<0.001	<0.01	0.01	<0.0001	8.45	5890	20	42	1060	5	50.7	1120	164	<1	54	797	851	52	1.29	0.01	<0.01	10.3	10.3	3020
		26-Oct-17	1340	4.92	5.85	8.6	5870	21.4																																	
		27-Nov-17	1325	4.94	5.87	8.5	6070	20																																	
		20-Dec-17	1415	4.89	5.82	8.4	6410	21.4																																	
		30-Jan-18	1330	4.91	5.84	8.3	6780	21.5																																	
		28-Feb-18	1225	5.14	6.07	8.2	7010	21.3																																	
		28-Mar-18	1415	4.99	5.92	8.2	7150	21.9																																	
		30-Apr-18	1305	5.00	5.93	8.2	7230	20.9																																	
		29-May-18	1230	4.89	5.82	8.4	7210	21.3																																	
		26-Jun-18	1015	5.10	6.03	8.3	7020	19.9																																	
		26-Jul-18	1150	5.06	5.99	8.4	7040	20.1																																	
		30-Aug-18	1255	5.05	5.98	8.3	7330	20.6																																	
		25-Sep-18	1315	5.08	6.01	8.1	8370	20.5	0.04	0.002	0.153	<0.001	<0.0001	<0.001	<0.001	<0.001	0.11	0.003	0.002	0.001	<0.01	<0.005	<0.0001	7.87	9910	35	80	1720	5	83.3	2590	298	<1	<1	637	637	92	4.97	0.03	<0.01	13	13	**5430**
		30-Oct-18	1045	5.04	5.97	8.1	8490	21.3																																	
		28-Nov-18	1345	4.96	5.89	8	9410	20.6																																	
		21-Dec-18	1255	4.95	5.88	7.9	9350	21																																	
		31-Jan-19	1250	4.99	5.92	7.9	9310	22.1																																	
		27-Feb-19	945	6.03	6.96	7.7	9680	21.6																																	
		28-Mar-19	1335	5.04	5.97	7.6	9370	21.5																																	
		30-Apr-19	1410	5.05	5.98	7.7	9940	21.9																																	
		31-May-19	1300	5.06	5.99	7.9	9320	20.7																																	
		25-Jun-19	1330	5.10	6.03	8	9430	20.8																																	
		31-Jul-19	1235	5.09	6.02	7.1	9780	20.5																																	
		28-Aug-19	1245	5.06	5.99	8.1	9840	20.9																																	
		24-Sep-19	1140	5.11	6.04	8	10340	20.6	0.01	0.001	0.192	<0.001	<0.0001	<0.001	<0.001	<0.001	<0.05	<0.001	<0.001	<0.001	<0.01	<0.005	<0.0001	8.37	10500	48	114	2080	7	102	3630	372	<1	23	694	717	124	9.71	0.01	<0.01	13.1	13.1	5700
		29-Oct-19	1300	5.12	6.05	7.8	10240	20.8																																	
		29-Nov-19	1040	5.10	6.03	7.8	10200	21.1																																	
		18-Dec-19	1220	5.11	6.04	7.8	9550	20.6																																	
P28		11-Mar-15	1120		0.78	Dry																																	
		03-Jun-15	1015		0.78	Dry																																			
Depth	15	08-Sep-15	1100		0.78	Dry																																	
Format.	Napperby	14-Dec-15	1330		0.78	Dry																																	
		10-Mar-16	1055		0.78	Dry																																			
		31-May-16	1055		0.78	Dry																																			
		27-Sep-16	1300		0.78	Dry																																			
		25-Oct-16	1405		0.78	Dry																																			
		24-Nov-16	1350		0.78	Dry																																			
		20-Dec-16	1335		0.78	Dry																																			
		25-Jan-17	1225		0.78	Dry																																			
		23-Feb-17	1150		0.78	Dry																																			
		30-Mar-17	1025		0.78	Dry																																			
		26-Apr-17	1410		0.78	Dry																																			
		29-May-17	1345		0.78	Dry																																			
		29-Jun-17	1040		0.78	Dry																																			
		26-Jul-17	1350		0.78	Dry																																			
		29-Aug-17	1325		0.78	Dry																																			
		26-Sep-17	1320		0.78	Dry																																			
		26-Oct-17	1320		0.78	Dry																																			
		27-Nov-17	1310		0.78	Dry																																			
		20-Dec-17	1400		0.78	Dry																																			
		30-Jan-18	1315		0.78	Dry																																			
		28-Feb-18	1210		0.78	Dry																																			
		28-Mar-18	1400		0.78	Dry																																			
		30-Apr-18	1250		0.78	Dry																																			
		29-May-18	1240		0.78	Dry																																			
		26-Jun-18	955		0.78	Dry																																			
		30-Jul-18	1135		0.78	Dry																																			
		30-Aug-18	1240		0.78	Dry																																			
		25-Sep-18	1300		0.78	Dry																																			
		26-Oct-18	1035		0.78	Dry																																			
		28-Nov-18	1330		0.78	Dry																																			
		21-Dec-18	1240		0.78	Dry																																			
		31-Jan-19	1235		0.78	Dry																																			
		27-Feb-19	1000		0.78	Dry																																			
		28-Mar-19	1320		0.78	Dry																																			
		30-Apr-19	1400		0.78	Dry																																			
		31-May-19	1250		0.78	Dry																																			
		25-Jun-19	1310		0.78	Dry																																			
		31-Jul-19	1215		0.78	Dry																																			
		31-Aug-19	1230		0.78	Dry																																			
		25-Sep-19	1120		0.78	Dry																																			
		10-Oct-19	1245		0.78	Dry																																			
		29-Nov-19	1020		0.78	Dry																																			
		18-Dec-19	1205		0.78	Dry																																			
P31		11-Mar-15	1020	15.54	16.45	7.3	7060	22.6	0.22	<0.001	0.222	<0.001	<0.0001	<0.001	<0.001	0.008	0.26	0.008	0.019	0.004	<0.01	0.143	<0.0001	7.76	7370	92	160	1220	12	71.1	1840	339	<1	<1	920	920	77.3	4.21	0.03	<0.01	9.71	9.71	3430
		03-Jun-15	935	15.76	16.67	7.2	7150	21.3																																	
Depth	15	08-Sep-15	1010	15.68	16.59	7.2	7210	21.6	0.74	0.001	0.171	<0.001	<0.0001	<0.001	0.001	0.006	1.4	0.009	0.174	0.002	<0.01	0.07	<0.0001	7.78	7640	108	170	1260	13	74.5	1730	322	<1	<1	820	820	71.9	1.77	0.05	0.01	7.82	7.83	**4470**
Format.	Napperby	14-Dec-15	1255	15.50	16.41	7.3	7180	23.4																																	
		10-Mar-16	955	15.47	16.38	7.3	7060	22.5	0.57	<0.001	0.158	<0.001	<0.0001	<0.001	<0.001	0.04	0.98	0.018	0.037	0.002	<0.01	0.078	<0.0001	7.66	7540	90	155	1320	17	75.1	1730	343	<1	<1	867	867	73.3	1.21	1.7	<0.01	10	10	**4280**
		31-May-16	1020	15.58	16.49	7.3	7100	21.4																																	
		27-Sep-16	1235	15.39	16.3	7.3	6840	22.2	0.03	0.001	0.171	<0.001	<0.0001	<0.001	<0.001	0.003	0.06	<0.001	0.003	0.001	<0.01	0.024	<0.0001	7.7	7310	95	161	1280	12	74	1350	299	<1	<1	932	932	62.9	8.04	0.02	<0.01	9.78	9.78	3640
		25-Oct-16	1335	15.45	16.36	7.3	6776	22.1																																	
		24-Nov-16	1320	15.44	16.35	7.3	6840	21.3																																	
		20-Dec-16	1325	15.38	16.29	7.2	6750	22.5																																	
		25-Jan-17	1215	15.43	16.34	7.1	6820	23																																	
		23-Feb-17	1145	15.47	16.38	7.2	6730	22.3																																	
		30-Mar-17	1020	15.41	16.32	7.3	6750	23																																	
		26-Apr-17	1400	15.37	16.28	7.3	6890	21.8																																	
		29-May-17	1330	15.49	16.4	7.3	6870	22.4																																	
		29-Jun-17	1050	15.41	16.32	7.1	7120	20.5																																	
		26-Jul-17	1340	15.48	16.39	7.2	7040	21.3																																	
		29-Aug-17	1315	15.48	16.39	7.3	7040	21.7																																	
		26-Sep-17	1310	15.46	16.37	7.3	7050	23.1	0.02	<0.001	0.181	<0.001	<0.0001	<0.001	<0.001	<0.001	<0.05	<0.001	0.002	<0.001	<0.01	0.013	<0.0001	7.66	7170	82	149	1120	11	65.4	1420	287	<1	<1	798	798	62	2.65	<0.01	<0.01	9.1	9.1	**4140**
		26-Oct-17	1310	15.35	16.26	7.3	6990	22.7																																	
		27-Nov-17	1300	15.45	16.36	7.2	7130	21.8																																	
		20-Dec-17	1355	15.41	16.32	7.2	7090	23.1																																	
		30-Jan-18	1305	15.39	16.3	7.3	7100	22.8																																	
		28-Feb-18	1200	15.51	16.42	7.3	6990	22.3																																	
		28-Mar-18	1350	15.53	16.44	7.3	7060	22.5																																	
		30-Apr-18	1240	15.60	16.51	7.3	7120	21.9																																	
		29-May-18	1255	15.59	16.5	7.3	7030	22.2																																	
		26-Jun-18	945	15.74	16.65	7.4	6730	21																																	
		30-Jul-18	1125	15.70	16.61	7.4	6820	21.3																																	
		30-Aug-18	1230	15.76	16.67	7.4	6710	21.5																																	
		25-Sep-18	1250	15.84	16.75	7.4	6670	21.7	0.02	0.001	0.133	<0.001	<0.0001	<0.001	<0.001	<0.001	<0.05	<0.001	0.005	<0.001	<0.01	<0.005	<0.0001	7.51	8250	88	158	1180	11	69	1890	352	<1	<1	781	781	76.2	4.99	0.03	<0.01	10.2	10.2	**4400**
		26-Oct-18	1020	15.91	16.82	7.3	6740	23.1																																	

Site ID	Piezometer / Water Bore	Date	Time	Depth to Water - mbgl	Depth to Stand - mbtoc	Field Parameters			Total Metals															Mercury (Hg) - mg/L	pH Lab	EC - Lab - µs/cm	Major Cations				Total Cations - meq/L	Major Anions						Total Anions - meq/L	Ionic Balance	Ammonia as Nitrogen (N)	Nitrite as N - mg/L	Nitrate as N - mg/L	NOX as N - mg/L	Total Dissolved Solids
						pH - Field	EC - Field - µs/cm	Temp - Field - °C	Aluminium (Al) - mg/L	Arsenic (As) - mg/L	Barium (Ba) - mg/L	Beryllium (Be) - mg/L	Cadmium (mg/L)	Chromium (Cr) - mg/L	Cobalt (Co) - mg/L	Copper (Cu) - mg/L	Iron (Fe) - mg/L	Lead (Pb) - mg/L	Manganese (Mn) - mg/L	Nickel (Ni) - mg/L	Vanadium (V) - mg/L	Zinc (Zn) - mg/L				Calcium (Ca) - mg/L	Magnesium (Mg) - mg/L	Sodium (Na) - mg/L	Potassium (K) - mg/L		Chloride (Cl) - mg/L	Sulfate (SO4) - mg/L	Hydroxide Alkalinity as CaCO3 - mg/L	Carbonate Alkalinity as CaCO3 - mg/L	Bicarbonate Alkalinity as CaCO3 - mg/L	Alkalinity - mg/L							
ANZECC Guideline - stock drinking water									***5***	***0.5***			***0.01***	***1***	***1***	***1***		***0.1***		***1***		***20***	***0.002***			***1000***						***1000***							***1500***	***400***		***4000***
		28-Nov-18	1325	15.88	16.79	7.3	7030	21.7																																	

Site ID	Piezometer / Water Bore	Date	Time	Depth to Water - mbgl	Depth to Stand - mbtoc	Field Parameters			Total Metals															Major Cations					Major Anions													
						pH - Field	EC - Field - µs/cm	Temp - Field - °C	Aluminium (Al) - mg/L	Arsenic (As) - mg/L	Barium (Ba) - mg/L	Beryllium (Be) - mg/L	Cadmium (mg/L)	Chromium (Cr) - mg/L	Cobalt (Co) - mg/L	Copper (Cu) - mg/L	Iron (Fe) - mg/L	Lead (Pb) - mg/L	Manganese (Mn) - mg/L	Nickel (Ni) - mg/L	Vanadium (V) - mg/L	Zinc (Zn) - mg/L	Mercury (Hg) - mg/L	pH Lab	EC - Lab - µs/cm	Calcium (Ca) - mg/L	Magnesium (Mg) - mg/L	Sodium (Na) - mg/L	Potassium (K) - mg/L	Total Cations - meq/L	Chloride (Cl) - mg/L	Sulfate (SO4) - mg/L	Hydroxide Alkalinity as CaCO3 - mg/L	Carbonate Alkalinity as CaCO3 - mg/L	Bicarbonate Alkalinity as CaCO3 - mg/L	Alkalinity - mg/L	Total Anions - meq/L	Ionic Balance	Ammonia as Nitrogen (N)	Nitrite as N - mg/L	Nitrate as N - mg/L	NOX as N - mg/L	Total Dissolved Solids
ANZECC Guideline - stock drinking water									*5*	*0.5*			*0.01*	*1*	*1*	*1*		*0.1*		*1*		*20*	*0.002*			*1000*						*1000*								*1500*	*400*		*4000*
		21-Dec-18	1230	15.76	16.67	7.3	6920	21.9																																		
		31-Jan-19	1230	15.79	16.7	7.3	6870	22.2																																		
		27-Feb-19	1025	15.90	16.81	7.2	7120	22.4																																		
		28-Mar-19	1315	15.98	16.89	7.2	7090	21.8																																		
		30-Apr-19	1355	15.97	16.88	7.3	7110	21.7																																		
		31-May-19	1245	16.01	16.92	7.4	6880	21.1																																		
		25-Jun-19	1230	16.07	16.98	7.5	7020	21.3																																		
		31-Jul-19	1210	16.07	16.98	7.5	7080	21.5																																		
		31-Aug-19	1225	16.01	16.92	7.4	6950	22.1																																		
		25-Sep-19	1110	16.07	16.98	7.3	7180	21.8	0.02	<0.001	0.177	<0.001	<0.0001	<0.001	<0.001	<0.001	<0.05	<0.001	0.006	<0.001	<0.01	0.011	<0.0001	8.24	7380	92	166	1290	13	74.7	1820	368	<1	<1	871	871	76.4	1.13	0.01	<0.01	10.3	10.3	4030
		10-Oct-19	1240	16.06	16.97	7.3	7020	22.3																																		
		29-Nov-19	1015	16.00	16.91	7.3	7060	22.4																																		
		18-Dec-19	1200	16.01	16.92	7.4	6840	22.4																																		
P32		11-Mar-15	1140	6.50	7.46	8.3	2030	23.8	0.16	0.003	0.013	<0.001	<0.0001	<0.001	<0.001	0.004	0.15	0.005	0.004	<0.001	0.04	0.023	<0.0001	8.48	2070	2	6	524	<1	23.4	123	114	<1	40	830	870	23.2	0.28	0.04	<0.01	0.41	0.41	1100
		03-Jun-15	1025	6.80	7.76	8.3	1807	21.3																																		
Depth	15	08-Sep-15	1115	6.69	7.65	8.5	1658	22.2	0.13	0.004	0.009	<0.001	<0.0001	<0.001	<0.001	0.003	0.16	<0.001	0.003	<0.001	0.04	0.02	<0.0001	8.52	1720	1	4	470	<1	20.8	40	52	<1	42	763	805	18.3	6.4	0.04	<0.01	0.15	0.15	998
Format.	Napperby	14-Dec-15	1340	6.58	7.54	8.5	1672	23																																		
		10-Mar-16	1120	6.16	7.12	8.7	1688	23.2	0.09	0.004	0.008	<0.001	<0.0001	0.006	<0.001	0.008	0.16	<0.001	0.003	<0.001	0.04	0.015	<0.0001	8.49	1770	<1	4	466	<1	20.6	40	66	<1	36	803	839	19.3	3.28	5.2	<0.01	1.04	1.04	1030
		31-May-16	1105	8.15	9.11	8.9	1786	21.7																																		
		27-Sep-16	1330	6.07	7.03	8.7	1695	22.9	0.13	0.004	0.013	<0.001	<0.0001	<0.001	<0.001	0.019	0.17	0.002	0.005	0.003	0.04	0.026	0.0002	8.58	1770	<1	3	444	<1	19.6	47	72	<1	68	817	884	20.5	2.38	0.32	0.16	1.15	1.31	1000
		25-Oct-16	1255	5.71	6.67	8.7	1667	22.4																																		
		24-Nov-16	1250	5.57	6.53	8.7	1719	21.6																																		
		20-Dec-16	1250	5.71	6.67	8.7	1773	22.6																																		
		25-Jan-17	1140	6.08	7.04	8.6	1841	22.9																																		
		23-Feb-17	1120	6.45	7.41	8.6	1684	22.1																																		
		30-Mar-17	945	6.70	7.66	8.6	1693	23																																		
		26-Apr-17	1325	6.80	7.76	8.7	1695	22.6																																		
		29-May-17	1255	7.07	8.03	8.7	1705	22.4																																		
		29-Jun-17	1130	7.13	8.09	8.6	1690	21.9																																		
		26-Jul-17	1300	7.22	8.18	8.7	1600	22.1																																		
		29-Aug-17	1240	7.38	8.34	8.7	1660	22																																		
		26-Sep-17	1230	7.56	8.52	8.7	1670	22.4	0.02	0.004	0.014	<0.001	<0.0001	<0.001	<0.001	0.003	<0.05	<0.001	0.001	<0.001	0.04	0.006	<0.0001	8.46	1760	4	6	384	1	17.4	33	51	<1	38	782	820	18.4	2.67	0.03	<0.01	0.94	0.94	1020
		26-Oct-17	1235	7.67	8.63	8.7	1697	23.4																																		
		27-Nov-17	1225	7.96	8.92	8.7	1720	22.1																																		
		20-Dec-17	1320	8.02	8.98	8.7	1787	23.4																																		
		30-Jan-18	1230	8.19	9.15	8.7	1851	23.4																																		
		28-Feb-18	1255	8.28	9.24	8.7	1844	22.8																																		
		28-Mar-18	1325	8.39	9.35	8.7	1895	23.2																																		
		30-Apr-18	1215	8.40	9.36	8.7	1907	22.3																																		
		29-May-18	1330	8.52	9.48	8.8	1845	22.4																																		
		26-Jun-18	905	8.66	9.62	8.6	1827	20.8																																		
		30-Jul-18	1050	8.70	9.66	8.6	1827	21																																		
		30-Aug-18	1215	8.80	9.76	8.6	1934	22.1																																		
		25-Sep-18	1225	8.81	9.77	8.8	1890	21.7	0.05	0.003	0.008	<0.001	<0.0001	<0.001	<0.001	0.004	0.05	<0.001	0.002	<0.001	0.03	<0.005	<0.0001	8.42	2120	4	7	518	<1	23.3	42	100	<1	32	801	833	19.9	7.86	0.02	<0.01	0.08	0.08	1320
		26-Oct-18	1115	9.00	9.96	8.9	2270	23.4																																		
		28-Nov-18	1300	8.80	9.76	8.5	2040	22.2																																		
		21-Dec-18	1200	8.85	9.81	8.4	2060	22.4																																		
		31-Jan-19	1200	8.93	9.89	8.4	2060	23.1																																		
		27-Feb-19	1045	9.00	9.96	8.6	2080	23.1																																		
		28-Mar-19	1240	9.01	9.97	8.6	2060	22.2																																		
		30-Apr-19	1335	9.00	9.96	8.6	2130	22.4																																		
		31-May-19	1220	9.05	10.01	8.5	1950	21.5																																		
		25-Jun-19	1230	9.06	10.02	8.3	2030	21.7																																		
		31-Jul-19	1140	9.08	10.04	8.4	2050	21.9																																		
		31-Aug-19	1155	9.09	10.05	8.4	2020	22.7																																		
		25-Sep-19	1020	9.09	10.05	8.4	2100	22.7	0.06	0.002	0.023	<0.001	<0.0001	0.002	<0.001	0.005	0.07	<0.001	<0.001	<0.001	0.03	0.01	<0.0001	8.78	2180	3	7	607	3	27.2	44	130	<1	108	938	1040	24.7	4.77	0.04	<0.01	0.32	0.32	1290
		10-Oct-19	1215	9.10	10.06	8.4	2250	22.8																																		
		29-Nov-19	945	9.07	10.03	8.4	2450	23.1																																		
		18-Dec-19	1135	9.09	10.05	8.4	2580	23.1																																		
P33		11-Mar-15	950		0.97	Dry																																		
		03-Jun-15	915		0.97	Dry																																		
Depth	15	08-Sep-15	940		0.97	Dry																																		
Format.	Napperby	14-Dec-15	1235		0.97	Dry																																		
		10-Mar-16	925		0.97	Dry																																		
		31-May-16	1000		0.97	Dry																																		
		27-Sep-16	1205		0.97	Dry																																		
		25-Oct-16	1305		0.97	Dry																																		
		24-Nov-16	1300		0.97	Dry																																		
		20-Dec-16	1300		0.97	Dry																																		
		25-Jan-17	1150		0.97	Dry																																		
		23-Feb-17	1125		0.97	Dry																																		
		30-Mar-17	955		0.97	Dry																																		
		26-Apr-17	1335		0.97	Dry																																		
		29-May-17	1308		0.97	Dry																																		
		29-Jun-17	1120		0.97	Dry																																		
		26-Jul-17	1315		0.97	Dry																																		
		29-Aug-17	1250		0.97	Dry																																		
		26-Sep-17	1240		0.97	Dry																																		
		26-Oct-17	1245		0.97	Dry																																		
		27-Nov-17	1235		0.97	Dry																																		
		20-Dec-17	1330		0.97	Dry																																		
		30-Jan-18	1240		0.97	Dry																																		
		28-Feb-18	1150		0.97	Dry																																		
		28-Mar-18	1330		0.97	Dry																																		
		30-Apr-18	1225		0.97	Dry																																		
		29-May-18	1315		0.97	Dry																																		
		26-Jun-18	920		0.97	Dry																																		
		30-Jul-18	1100		0.97	Dry																																		
		30-Aug-18			0.97	Dry																																		
		25-Sep-18	1230		0.97	Dry																																		
		26-Oct-18	1130		0.97	Dry																																		
		28-Nov-18	1305		0.97	Dry																																		
		21-Dec-18	1205		0.97	Dry																																		
		31-Jan-19	1205		0.97	Dry																																		
		27-Feb-19	1105		0.97	Dry																																		
		28-Mar-19	1245		0.97	Dry																																		
		30-Apr-19	1340		0.97	Dry																																		
		31-May-19	1225		0.97	Dry																																		
		25-Jun-19	1235		0.97	Dry																																		
		31-Jul-19	1145		0.97	Dry																																		
		31-Aug-19	1200		0.97	Dry																																		
		25-Sep-29	1030		0.97	Dry																																		
		29-Oct-19	1220		0.97	Dry																																		
		29-Nov-19	950		0.97	Dry																																		
		18-Dec-19	1140		0.97	Dry																																		
P34		11-Mar-15	1000		0.95	Dry																																		
		03-Jun-15	925		0.95	Dry																																		
Depth	15	08-Sep-15	955		0.95	Dry																																		
Format.	Napperby	14-Dec-15	1245		0.95	Dry																																		
		10-Mar-16	935		0.95	Dry																																		

Site ID	Piezometer / Water Bore	Date	Time	Depth to Water - mbgl	Depth to Stand - mbtoc	Field Parameters			Total Metals															Mercury (Hg) - mg/L	pH Lab	EC - Lab - µs/cm	Major Cations				Total Cations - meq/L	Major Anions						Total Anions - meq/L	Ionic Balance	Ammonia as Nitrogen (N)	Nitrite as N - mg/L	Nitrate as N - mg/L	NOX as N - mg/L	Total Dissolved Solids
						pH - Field	EC - Field - µs/cm	Temp - Field - °C	Aluminium (Al) - mg/L	Arsenic (As) - mg/L	Barium (Ba) - mg/L	Beryllium (Be) - mg/L	Cadmium (mg/L)	Chromium (Cr) - mg/L	Cobalt (Co) - mg/L	Copper (Cu) - mg/L	Iron (Fe) - mg/L	Lead (Pb) - mg/L	Manganese (Mn) - mg/L	Nickel (Ni) - mg/L	Vanadium (V) - mg/L	Zinc (Zn) - mg/L				Calcium (Ca) - mg/L	Magnesium (Mg) - mg/L	Sodium (Na) - mg/L	Potassium (K) - mg/L		Chloride (Cl) - mg/L	Sulfate (SO4) - mg/L	Hydroxide Alkalinity as CaCO3 - mg/L	Carbonate Alkalinity as CaCO3 - mg/L	Bicarbonate Alkalinity as CaCO3 - mg/L	Alkalinity - mg/L						
ANZECC Guideline - stock drinking water									*5*	*0.5*			*0.01*	*1*	*1*	*1*		*0.1*		*1*		*20*	*0.002*			*1000*						*1000*									*1500*	*400*		*4000*
		31-May-16	1010		0.95	Dry																																			
		27-Sep-16	1215		0.95	Dry																																				
		25-Oct-16	1315		0.95	Dry																																				

Site ID	Piezometer / Water Bore	Date	Time	Depth to Water - mbgl	Depth to Stand - mbtoc	Field Parameters			Total Metals														Mercury (Hg) - mg/L	pH Lab	EC - Lab - µs/cm	Major Cations				Total Cations - meq/L	Major Anions						Total Anions - meq/L	Ionic Balance	Ammonia as Nitrogen (N)	Nitrite as N - mg/L	Nitrate as N - mg/L	NOX as N - mg/L	Total Dissolved Solids
						pH - Field	EC - Field - µs/cm	Temp - Field - °C	Aluminium (Al) - mg/L	Arsenic (As) - mg/L	Barium (Ba) - mg/L	Beryllium (Be) - mg/L	Cadmium (mg/L)	Chromium (Cr) - mg/L	Cobalt (Co) - mg/L	Copper (Cu) - mg/L	Iron (Fe) - mg/L	Lead (Pb) - mg/L	Manganese (Mn) - mg/L	Nickel (Ni) - mg/L	Vanadium (V) - mg/L	Zinc (Zn) - mg/L				Calcium (Ca) - mg/L	Magnesium (Mg) - mg/L	Sodium (Na) - mg/L	Potassium (K) - mg/L		Chloride (Cl) - mg/L	Sulfate (SO4) - mg/L	Hydroxide Alkalinity as CaCO3 - mg/L	Carbonate Alkalinity as CaCO3 - mg/L	Bicarbonate Alkalinity as CaCO3 - mg/L	Alkalinity - mg/L							
ANZECC Guideline - stock drinking water									*5*	*0.5*			*0.01*	*1*	*1*	*1*		*0.1*		*1*		*20*	*0.002*			*1000*						*1000*							*1500*	*400*		*4000*
		24-Nov-16	1310		0.95	Dry																																			
		20-Dec-16	1310		0.95	Dry																																			
		25-Jan-17	1200		0.95	Dry																																			
		23-Feb-17	1130		0.95	Dry																																			
		30-Mar-17	1005		0.95	Dry																																			
		26-Apr-17	1345		0.95	Dry																																			
		29-May-17			0.95	Dry																																			
		29-Jun-17	1110		0.95	Dry																																			
		26-Jul-17	1325		0.95	Dry																																			
		29-Aug-17	1300		0.95	Dry																																			
		26-Sep-17	1250		0.95	Dry																																			
		26-Oct-17	1255		0.95	Dry																																			
		27-Nov-17	1245		0.95	Dry																																			
		20-Dec-17	1340		0.95	Dry																																			
		30-Jan-18	1250		0.95	Dry																																			
		28-Feb-18	1140		0.95	Dry																																			
		28-Mar-18	1335		0.95	Dry																																			
		30-Apr-18	1230		0.95	Dry																																			
		29-May-18	1305		0.95	Dry																																			
		26-Jun-18	930		0.95	Dry																																			
		30-Jul-18	1110		0.95	Dry																																			
		30-Aug-18			0.95	Dry																																			
		25-Sep-18	1235		0.95	Dry																																			
		26-Oct-18	1140		0.95	Dry																																			
		28-Nov-18	1310		0.95	Dry																																			
		21-Dec-18	1210		0.95	Dry																																			
		31-Jan-19	1210		0.95	Dry																																			
		27-Feb-19	1110		0.95	Dry																																			
		28-Mar-19	1250		0.95	Dry																																			
		30-Apr-19	1345		0.95	Dry																																			
		31-May-19	1230		0.95	Dry																																			
		25-Jun-19	1240		0.95	Dry																																			
		31-Jul-19	1150		0.95	Dry																																			
		31-Aug-19	1205		0.95	Dry																																			
		25-Sep-19	1040		0.95	Dry																																			
		29-Oct-19	1225		0.95	Dry																																			
		29-Nov-19	955		0.95	Dry																																			
		18-Dec-19	1145		0.95	Dry																																			
P47		12-Mar-15	1345	23.78	24.8	7	5360	23.7	1.65	<0.001	0.115	<0.001	<0.0001	0.01	0.01	0.026	5.97	0.004	0.17	0.039	0.01	0.098	<0.0001	7.5	5660	32	122	1180	38	63.9	858	353	<1	<1	1530	1530	62.1	1.4	0.09	<0.01	0.02	0.02	2770
		03-Jun-15	1120	23.90	24.92	7	5980	21.7																																			
Depth	30.5	08-Sep-15	1200	23.88	24.9	7.1	5890	22.8	**5.7**	0.002	0.095	<0.001	<0.0001	0.031	0.011	0.027	9.33	0.007	0.16	0.036	0.03	0.075	<0.0001	7.69	6200	34	111	1100	37	59.6	800	330	<1	<1	1450	1450	58.4	0.99	0.59	<0.01	0.03	0.03	3940
Format.	Garrawilla	14-Dec-15	1140	23.85	24.87	7.2	6010	23.1																																			
		10-Mar-16	1315	23.85	24.87	7.2	5470	25	**16.4**	0.003	0.267	<0.001	0.0002	0.095	0.041	0.116	31	0.018	0.453	0.153	0.08	0.28	<0.0001	7.38	5810	29	113	1110	35	59.9	901	358	<1	<1	1410	1410	61	0.96	0.5	<0.01	0.02	0.02	3880
		02-Jun-16	1150	23.86	24.88	7.1	5420	22.1																																			
		28-Sep-16	1415	23.81	24.83	7.1	5510	22.9	0.16	0.001	0.053	<0.001	<0.0001	<0.001	0.002	0.002	2.38	<0.001	0.084	0.006	<0.01	0.062	<0.0001	7.56	6140	34	113	1240	37	65.9	937	349	<1	<1	1640	1640	66.5	0.48	0.3	<0.01	0.01	0.01	3410
		27-Oct-16	1115	23.95	24.97	7.1	5380	22.5																																			
		24-Nov-16	1120	23.84	24.86	7.1	5360	22																																			
		20-Dec-16	1105	23.81	24.83	7	5410	22.9																																			
		24-Jan-17	1110	23.80	24.82	7	5430	23																																			
		22-Feb-17	1215	23.79	24.81	7	5910	23.2																																			
		29-Mar-17	1040	23.76	24.78	7	5680	23.6																																			
		26-Apr-17	1145	23.69	24.71	7	5640	22.8																																			
		29-May-17	1120	23.74	24.76	7	5560	22.7																																			
		29-Jun-17				No access too wet																																					
		26-Jul-17	1110	23.76	24.78	7	5520	22.1																																			
		29-Aug-17	1100	23.88	24.9	7.1	5450	21.9																																			
		26-Sep-17	1030			damaged																																					
		26-Oct-17				damaged																																					
		27-Nov-17				damaged																																					
		20-Dec-17				damaged																																					
		30-Jan-18				damaged																																					
		28-Feb-18				damaged																																					
		28-Mar-18				damaged																																					
		30-Apr-18				damaged																																					
		29-May-18				damaged																																					
		26-Jun-18				damaged																																					
		18-Jul-18	1130	24.73	26.77	7.2	5650	22.3																																			
		26-Jul-18	1050	23.86	25.9	7.2	5570	22.2																																			
		30-Aug-18	1110	23.87	25.12	7.2	5620	21.7																																			
		25-Sep-18	1025	23.94	25.19	7.2	5640	21.4	**16.6**	0.003	0.458	<0.001	0.0002	0.086	0.044	0.056	26.4	0.016	0.714	0.156	0.07	0.1	0.0001	7.23	7100	39	149	1380	34	75.1	1040	407	<1	<1	1360	1360	65	7.22	0.07	<0.01	0.02	0.02	**4150**
		30-Oct-18	1240	23.91	25.16	7.2	5870	23.1																																			
		28-Nov-18	1125	23.89	25.14	7.2	5910	22.9																																			
		21-Dec-18	1020	23.89	25.14	7.2	5840	23.1																																			
		31-Jan-19	1030	23.92	25.17	7.2	5710	22.8																																			
		27-Feb-19	1210	23.94	25.19	7	5750	23.4																																			
		28-Mar-19	1035	23.97	25.22	7	5680	22.8																																			
		30-Apr-19	1215	23.96	25.21	7	5710	22.4																																			
		31-May-19	1055	23.99	25.24	7	5680	22.3																																			
		25-Jun-19	1035	24.01	25.26	7.1	5880	21.3																																			
		31-Jul-19	925	24.00	25.25	7.2	5840	21.3																																			
		28-Aug-19	1010	23.99	25.24	7.2	5940	22.2																																			
		24-Sep-19	1110	25.00	26.25	7.4	6030	22	4.36	0.002	0.127	<0.001	<0.0001	0.022	0.017	0.015	6.88	0.004	0.226	0.056	0.02	0.049	<0.0001	7.53	3570	44	144	1370	38	74.6	989	393	<1	1	1380	1380	63.6	7.92	0.21	<0.01	0.03	0.03	3570
		29-Oct-19	1040	24.56	25.81	7.2	5920	22.4																																			
		28-Nov-19	1245	24.05	25.3	7.2	6180	23.3																																			
		18-Dec-19	1000	23.99	25.24	7.2	5790	22.8																																			
P39A		02-Jun-16	1005	6.56	7.56	7.5	3340	20.1																																			
		26-Sep-16			too wet																																					
Depth	80	27-Oct-16	1010	5.88	6.88	7.8	3440	21.2	0.12	0.002	0.071	<0.001	<0.0001	<0.001	<0.001	0.001	0.5	<0.001	0.209	0.004	<0.01	0.033	<0.0001	7.84	3730	58	58	687	12	37.8	803	55	<1	<1	620	620	36.2	2.26	0.08	<0.01	<0.01	<0.01	1840
Format.	Watermark	25-Nov-16	1010	5.90	6.9	7.5	3510	20.5																																			
		21-Dec-16	1040	5.86	6.86	7.5	3660	21.9																																			
		20-Jan-17	1200	5.86	6.86	7.6	3610	22																																			
		21-Feb-17				No access																																					
		29-Mar-17	1305	5.80	6.8	7.7	3790	22.7																																			
		27-Apr-17	945	5.83	6.83	7.9	3960	19.6																																			
		30-May-17	1040	5.81	6.81	8	3860	20.3																																			
		27-Jun-17	1050	5.80	6.8	7.9	3880	20.2																																			
		28-Jul-17	945	5.82	6.82	7.9	3840	20.3																																			
		28-Aug-17	955	5.82	6.82	7.9	3950	20.1																																			
		25-Sep-17	1010	5.85	6.85	7.9	3900	21.5	<0.01	0.001	0.091	<0.001	<0.0001	<0.001	<0.001	0.003	0.17	<0.001	0.281	0.004	<0.01	0.008	<0.0001	7.95	4080	60	62	812	13	43.7	793	76	<1	<1	604	604	36	9.69	0.81	<0.01	<0.01	<0.01	2260
		27-Oct-17	955	5.83	6.83	7.8	3920	21.1																																			
		28-Nov-17	1050	5.88	6.88	7.9	3910	21.2																																			
		20-Dec-17	950	5.91	6.91	7.9	3810	22.3																																			
		31-Jan-18	930	5.94	6.94	7.9	3970	21.2																																			
		27-Feb-18	930	5.69	6.69	8	3940	20.5																																			
		28-Mar-18	930	5.98	6.98	8	3980	21.2																																			
		26-Apr-18	940	5.92	6.92	8	3890	21.3																																			
		28-May-18	955	6.06	7.06	8	3760	20.9																																			
		25-Jun-18				No access																																					
		30-Jul-18				No access																																					

Site ID	Piezometer / Water Bore	Date	Time	Depth to Water - mbgl	Depth to Stand - mbtoc	Field Parameters			Total Metals															Mercury (Hg) - mg/L	pH Lab	EC - Lab - µs/cm	Major Cations				Total Cations - meq/L	Major Anions						Total Anions - meq/L	Ionic Balance	Ammonia as Nitrogen (N)	Nitrite as N - mg/L	Nitrate as N - mg/L	NOX as N - mg/L	Total Dissolved Solids
						pH - Field	EC - Field - µs/cm	Temp - Field - °C	Aluminium (Al) - mg/L	Arsenic (As) - mg/L	Barium (Ba) - mg/L	Beryllium (Be) - mg/L	Cadmium (mg/L)	Chromium (Cr) - mg/L	Cobalt (Co) - mg/L	Copper (Cu) - mg/L	Iron (Fe) - mg/L	Lead (Pb) - mg/L	Manganese (Mn) - mg/L	Nickel (Ni) - mg/L	Vanadium (V) - mg/L	Zinc (Zn) - mg/L				Calcium (Ca) - mg/L	Magnesium (Mg) - mg/L	Sodium (Na) - mg/L	Potassium (K) - mg/L		Chloride (Cl) - mg/L	Sulfate (SO4) - mg/L	Hydroxide Alkalinity as CaCO3 - mg/L	Carbonate Alkalinity as CaCO3 - mg/L	Bicarbonate Alkalinity as CaCO3 - mg/L	Alkalinity - mg/L							
ANZECC Guideline - stock drinking water									***5***	***0.5***			***0.01***	***1***	***1***	***1***		***0.1***		***1***		***20***	***0.002***			***1000***					***1000***								***1500***	***400***		***4000***
		30-Aug-18				No access																																				
		26-Sep-18	935	6.10	7.1	8.5	3920	19.2	0.31	0.002	0.094	<0.001	<0.0001	<0.001	<0.001	0.004	1.1	<0.001	0.336	0.003	<0.01	0.019	<0.0001	8.19	4280	72	78	859	15	47.8	938	156	<1	<1	516	516	40	8.82	1.22	0.03	0.13	0.16	2540
		30-Oct-18				No access																																				
		29-Nov-18	1020	6.14	7.14	8.1	4280	20.5																																		
		20-Dec-18	1005	6.16	7.16	8.1	4200	20.7																																		
		31-Jan-19				No access																																				
		25-Feb-19				No access																																				
		25-Mar-19				No access																																				
		26-Apr-19				No access																																				
		30-May-19	945	6.28	7.28	8.1	3970	20.6																																		
		26-Jun-19				No access - hand feeding																																				
		31-Jul-19				No access - hand feeding																																				
		29-Aug-19				No access - hand feeding																																				
		26-Sep-19				No access - hand feeding																																				
		29-Oct-19				No access - hand feeding																																				
		28-Nov-19				No access - hand feeding																																				
		18-Dec-19				No access - hand feeding																																				
P39B		**02-Jun-16**	950	6.22	7.12	8.1	5850	20.2																																		
		26-Sep-16			too wet																																					

Site ID	Piezometer / Water Bore	Date	Time	Depth to Water - mbgl	Depth to Stand - mbtoc	Field Parameters			Total Metals														Mercury (Hg) - mg/L	pH Lab	EC - Lab - µs/cm	Major Cations				Total Cations - meq/L	Major Anions						Total Anions - meq/L	Ionic Balance	Ammonia as Nitrogen (N)	Nitrite as N - mg/L	Nitrate as N - mg/L	NOX as N - mg/L	Total Dissolved Solids
						pH - Field	EC - Field - µs/cm	Temp - Field - °C	Aluminium (Al) - mg/L	Arsenic (As) - mg/L	Barium (Ba) - mg/L	Beryllium (Be) - mg/L	Cadmium (mg/L)	Chromium (Cr) - mg/L	Cobalt (Co) - mg/L	Copper (Cu) - mg/L	Iron (Fe) - mg/L	Lead (Pb) - mg/L	Manganese (Mn) - mg/L	Nickel (Ni) - mg/L	Vanadium (V) - mg/L	Zinc (Zn) - mg/L				Calcium (Ca) - mg/L	Magnesium (Mg) - mg/L	Sodium (Na) - mg/L	Potassium (K) - mg/L		Chloride (Cl) - mg/L	Sulfate (SO4) - mg/L	Hydroxide Alkalinity as CaCO3 - mg/L	Carbonate Alkalinity as CaCO3 - mg/L	Bicarbonate Alkalinity as CaCO3 - mg/L	Alkalinity - mg/L							
ANZECC Guideline - stock drinking water									*5*	*0.5*			*0.01*	*1*	*1*	*1*		*0.1*		*1*		*20*	*0.002*			*1000*					*1000*									*1500*	*400*		*4000*
Depth	32	27-Oct-16	950	6.13	7.03	7.8	5890	21.3	0.04	<0.001	0.025	<0.001	<0.0001	0.006	<0.001	0.001	0.05	<0.001	0.012	<0.001	<0.01	0.078	<0.0001	8.17	6520	84	135	1150	12	65.6	1320	568	<1	<1	577	577	60.6	3.99	<0.01	<0.01	0.31	0.31	3840
Format.	Alluvium	25-Nov-16	950	6.27	7.17	7.9	6100	20.7																																			
		21-Dec-16	1025	6.20	7.1	7.9	6160	22																																			
		20-Jan-17	1145	6.17	7.07	7.9	6180	22.6																																			
		21-Feb-17				No access																																					
		29-Mar-17	1320	6.13	7.03	8	6380	22.2																																			
		27-Apr-17	930	6.21	7.11	8	6410	19.7																																			
		30-May-17	1020	6.12	7.02	8	6370	20.3																																			
		27-Jun-17	1030	6.10	7	8	6390	19.9																																			
		28-Jul-17	1000	6.09	6.99	8	6330	19.9																																			
		28-Aug-17	1015	6.11	7.01	8	6400	19.9																																			
		25-Sep-17	1030	6.13	7.03	8	6490	21.9	0.05	<0.001	0.031	<0.001	0.0001	0.002	<0.001	0.004	0.16	<0.001	0.033	<0.001	<0.01	0.08	<0.0001	8.07	6820	95	152	1300	13	74.1	1240	659	<1	<1	555	555	59.8	10.7	0.1	0.03	2.01	2.04	**4130**
		27-Oct-17	1015	6.28	7.18	8	6360	20.7																																			
		28-Nov-17	1030	6.34	7.24	7.8	6570	20.9																																			
		20-Dec-17	935	6.29	7.19	7.9	6650	21.4																																			
		31-Jan-18	945	6.28	7.18	7.9	6520	21.1																																			
		27-Feb-18	945	6.26	7.16	8	6430	20.5																																			
		28-Mar-18	945	6.29	7.19	8.1	6530	21.3																																			
		26-Apr-18	955	6.37	7.27	8.2	6730	21.3																																			
		28-May-18	940	6.51	7.41	8.2	6520	20.9																																			
		25-Jun-18				No access																																					
		30-Jul-18				No access																																					
		30-Aug-18				No access																																					
		26-Sep-18	915	6.78	7.68	8.2	6450	18.9	0.24	<0.001	0.047	<0.001	0.0002	0.001	<0.001	0.007	0.76	0.002	0.026	0.002	<0.01	0.068	<0.0001	8.14	7090	89	134	1160	12	66.2	1440	655	<1	<1	451	451	63.3	2.29	0.04	<0.01	3.18	3.18	3910
		30-Oct-18				No access																																					
		29-Nov-18	1000	6.57	7.47	8.2	7050	20.7																																			
		20-Dec-18	945	6.57	7.47	8.3	6920	20.9																																			
		31-Jan-19				No access																																					
		25-Feb-19				No access																																					
		25-Mar-19				No access																																					
		26-Apr-19				No access																																					
		30-May-19	930	5.19	6.09	8.4	6400	20.3																																			
		26-Jun-19				No access - hand feeding																																					
		31-Jul-19				No access - hand feeding																																					
		29-Aug-19				No access - hand feeding																																					
		26-Sep-19				No access - hand feeding																																					
		29-Oct-19				No access - hand feeding																																					
		28-Nov-19				No access - hand feeding																																					
		18-Dec-19				No access - hand feeding																																					
P43		02-Jun-16	925	49.40	50.35	8.2	9940	21.8																																			
		26-Sep-16			too wet																																					
Depth	65	27-Oct-16	925	22.06	23.01	7.2	10470	22.7	0.06	<0.001	0.179	<0.001	<0.0001	<0.001	<0.001	0.006	0.12	<0.001	0.808	0.004	<0.01	0.056	<0.0001	7.95	11500	122	207	2060	35	114	3360	383	<1	<1	821	821	119	2.38	0.06	<0.01	0.04	0.04	**6670**
Format.	Watermark	25-Nov-16	920	20.09	21.04	7.2	10660	22.8																																			
		21-Dec-16	1000	18.78	19.73	7.3	10530	23.9																																			
		20-Jan-17	1130	17.38	18.33	7.3	10690	23.4																																			
		21-Feb-17				No access																																					
		29-Mar-17	1240	14.72	15.67	7.3	10670	24.1																																			
		27-Apr-17	915	14.77	15.72	7.4	10830	21.3																																			
		30-May-17	1000	13.06	14.01	7.3	10810	20.9																																			
		27-Jun-17	1010	12.56	13.51	7.3	10870	21.7																																			
		28-Jul-17	920	12.15	13.1	7.4	10720	21.9																																			
		28-Aug-17	930	11.74	12.69	7.4	10900	22.2																																			
		25-Sep-17	940	11.43	12.38	7.4	11040	23.7	0.89	0.002	0.145	<0.001	0.0002	0.001	<0.001	0.005	1.07	0.001	0.566	0.003	<0.01	0.049	<0.0001	7.89	12100	112	214	2160	34	118	3040	442	<1	<1	722	722	109	3.8	0.03	<0.01	0.88	0.88	**6080**
		27-Oct-17	925	11.45	12.4	7.4	10890	22.8																																			
		28-Nov-17	1000	11.13	12.08	7.4	11080	23.1																																			
		20-Dec-17	905	11.01	11.96	7.3	11310	23.6																																			
		31-Jan-18	900	10.50	11.45	7.4	11150	22.8																																			
		27-Feb-18	900	10.26	11.21	7.4	11140	22.4																																			
		28-Mar-18	900	10.15	11.1	7.4	11180	22.6																																			
		26-Apr-18	915	10.05	11	7.5	11260	23.4																																			
		28-May-18	910	9.90	10.85	7.5	10940	22.1																																			
		25-Jun-18				No access																																					
		30-Jul-18				No access																																					
		30-Aug-18				No access																																					
		26-Sep-18	845	8.79	9.74	7.6	10800	21.8	0.58	<0.001	0.124	<0.001	<0.0001	<0.001	<0.001	0.005	1.01	0.002	0.046	0.004	<0.01	0.037	<0.0001	7.94	12900	114	194	1960	32	108	3690	464	<1	<1	630	630	126	7.95	0.02	<0.01	1.4	1.4	**6010**
		30-Oct-18				No access																																					
		29-Nov-18	930	8.81	9.76	7.5	11670	23.1																																			
		20-Dec-18	915	8.98	9.93	7.6	11430	23.6																																			
		31-Jan-19				No access																																					
		25-Feb-19				No access																																					
		25-Mar-19				No access																																					
		26-Apr-19				No access																																					
		30-May-19	900	9.00	9.95	7.7	10480	23																																			
		25-Jun-19				No access - hand feeding																																					
		31-Jul-19				No access - hand feeding																																					
		29-Aug-19				No access - hand feeding																																					
		26-Sep-19				No access - hand feeding																																					
		29-Oct-19				No access - hand feeding																																					
		28-Nov-19				No access - hand feeding																																					
		18-Dec-19				No access - hand feeding																																					
P51		29-Jan-15	1320	4.68	5.26	7.6	15600	23.4	0.02	0.003	0.264	0.057	**0.0166**	<0.001	<0.001	0.016	<0.05	<0.001	0.055	0.003	0.49	0.063	0.0003	7.77	17000	50	346	3310	12		5280	814							0.12	<0.01	0.05	0.05	**7880**
		11-Mar-15	1200	4.60	5.18	7.6	16920	25.4	**29.4**	0.01	0.615	0.002	0.0007	0.031	0.014	0.07	17.7	0.054	1.65	0.027	0.08	0.223	0.0002	7.91	18000	39	455	3880	9	208	5840	933	<1	<1	964	964	203	1.18	0.04	<0.01	0.16	0.16	**11100**
Depth	17	03-Jun-15	1040	4.59	5.17	7.6	16670	23.2																																			
Format.	Napperby	08-Sep-15	1130	4.64	5.22	7.7	17140	23	0.11	0.004	0.083	<0.001	<0.0001	<0.001	<0.001	0.013	0.14	0.001	0.012	0.002	<0.01	0.112	0.0002	8.09	18200	41	308	2960	10	156	4490	851	<1	<1	842	842	161	1.53	0.04	<0.01	0.47	0.47	**11200**
		15-Dec-15	945	4.88	5.46	7.7	18280	22.9																																			
		10-Mar-16	1150	5.36	5.94	8	17290	25.4	0.09	0.002	0.092	<0.001	<0.0001	<0.001	<0.001	0.033	0.14	<0.001	0.021	0.006	<0.01	0.193	<0.0001	8.07	18800	49	366	3230	10	173	5760	954	<1	<1	893	893	200	7.22	1.2	<0.01	0.84	0.84	**12000**
		02-Jun-16	1230	5.00	5.58	7.9	16830	21.8																																			
		26-Sep-16	1245	4.92	5.5	7.9	17550	22.7	0.07	0.002	0.077	<0.001	<0.0001	<0.001	0.001	0.002	0.09	<0.001	0.097	<0.001	0.01	0.013	<0.0001	7.95	19800	51	453	3700	13	201	6110	843	<1	<1	933	933	208	1.84	0.16	0.02	0.04	0.06	**11600**
		25-Oct-16	1200	4.95	5.53	7.7	17510	22.4																																			
		24-Nov-16	1200	4.93	5.51	7.8	16240	21.8																																			
		20-Dec-16	1150	4.86	5.44	7.8	16780	22.8																																			
		24-Jan-17	1130	4.94	5.52	7.7	17350	23.7																																			
		23-Feb-17	1025	4.99	5.57	7.6	17860	23.6																																			
		29-Mar-17	1140	4.96	5.54	7.7	16540	24.3																																			
		26-Apr-17	1230	5.02	5.6	7.6	17420	24.4																																			
		29-May-17	1200	5.09	5.67	7.7	18250	23.5																																			
		29-Jun-17	1210	5.11	5.69	7.6	19140	23.3																																			
		26-Jul-17	1200	5.20	5.78	7.8	18890	23.5																																			
		29-Aug-17	1145	5.29	5.87	8	18980	22.5																																			
		26-Sep-17	1130	5.32	5.9	8	19260	22.6	0.05	0.002	0.112	<0.001	<0.0001	<0.001	0.002	0.006	0.09	<0.001	0.241	0.003	<0.01	0.038	<0.0001	8.02	21800	51	425	3640	11	196	6020	880	<1	<1	744	744	203	1.72	0.25	<0.01	0.17	0.17	**14000**
		26-Oct-17	1125	5.29	5.87	7.8	18970	23.9																																			
		27-Nov-17	1130	5.40	5.98	7.6	19730	22.8																																			
		20-Dec-17	1220	5.40	5.98	7.4	19860	23.9																																			
		30-Jan-18	1120	5.46	6.04	7.4	19780	23.9																																			
		28-Feb-18	1050	5.52	6.1	7.3	19850	23.9																																			
		28-Mar-18	1240	5.53	6.11	7.3	19910	24.3																																			
		30-Apr-18	1115	5.65	6.23	7.4	20200	23.9																																			
		29-May-18	1115	5.57	6.15	7.7	19750	22.7																																			
		26-Jun-18	1105	5.74	6.32	7.6	19490	23.1																																			
		26-Jul-18	1250	5.73	6.31	7.6	19190	23.7																																			

Site ID	Piezometer / Water Bore	Date	Time	Depth to Water - mbgl	Depth to Stand - mbtoc	Field Parameters			Total Metals																Mercury (Hg) - mg/L	pH Lab	EC - Lab - µs/cm	Major Cations				Total Cations - meq/L	Major Anions						Total Anions - meq/L	Ionic Balance	Ammonia as Nitrogen (N)	Nitrite as N - mg/L	Nitrate as N - mg/L	NOX as N - mg/L	Total Dissolved Solids
						pH - Field	EC - Field - µs/cm	Temp - Field - °C	Aluminium (Al) - mg/L	Arsenic (As) - mg/L	Barium (Ba) - mg/L	Beryllium (Be) - mg/L	Cadmium (mg/L)	Chromium (Cr) - mg/L	Cobalt (Co) - mg/L	Copper (Cu) - mg/L	Iron (Fe) - mg/L	Lead (Pb) - mg/L	Manganese (Mn) - mg/L	Nickel (Ni) - mg/L	Vanadium (V) - mg/L	Zinc (Zn) - mg/L				Calcium (Ca) - mg/L	Magnesium (Mg) - mg/L	Sodium (Na) - mg/L	Potassium (K) - mg/L		Chloride (Cl) - mg/L	Sulfate (SO4) - mg/L	Hydroxide Alkalinity as CaCO3 - mg/L	Carbonate Alkalinity as CaCO3 - mg/L	Bicarbonate Alkalinity as CaCO3 - mg/L	Alkalinity - mg/L							
ANZECC Guideline - stock drinking water									***5***	***0.5***			***0.01***	***1***	***1***	***1***		***0.1***		***1***		***20***	***0.002***			***1000***					***1000***							***1500***	***400***		***4000***
		30-Aug-18	1125	5.83	6.41	7.5	19370	23																																	
		25-Sep-18	1115	5.98	6.56	7.7	19230	23.1	0.06	0.002	0.093	<0.001	<0.0001	<0.001	0.001	<0.001	0.13	<0.001	0.166	0.004	<0.01	0.007	<0.0001	7.78	21200	44	479	4000	12	216	7170	885	<1	<1	743	743	236	4.34	0.31	<0.01	0.18	0.18	**15300**
		30-Oct-18	1315	6.04	6.62	7.6	19400	23.3																																	

Site ID	Piezometer / Water Bore	Date	Time	Depth to Water - mbgl	Depth to Stand - mbtoc	Field Parameters			Total Metals															Mercury (Hg) - mg/L	pH Lab	EC - Lab - µs/cm	Major Cations				Total Cations - meq/L	Major Anions						Total Anions - meq/L	Ionic Balance	Ammonia as Nitrogen (N)	Nitrite as N - mg/L	Nitrate as N - mg/L	NOX as N - mg/L	Total Dissolved Solids
						pH - Field	EC - Field - µs/cm	Temp - Field - °C	Aluminium (Al) - mg/L	Arsenic (As) - mg/L	Barium (Ba) - mg/L	Beryllium (Be) - mg/L	Cadmium (mg/L)	Chromium (Cr) - mg/L	Cobalt (Co) - mg/L	Copper (Cu) - mg/L	Iron (Fe) - mg/L	Lead (Pb) - mg/L	Mangane se (Mn) - mg/L	Nickel (Ni) - mg/L	Vanadium (V) - mg/L	Zinc (Zn) - mg/L				Calcium (Ca) - mg/L	Magnesiu m (Mg) - mg/L	Sodium (Na) - mg/L	Potassiu m (K) - mg/L		Chloride (Cl) - mg/L	Sulfate (SO4) - mg/L	Hydroxide Alkalinity as CaCO3 - mg/L	Carbonate Alkalinity as CaCO3 - mg/L	Bicarbonat e Alkalinity as CaCO3 - mg/L	Alkalinity - mg/L							
ANZECC Guideline - stock drinking water									*5*	*0.5*			*0.01*	*1*	*1*	*1*		*0.1*		*1*		*20*	*0.002*			*1000*						*1000*								*1500*	*400*		*4000*
		28-Nov-18	1210	5.94	6.52	7.7	19580	22.7																																	
		21-Dec-18	1110	5.98	6.56	7.6	19340	21.9																																	
		31-Jan-19	1105	6.13	6.71	7.5	19500	24.1																																	
		27-Feb-19	1115	6.25	6.83	7.8	19270	24.3																																	
		28-Mar-19	1130	6.16	6.74	7.8	19160	21.2																																	
		30-Apr-19	1255	6.14	6.72	7.8	19270	23.8																																	
		31-May-19	1140	6.28	6.86	7.7	18930	23.1																																	
		25-Jun-19	1130	6.27	6.85	7.7	19200	23.6																																	
		31-Jul-19	1020	6.35	6.93	7.7	19890	23.9																																	
		28-Aug-19	1055	6.47	7.05	7.6	19830	23.7																																	
		24-Sep-19	1225	6.62	7.2	7.8	19910	23.9	0.04	0.002	0.073	<0.001	<0.0001	<0.001	<0.001	<0.001	0.1	<0.001	0.081	0.002	<0.01	0.006	<0.0001	7.83	12500	36	412	3480	12	187	6620	847	<1	1	810	810	220	8.13	0.16	<0.01	0.1	0.1	12500
		29-Oct-19	1130	6.69	7.27	7.7	19810	23.5																																	
		28-Nov-19	1320	6.75	7.33	7.6	19870	23.5																																	
		18-Dec-19	1045	6.82	7.4	7.6	18710	23.4																																	
P52		**15-Dec-15**	1100	7.47	8.02	7.1	2480	22.8	**40.5**	0.022	0.802	0.004	0.0004	0.17	0.091	0.292	66.7	0.072	1.56	0.224	0.14	0.322	0.0002	7.56	2490	104	144	245	6	27.8	455	126	<1	<1	578	578	27	1.53	0.34	0.01	3.08	3.09	2030
		10-Mar-16	1210	7.75	8.3	7.2	2540	24.1	0.35	<0.001	0.131	<0.001	<0.0001	0.001	0.004	0.015	0.46	0.001	0.091	0.014	<0.01	0.05	<0.0001	7.62	2540	98	126	250	6	26.3	434	125	<1	<1	604	604	26.9	1.19	0.6	<0.01	1.73	1.73	1500
Depth	**24**	**02-Jun-16**	1245	7.99	8.54	7.2	2610	20.3																																	
Format.	**Napperby**	**27-Sep-16**	1355	4.59	5.14	7.4	1951	23	0.05	0.003	0.178	<0.001	<0.0001	<0.001	0.004	<0.001	0.08	<0.001	0.258	0.014	<0.01	0.024	<0.0001	7.95	2080	89	100	205	7	21.8	287	78	<1	<1	627	627	22.2	1.11	0.09	<0.01	0.7	0.7	1060
		25-Oct-16	1215	5.41	5.96	7.6	2020	21.7																																	
		24-Nov-16	1215	5.77	6.32	7.7	2180	21.6																																	
		20-Dec-16	1205	6.09	6.64	7.7	2170	22.2																																	
		24-Jan-17	1145	6.39	6.94	7.8	2140	22.9																																	
		23-Feb-17	1040	6.97	7.52	7.8	2160	21.8																																	
		29-Mar-17	1200	6.88	7.43	7.8	2250	23.2																																	
		26-Apr-17	1245	6.89	7.44	7.8	2350	22.3																																	
		29-May-17	1215	6.88	7.43	7.9	2260	22.8																																	
		29-Jun-17				No access too wet																																			
		26-Jul-17	1215	7.22	7.77	7.9	2240	22.3																																	
		29-Aug-17	1200	7.36	7.91	7.8	2210	22.2																																	
		26-Sep-17	1145	7.53	8.08	7.8	2210	23	0.05	0.002	0.163	<0.001	<0.0001	<0.001	<0.001	0.006	0.07	<0.001	0.015	0.004	<0.01	0.026	<0.0001	8.03	2290	77	107	256	9	24	352	84	<1	<1	524	524	22.1	4.04	0.02	<0.01	0.89	0.89	1190
		26-Oct-17	1140	7.64	8.19	7.8	2260	23																																	
		27-Nov-17	1145	7.79	8.34	7.7	2270	22.3																																	
		20-Dec-17	1235	7.92	8.47	7.7	2280	23.4																																	
		30-Jan-18	1135	8.13	8.68	7.6	2260	22.8																																	
		28-Feb-18	1105	8.17	8.72	7.6	2210	22.3																																	
		28-Mar-18	1255	8.29	8.84	7.5	2180	21.9																																	
		30-Apr-18	1130	8.37	8.92	7.5	2210	22.1																																	
		29-May-18	1130	8.54	9.09	7.5	2300	21.8																																	
		26-Jun-18	1120	8.60	9.15	7.6	2050	21.6																																	
		26-Jul-18	1305	8.60	9.15	7.4	2060	22.2																																	
		30-Aug-18	1140	8.82	9.37	7.4	2100	22.1																																	
		25-Sep-18	1140	8.86	9.41	7.3	2160	21.9	0.03	<0.001	0.215	<0.001	<0.0001	<0.001	0.003	<0.001	<0.05	<0.001	0.366	0.014	<0.01	0.007	<0.0001	7.34	2530	102	111	218	7	23.9	424	84	<1	<1	552	552	24.7	1.75	0.17	<0.01	0.04	0.04	1280
		30-Oct-18	1330	8.83	9.38	7.3	2200	22.8																																	
		28-Nov-18	1225	9.00	9.55	7.2	2250	22.4																																	
		21-Dec-18	1130	9.13	9.68	7.2	2310	22.4																																	
		31-Jan-19	1120	9.27	9.82	7.1	2170	23																																	
		27-Feb-19	1130	9.34	9.89	7.2	2450	23.1																																	
		28-Mar-19	1150	9.38	9.93	7.3	2530	22.5																																	
		30-Apr-19	1310	9.54	10.09	7.5	2260	22.5																																	
		31-May-19	1150	9.59	10.14	7.4	2120	21.2																																	
		25-Jun-19	1145	9.64	10.19	7.2	2110	21.8																																	
		31-Jul-19	1040	9.77	10.32	7.3	2150	21.7																																	
		28-Aug-19	1115	9.85	10.4	7.6	2090	23.7																																	
		24-Sep-19	1250	9.90	10.45	7.3	2150	22.7	0.05	<0.001	0.201	<0.001	<0.0001	<0.001	0.009	0.001	0.22	<0.001	0.379	0.012	<0.01	0.016	<0.0001	7.53	1130	93	107	209	8	22.7	345	85	<1	1	562	562	22.7	0.03	0.28	<0.01	0.08	0.08	1130
		29-Oct-19	1200	9.98	10.53	7.3	2160	22.4																																	
		28-Nov-19	1355	10.02	10.57	7.4	2220	22.4																																	
		18-Dec-19	1100	10.15	10.7	7.4	2180	22.8																																	
P53		**15-Dec-15**	1145	9.73	10.23	7.7	1060	23.3	**23.2**	0.002	0.285	<0.001	<0.0001	0.086	0.026	0.038	35.8	0.004	0.543	0.083	0.08	0.115	<0.0001	7.98	1100	54	58	121	4	12.8	116	25	<1	<1	387	387	11.5	5.35	0.12	<0.01	0.06	0.06	763
		10-Mar-16	1230	10.04	10.54	7.8	1052	23.3	0.44	<0.001	0.146	<0.001	<0.0001	0.002	<0.001	0.008	0.65	<0.001	0.068	0.002	<0.01	0.018	<0.0001	8.02	1080	49	50	174	5	14.2	112	25	<1	<1	399	399	11.6	10	0.7	<0.01	0.14	0.14	603
Depth	**24**	**02-Jun-16**	1300	10.27	10.77	7.7	1045	20.1																																	
Format.	**Garrawilla**	**27-Sep-16**	1415	7.57	8.07	7.7	963	23.2	0.03	<0.001	0.136	<0.001	<0.0001	<0.001	<0.001	<0.001	<0.05	<0.001	0.078	<0.001	<0.01	0.016	<0.0001	8.02	980	45	42	157	4	12.6	52	14	<1	<1	481	481	11.4	5.23	0.04	<0.01	0.12	0.12	494
		25-Oct-16	1235	8.05	8.55	7.7	971	22.2																																	
		24-Nov-16	1230	8.14	8.64	7.7	1012	21.8																																	
		20-Dec-16	1220	8.39	8.89	7.8	1107	22.4																																	
		24-Jan-17	1200	8.61	9.11	7.9	1052	23.2																																	
		23-Feb-17	1055	8.84	9.34	7.9	1043	22.7																																	
		29-Mar-17	1215	9.05	9.55	8	1055	22.6																																	
		26-Apr-17	1300	9.19	9.69	8	1050	22.4																																	
		29-May-17	1230	9.18	9.68	8	1066	21.7																																	
		29-Jun-17				No access too wet																																			
		26-Jul-17	1230	9.32	9.82	8	1022	21.9																																	
		29-Aug-17	1215	9.62	10.12	8.1	1038	22.2																																	
		26-Sep-17	1200	9.71	10.21	7.8	1064	22.8	0.04	<0.001	0.135	<0.001	<0.0001	<0.001	<0.001	0.004	<0.05	<0.001	0.01	<0.001	<0.01	0.015	<0.0001	8	1110	45	45	121	5	11.3	61	12	<1	<1	430	430	10.6	3.55	0.03	<0.01	0.35	0.35	552
		26-Oct-17	1155	9.81	10.31	7.7	1070	23.1																																	
		27-Nov-17	1200	9.99	10.49	7.8	1058	22.4																																	
		20-Dec-17	1250	10.12	10.62	7.8	1247	24																																	
		30-Jan-18	1150	10.31	10.81	7.8	1070	23.2																																	
		28-Feb-18	1120	10.41	10.91	7.8	1057	22.1																																	
		28-Mar-18	1310	10.52	11.02	7.8	1052	21.9																																	
		30-Apr-18	1145	10.65	11.15	7.8	1048	22.2																																	
		29-May-18	1145	10.49	10.99	7.8	1090	21.9																																	
		26-Jun-18	1135	10.84	11.34	7.8	1010	21.6																																	
		26-Jul-18	1320	9.91	10.41	7.8	1015	22.5																																	
		30-Aug-18	1155	11.03	11.53	7.7	1090	22.3																																	
		25-Sep-18	1200	11.14	11.64	7.8	1050	22.1	0.04	<0.001	0.16	<0.001	<0.0001	<0.001	<0.001	<0.001	0.33	<0.001	0.047	<0.001	<0.01	<0.005	<0.0001	7.75	1080	45	47	128	4	11.8	71	14	<1	<1	431	431	10.9	3.87	0.14	<0.01	0.06	0.06	632
		30-Oct-18	1345	11.22	11.72	7.9	1080	22.9																																	
		28-Nov-18	1240	11.32	11.82	7.7	1110	22.2																																	
		21-Dec-18	1145	11.37	11.87	7.6	1150	22.1																																	
		31-Jan-19	1130	11.41	11.91	7.6	1130	22.8																																	
		27-Feb-19	1155	11.59	12.09	7.9	1067	23.7																																	
		28-Mar-19	1210	11.60	12.1	7.8	1150	22.4																																	
		30-Apr-19	1325	11.72	12.22	7.7	1165	22.4																																	
		31-May-19	1200	11.75	12.25	7.7	1180	22.6																																	
		25-Jun-19	1200	11.99	12.49	7.5	1055	21.7																																	
		31-Jul-19	1100	12.03	12.53	7.5	1045	21.6																																	
		28-Aug-19	1135	12.10	12.6	7.4	1040	22																																	
		24-Sep-19	1315	12.17	12.67	7.6	1060	22.3	0.12	<0.001	0.156	<0.001	<0.0001	0.002	<0.001	0.002	0.33	<0.001	0.03	0.001	<0.01	0.024	<0.0001	7.75	596	47	50	125	4	12	65	15	<1	<1	347	347	9.08	13.8	0.09	<0.01	0.13	0.13	596
		29-Oct-19	1200	12.25	12.75	7.5	1080	22.4																																	
		29-Oct-19				7.5	1070	22.4	Duplet																																			
		28-Nov-19	1350		12.92	7.5	1120	22.6																																	
		18-Dec-19	1115	12.35	12.85	7.6	1090	22.8																																	
VPW		**11-Mar-15**	1050			7	12890	25.8	0.1	0.01	8.81	<0.001	0.0002	0.004	0.004	0.01	0.85	<0.001	0.033	0.008	<0.01	0.074	<0.0001	7.58	13500	63	84	4160	121	194	172	<1	<1	<1	7780	7780	160	9.47	12.2	<0.01	0.01	0.01	**8340**
		03-Jun-15	955			7	13840	10.7																																	
		08-Sep-15	1035			7	14010	15.5	0.15	<0.010	7.6	<0.010	<0.0010	<0.010	<0.010	<0.010	1.19	<0.010	0.019	<0.010	<0.10	<0.050	<0.0001	7.17	14400	110	119	4520	169	216	160	<5	<1	<1	10100	10100	206	2.28	15	0.05	<0.01	0.05	**10300**
		14-Dec-15	1310			7.4	13860	34.2																																	
		10-Mar-16	1025			7.6	12440	28	0.13	<0.010	5.27	<0.010	<0.0010	<0.010	<0.010	<0.010	0.11	<0.010	<0.010	<0.010	<0.10	<0.052	<0.0001	7.41	13400	58	82	4100	128	191	185	<10	<1	<1	8750	8750	180	2.95	2	0.53	2.24	2.77	**7580**
		31-May-16	1120			Tap removed																																	
		27-Sep-16	1145			7.4	12840	22.8	0.07	0.029	8.67	<0.001	<0.0001	0.011	0.013	0.04	3.13	<0.001	0.028	0.036	<0.01	0.045	<0.0001	7.41	14400	121	94	4130	140	197	178	<1	<1	<1	10400	10400	213	3.92	15.2	<0.10	<0.10	<0.10	**9060**
		27-Oct-16	1100			7.2	12550	25.7																																	
		24-Nov-16	1240			7.2	12230	26.6																																	

Site ID	Piezometer / Water Bore	Date	Time	Depth to Water - mbgl	Depth to Stand - mbtoc	Field Parameters			Total Metals															Mercury (Hg) - mg/L	pH Lab	EC - Lab - µs/cm	Major Cations				Total Cations - meq/L	Major Anions						Total Anions - meq/L	Ionic Balance	Ammonia as Nitrogen (N)	Nitrite as N - mg/L	Nitrate as N - mg/L	NOX as N - mg/L	Total Dissolved Solids
						pH - Field	EC - Field - µs/cm	Temp - Field - °C	Aluminium (Al) - mg/L	Arsenic (As) - mg/L	Barium (Ba) - mg/L	Beryllium (Be) - mg/L	Cadmium (mg/L)	Chromium (Cr) - mg/L	Cobalt (Co) - mg/L	Copper (Cu) - mg/L	Iron (Fe) - mg/L	Lead (Pb) - mg/L	Manganese (Mn) - mg/L	Nickel (Ni) - mg/L	Vanadium (V) - mg/L	Zinc (Zn) - mg/L				Calcium (Ca) - mg/L	Magnesium (Mg) - mg/L	Sodium (Na) - mg/L	Potassium (K) - mg/L		Chloride (Cl) - mg/L	Sulfate (SO4) - mg/L	Hydroxide Alkalinity as CaCO3 - mg/L	Carbonate Alkalinity as CaCO3 - mg/L	Bicarbonate Alkalinity as CaCO3 - mg/L	Alkalinity - mg/L							
ANZECC Guideline - stock drinking water									*5*	*0.5*			*0.01*	*1*	*1*	*1*		*0.1*		*1*		*20*	*0.002*			*1000*						*1000*								*1500*	*400*		*4000*
		20-Dec-16	1235			7.4	13270	31.5																																		
		25-Jan-17	1135			7.2	13790	31.5																																		
		23-Feb-17	1110			7.3	12330	31.9																																		
		30-Mar-17	920			7.3	13190	28.9																																		
		26-Apr-17	1315			7.3	14120	24.1																																		
		29-May-17	1240			7.1	12450	20.5																																		
		29-Jun-17	1025			7.1	13570	13.5																																		
		26-Jul-17	1245			7.2	12500	19.4																																		
		29-Aug-17	1230			6.9	10490	17.6																																		
		26-Sep-17	1215			7.4	13260	28.9	0.02	0.005	6.53	<0.001	<0.0001	0.004	0.051	0.023	0.28	<0.001	0.041	0.034	<0.01	0.072	<0.0001	7.47	14800	86	85	3830	144	182	219	<1	<1	<1	9340	9340	193	3	14.6	<0.01	0.26	0.26	**9450**
		26-Oct-17	1215			7.3	13490	27.3																																		
		27-Nov-17	1210			7.1	14290	25.1																																		
		20-Dec-17	1300			7.2	14110	31.8																																		

Site ID	Piezometer / Water Bore	Date	Time	Depth to Water - mbgl	Depth to Stand - mbtoc	Field Parameters			Total Metals															Mercury (Hg) - mg/L	pH Lab	EC - Lab - µs/cm	Major Cations				Total Cations - meq/L	Major Anions						Total Anions - meq/L	Ionic Balance	Ammonia as Nitrogen (N)	Nitrite as N - mg/L	Nitrate as N - mg/L	NOX as N - mg/L	Total Dissolved Solids
						pH - Field	EC - Field - µs/cm	Temp - Field - °C	Aluminium (Al) - mg/L	Arsenic (As) - mg/L	Barium (Ba) - mg/L	Beryllium (Be) - mg/L	Cadmium (mg/L)	Chromium (Cr) - mg/L	Cobalt (Co) - mg/L	Copper (Cu) - mg/L	Iron (Fe) - mg/L	Lead (Pb) - mg/L	Manganese (Mn) - mg/L	Nickel (Ni) - mg/L	Vanadium (V) - mg/L	Zinc (Zn) - mg/L				Calcium (Ca) - mg/L	Magnesium (Mg) - mg/L	Sodium (Na) - mg/L	Potassium (K) - mg/L		Chloride (Cl) - mg/L	Sulfate (SO4) - mg/L	Hydroxide Alkalinity as CaCO3 - mg/L	Carbonate Alkalinity as CaCO3 - mg/L	Bicarbonate Alkalinity as CaCO3 - mg/L	Alkalinity - mg/L							
ANZECC Guideline - stock drinking water									*5*	*0.5*			*0.01*	*1*	*1*	*1*		*0.1*		*1*		*20*	*0.002*			*1000*					*1000*									*1500*	*400*		*4000*
		30-Jan-18	1210			7.2	14020	29																																	
		22-Feb-18	1200			8	14040	28.4																																	
		28-Mar-18	1320			7.1	14680	28.4																																	
		30-Apr-18	1200			7.1	14270	23																																	
		29-May-18	1200			7	14140	21.9																																	
		26-Jun-18	1040			7.4	12790	15.1																																	
		30-Jul-18	1035			7.4	13140	15.4																																	
		30-Aug-18	1205			7.2	12650	12.9																																	
		20-Sep-18	1015			7	12430	20.6	0.16	0.004	7.1	<0.001	<0.0001	0.013	0.002	<0.001	4.08	<0.001	0.035	0.003	<0.01	0.025	<0.0001	7.5	13700	73	73	3410	119	161	200	<1	<1	<1	8990	8990	185	7	15.3	<0.01	0.9	0.9	**10600**
		26-Oct-18	1150			7.4	12560	28.9																																	
		26-Nov-18	1030			7.4	13900	26.9																																	
		18-Dec-18	1200			7.4	13410	31.4																																	
		31-Jan-19	1140			7.3	13800	32.1																																	
		27-Feb-19	910			7.1	13950	25.3																																	
		26-Mar-19	1200			7.3	14360	25.2																																	
		29-Apr-19	1030			7.4	14620	25.1																																	
		30-May-19	1230			7.4	13540	18.6																																	
		26-Jun-19	1030			7.4	14050	15																																	
		31-Jul-19	1110			7.3	14580	16.7																																	
		27-Aug-19	1200			7.3	14290	22.3																																	
		25-Sep-19	945			7	13910	20.6	0.12	0.003	7	<0.001	0.0004	0.006	0.006	0.024	2.28	<0.001	0.063	0.011	<0.01	0.038	<0.0001	7.49	14400	95	108	3750	138	180	310	<1	<1	<1	8720	8720	183	0.74	15.1	<0.10	<0.10	<0.10	9720
		29-Oct-19	1120			7.3	13750	28.7																																	
		29-Nov-19	930			7.2	14570	27.4																																	
		18-Dec-19	935			7.3	13430	28.6																																	
Mayfield Spring Top		**28-Sep-16**	1350	No flow		8.8	156	23.9	2.23	0.002	0.086	<0.001	<0.0001	0.002	0.002	0.007	2.17	0.001	0.108	0.006	<0.01	0.015	<0.0001	7.8	158	12	5	10	12	1.75	6	4	<1	<1	64	64	1.53	----	0.07	<0.01	0.03	0.03	140
Depth	**0**	**27-Oct-16**	1235	No flow		9	188	24.7																																	
Merrilong Dam		**25-Nov-16**	1325	No flow		7.6	2480	24.5	0.28	<0.001	0.278	<0.001	<0.0001	<0.001	0.001	<0.001	1.11	<0.001	0.634	0.008	<0.01	0.009	<0.0001	7.72	2510	36	70	372	9	24	672	70	<1	<1	152	152	23.4	1.09	<0.01	<0.01	<0.01	<0.01	1490
		21-Dec-16	1220	Flow <1m/s		7.7	2960	28																																	
		24-Jan-17	1345	Slow trickle		8	3400	28.5																																	
		22-Feb-17	1315	Flow <1m/s		7.6	4090	22.8																																	
		29-Mar-17	1420	Slow trickle		8.4	5260	32.1																																	
		27-Apr-17	1300	No flow		7.6	2900	16.2																																	
		30-May-17	1300	No visible flow		7.3	2740	12.6																																	
		27-Jun-17	1445	No visible flow		7.5	3220	12.6																																	
		28-Jul-17	1200	No visible flow		7.7	3270	11.3																																	
		28-Aug-17	1320	No visible flow		7.6	3450	15.3																																	
		25-Sep-17	1315	No visible flow		7.6	3820	18	0.45	<0.001	0.243	<0.001	<0.0001	<0.001	0.007	<0.001	0.71	<0.001	0.611	0.047	<0.01	0.006	<0.0001	7.67	4010	56	132	517	17	36.6	960	132	<1	<1	104	104	31.9	6.82	0.01	<0.01	<0.01	<0.01	2070
		30-Oct-17	1200	No visible flow		7.9	4030	24.6																																	
		28-Nov-17	1210	Slow trickle		7.7	3920	24.6																																	
		21-Dec-17	1130	No visible flow		7.8	4650	24																																	
		31-Jan-18	1335	No visible flow		Dry																																			
		27-Feb-18	1320	Flow <1m/s		7.8	4420	27.2																																	
		28-Mar-18	1500	No visible flow		Dry																																			
		30-Apr-18	1400	No visible flow		Dry																																			
		25-May-18	1240	No visible flow		Dry																																			
		26-Jun-18	1400	No visible flow		Dry																																			
		30-Jul-18	1240	Slow trickle		7	4360	17.5																																	
		30-Aug-18	1325	Slow trickle		8.5	5440	19.2																																	
		25-Sep-18	1410	Small trickle		7.2	4310	20.1	0.23	<0.001	0.267	<0.001	0.0003	<0.001	0.096	<0.001	1.84	<0.001	1.47	0.48	<0.01	0.112	<0.0001	6.69	5450	78	203	725	18	52.6	1380	245	<1	<1	43	43	44.9	7.91	0.06	<0.01	0.04	0.04	3240
		29-Oct-18	1400	Small trickle		7.7	4410	24.3																																	
		26-Nov-18	1405	Small trickle		7.7	4520	26.8																																	
		20-Dec-18	1430	Small trickle		8	4670	27.8																																	
		24-Jan-19	1330	Small trickle		8.3	4720	32.4																																	
		25-Feb-19	1400	Clear, No inflow		8.3	5120	25.5																																	
		25-Mar-19	1430	Slightly Turbid		7.7	4810	23.2																																	
		26-Apr-19	1415	Small trickle		7.9	4480	25.1																																	
		30-May-19	1300	Slightly Turbid		7.2	2870	17.9																																	
		24-Jun-19	1500	Slightly Turbid		7.1	3760	17.5																																	
		31-Jul-19	1335	Slightly Turbid		7.1	3870	18.4																																	
		23-Aug-19	1330	Small trickle		7.4	4460	19.1																																	
		25-Sep-19	1300	Small trickle, slightly		8.1	5060	23.6	1.16	<0.001	0.292	<0.001	<0.0001	0.002	0.043	<0.001	2.39	<0.001	1.39	0.223	<0.01	0.039	<0.0001	7.08	5190	85	212	663	18	51	1620	309	<1	<1	55	55	53.2	2.15	0.02	<0.01	0.01	0.01	3030
		28-Oct-19	1350	Slightly turbid		8.2	4980	27.8																																	
		27-Nov-19	1050	Slightly turbid		8.7	6390	22.7																																	
		18-Dec-19	1320	Slightly turbid		7.4	3580	25.3																																	
Mayfield Spring Btm		**28-Sep-16**	1340	No flow		8.3	150	22.3	1.79	<0.001	0.054	<0.001	<0.0001	0.002	<0.001	0.002	2	<0.001	0.059	0.006	<0.01	0.007	<0.0001	7.64	152	10	5	10	11	1.63	6	6	<1	<1	62	62	1.53	----	0.07	<0.01	0.06	0.06	112
		27-Oct-16	1250	No flow		8.7	182	23																																	
Depth	**0**																																									
WB1		Not sampled since 2008																																								
Depth	**Unknown**																																									
Format.	**Unknown**																																									
WB2		**13-Mar-15**	1235			6.7	2830	27.3	0.03	<0.001	0.13	<0.001	<0.0001	<0.001	<0.001	0.015	<0.05	<0.001	<0.001	<0.001	<0.01	0.021	<0.0001	7.03	2850	175	155	167	2	28.8	639	83	<1	<1	496	496	29.7	1.46	0.04	<0.01	7.18	7.18	1620
		03-Jun-15	1340			7	2760	13.9																																	
Depth	**Unknown**	**09-Sep-15**	1000			7	2260	16.8	**5.53**	<0.001	0.111	<0.001	<0.0001	0.002	<0.001	0.182	0.2	0.015	0.02	0.007	<0.01	0.791	<0.0001	7.48	2350	141	129	136	2	23.6	474	74	<1	<1	396	396	22.8	1.72	0.04	<0.01	1.87	1.87	1620
Format.	**Garrawilla**	**14-Dec-15**	1010			No sample - no pressure @ pump																																			
		09-Mar-16	1325			7.1	2370	29.1	0.39	<0.001	0.125	<0.001	<0.0001	<0.001	<0.001	0.132	5.5	0.011	0.022	0.008	<0.01	0.521	<0.0001	7.37	2520	164	140	145	1	26	520	84	<1	<1	412	412	24.6	2.75	0.14	<0.01	4.67	4.67	1550
		31-May-16	1200			6.9	2760	16.9																																	
		26-Sep-16	1030			7	2640	17.9	1.1	<0.001	0.123	<0.001	0.0003	<0.001	<0.001	0.214	0.08	0.002	0.008	0.02	<0.01	1.34	<0.0001	7.61	2820	170	136	144	2	26	617	98	<1	<1	457	457	28.6	4.73	0.02	<0.01	4.11	4.11	1940
		25-Oct-16	1005			7	2640	21.1																																	
		24-Nov-16	1020			7.2	2660	21.4																																	
		20-Dec-16	945			7.2	2640	26.5																																	
		25-Jan-17	1010			7.2	2610	27.8																																	
		22-Feb-17	1000			7.2	2630	27.9																																	
		29-Mar-17	930			7.3	2630	26.4																																	
		26-Apr-17	1000			7.4	2720	20.3																																	
		29-May-17	1025			7.5	2710	23.1																																	
		29-Jun-17	1335			7.5	2630	22.2																																	
		26-Jul-17	955			7.3	2720	17.9																																	
		29-Aug-17	950			7.5	2700	18.3																																	
		26-Sep-17	950			7.3	2720	23.4	3.14	<0.001	0.098	<0.001	0.0004	0.001	<0.001	0.25	<0.05	0.028	0.007	0.02	<0.01	1.36	<0.0001	7.74	2790	159	142	182	2	27.6	588	84	<1	<1	392	392	26.2	2.64	0.02	<0.01	5.86	5.86	1940
		26-Oct-17	955			7.3	2710	26.7																																	
		27-Nov-17	1000			7.3	2760	25																																	
		20-Dec-17	1110			7.4	2720	28																																	
		30-Jan-18	1000			7.4	2680	28.4																																	
		28-Feb-18	945			7.3	2600	26.6																																	
		28-Mar-18	1035			7.6	2610	25.8																																	
		30-Apr-18	920			7.5	2610	22.5																																	
		29-May-18	900			7.6	2580	20.4																																	
		26-Jun-18	1330			7.6	2480	22.7																																	
		26-Jul-18	1130			No sample - no pressure @ pump																																					
		30-Aug-18	1000			No sample - no pressure @ pump																																					
		25-Sep-18	935			7	3100	17.5	3.58	<0.001	0.168	<0.001	0.0001	0.002	<0.001	0.123	<0.05	0.005	0.014	0.009	<0.01	0.637	<0.0001	7.07	3710	206	177	178	2	32.6	771	120	<1	<1	416	416	32.6	0.12	0.06	0.1	4.78	4.88	2360
		30-Oct-18	1155			7	3090	24.7																																	
		28-Nov-18	1035			7.2	3350	23.4																																	
		21-Dec-18	935			7.2	3330	27.3																																	
		31-Jan-19	945			7	3470	23.7																																	
		28-Feb-19	1130			7.1	3430	27.8																																	
		28-Mar-19	925			7.2	3640	23.7																																	
		30-Apr-19	1130			7.1	3780	22.9																																	

Site ID	Piezometer / Water Bore	Date	Time	Depth to Water - mbgl	Depth to Stand - mbtoc	Field Parameters			Total Metals															Mercury (Hg) - mg/L	pH Lab	EC - Lab - µs/cm	Major Cations				Total Cations - meq/L	Major Anions						Total Anions - meq/L	Ionic Balance	Ammonia as Nitrogen (N)	Nitrite as N - mg/L	Nitrate as N - mg/L	NOX as N - mg/L	Total Dissolved Solids
						pH - Field	EC - Field - µs/cm	Temp - Field - °C	Aluminium (Al) - mg/L	Arsenic (As) - mg/L	Barium (Ba) - mg/L	Beryllium (Be) - mg/L	Cadmium (mg/L)	Chromium (Cr) - mg/L	Cobalt (Co) - mg/L	Copper (Cu) - mg/L	Iron (Fe) - mg/L	Lead (Pb) - mg/L	Manganese (Mn) - mg/L	Nickel (Ni) - mg/L	Vanadium (V) - mg/L	Zinc (Zn) - mg/L				Calcium (Ca) - mg/L	Magnesium (Mg) - mg/L	Sodium (Na) - mg/L	Potassium (K) - mg/L		Chloride (Cl) - mg/L	Sulfate (SO4) - mg/L	Hydroxide Alkalinity as CaCO3 - mg/L	Carbonate Alkalinity as CaCO3 - mg/L	Bicarbonate Alkalinity as CaCO3 - mg/L	Alkalinity - mg/L							
ANZECC Guideline - stock drinking water									*5*	*0.5*			*0.01*	*1*	*1*	*1*		*0.1*		*1*		*20*	*0.002*			*1000*						*1000*						*1500*	*400*		*4000*
		31-May-19	1015			7.1	3680	16.8																																	
		25-Jun-19	1010			7.1	3970	15.9																																	
		30-Jul-19	1210			7.1	3860	17.2																																	
		28-Aug-19	930			6.8	3480	17.2																																	
		24-Sep-19	1005			7	3530	20.2	0.11	<0.001	0.169	<0.001	<0.0001	<0.001	<0.001	0.026	<0.05	0.003	0.008	0.003	<0.01	0.22	<0.0001	7.06	3700	201	203	174	2	34.4	873	149	<1	1	390	390	35.5	1.66	0.03	<0.01	5.23	5.23	2300
		29-Oct-19	950			7	3580	25.3																																	
		28-Nov-19	1205			No sample - no pressure @ tap																																			
		18-Dec-19	935			No sample - no pressure @ tap																																			
WB3a		**11-Mar-15**	1330	8.04	8.55																																				
		05-Jun-15	1015	8.07	8.58																																				
Depth	**Unknown**	**10-Sep-15**	1040	7.88	8.39																																				
Format.	**Alluvium**	**09-Dec-15**	1305	8.14	8.65																																				
		09-Mar-16	1000	8.32	8.83																																				
		01-Jun-16	1310	8.34	8.85																																				

Site ID	Piezometer / Water Bore	Date	Time	Depth to Water - mbgl	Depth to Stand - mbtoc	Field Parameters			Total Metals														Mercury (Hg) - mg/L	pH Lab	EC - Lab - µs/cm	Major Cations				Total Cations - meq/L	Major Anions						Total Anions - meq/L	Ionic Balance	Ammonia as Nitrogen (N)	Nitrite as N - mg/L	Nitrate as N - mg/L	NOX as N - mg/L	Total Dissolved Solids
						pH - Field	EC - Field - µs/cm	Temp - Field - °C	Aluminium (Al) - mg/L	Arsenic (As) - mg/L	Barium (Ba) - mg/L	Beryllium (Be) - mg/L	Cadmium (mg/L)	Chromium (Cr) - mg/L	Cobalt (Co) - mg/L	Copper (Cu) - mg/L	Iron (Fe) - mg/L	Lead (Pb) - mg/L	Mangane se (Mn) - mg/L	Nickel (Ni) - mg/L	Vanadium (V) - mg/L	Zinc (Zn) - mg/L				Calcium (Ca) - mg/L	Magnesiu m (Mg) - mg/L	Sodium (Na) - mg/L	Potassiu m (K) - mg/L		Chloride (Cl) - mg/L	Sulfate (SO4) - mg/L	Hydroxide Alkalinity as CaCO3 - mg/L	Carbonate Alkalinity as CaCO3 - mg/L	Bicarbonat e Alkalinity as CaCO3 - mg/L	Alkalinity - mg/L							
ANZECC Guideline - stock drinking water									*5*	*0.5*			*0.01*	*1*	*1*	*1*		*0.1*		*1*		*20*	*0.002*			*1000*						*1000*							*1500*			*4000*
		26-Sep-16	1315	7.71	8.22																																				
		26-Oct-16	1010	7.74	8.25																																				
		23-Nov-16	1010	7.72	8.23																																				
		19-Dec-16	1020	7.71	8.22																																				
		20-Jan-17	1020	7.71	8.22																																				
		21-Feb-17	1020	7.77	8.28																																				
		28-Mar-17	1020	7.84	8.35																																				
		20-Apr-17	1030	7.90	8.41																																				
		24-May-17	1030	8.07	8.58																																				
		30-Jun-17	1110	8.28	8.79																																				
		25-Jul-17	1110	8.16	8.67																																				
		24-Aug-17	1055	8.07	8.58																																				
		21-Sep-17	1055	8.06	8.57																																				
		25-Oct-17	1055	8.24	8.75																																				
		24-Nov-17	1050	8.21	8.72																																				
		19-Dec-17	1040	8.09	8.60																																				
		25-Jan-18	1035	8.26	8.77																																				
		20-Feb-18	1035	8.10	8.61																																				
		27-Mar-18	1030	8.25	8.76																																				
		24-Apr-18	1130	8.41	8.92																																				
		28-May-18	1200	8.44	8.95																																				
		25-Jun-18	1035	8.55	9.06																																				
		25-Jul-18	1035	8.38	8.89																																				
		27-Aug-18	1055	8.50	9.01																																				
		20-Sep-18	1050	8.37	8.88																																				
		29-Oct-18	1050	8.61	9.12																																				
		26-Nov-18	1050	8.42	8.93																																				
		14-Dec-18	1110	8.40	8.91																																				
		25-Jan-19	1110	8.69	9.20																																				
		25-Feb-19	1100	8.82	9.33																																				
		25-Mar-19	1100	8.94	9.45																																				
		26-Apr-19	1050	8.96	9.47																																				
		28-May-19	1050	9.09	9.60																																				
		24-Jun-19	1000			no access - lock changed																																				
		31-Jul-19				no access - lock changed																																				
		23-Aug-19				no access - lock changed																																				
		25-Sep-19				no access - lock changed																																				
		29-Oct-19				no access - lock changed																																				
		29-Nov-19				no access - lock changed																																				
		18-Dec-19				no access - lock changed																																				
WB3b		**05-Jun-15**	1005	8.28	8.79																																				
		10-Sep-15	1030	7.77	8.28																																				
Depth	**Unknown**	**09-Dec-15**	1315	8.28	8.79																																				
Format.	**Alluvium**	**09-Mar-16**	1010	8.55	9.06																																				
		01-Jun-16	1320	8.21	8.72																																				
		26-Sep-16	1320	7.92	8.43																																				
		26-Oct-16	1015	7.57	8.08																																				
		23-Nov-16	1020	7.56	8.07																																				
		19-Dec-16	1010	7.59	8.10																																				
		20-Jan-17	1010	7.80	8.31																																				
		21-Feb-17	1010	7.69	8.20																																				
		28-Mar-17	1010	8.28	8.79																																				
		20-Apr-17	1020	7.85	8.36																																				
		24-May-17	1040	7.93	8.44																																				
		30-Jun-17	1100	8.05	8.56																																				
		25-Jul-17	1100	8.00	8.51																																				
		24-Aug-17	1045	8.52	9.03																																				
		21-Sep-17	1045	7.97	8.48																																				
		25-Oct-17	1045	8.07	8.58																																				
		24-Nov-17	1040	8.06	8.57																																				
		19-Dec-17	1030	8.04	8.55																																				
		25-Jan-18	1025	8.74	9.25																																				
		20-Feb-18	1025	8.02	8.53																																				
		27-Mar-18	1020	8.36	8.87																																				
		24-Apr-18	1120	8.85	9.36																																				
		28-May-18	1210	8.35	8.86																																				
		25-Jun-18	1025	8.94	9.45																																				
		25-Jul-18	1025	8.29	8.80																																				
		27-Aug-18	1105	8.78	9.29																																				
		20-Sep-18	1040	8.28	8.79																																				
		29-Oct-18	1040	8.52	9.03																																				
		26-Nov-18	1040	8.30	8.81																																				
		14-Dec-18	1100	8.34	8.85																																				
		25-Jan-19	1100	9.13	9.64																																				
		25-Feb-19	1050	9.25	9.76																																				
		25-Mar-19	1050	9.36	9.87																																				
		26-Apr-19	1040	9.33	9.84																																				
		28-May-19	1040	9.43	9.94																																				
		24-Jun-19	1000			No Access - Lock changed.																																				
		31-Jul-19				No Access - Lock changed.																																				
		23-Aug-19				No Access - Lock changed.																																				
		25-Sep-19				No Access - Lock changed.																																				
		29-Oct-19				No Access - Lock changed.																																				
		29-Nov-19				No Access - Lock changed.																																				
		18-Dec-19				No Access - Lock changed.																																				
WB4		**11-Mar-15**	1320	7.84	8.39																																				
		05-Jun-15	1025	7.92	8.47																																				
Depth	**Unknown**	**10-Sep-15**	1050	8.00	8.55																																				
Format.	**Alluvium**	**09-Dec-15**	1250	8.04	8.59																																				
		09-Mar-16	1050	8.09	8.64																																				
		01-Jun-16	1255	8.17	8.72																																				
		26-Sep-16	1335	8.20	8.75																																				
		26-Oct-16	1030	8.18	8.73																																				
		23-Nov-16	1040	8.16	8.71																																				
		19-Dec-16	1035	8.13	8.68																																				
		20-Jan-17	1040	8.13	8.68																																				
		21-Feb-17	1035	8.15	8.70																																				
		28-Mar-17	1035	8.14	8.69																																				
		20-Apr-17	1045	8.12	8.67																																				
		24-May-17	1050	8.17	8.72																																				
		30-Jun-17	1125	8.17	8.72																																				
		25-Jul-17	1125	8.19	8.74																																				
		24-Aug-17	1110	8.20	8.75																																				
		21-Sep-17	1110	8.20	8.75																																				
		25-Oct-17	1110	8.21	8.76																																				
		24-Nov-17	1105	8.25	8.80																																				
		19-Dec-17	1055	8.27	8.82																																				
		25-Jan-18	1050	8.29	8.84																																				
		20-Feb-18	1050	8.30	8.85																																				
		27-Mar-18	1045	8.32	8.87																																				

Site ID	Piezometer / Water Bore	Date	Time	Depth to Water - mbgl	Depth to Stand - mbtoc	Field Parameters			Total Metals														Mercury (Hg) - mg/L	pH Lab	EC - Lab - µs/cm	Major Cations				Total Cations - meq/L	Major Anions						Total Anions - meq/L	Ionic Balance	Ammonia as Nitrogen (N)	Nitrite as N - mg/L	Nitrate as N - mg/L	NOX as N - mg/L	Total Dissolved Solids
						pH - Field	EC - Field - µs/cm	Temp - Field - °C	Aluminium (Al) - mg/L	Arsenic (As) - mg/L	Barium (Ba) - mg/L	Beryllium (Be) - mg/L	Cadmium (mg/L)	Chromium (Cr) - mg/L	Cobalt (Co) - mg/L	Copper (Cu) - mg/L	Iron (Fe) - mg/L	Lead (Pb) - mg/L	Manganese (Mn) - mg/L	Nickel (Ni) - mg/L	Vanadium (V) - mg/L	Zinc (Zn) - mg/L				Calcium (Ca) - mg/L	Magnesium (Mg) - mg/L	Sodium (Na) - mg/L	Potassium (K) - mg/L		Chloride (Cl) - mg/L	Sulfate (SO4) - mg/L	Hydroxide Alkalinity as CaCO3 - mg/L	Carbonate Alkalinity as CaCO3 - mg/L	Bicarbonate Alkalinity as CaCO3 - mg/L	Alkalinity - mg/L							
ANZECC Guideline - stock drinking water									*5*	*0.5*			*0.01*	*1*	*1*	*1*		*0.1*		*1*		*20*	*0.002*			*1000*						*1000*							*1500*	*400*		*4000*
		24-Apr-18	1150	8.31	8.86																																				
		28-May-18	1145	8.33	8.88																																				
		25-Jun-18	1050	8.38	8.93																																				
		25-Jul-18	1050	8.40	8.95																																				
		27-Aug-18	1035	8.42	8.97																																				
		20-Sep-18	1110	8.44	8.99																																				
		29-Oct-18	1110	8.39	8.94																																				
		26-Nov-18	1110	8.49	9.04																																				
		14-Dec-18	1140	8.54	9.09																																				
		25-Jan-19	1130	8.53	9.08																																				
		25-Feb-19	1120	8.55	9.10																																				
		25-Mar-19	1120	8.57	9.12																																				
		26-Apr-19	1110	8.59	9.14																																				
		28-May-19	1110	8.55	9.10																																				
		24-Jun-19	1010			No access - lock changed																																				
		31-Jul-19				No access - lock changed																																				
		23-Aug-19				No access - lock changed																																				
		25-Sep-19				No access - lock changed																																				
		29-Oct-19				No access - lock changed																																				
		29-Nov-19				No access - lock changed																																				
		18-Dec-19				No access - lock changed																																				
WB5a		**11-Mar-15**	1400	9.66	10.78																																				
		05-Jun-15	935	9.66	10.78																																				
Depth	**Unknown**	**10-Sep-15**	950	9.42	10.54																																				
Format.	**Alluvium**	**09-Dec-15**	1350	9.59	10.71																																				
		09-Mar-16	920	10.02	11.14																																				
		01-Jun-16	1400	10.08	11.20																																				
		27-Sep-16	920	8.89	10.01																																				
		26-Oct-16	925	9.20	10.32																																				
		23-Nov-16	930	9.18	10.30																																				
		19-Dec-16	935	9.18	10.30																																				
		20-Jan-17	935	9.14	10.26																																				
		21-Feb-17	925	9.35	10.47																																				
		28-Mar-17	930	9.75	10.87																																				
		20-Apr-17	940	9.70	10.82																																				
		24-May-17	950	9.68	10.80																																				
		30-Jun-17	1010	9.59	10.71																																				
		25-Jul-17	1010	9.62	10.74																																				
		24-Aug-17	955	9.57	10.69																																				
		21-Sep-17	950	9.58	10.70																																				
		25-Oct-17	955	9.41	10.53																																				
		24-Nov-17	950	9.39	10.51																																				
		19-Dec-17	940	9.27	10.39																																				
		25-Jan-18	940	9.15	10.27																																				
		20-Feb-18	940	9.32	10.44																																				
		27-Mar-18	940	9.63	10.75																																				
		24-Apr-18	1040	9.72	10.84																																				
		28-May-18	1300	9.77	10.89																																				
		25-Jun-18	940	9.60	10.72																																				
		25-Jul-18	940	9.79	10.91																																				
		27-Aug-18	1210	9.83	10.95																																				
		20-Sep-18	940	9.90	11.02																																				
		29-Oct-18	940	9.65	10.77																																				
		26-Nov-18	940	9.66	10.78																																				
		14-Dec-18	1000	9.72	10.84																																				
		25-Jan-19	950	10.25	11.37																																				
		25-Feb-19	950	10.56	11.68																																				
		25-Mar-19	950	10.76	11.88																																				
		26-Apr-19	950	10.63	11.75																																				
		28-May-19	950	10.64	11.76																																				
		24-Jun-19	920			no access - lock changed																																				
		31-Jul-19				no access - lock changed																																				
		23-Aug-19	920			no access - lock changed																																				
		26-Sep-19				no access - lock changed																																				
		28-Oct-19				no access - lock changed																																				
		29-Nov-19				no access - lock changed																																				
		18-Dec-19				no access - lock changed																																				
WB5b		**11-Mar-15**	1410	10.11	11.23																																				
		05-Jun-15	930	9.78	10.90																																				
Depth	**Unknown**	**10-Sep-15**	940	9.47	10.59																																				
Format.	**Alluvium**	**09-Dec-15**	1400	9.94	11.06																																				
		09-Mar-16	930	10.55	11.67																																				
		01-Jun-16	1410	10.41	11.53																																				
		27-Sep-16	930	9.28	10.40																																				
		26-Oct-16	935	9.31	10.43																																				
		23-Nov-16	940	9.50	10.62																																				
		19-Dec-16	925	9.59	10.71																																				
		20-Jan-17	925	9.95	11.07																																				
		21-Feb-17	915	10.11	11.23																																				
		28-Mar-17	920	9.96	11.08																																				
		20-Apr-17	930	9.86	10.98																																				
		24-May-17	940	9.76	10.88																																				
		30-Jun-17	1000	9.67	10.79																																				
		25-Jul-17	1000	9.60	10.72																																				
		24-Aug-17	945	9.54	10.66																																				
		21-Sep-17	940	9.75	10.87																																				
		25-Oct-17	945	9.55	10.67																																				
		24-Nov-17	940	9.57	10.69																																				
		19-Dec-17	930	9.82	10.94																																				
		25-Jan-18	930	10.18	11.30																																				
		20-Feb-18	930	10.19	11.31																																				
		27-Mar-18	930	9.99	11.11																																				
		24-Apr-18	1030	9.96	11.08																																				
		28-May-18	1310	9.91	11.03																																				
		25-Jun-18	930	9.82	10.94																																				
		25-Jul-18	930	9.98	11.10																																				
		27-Aug-18	1220	9.86	10.98																																				
		20-Sep-18	930	10.17	11.29																																				
		29-Oct-18	930	10.44	11.56																																				
		26-Nov-18	930	10.27	11.39																																				
		14-Dec-18	950	10.45	11.57																																				
		25-Jan-19	940	11.11	12.23																																				
		25-Feb-19	940	11.42	12.54																																				
		25-Mar-19	940	11.09	12.21																																				
		26-Apr-19	940	10.98	12.10																																				
		28-May-19	940	10.91	12.03																																				
		24-Jun-19	920			no access - lock changed																																				
		31-Jul-19				no access - lock changed																																				
		23-Aug-19	920			no access - lock changed																																				
		26-Sep-19				no access - lock changed																																				

Site ID	Piezometer / Water Bore	Date	Time	Depth to Water - mbgl	Depth to Stand - mbtoc	Field Parameters			Total Metals														Mercury (Hg) - mg/L	pH Lab	EC - Lab - µs/cm	Major Cations				Total Cations - meq/L	Major Anions						Total Anions - meq/L	Ionic Balance	Ammonia as Nitrogen (N)	Nitrite as N - mg/L	Nitrate as N - mg/L	NOX as N - mg/L	Total Dissolved Solids
						pH - Field	EC - Field - µs/cm	Temp - Field - °C	Aluminium (Al) - mg/L	Arsenic (As) - mg/L	Barium (Ba) - mg/L	Beryllium (Be) - mg/L	Cadmium (mg/L)	Chromium (Cr) - mg/L	Cobalt (Co) - mg/L	Copper (Cu) - mg/L	Iron (Fe) - mg/L	Lead (Pb) - mg/L	Manganese (Mn) - mg/L	Nickel (Ni) - mg/L	Vanadium (V) - mg/L	Zinc (Zn) - mg/L				Calcium (Ca) - mg/L	Magnesium (Mg) - mg/L	Sodium (Na) - mg/L	Potassium (K) - mg/L		Chloride (Cl) - mg/L	Sulfate (SO4) - mg/L	Hydroxide Alkalinity as CaCO3 - mg/L	Carbonate Alkalinity as CaCO3 - mg/L	Bicarbonate Alkalinity as CaCO3 - mg/L	Alkalinity - mg/L						
ANZECC Guideline - stock drinking water									*5*	*0.5*			*0.01*	*1*	*1*	*1*		*0.1*		*1*	*20*	*0.002*			*1000*						*1000*									*1500*	*400*		*4000*
		28-Oct-19				no access - lock changed																																		
		29-Nov-19				no access - lock changed																																		
		18-Dec-19				no access - lock changed																																		
WB6a		**11-Mar-15**	1420	11.57	12.41																																			
		05-Jun-15	915	11.67	12.51																																			
Depth	**Unknown**	**10-Sep-15**	925	11.42	12.26																																			
Format.	**Alluvium**	**09-Dec-15**	1410	11.59	12.43																																			
		09-Mar-16	850	11.59	12.43																																			
		01-Jun-16	1425	11.61	12.45																																			
		27-Sep-16	850	11.58	12.42																																			
		26-Oct-16	910	11.50	12.34																																			
		23-Nov-16	900	11.53	12.37																																			
		19-Dec-16	900	11.55	12.39																																			
		20-Jan-17	910	11.56	12.40																																			
		21-Feb-17	910	11.56	12.40																																			
		28-Mar-17	910	11.57	12.41																																			
		20-Apr-17	915	11.55	12.39																																			
		24-May-17	920	11.60	12.44																																			
		30-Jun-17	940	11.61	12.45																																			
		25-Jul-17	940	11.58	12.42																																			
		24-Aug-17	925	11.34	12.18																																			
		21-Sep-17	920	11.41	12.25																																			

Site ID	Piezometer / Water Bore	Date	Time	Depth to Water - mbgl	Depth to Stand - mbtoc	Field Parameters			Total Metals															Mercury (Hg) - mg/L	pH Lab	EC - Lab - µs/cm	Major Cations				Total Cations - meq/L	Major Anions						Total Anions - meq/L	Ionic Balance	Ammonia as Nitrogen (N)	Nitrite as N - mg/L	Nitrate as N - mg/L	NOX as N - mg/L	Total Dissolved Solids
						pH - Field	EC - Field - µs/cm	Temp - Field - °C	Aluminium (Al) - mg/L	Arsenic (As) - mg/L	Barium (Ba) - mg/L	Beryllium (Be) - mg/L	Cadmium (mg/L)	Chromium (Cr) - mg/L	Cobalt (Co) - mg/L	Copper (Cu) - mg/L	Iron (Fe) - mg/L	Lead (Pb) - mg/L	Mangane se (Mn) - mg/L	Nickel (Ni) - mg/L	Vanadium (V) - mg/L	Zinc (Zn) - mg/L				Calcium (Ca) - mg/L	Magnesiu m (Mg) - mg/L	Sodium (Na) - mg/L	Potassiu m (K) - mg/L		Chloride (Cl) - mg/L	Sulfate (SO4) - mg/L	Hydroxide Alkalinity as CaCO3 - mg/L	Carbonate Alkalinity as CaCO3 - mg/L	Bicarbonat e Alkalinity as CaCO3 - mg/L	Alkalinity - mg/L							
ANZECC Guideline - stock drinking water									*5*	*0.5*			*0.01*	*1*	*1*	*1*		*0.1*		*1*		*20*	*0.002*			*1000*						*1000*								*1500*	*400*		*4000*
		25-Oct-17	925	11.49	12.33																																				
		24-Nov-17	920	11.55	12.39																																				
		19-Dec-17	910	11.54	12.38																																				
		25-Jan-18	910	11.57	12.41																																				
		20-Feb-18	910	11.57	12.41																																				
		27-Mar-18	910	11.59	12.43																																				
		24-Apr-18	1010	11.60	12.44																																				
		28-May-18	1335	11.62	12.46																																				
		25-Jun-18	900	11.63	12.47																																				
		25-Jul-18	900	11.63	12.47																																				
		27-Aug-18	1240	11.62	12.46																																				
		20-Sep-18	910	11.63	12.47																																				
		29-Oct-18	910	11.65	12.49																																				
		26-Nov-18	910	11.65	12.49																																				
		14-Dec-18	930	11.66	12.50																																				
		25-Jan-19	920	11.68	12.52																																				
		25-Feb-19	920	11.69	12.53																																				
		25-Mar-19	910	11.70	12.54																																				
		26-Apr-19	910	11.72	12.56																																				
		28-May-19	920	11.73	12.57																																				
		24-Jun-19	900			no access - lock changed																																				
		31-Jul-19				no access - lock changed																																				
		23-Aug-19				no access - lock changed																																				
		26-Sep-19				no access - lock changed																																				
		28-Oct-19				no access - lock changed																																				
		29-Nov-19				no access - lock changed																																				
		18-Dec-19				no access - lock changed																																				
WB6b		**11-Mar-15**	1430	16.19	17.03																																				
		05-Jun-15	910	10.43	11.27																																				
Depth	**Unknown**	**10-Sep-15**	915	10.60	11.44																																				
Format.	**Alluvium**	**09-Dec-15**	1420	17.14	17.98																																				
		09-Mar-16	900	14.88	15.72																																				
		01-Jun-16	1435	15.13	15.97																																				
		27-Sep-16	900	10.59	11.43																																				
		26-Oct-16	900	10.93	11.77																																				
		23-Nov-16	915	16.02	16.86																																				
		19-Dec-16	910	15.97	16.81																																				
		20-Jan-17	900	19.09	19.93																																				
		21-Feb-17	900	15.42	16.26																																				
		28-Mar-17	900	11.38	12.22																																				
		20-Apr-17	900	11.10	11.94																																				
		24-May-17	910	10.86	11.70																																				
		30-Jun-17	930	10.70	11.54																																				
		25-Jul-17	930	10.60	11.44																																				
		24-Aug-17	915	10.51	11.35																																				
		21-Sep-17	910	14.74	15.58																																				
		25-Oct-17	915	10.98	11.82																																				
		24-Nov-17	910	11.44	12.28																																				
		19-Dec-17	900	18.83	19.67																																				
		25-Jan-18	900	21.70	22.54																																				
		20-Feb-18	900	16.83	17.67																																				
		27-Mar-18	900	11.58	12.42																																				
		24-Apr-18	1000	11.29	12.13																																				
		28-May-18	1345	11.11	11.95																																				
		25-Jun-18	910	10.57	11.41																																				
		25-Jul-18	910	15.25	16.09																																				
		27-Aug-18	1250	12.92	13.76																																				
		20-Sep-18	900	16.11	16.95																																				
		29-Oct-18	900	19.69	20.53																																				
		26-Nov-18	900	12.54	13.38																																				
		14-Dec-18	920	13.55	14.39																																				
		25-Jan-19	910	26.93	27.77																																				
		25-Feb-19	910	27.72	28.56																																				
		25-Mar-19	910	12.91	13.75																																				
		26-Apr-19	910	12.37	13.21																																				
		28-May-19	910	12.14	12.98																																				
		24-Jun-19	900			no access - lock changed																																				
		31-Jul-19				no access - lock changed																																				
		23-Aug-19	905			no access - lock changed																																				
		26-Sep-19				no access - lock changed																																				
		28-Oct-19				no access - lock changed																																				
		28-Oct-19				no access - lock changed																																				
		29-Nov-19				no access - lock changed																																				
		18-Dec-19				no access - lock changed																																				
WB7		**11-Sep-08**	1330			6.9	1175	20.5		<0.001	0.006	<0.001	<0.0001	<0.001	<0.001	0.013	<0.05	<0.001	<0.001	<0.001	<0.01	0.040	<0.0001		765	33	18	92	2	7.16	60	23	<1	<1	250	250	7.16	0.06	0.04				410
		14-Nov-08	0841	4.11	4.99																																				
Depth	**Unknown**	**01-Dec-08**	1045	2.27	3.15																																				
Format.	**Alluvium**	**12-Jan-09**	1315	4.30	5.18																																				
		25-Aug-09	1500							<0.001	0.006	<0.001	<0.0001	<0.001	<0.001	0.049	<0.05	0.006	0.002	<0.001	<0.01	0.044	<0.0001		633	26	14	80	2		47.4	23	<1	<1	224	224			<0.01				348
		01-Dec-09	1330	4.79		8.18	1002	23.3	0.05	0.005				<0.001		0.013	0.32	<0.001	0.038	0.004		<0.005	<0.0001	7.91	848	12	7	164	1	8.35	65.2	32	<1	<1	272	272	8.05	1.82		0.02	1.45	1.48	
		18-Feb-10	1240	4.64																																					
		23-Jun-10	1340		4.81	8.2	796	21	<0.01	<0.001				<0.001		0.01	<0.05	<0.001	<0.001	<0.001		0.007	<0.0001	7.22	621	29	16	93	2	6.89	51	17.8	<1	<1	250	250	6.81	0.59		<0.01	0.31	0.31	
		03-Sep-10	1305		1.93	7.39	625	22.3																																			
		08-Feb-11	1330		2.12	7.36	964	27.3	0.02	<0.001				<0.005		0.023	<0.05	<0.001	<0.001	<0.001		0.012	<0.001	7.2	766	41	24	125	2	9.52	65	33	<1	<1	345	345	9.41	0.52		<0.01	0.43	0.43	
		31-May-11	1215	3.01	3.01	7.55	613	14.8																																			
		27-Sep-11	1240	2.85	2.85	7.61	701	22.3	<0.01	<0.001	0.007	<0.001	<0.0001	<0.001	<0.001	0.016	0.2	0.002	0.004	<0.001	<0.01	0.009	<0.0001	7.95	740	30	17	105	2	7.51	61	25	<1	<1	260	260	7.44	0.5	<0.01	<0.01	0.35	0.35	402
		03-Jan-12	1230	1.90	1.90	7.52	732	25.7																																			
		22-Mar-12	1250	3.09	3.09	7.45	722	24.2	<0.01	0.007	0.011	<0.001	<0.0001	<0.001	<0.001	0.016	1.14	0.006	0.163	0.002	<0.01	0.012	<0.0001	7.69	654	24	14	112	3	7.3	60	23	<1	<1	245	245	7.07	1.58	0.14	<0.01	<0.01	<0.01	490
		01-Jun-12	1230	3.76	3.76	7.55	704	16.1																																			
		10-Sep-12	1015	1.14	1.14	7.27	597	17.5	0.01	<0.001	0.008	<0.001	<0.0001	<0.001	<0.001	0.008	<0.05	<0.001	0.027	<0.001	<0.01	0.005	<0.0001	7.65	636	23	12	98	2	6.45	56	20	<1	<1	234	234	6.67	1.72	<0.01	<0.01	0.05	0.05	362
		04-Dec-12	920	3.12	3.12																																				
		07-Mar-13	1340	1.7	1.7	7.4	673	25.2	<0.01	<0.001	0.009	<0.001	<0.0001	<0.001	<0.001	0.064	0.16	0.042	0.01	<0.001	<0.01	0.015	<0.0001	7.3	693	34	17	90	2	7.06	54	18	<1	<1	255	255	6.99	0.46	<0.01	<0.01	0.51	0.51	398
		03-Jul-13	1410	2.87	2.87	7.47	668	13.4																																			
		04-Sep-13	945	3.34	3.34	7.1	688	17.1	0.02	<0.001	0.012	<0.001	<0.0001	<0.001	<0.001	0.022	0.87	0.002	0.306	0.002	<0.01	0.021	<0.0001	7.63	715	32	18	102	2	7.57	58	26	<1	<1	254	254	7.27	1.97	<0.01	<0.01	0.06	0.06	387
		02-Dec-13	1415	3.15	3.15	9.2	992	19.2																																			
		07-Mar-14	1320	2.62	2.62	7.7	846	26.2	<0.01	<0.001	0.01	<0.001	<0.0001	<0.001	<0.001	0.014	<0.05	<0.001	0.002	<0.001	<0.01	0.008	<0.0001	7.46	821	38	21	107	2	8.33	75	28	<1	<1	268	268	8.05	1.66	0.01	<0.01	1.85	1.85	491
		10-Jun-14	1315	4.62	4.62	7.9	740	15																																			
		25-Sep-14	1150	3.71	3.71	7.7	704	18.1	0.02	<0.001	0.009	<0.001	<0.0001	<0.001	<0.001	0.011	<0.05	<0.001	0.012	0.002	<0.01	0.012	<0.0001	7.53	708	28	17	92	2	6.85	61	28	<1	<1	222	222	6.74	0.78	0.01	<0.01	0.52	0.52	393
		03-Dec-14	1245	2.79	2.79	7.6	702	19.6																																			
		11-Mar-15	1350	2.65	2.65	7.8	1010	24.7	<0.01	<0.001	0.011	<0.001	<0.0001	<0.001	<0.001	0.013	<0.05	<0.001	0.005	0.001	<0.01	0.026	<0.0001	7.6	810	42	25	114	2	9.16	64	46	<1	<1	292	292	8.6	3.16	0.03	<0.01	1.76	1.76	426
		05-Jun-15	950	2.38	2.38	7.3	694	9.1																																			
		10-Sep-15	1010	1.74	1.74	7	642	14	<0.01	<0.001	0.009	<0.001	<0.0001	<0.001	<0.001	0.011	0.13	0.002	0.042	0.002	<0.01	0.024	<0.0001	7.46	657	29	17	95	2	7.03	53	22	<1	<1	230	230	6.55	3.52	0.03	<0.01	0.07	0.07	410
		09-Dec-15	1355	2.51	2.51	7.1	875	24.7																																			
		09-Mar-16	1040	3.87	3.87	7.1	825	26.7	<0.01	<0.001	0.01	<0.001	<0.0001	<0.001	<0.001	0.073	1.68	<0.001	1.78	<0.001	<0.01	0.009	<0.0001	7.59	809	41	20	111	2	8.57	60	37	<1	<1	283	283	8.12	2.7	0.06	<0.01	0.03	0.03	439
		01-Jun-16	1345	3.69	3.69	7.5	794	16.3																																			
		27-Sep-16	950	2.35	2.35	7.5	760	15.1	<0.01	<0.001	0.005	<0.001	<0.0001	<0.001	<0.001	<0.001	3.29	<0.001	0.196	<0.001	<0.01	<0.005	<0.0001	7.8	739	34	20	104	1	7.89	54	20	<1	<1	283	283	7.59	1.89	<0.01	<0.01	<0.01	<0.01	390
		26-Oct-16	950	1.39	1.39																																				
		23-Nov-16	950	2.77	2.77	7.1	642	24.1																																			
		19-Dec-16	955	2.9	2.9	7.1	735	22.9																																			
		20-Jan-17	950	1.79	1.79	7.1	832	24.9																																			

Site ID	Piezometer / Water Bore	Date	Time	Depth to Water - mbgl	Depth to Stand - mbtoc	Field Parameters			Total Metals															Mercury (Hg) - mg/L	pH Lab	EC - Lab - µs/cm	Major Cations				Total Cations - meq/L	Major Anions						Total Anions - meq/L	Ionic Balance	Ammonia as Nitrogen (N)	Nitrite as N - mg/L	Nitrate as N - mg/L	NOX as N - mg/L	Total Dissolved Solids
						pH - Field	EC - Field - µs/cm	Temp - Field - °C	Aluminium (Al) - mg/L	Arsenic (As) - mg/L	Barium (Ba) - mg/L	Beryllium (Be) - mg/L	Cadmium (mg/L)	Chromium (Cr) - mg/L	Cobalt (Co) - mg/L	Copper (Cu) - mg/L	Iron (Fe) - mg/L	Lead (Pb) - mg/L	Manganese (Mn) - mg/L	Nickel (Ni) - mg/L	Vanadium (V) - mg/L	Zinc (Zn) - mg/L				Calcium (Ca) - mg/L	Magnesium (Mg) - mg/L	Sodium (Na) - mg/L	Potassium (K) - mg/L		Chloride (Cl) - mg/L	Sulfate (SO4) - mg/L	Hydroxide Alkalinity as CaCO3 - mg/L	Carbonate Alkalinity as CaCO3 - mg/L	Bicarbonate Alkalinity as CaCO3 - mg/L	Alkalinity - mg/L							
ANZECC Guideline - stock drinking water									***5***	***0.5***			***0.01***	***1***	***1***	***1***		***0.1***		***1***		***20***	***0.002***			***1000***					***1000***								***1500***	***400***		***4000***
		21-Feb-17	950	3.55	3.55	7.1	783	20.3																																	
		28-Mar-17	950	3.43	3.43	7.1	673	23.6																																	
		20-Apr-17	1000	2.11	2.11	7	674	20.5																																	
		24-May-17	1010	1.47	1.47	7.3	669	17.8																																	
		30-Jun-17	1040	1.39	1.39	7.1	617	14.8																																	
		25-Jul-17	1040	1.37	1.37	7.1	685	10.3																																	
		24-Aug-17	1020	1.17	1.17	7	668	12.3																																	
		21-Sep-17	1020	2.37	2.37	6.5	716	20.8	<0.01	<0.001	0.006	<0.001	<0.0001	<0.001	<0.001	0.004	<0.05	<0.001	0.002	<0.001	<0.01	0.005	<0.0001	7.26	701	36	18	94	2	7.42	53	26	<1	<1	267	267	7.37	0.32	0.03	<0.01	1.25	1.25	356
		25-Oct-17	1020	3.75	3.75	6.7	772	20.7																																	
		24-Nov-17	1015	1.98	1.98	6.6	682	20.7																																	
		19-Dec-17	1005	1.67	1.67	7	843	23																																	
		25-Jan-18	1005	1.51	1.51	7.1	822	24.8																																	
		20-Feb-18	1005	2.33	2.33	7	912	21.8																																	
		27-Mar-18	1000	2.15	2.15	7.1	678	18.3																																	
		24-Apr-18	1100	3.09	3.09	7.2	685	20.9																																	
		28-May-18	1240	3.48	3.48	7.1	672	20.7																																	
		25-Jun-18	1005	3.82	3.82	7.2	859	14.4																																	
		25-Jul-18	1005	4.2	4.2	7.2	665	13.2																																	
		27-Aug-18	1140	4.2	4.2	7.4	722	16.7																																	
		20-Sep-18	1010	4.82	4.82	7.2	824	19.7	<0.01	<0.001	0.011	<0.001	<0.0001	<0.001	<0.001	0.011	<0.05	<0.001	0.002	<0.001	<0.01	0.027	<0.0001	7.29	897	49	26	135	2	10.5	72	43	<1	<1	274	274	8.57	10.1	0.03	<0.01	2.38	2.38	482
		29-Oct-18	1010	3.45	3.45	7	796	19.3																																	
		26-Nov-18	1010	3.3	3.3	7	781	21																																	
		14-Dec-18	1030	3.42	3.42	7	768	21.5																																	
		25-Jan-19	1025	2.1	2.1	7	893	24.6																																	
		25-Feb-19	1020	1.73	1.73	7	973	20.5																																	
		25-Mar-19	1020	1.82	1.82	7	980	20.9																																	
		26-Apr-19	1020	2.41	2.41	7	920	20.3																																	
		28-May-19	1020	2.03	2.03	6.9	742	12.4																																	
		24-Jun-19	945	2.16	2.16	7.5	750	13.6																																	
		31-Jul-19	910	2.72	2.72	7	730	15.1																																	
		23-Aug-19	950	4.85	4.85	6.8	825	19.1																																	
		26-Sep-19	1150	3.92	3.92	7.3	1230	20.3	<0.01	<0.001	0.017	<0.001	<0.0001	<0.001	<0.001	0.055	<0.05	0.002	0.003	<0.001	<0.01	0.027	<0.0001	7.34	1160	60	31	152	2	12.2	125	82	<1	<1	273	273	10.7	6.64	0.02	<0.01	5.74	5.74	693
		28-Oct-19	910	410	410	7.2	1150	21.4																																	
		28-Oct-19	910			7.2	1150	21.4	Duplet																																	
		29-Nov-19	900	2.43	2.43	7.3	1100	22.3																																	
		18-Dec-19	1355	3.18	3.18	7.2	1080	22.4																																	
WB8		**Not sampled since 2008**																																							
WB9	NC-008	**Not sampled since 2008**																																							

Denotes dissolved metals