

Annual Review

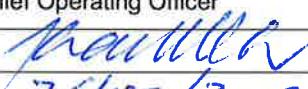
Rocglen Coal Mine

Name of operation	Rocglen Coal Mine
Name of operator	Whitehaven Coal Mining Pty Ltd
Development consent/project approval number	PA 10_0015
Name of holder of development consent/project approval	Whitehaven Coal Mining Pty Ltd
Mining lease number	ML 1620, ML 1662
Name of holder of mining lease	Whitehaven Coal Mining Pty Ltd
Water licence number	WAL29461 and WAL 36758
Name of holder of water licence	Whitehaven Coal Mining Pty Ltd
MOP start date	1 st November 2015
MOP end date	31 st October 2020
Annual review start date	1 st January 2018
Annual review end date	31 st December 2018

I, Jamie Frankcombe, certify that this audit report is a true and accurate record of the compliance status of Rocglen Coal Mine for the period 1st January 2017 to 31st December 2018, and that I am authorised to make this statement on behalf of Whitehaven Coal Mining 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	Jamie Frankcombe
Title of authorised reporting officer	Chief Operating Officer
Signature of authorised reporting officer	
Date	26/02/2019

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Appendix 1 – Attended Noise Monitoring Results
Appendix 2 – Surface Water Data
Appendix 3 – Groundwater Data

1. STATEMENT OF COMPLIANCE

The compliance status of Rocglen Coal Mine (RCM) as at 31st December 2017 is summarised in Table 1. Table 2 notes non-compliances that occurred during the reporting period, as well as non-compliances from previous reporting periods that still require management action. References to the Environment Protection Licence (EPL) are limited to those that related to the Project Approval conditions, specifically Schedule 3 Conditions 4, 12, 17, 18(b), 21 and 22, and Schedule 5 Condition 8.

Table 1 - Statement of Compliance

Were all conditions of the relevant approval(s) complied with?	
PA10_0015	No
EPL 12870 (applicable conditions above)	No
ML 1620	Yes
ML 1662	Yes
WAL 29461	Yes
WAL 36758	Yes

Table 2 - Non-compliances

Relevant Approval	Condition, Schedule and Number	Condition Description (summary)	Compliance Status	Comment	Where Addressed in Annual Review
PA 10_0015	Schedule 2(2)	The proponent shall carry out the project generally in accordance with the: - EA; - Statement of commitments; - The conditions of this approval	NC	Non-compliances with approval detailed below.	Section 11.2
	Schedule 2(8)	Prior to the surrender of Project Approval 06_0198 the conditions of that approval will prevail to the extent of any inconsistency between the two approvals.	NC	Project Approval 06_0198 surrender has been submitted, but not finalised.	Section 11.2
	Schedule 3(15)	In accordance with the Air Quality and Greenhouse Gas Management Plan the 'Costa Vale' HVAS is to run every 6 days for 24hrs.	NC	Several occasions in which the 'Costa Vale' HVAS did not run.	Section 11.2 & 6.1.2
	Schedule 3(18)	Requirement for continuous meteorological monitoring.	NC	Continuous monitoring was not achieved due to communication issues, breakdowns and planned maintenance.	Section 11.2
	Schedule 3(31)	Establish and maintain an effective vegetative screen along the boundary of the site that adjoins public roads.	NC	Existing vegetative screen has been augmented with additional planting undertaken during the reporting period.	Section 11.2
EPL 12870	A3.1	Works carried out in accordance with licence.	NC	Non-compliances with licence detailed below.	Section 11.2

	M2.1, M2.2	Requirement for continuous PM10 monitoring.	NC	Continuous monitoring no achieved due to communication issues, breakdowns and planned maintenance.	Section 11.2
	M2.2	Requirement for 24hr PM10 monitoring in accordance with AM-18 methodology.	NC	A short run was experienced at the 'Roseberry' HVAS on one occasion, resulting in an invalid result.	Section 11.2 and 6.1.2.
	M4.1, M4.2	Requirement for continuous meteorological monitoring.	NC	Continuous monitoring was not achieved due to communication issues, breakdowns and planned maintenance.	Section 11.2

Compliance status key for Table 2

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: <ul style="list-style-type: none"> 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: <ul style="list-style-type: none"> 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)

2. INTRODUCTION

This is the tenth Annual Review (AR), previously Annual Environmental Management Report, produced for the RCM, and it has been prepared in accordance with Conditions 4 and 5 of Mining Lease (ML1620) (Mining Act 1992), Condition 4 of Mining Lease (ML1662) and Condition 3 Schedule 5 of PA 10_0015, as modified. This report covers the period between the 1st January 2018 and the 31st December 2018. The AR follows the format required by the NSW Government Annual Review Guideline (October, 2015).

The RCM is located approximately 28km north of Gunnedah (refer Figure 1). The RCM is owned by Whitehaven Coal Limited (WCL) and operated by Whitehaven Coal Mining Pty Ltd (WCMPL).

The RCM was initially approved on the 15th April 2008 under PA 06_0198 with a minor modification (PA 06_0198 MOD1) granted in May 2010 to address highwall stability issues. Whitehaven submitted a Project Application, and accompanying Environmental Assessment, under Part 3A of the *Environmental Planning and Assessment Act 1979* in March 2010. PA 10_0015 was issued on the 27th September 2011 and allows for

additional extraction of up to 5 million tonnes of coal at a maximum recovery rate of 1.5 million tonnes per annum (i.e. increased project life of the operation of coal extraction by up to four years).

PA 10_0015 was modified initially in November 2014 to condition cumulative coal haulage from the Tarrawonga/Vickery/Rocglen mines. In August 2015 another modification was made allowing changes to coal reject haulage to the site. During February 2017, PA10_0015 was modified to permit increased coal haulage during the 2017 calendar year, and then again in October 2018 to allow the continuation of the increased haulage into the 2018 calendar year.

2.1 Mine Contacts

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

- Mr Matthew Sparkes, Operations Manager – statutory responsibility for mining activities at the site.
Contact: (02) 6740 7003
- Mr Matthew Sparks, Operations Manager Rocglen– oversees Rocglen operations. Contact: (02) 6740 7003
- Mr Andrew Raal, Environmental Officer – oversees day to day environmental and rehabilitation performance across the site. Contact 0436 685 548

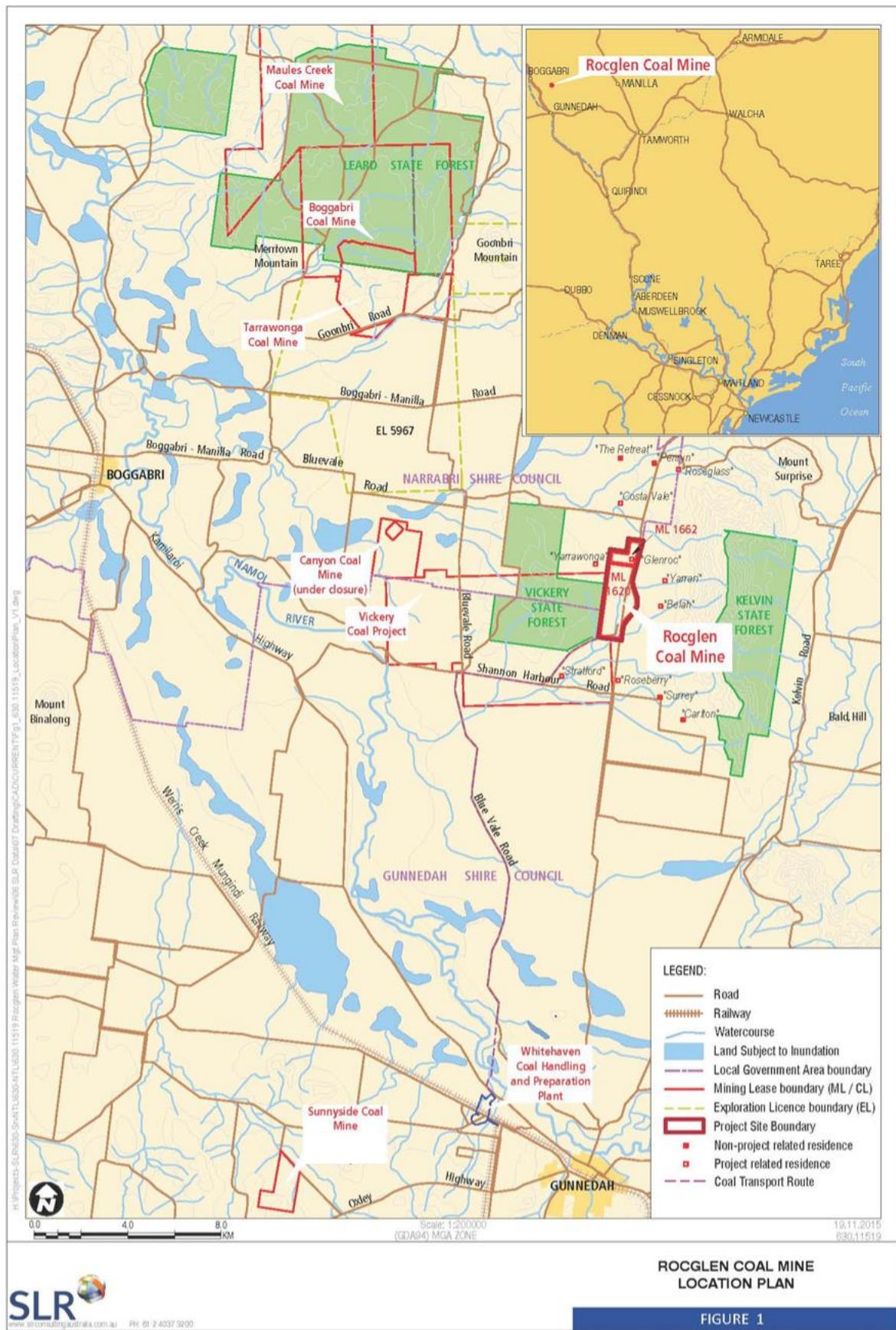


Figure 1 - Project Locality

3. APPROVALS

3.1 Tenements, Licences and Approvals

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

Table 3 - Tenements, Licences and Approvals

Responsible Authority	Type of Lease, Licence, Approval	Date of Issue	Expiry	Comments
Department of Planning and Environment (DP&E)	Project Approval PA10_0015	27 th September 2011	31 st December 2022	Modified during reporting period to allow for 4Mtpa cumulative road haulage during the 2018 calendar year.
Environment Protection Authority (EPA)	Environment Protection Licence 12870 (EPL12870)	31 st July 2008	N/A Anniversary Date: 31 st July	-
Department of Environment – Division of Resources and Geoscience (DRG)	ML1620	10 th June 2008	10 th June 2029	-
Department of Environment – Division of Resources and Geoscience (DRG)	ML1662	9 th January 2012	9 th January 2033	Variation to condition 5 made by DRG.
Division of Resources and Geoscience (DRG)	Mining Operations Plan (MOP)	28 th October 2015	30 th October 2020	-
Department of Primary Industries – Water (DPI Water)	WAL 29461	25 th October 2012	In perpetuity	-
Department of Primary Industries – Water (DPI Water)	WAL 36758	4 th September 2014	In perpetuity	-

4. OPERATIONS SUMMARY

4.1 Mining Operations

Table 4 - Production Summary

Material	Approved Limit	Previous Reporting Period (actual)	This Reporting Period (actual)	Next Reporting Period (forecast)
Waste Rock/Overburden	N/A	5,773,704 bcm	4,580,100 bcm	2,373,500 bcm
ROM Coal/Ore	1,500,000 t	1,497,119 t	1,062,674 t	412,000 t
Reject Material ¹	700,000 t	135,256 t	171,179 t	150,000 t
Saleable Product	N/A	983,054 t	856,818 t	326,000 t

¹RCM does not separately record coarse and fine reject volumes.

4.2 Other Operations

4.2.1 Hours of Operations

RCM hours of operation during the reporting period were within Project Approval limits, which permit mining 24 hours per day Monday to Saturday, with the exclusion of public holidays. Blasting is restricted to 9:00am – 5:00pm Monday to Saturday. Currently the mine operates two shifts, a 10 hour production shift on weekdays (7am – 5pm), and a 10 hour production shift during weeknights (4:40pm – 2:40pm). Note that night shift operations did not commence until the 9th April 2018. Saturday shifts are not currently rostered for RCM, although they are occasionally undertaken if required. Other ancillary tasks and maintenance activities continue 24 hours per day, seven days per week.

4.2.2 Coal Haulage

For the reporting period there were 30,100 truck movements to transport 1,206,300t of ROM coal along the approved haulage route from RCM to the Whitehaven Gunnedah CHPP. 4,762 return truck movements to transport 171,179t of coal reject from the CHPP back to RCM also occurred.

Transport of coal from the site and/or receipt of coal reject from the Whitehaven CHPP by truck occurred only during the approved hours of:

- a) 7am to 9:15pm Monday to Friday;
- b) 7am to 5:15pm Saturday; and
- c) At no time on Sundays or public holidays.

4.2.3 Exploration

Exploration drilling was undertaken on the Mining Lease (ML1620) during the reporting period towards the south of the lease. 10 holes were drilled and have subsequently been sealed.

4.3 Next Reporting Period

The planned mine production rates for RCM during the upcoming reporting period are as follows:

- Approximately 0.41 Mt of ROM Coal; and
- 2.37 Mbcm of overburden

Vegetation clearing activities in mining areas over the next reporting period will be conducted in accordance with the approved MOP.

5. ACTIONS REQUIRED FROM PREVIOUS ANNUAL REVIEW

DP&E made the following requests for provision in future Annual Reviews:

Table 5 - DP&E Requests

DP&E Request	Adopted (Y/N)	Comment	Relevant Section
Present the Site Water Balance using the same categories as Table 2 in the approved RCM Water Management Plan (Nov 2015).	Y	The site water balance has been presented in the format used in the Water Balance Report (WRM, 2019), similar to that presented in the WMP.	7.3
Include the date of the Site Water Balance Validation	Y	Model validation period provided.	7.3
Where possible, identify any community engagement activities or contributions that are directly related to RCM, in addition to community engagement and activities undertaken by the wider Whitehaven group.	Y	In terms of donations, there are none specific to RCM however, information specific to RCM regarding community engagement has been included.	9.3

6. ENVIRONMENTAL PERFORMANCE

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

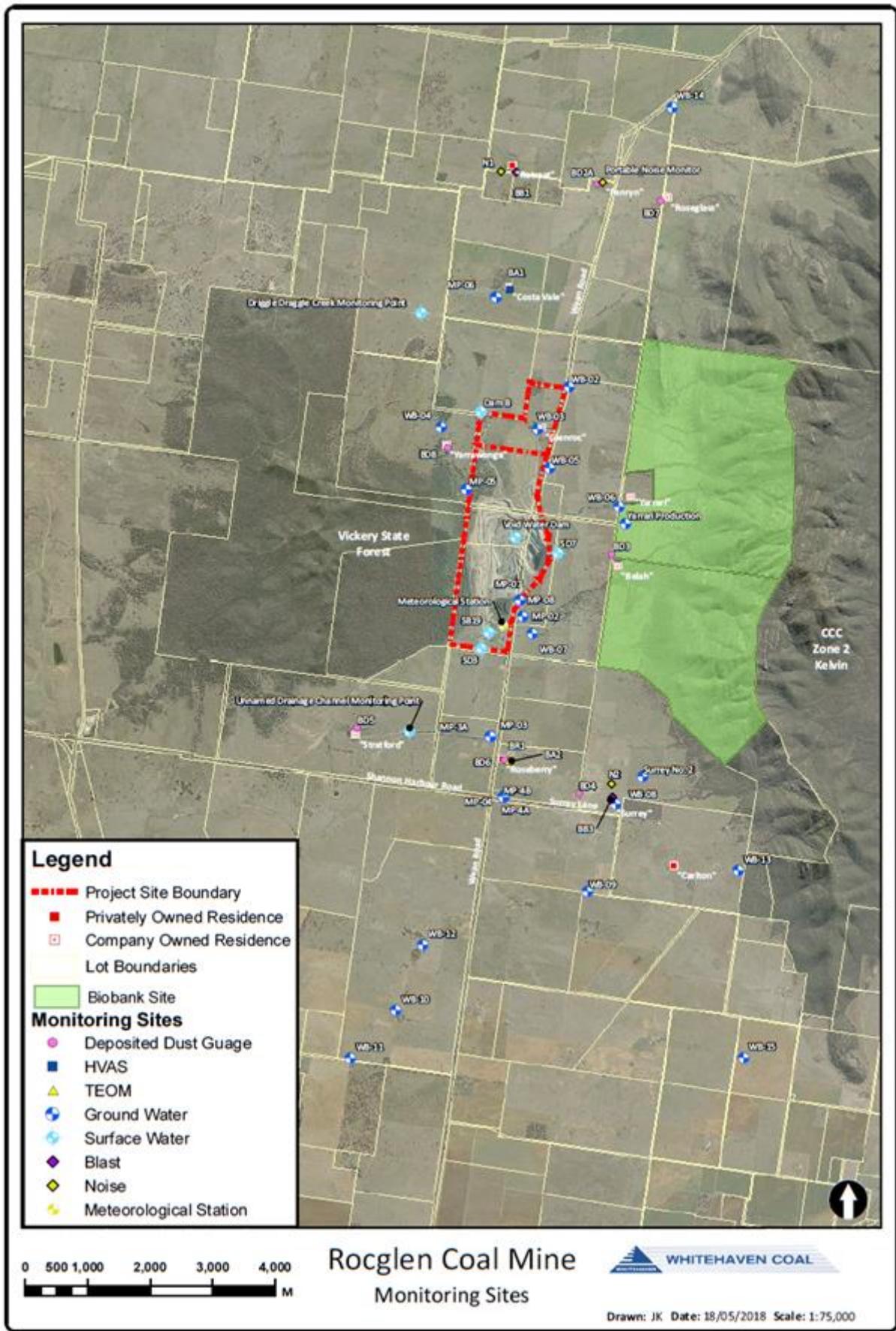


Figure 2 - Monitoring Locations

6.1 Air Quality

6.1.1 Criteria

The air quality criteria applicable to RCM are specified in PA 10_0015 and summarised below.

Table 6 - Air Quality Criteria

Air Quality Type	Criteria
Acceptable Mean Annual Increase in Deposited Dust	2 g/m ² /month
Mean Annual Dust Deposition (all sources)	4 g/m ² /month
Mean Annual Total Suspended Particulate (TSP) Matter (all sources) Concentration	90 µg/m ³
Mean Annual PM ₁₀ Particulate Level	30 µg/m ³
24hr Average PM ₁₀ Particulate Level	50 µg/m ³

6.1.2 Environmental Management Measures

Monitoring of Deposited Dust is undertaken on a monthly basis, whilst PM₁₀ levels are monitored every 6 days. Table 7 and Figure 3 below present a summary of the Deposited Dust monitoring data.

Table 7 - Deposited Dust Monitoring Data Summary 2018

Site	EPL I.D. No.	Property Name	Annual Mean Total Insoluble Solids (g/m ² /month)	Annual Mean Ash (g/m ² /month)	Long Term Insoluble Solids Average
BD3		Belah	4.6	2.0	1.7
BD4	4	Surrey	2.0	1.3	1.2
BD5		Stratford	1.9	1.3	1.4
BD6	6	Roseberry	1.5	1.0	1.2
BD7		Roseglass	2.2	1.5	1.5
BD8		Yarrawonga	1.6	1.2	2.3
BD2-A		Penryn	4.5	3.1	2.5

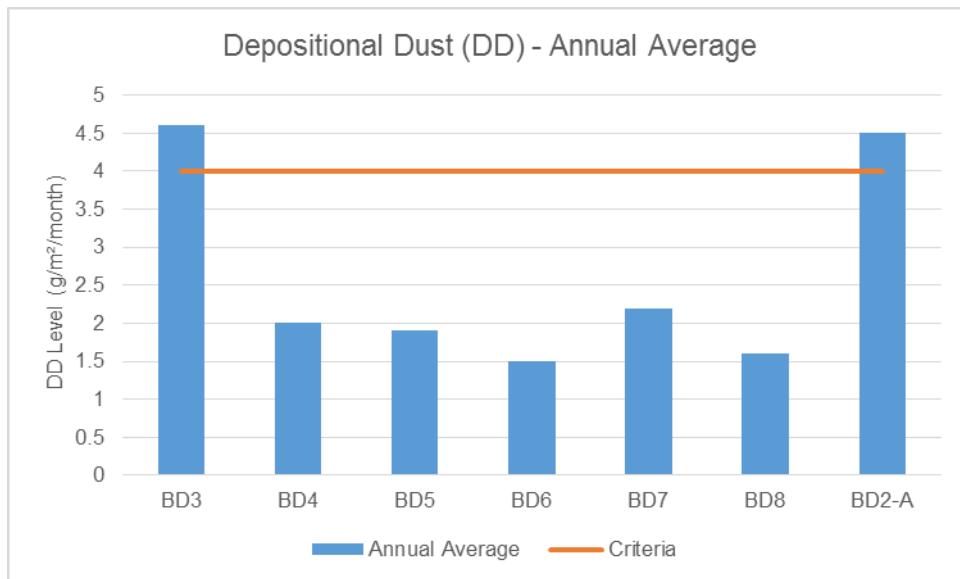


Figure 3 - Depositional Dust

A review of the above, shows that the annual average limit for deposited dust was exceeded at two locations - BD3 ('Belah'), a Whitehaven owned property, and BD2-A ('Penryn'), a private property. Results at all other sites remained well below the set criteria.

Given that 'Belah' is a Whitehaven owned property, the exceedance of the annual average is not considered a non-compliance. Nevertheless, investigation into the predominant wind directions throughout the year suggests that the exceedances at both 'Belah' and 'Penryn' are not a result of mining activity. It was noted that the 'Roseglass' Dust Deposition Gauge (DDG) (BD7) annual average was well below the criteria. This gauge is located approximately 1km west of BD2-A – given their proximity to one another, if the exceedance at BD2-A was as a result of mining activity, you would expect both gauges to show similar results. It is likely that the unsealed dirt road to the west of 'Penryn' could have influenced dust levels recorded.

Another important factor to note when interpreting results, is that due to the dry and hot conditions during the reporting period, there have been multiple regional dust events which impacted upon some of the weekly results.

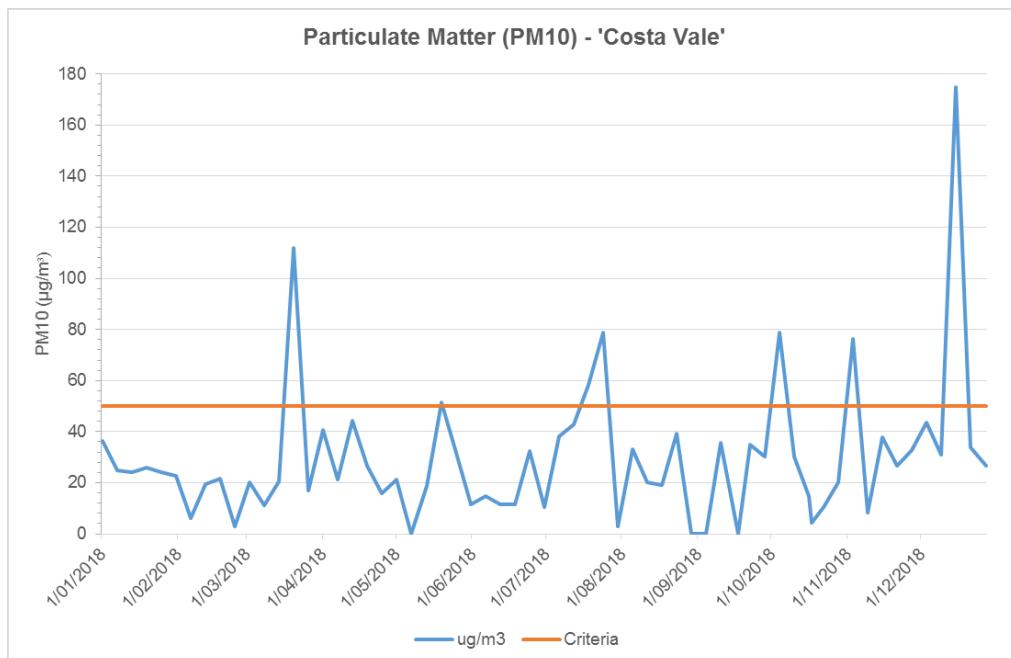


Figure 4 - 'Costa Vale' Particulate Matter (PM10)

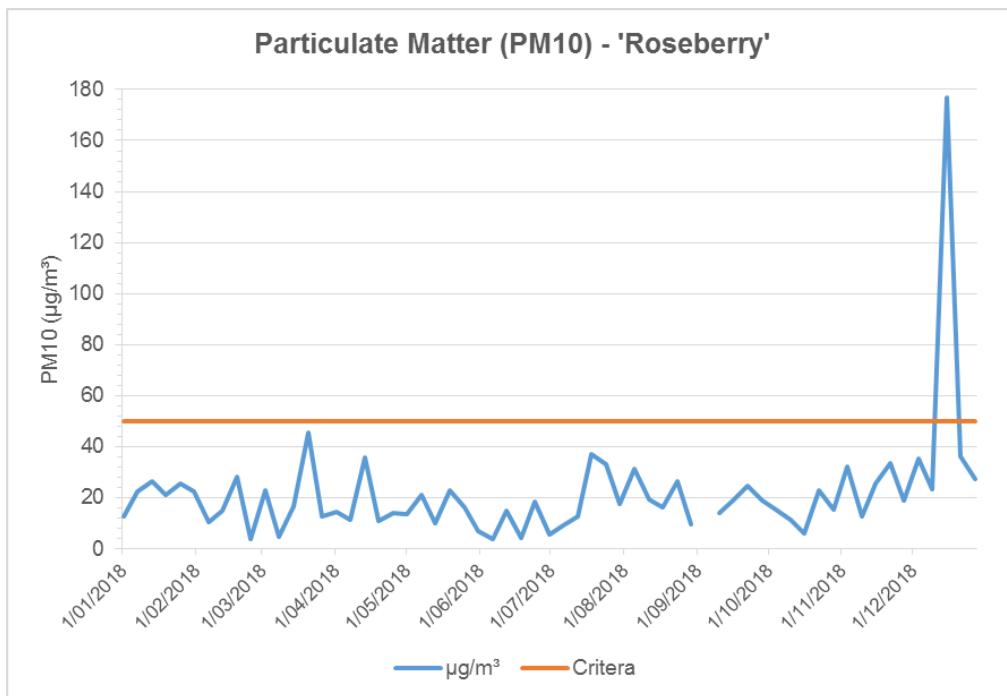


Figure 5 – ‘Roseberry’ Particulate Matter (PM10)

RCM has two High Volume Air Samplers (HVAS) (PM_{10}), one located to the North of the mine on the project related property ‘Costa Vale’, and the other, a licenced monitor (EPL ID - 10) to the South-east of the mine on ‘Roseberry’ (a privately owned property under private agreement). Figures 4 and 5 display the PM_{10} 24hr results for ‘Costa Vale’ and ‘Roseberry’ respectively. The ‘Costa Vale’ HVAS recorded six exceedances of the 24 hour limit throughout the calendar year, all of which were deemed to be not mine related due to the following reasons:

- 20th March 2018 – predominant wind direction was from the North towards the mine not from the mine. No excavator, dozer or truck operations occurred on afternoon shift. Only ROM crusher, water truck and grader used.
- 19th May 2018 – as above, the predominant wind direction was from the North. Only the ROM Pad/Crusher & Loader were operating on this day, activity ceased at 6pm (with last coal haulage truck at 5pm) therefore the majority of the run period was outside of operating hours.
- 18th July 2018 – Predominant wind direction was Northerly. 24hr average real-time PM_{10} was also never exceeded during the run period.
- 24th July 2018 – As above.
- 3rd November 2018 – Windy, dry conditions noted by ALS sampler. HVAS run fell on a Sunday when RCM was not operational, therefore the exceedance were deemed not to be mine related.
- 15th December 2018 – a regional dust event occurred during this time period with all TEOMs and HVAS’s in the Gunnedah area recording high results.

The ‘Roseberry’ TEOM exceeded the 24hr criteria on the 15th December 2018, as did the ‘Costa Vale’ HVAS, this was as a result of a regional dust event and thus not mine related.

Throughout the reporting period there were three instances in which the HVAS on 'Costa Vale' did not run, and one instance of a short run at the same monitor. On all occasions the fuse on meter box had been tripped, and on one of those occasions the power cord directly into the HVAS had been removed and taken. On discussion with the tenant, WHC was advised that the power company had been switching off the power. No outages have occurred since 4th October 2018. One short run at 'Roseberry' occurred on the 4th September 2018 - "recent heavy rain" noted on the Chain of Custody could potentially have affected the run.

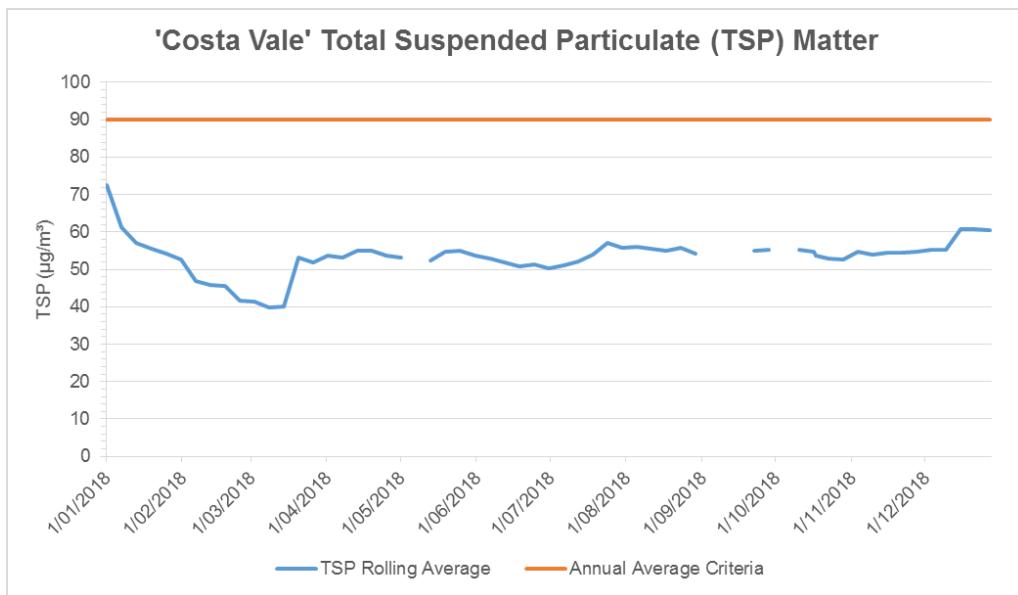


Figure 6 - 'Costa Vale' TSP Annual Rolling Average

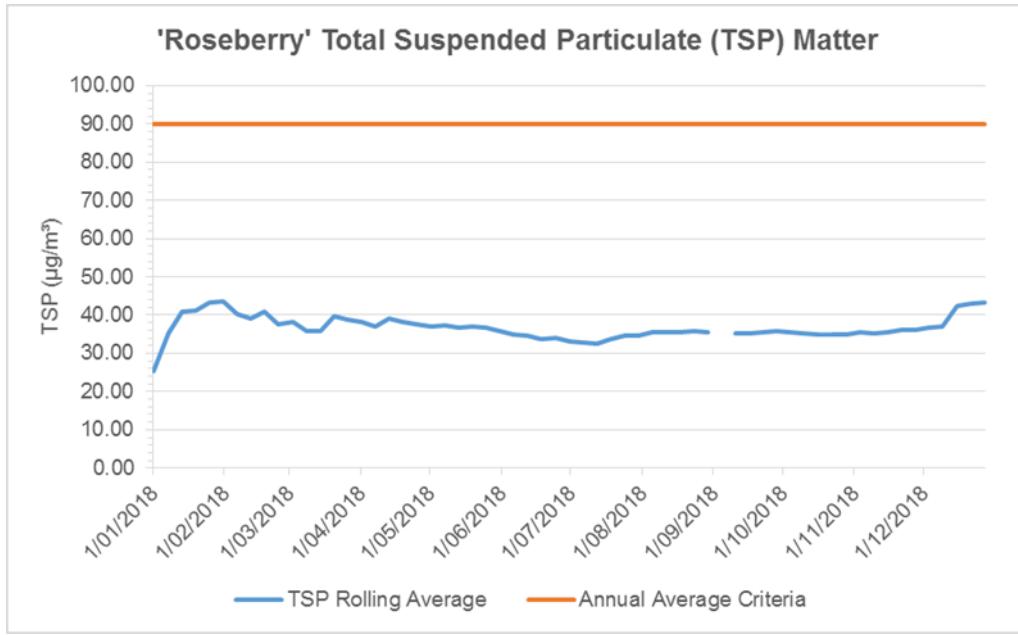


Figure 7 - 'Roseberry' TSP Annual Rolling Average

The annual rolling Total Suspended Particulate (TSP) matter at both 'Roseberry' and 'Costa Vale' remained below the Annual Average Limit. The TSP is not directly measured as part of RCM air quality monitoring, it is calculated in accordance with the Air Quality and Greenhouse Gas Management Plan, by multiplying the HVAS PM10 24hr readings by a factor of 2.

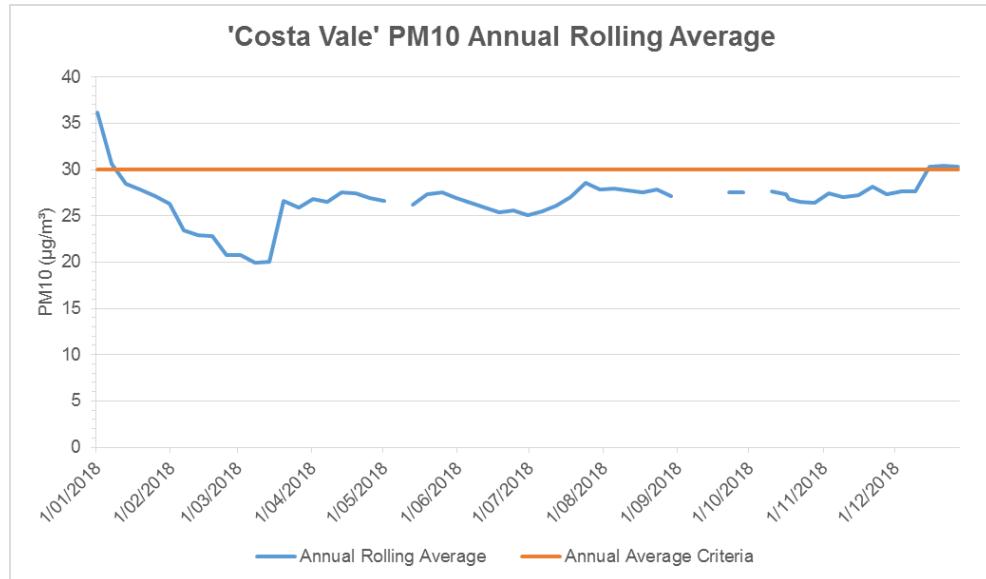


Figure 8 - 'Costa Vale' PM10 Annual Rolling Average

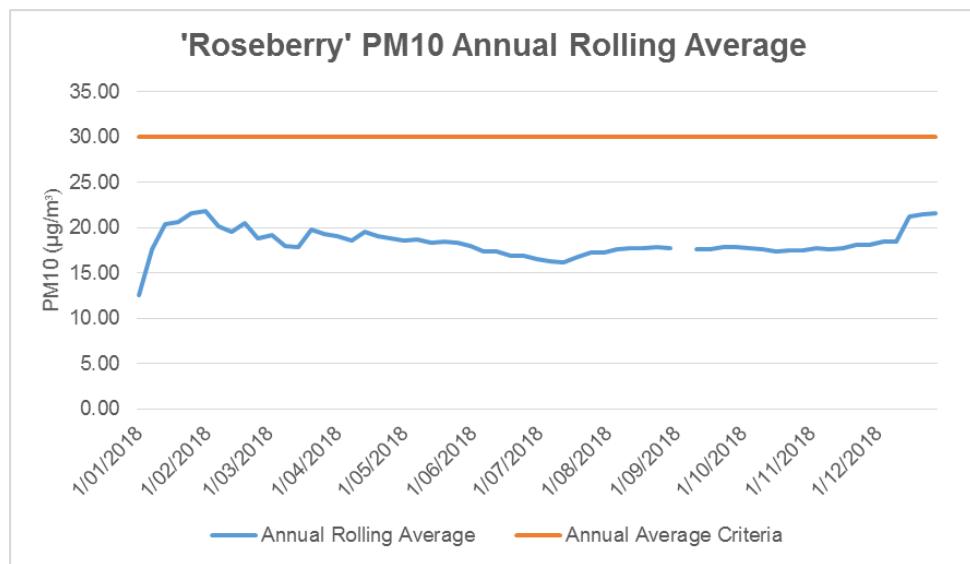


Figure 9 - 'Roseberry' PM10 Annual Rolling Average

The annual average PM10 at 'Roseberry' remained below the criteria for the monitoring period. Results at the 'Costa Vale' HVAS (as seen in Figure 8) however, exceeded the criteria by $0.31\mu\text{g}/\text{m}^3$. This small exceedance is not deemed to be mine related for the same reasons as stipulated above for the PM10 24hr exceedances. If these 24hr exceedances of PM10 are excluded from the rolling average calculation (given they were deemed not mine related), results become compliant ($26.61\mu\text{g}/\text{m}^3$).

6.1.3 Long Term Trends

Dispersion modelling undertaken for the Rocglen Extension Project Environmental Assessment (PAEHolmes, 2011) predicted that depositional dust would comply with assessment criteria at all nearby residential properties except 'Yarrawonga' (for the proposed mine extension alone). Given that the depositional dust exceedances for 2018 were deemed to be non-mine related, results along with those in past years, have been seen to be generally consistent with the prediction.

Modelling predicted only one exceedance a year at 'Roseberry' and 'Glenroc', and it was noted cumulative 24-hour impacts were unlikely to arise (PAEHolmes, 2011). The EA noted that in conditions of significant high winds and dust storms, the proportional contribution of mining activities to the total PM10 concentration would be low (PAEHolmes, 2011). One high result for December in particular, displays the effects of these regional events on dust levels.

6.1.4 Key Environmental Performance/Management Issues

No key environmental performance/management issues were raised during the period, with most results returning compliant, and those that displayed exceedances, being deemed not mine related.

6.1.5 Proposed Improvements to Environmental Management

In the event of short or non-runs of HVAS units in the future, RCM will endeavour to undertake additional, supplementary run's to mitigate the data loss.

6.2 Onsite Biodiversity

6.2.1 Threatened Flora

A Rehabilitation Management Plan (RMP) was prepared by Whitehaven in accordance with Schedule 3, Condition 36 of PA 10_0015, and approved by the Division of Resources and Energy in April 2012.

Incorporation of the RMP into the RCM Mining Operations Plan (MOP) has since occurred. Flora monitoring was, and will continue to be, undertaken in accordance with the RCM MOP.

To address and offset vegetation impacts of RCM, a Biodiversity Offset Management Plan (BOMP) was prepared as part of the Rocglen Extension Project. The area of offset required was calculated using the NSW BioBanking Assessment Methodology (BAM), which calculates the number of "credits" required at the impact site based on the area and condition of each vegetation type impacted, and the number of credits generated at a BioBank Site based on the improvement in biodiversity values via conservation management. On the 28th June 2012, the Whitehaven Regional Biobank site was formally established under BioBank Agreement 43. This BioBank site, which includes the 'Yarrari' and 'Belah' properties, now accounts for the RCM offset requirements. The BioBank credits required to be retired for these approvals occurred on the 17th April 2013, and the area is now subject to active management in accordance with the Management Plan for the Regional BioBank site.

A BioBank Management Plan has been prepared for the site, with active management required to commence on release of the first years management costs from the BioBank Trust Fund.

6.2.2 Threatened Fauna

Whitehaven engaged RPS Harper Somers O'Sullivan to undertake a Flora and Fauna Assessment to support the application for the Extension Approval. Further to Countrywide Ecological Service investigations in 2007, RPS recorded a total of 100 fauna species, including one additional threatened species, the Speckled Warbler (*Pyrrholaemus sagittatus*), present within the project area.

Monitoring is undertaken in accordance with the MOP, with fauna monitoring completed annually. Fauna monitoring plots were established during spring 2009 in areas adjacent to the site. An additional monitoring plot was established on the Northern Rehabilitation area during 2018 monitoring.

It has been found that due to RCM's proximity to Vickery State Forest, much of the fauna species richness can still be expected to continue to exist on the mine site throughout the life of the mine. It has also been noted that the abundance of water located at the RCM site has attracted many animals to congregate on the rehabilitation and in the woodlands around the mine.

6.2.3 Weeds

A contractor has been engaged by WHC to undertake quarterly weed inspections on site at RCM. Monthly inspections are also undertaken to determine level of weed infestation and if/where necessary, targeted campaign spraying is undertaken across any areas of concern. Weed control is undertaken by both Whitehaven's own qualified personnel, and for larger jobs, by qualified contractors.

During the reporting period, ongoing weed management consisted of general weed spraying by Whitehaven personnel on two occasions in January and September, as well as targeted spraying for African Boxthorn on the Northern Rehabilitation Area during May. A contractor was engaged in December to undertake site-wide spraying for all weeds identified on site.

6.2.4 Feral Animal Control

Two motion sensor cameras were installed at RCM during November 2018 for the purpose of monitoring feral animal activity onsite. Though feral animals are not considered a significant land management issue on RCM's landholding, the cameras will allow personnel to better monitor and quantify feral animal numbers on site, and implement appropriate management/control programmes if and when necessary.

Feral Pig trapping at RCM was undertaken for a week in October 2018 with two traps set and checked each day - no pigs were caught during this round.

6.2.5 Key Environmental Performance/Management Issues

As with previous years, African Boxthorn was again identified on site and targeted on the Northern Rehabilitation area during the reporting period. Ongoing management of any new plants and regrowth will continue in upcoming reporting periods.

6.2.6 Proposed Improvements to Environmental Management

It is expected that the implementation of the feral animal monitoring cameras (as discussed in Section 6.2.4) will assist with improved feral animal monitoring and management during the upcoming calendar year. No further improvements are proposed within the next reporting period.

6.3 Biodiversity Offset Area (BOA) Management

The approved WHC Biobank Biodiversity Offset Management Plan (BOMP, 2013) outlines the Biodiversity Offset Strategy requiring 1,524ha of native woodland to be maintained and improved on the Yarrari and BElah properties with subsequent biobanking credits retired relating to the Rocglen Coal Mine, Canyon Coal Mine and Tarrawonga Coal Mines.

6.3.1 Offset Security Management

The WHC Biobank BOA is secured under a NSW Biobanking Agreement with the BOMP indicating that OEHs intention is to transfer the property to the National Parks Estate as an addition to the Boonalla Aboriginal Area (formerly Kelvin State Forest) after Year 10 (~2023). Should such a land dedication be made and accepted by the NSW Minister for the Environment, the balance of funds held in the Biobanking Trust Fund would be transferred to the Minister in accordance with Section 36 of the Threatened Species Conservation (Biodiversity Banking) Regulation 2008 (or equivalent transitional provisions superseded by the Biodiversity Conservation Act 2016 for Biodiversity Stewardship Agreements) to provide for the ongoing management of the reserve.

6.3.2 Infrastructure Management

During the reporting period, no new fencing was required and redundant waste historically deposited onsite was removed from the Biobank BOA and recycled at the Narrabri Waste Management Facility. All Biobank BOA fences, gates and signage were maintained to continue restricting unauthorised access and prevent inadvertent livestock grazing. Hazardous material assessments were completed during the reporting period for redundant and derelict assets/infrastructure (i.e. sheds and cottages) associated with the former agricultural use as part of planning for their demolition and removal in the next reporting period.

6.3.3 Seed Management

Routine seed assessments completed for the Biobank BOA were impacted by the severe drought conditions experienced during 2018. 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. Due to the drought conditions, additional seed collection opportunities within the Biobank BOA were limited.

As part of the EHC group wide revegetation planning, previous 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 FY18 (completed) and currently being grown for the FY19 revegetation program for the Biobank BOA.

6.3.4 Revegetation Management

In accordance with the Biobanking Agreement 43 revegetation schedule for 2018 (Year 5 – undertake revegetation between Years 4 and 6); WHC coordinated an overstorey revegetation program in July 2018 across the Biobank BOA with 100ha planted with 2,678 hiko seedlings of *Eucalyptus albens*, *Eucalyptus blakelyi*, *Eucalyptus mellidora* and *Eucalyptus floribunda*. Despite prevailing drought conditions throughout 2018, 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 (28 trees per hectare) is achieved commensurate with the target open Box Gum Woodland vegetation structure of the Biobank BOA. Previous ecological due diligence identified that there was 45ha of natural regeneration revegetation not requiring additional active revegetation at the Biobank BOA.

6.3.5 Heritage Management

During the reporting period, historical heritage assessments were completed for redundant and derelict assets/infrastructure (i.e. sheds and cottages) associated with the former agricultural use as part of planning for their demolition and removal in the next reporting period. There are now 34 known Aboriginal cultural heritage sites within and adjacent to the Biobank BOA with each site maintained with identification/demarcating fencing around the heritage site perimeter and signage to mitigate access and disturbance (except for the two remote/inaccessible sites on the eastern boundary within the Boonalla Aboriginal Area). Also during the reporting period, a heritage consultant reviewed the location of firebreak tracks relative to adjacent cultural heritage sites prior to undertaking the track maintenance program to avoid impacting known artefacts.

6.3.6 Habitat Management

During the reporting period, four rock debris habitat structures constructed during the previous reporting period were maintained.

6.3.7 Weed Management

WHC coordinated routine formal weed monitoring/inspections undertaken across Biobank BOA in February, May, September and November 2018. The priority weeds for control were noted as general broadleaf weeds (Biosecurity Act 2015 priority and general biosecurity duty species) in areas proposed for revegetation as well as legacy priority (formerly noxious) weeds inherited from previous owners' management regimes such as African/Consul Lovegrass, Tiger Pear 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 comprehensive weed control program across the Biobank BOA including 364ha treated between January and December 2018 targeting primarily African/Consul

Lovegrass, Broadleaf and Pear weed species as required. Only appropriately qualified and experienced weed contractors (AQF3 accreditation or higher for use of herbicide) were engaged to undertake weed control works for WHC.

6.3.8 Feral Animal Management

WHC coordinated routine formal feral animal monitoring across Biobank BOA in February, May, September and November 2018. 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 Biobank BOA. 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 such as Feral Pigs and Eastern Grey Kangaroos can be seasonally moderate to high in abundance with all other feral animal species recorded as scarce to low level. 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 Biobank BOA for feral animal management.

During the reporting period, WHC implemented a comprehensive feral animal control program across the Biobank BOA with open range shooting, fox baiting and pig trapping undertaken in March (8 Foxes removed from 36 baits presented and 36 Feral Pigs trapped), June (17 Foxes removed from 52 baits presented and 25 Feral Pigs trapped), October (2 Foxes baited from 50 baits presented and no Feral Pig trapped) and December 2018 (3 Foxes removed from 52 baits presented, 5 Feral Pigs trapped and 10 Hares removed). The Feral Goat harvesting during the reporting period resulted in 155 captured with the Feral Goats on sold to an abattoir. Only appropriately qualified and experienced feral animal contractors (appropriate feral animal management qualifications, NSW gun licence and pesticide accreditation where relevant) were engaged to undertake feral animal control works for WHC.

6.3.9 Soil and Erosion Management

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

6.3.10 Grazing Management

During the reporting period, the Biobank BOA was not stocked and subsequently grazing was excluded.

6.3.11 Bushfire Management

The Biobank BOA Agreement 43 prohibits the use of fire onsite until Year 40 with no fire recorded on the Biobank Offset in 2018. During the reporting period, WHC submitted to the Biodiversity Conservation Trust (BCT) the five year review of fire management strategies/requirements suggesting revision of the agreement for fire management to be based on risk management and fuel load assessment. Fire management implemented by WHC during the reporting period included the maintenance fire break tracks (24.8km) to a zero fuel barrier standard. 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 firefighting contractor for an on call engagement during the fire season to respond in the event of a bushfire on WHC BOAs and non-mining lands.

6.3.12 Monitoring Program

During the reporting period, ecological monitoring of the Biobank BOA included winter bird surveys that were undertaken in July 2018 and annual spring flora monitoring of 34 sites undertaken during November 2018. During the winter bird surveys, three threatened species were recorded (Black Falcon, Flame Robin and Speckled Warbler). Despite the prevailing wind conditions for much of 2018, the three months prior to the spring flora monitoring recorded average rainfall resulting in native plant species richness to increase from 14 sites last year to 16 out of the 34 sites meeting or exceeding the performance criteria (75% of native species richness benchmark for relevant biometric vegetation communities i.e. between 6% and 40% cover). Midstorey cover did not change from last year with 29 out of the 34 sites meeting or exceeding the performance criteria (75% of midstorey cover benchmark for relevant biometric vegetation communities i.e. between 0% and 40% cover). Groundcover had no change from the previous year with 3 out of the 34 sites meeting or exceeding all subcomponents of the performance criteria (75% of grass, shrub and other groundcover benchmark for relevant biometric vegetation communities i.e. between 0% and 40% cover).

6.3.13 Audits and Reviews

There were no biodiversity audits during the reporting period. The annual Biobanking Agreement 43 inspection was undertaken in October 2018.

6.4 Blasting

6.4.1 Criteria

Blasting criteria for RCM are noted in PA10_0015, and included in Table 8 below.

Table 8 - Blasting Criteria

Location	Airblast Overpressure (dB(Lin Peak))	Ground Vibration (mm/s)	Allowable Exceedance
Residence on privately-owned land	115	5	5% of the total number of blasts over a period of 12 months
	120	10	0%

Note: criteria do not apply if the Proponent has a written agreement with the relevant landowner to exceed the criteria, and the Proponent has advised the Department in writing of the terms of this agreement.

6.4.2 Key Environmental Performance/Management Issues

RCM did not exceed the blasting criteria for any blast during the reporting period, consistent with previous years. A total of 18 blasts were undertaken during the 2018 calendar year, with results for the period shown

below in Table 9. No reportable fume incidents occurred during the reporting period, and blasting is undertaken in accordance with the Blast Management Plan to minimise dust generation.

Table 9 - Blast Monitoring Results

Location	Parameter	100%ile Limit	Average	Maximum	95 th %ile Limit	>95 th %ile
'Surrey'	Air Blast Overpressure (dB(Lin Peak))	120	97.0	111.0	115	0%
	Vibration (mm/s)	10	0.35	0.83	5	0%
'Retreat'	Air Blast Overpressure (dB(Lin Peak))	120	98.3	108.4	115	0%
	Vibration (mm/s)	10	0.18	0.59	5	0%

Post blast inspections for flyrock have demonstrated that current blast procedures are sufficient in ensuring that blasting carried out within 500 metres of privately owned land is not compromising the safety of the people and their livestock, or damaging the buildings and/or structures, on that land.

6.4.3 Proposed Improvements to Environmental Management

No improvements are proposed within the next reporting period.

6.5 Operational Noise

6.5.1 Criteria

The operational noise criteria specified in PA10_0015 and EPL 12870 are as follows:

Table 10 - Attended Noise Monitoring Criteria

Location	Day	Evening	Night	
	L _{Aeq(15min)}	L _{Aeq(15min)}	L _{Aeq(15min)}	L _{Aeq(1min)}
All privately-owned land	35	35	35	45

The cumulative road noise criteria specified in PA10_0015 (RCM) and PA11_0047 (Tarrawonga) are below:

Table 11 - Cumulative Road Noise Criteria

Location	Day L _{Aeq(15hour)}	Evening L _{Aeq(15hour)}	Night L _{Aeq(9hour)}
All privately-owned residences	60	60	55

6.5.2 Environmental Management Measures

Control of noise generation and propagation at the mine is by a combination of general source and propagation path methods including:

- Where operationally feasible, scheduling activities to minimise operation of equipment in exposed locations when winds are blowing towards residences and elevated locations when temperature inversions are present;
- Equipment removal or replacement;
- Changing operation procedures;
- Restricting hours of operation;
- Enclosure of fixed items of plant, e.g. generators;
- Bunding close to noise sources to create obstructions to the propagation path;
- On-going site road maintenance using the mine-based grader; and
- Regular equipment maintenance.

6.5.3 Key Environmental Performance/Management Issues

In accordance with Schedule 3, Condition 3(c) of PA10_0015, RCM is required to regularly assess real-time noise levels and meteorological forecasting data to ensure compliance with operational noise criteria. RCM utilises a mobile real-time noise monitor which is used to actively monitor noise at surrounding properties which are likely to receive the greatest impact from operations. The unit monitors operational noise levels in comparison with compliance levels and when noise levels approach criteria, an alarm system is triggered to operational personnel. Operations and environmental personnel are able to log on to a web based platform where real-time noise and weather data are viewable. The web based platform also has the capability to live stream from the monitor, to identify specific sources of noise which can be used to confirm if the source is mining related.

Attended noise monitoring is undertaken on a quarterly basis, with monitoring occurring during February/March, June, September and December 2018 (results provided in Appendix 1). Cumulative road noise monitoring was undertaken in July and December 2018 in accordance with the Road Traffic Noise Management Plan, see Table 12 below for results.

Table 12 - Cumulative Road Traffic Noise Monitoring Results

Location	Measured Coal Haulage LAeq(1hr) Contribution dBA		Noise Criteria LAeq(1hr) dBA
	Day	Evening	
Round One – July			
Brooklyn 1	- ¹	59	60
Brooklyn 2	- ¹	48	60
Werona	39	- ¹	60
Round 2 – December			
Brooklyn 1	58	- ¹	60

Brooklyn 2	45	- ¹	60
Werona	- ¹	44	60

¹Noise monitoring was not conducted during this period at this location.

No exceedances of the relevant attended noise criteria were recorded at either ‘Surrey’ or ‘Retreat’ for all four monitoring rounds during the calendar year. Likewise, biannual attended monitoring for the cumulative road traffic noise at ‘Brooklyn 1’, ‘Brooklyn 2’ and ‘Werona’, returned compliant for all three locations.

6.5.4 Long Term Trends

The RCM Extension Project Environmental Assessment (EA) – Noise and Vibration Impact Assessment conducted by Spectrum Acoustics (2010), shows historical traffic noise measurements to vary from 3-9 dB below the 60dB(A) criteria – no significant change in levels were predicted to be observed at ‘Brooklyn’ following the extension. During 2018 monitoring, readings ranged from 1dB below criteria, to 5dB below criteria, similar to those predictions in the EA. Previous years of monitoring have also shown compliance with the criteria.

In the past, exceedances of noise criteria have had a tendency to occur at ‘Surrey’ (N2). Unlike previous calendar years however, RCM saw no exceedances of the attended noise monitoring results in 2018 at ‘Surrey’ or ‘Retreat’.

6.5.5 Proposed Improvements to Environmental Management

There are no proposed improvements to environmental noise management in the upcoming calendar year.

6.6 Aboriginal Heritage Management

6.6.1 Environmental Management Measures

In 2010, RPS archaeologists conducted an assessment and field survey of the potential impact of the Rocglen Extension on Aboriginal heritage. The archaeological field survey, which covered the area proposed to be disturbed by the expansion of the Northern Emplacement Area, was undertaken with members of four local Aboriginal Stakeholder groups. In summary, three stone artefact sites were located comprising of one isolated find (IF1) and two artefact scatters (AS1 and AS2). To date, the measures in place to protect Aboriginal Cultural Heritage are considered satisfactory, with all measures identified in the EA and consent criteria in place.

6.6.2 Consultation

No further stripping or clearing was undertaken during the reporting period outside areas previously assessed by the RCM Registered Aboriginal Parties or during the EA assessments, and as such no consultation has been undertaken.

6.6.3 Key Environmental Performance/Management Issues

A review of the Heritage Management Plan was undertaken during the reporting period, with only minor changes made and accepted by DP&E. No key environmental performance/management issues were identified during the reporting period.

6.6.4 Proposed Improvements to Environmental Management

No improvements are proposed to be undertaken during the upcoming reporting period.

6.7 Natural Heritage

There are no features of natural heritage within the Project Approval area and hence, no specific management procedures are required.

6.8 Bushfire Management

6.8.1 Environmental Management Measures

The mine maintains firebreaks around both its landholding and the mine area and maintains firefighting equipment as well as earthmoving equipment, a water truck and fire truck, which would be used to control fires. RCM personnel also liaise with the local (Nandewar) Rural Fire Service (RFS) and Regional Fire Control, as required. On request from the RFS due to drought conditions and lack of water availability, the mine has nominated a dam on site that can be used as a water source during emergencies. Whitehaven Coal have engaged a firefighting contract company LRM Fire and Rescue on a retainer bases to assist in case of any fire breakout.

6.8.2 Key Environmental Performance/Management Issues

No key environmental performance/management issues were identified during the reporting period, with no fires occurring on site or on project-related mine owned land.

6.8.3 Proposed Improvements to Environmental Management

No improvements are proposed within the next reporting period.

6.9 Waste

6.9.1 Environmental Management Measures

Waste oils from maintenance activities were pumped from equipment to bulk storage tanks and bunded in accordance with EPA requirements. When breakdown maintenance was undertaken away from the workshop, oil was pumped from the equipment to a tank on the service truck and subsequently transferred to the bulk storage tank.

Waste oil and filters stored at the maintenance workshop were collected and disposed of by a licenced contractor.

Runoff from the concrete vehicle and equipment wash pad was directed to an oil separator and containment system for subsequent pump out and disposal.

RCM also continues to record waste streams such as general domestic-type waste and recycling, overburden and inter-burden, mine reject waste, and mine equipment tyres.

6.9.2 Key Environmental Performance/Management Issues

No incidents relating to waste management occurred during the reporting period, and there were no key environmental issues identified.

6.9.3 Proposed Improvements to Environmental Management

No improvements are proposed within the next reporting period.

6.10 Environmental Performance Summary

An environmental performance summary for RCM is presented in Table 12 below.

Table 13 - Environmental Performance Summary

Aspect	Approval Criteria/EIS Prediction	Performance During the Reporting Period	Trend/Key Management Implications	Implemented/Proposed Management Actions
Air Quality	Refer to Section 6.1	One exceedance of HVAS criterion at 'Roseberry' which was as a result of a regional dust event. Five exceedances of HVAS criterion at 'Costa Vale' (mine-owned land) which were all deemed to be non-mine related. Two exceedances of the annual average criteria for deposited	Nil	Nil

		dust, one on mine owned land, both deemed to be non-mine related.		
Biodiversity	Refer to Section 6.2	Biobank BOA continues to maintain compliance with BOMP while restoration works are ongoing.	Nil	Nil
Blasting	Refer to Section 6.4	Approval criteria met.	Nil	Nil
Noise	Refer to Section 6.5	Approval criteria met.	Nil	Nil
Heritage	Refer to Section 6.6 & 6.7	Approval criteria met.	Nil	Nil
Bushfire Management	Refer to Section 6.8	No bushfires on site or in biobank site during reporting period.	Nil	Nil
Rehabilitation	Refer to Section 8.2	Ongoing.	Nil	Additional rehabilitation to be undertaken as per MOP.
Water	Refer to Section 7	No wet weather discharges during reporting period.	Nil	Nil

7. WATER MANAGEMENT

7.1 Surface Water Management

The mine lies within the catchment of the Namoi River, and in close proximity to Driggle Draggle Creek. The design of sediment detention basins on site aims to limit the opportunity of discharge of runoff from mine-disturbed areas, until such time as the licenced discharge criteria are met. All sediment basins, storage dams and associated banks and drains have been designed and constructed in accordance with the *Managing Urban Stormwater: Soils and Construction Vol 2E Mines and Quarries* (DECC, 2008) in conjunction with the references to Volume 1 (Landcom, 2004).

Due to the extended dry period throughout the calendar year, water available onsite decreased significantly. As a result, to ensure availability of sufficient water for dust suppression, RCM began trucking water externally from the Canyon Coal Mine final void, to supplement lack of water on site at RCM.

7.1.1 Surface Water Monitoring Results

In addition to any monitoring required during discharge events, RCM has a requirement to undertake surface water monitoring on a quarterly basis. Whilst there are no criteria or concentration limits specified for the quarterly surface water samples, the results do provide an indication as to the quality of waters onsite. The assessment of sediment load, electrical conductivity, pH, oil and grease, and other monitoring parameters during these quarterly water monitoring rounds also provides an indication of the ability of those storages to meet water quality criteria should a wet weather discharge occur, and if additional treatment methods would be warranted to minimise potential for a non-compliant discharge. The quarterly surface water testing includes

the Void Water Dam (Void), three additional out-of-pit surface water storages (SD3, SB19 & Dam B), and one offsite, upstream dam (SD7).

Generally results throughout the reporting period were consistent for each individual site, however it should be noted that there were several occasions when SD3, SB19 and Dam B were dry and therefore no water samples were taken (See Appendix 2). A spike in Total Organic Carbon (TOC) at SD3 was seen during November, however it should be noted that there was minimal water in this dam at the time of sampling, and it had been dry for the previous two rounds. SB19 had a large spike in Total Suspended Solids (TSS) when sampled in February. Dam B results during November showed higher readings of Electrical Conductivity, TSS, TOC and Grease and Oil. Again there was very little water to be sampled during this round.

Long Term Trends

The surface water assessment carried out by GSS Environmental for the Extension EA predicted that there would be minimal impact on flow regimes downstream of the Project due to the RCM, which has proven to be generally correct over the long term operations of the site.

Soil and water assessments for the site suggested that Total Suspended Soils (TSS) was likely to be the key water quality parameter requiring management during the life of the Project to ensure the water quality in downstream watercourses is not impacted. TSS levels were seen to be elevated when compared to the discharge criteria of 50mg/L

7.1.2 Discharges

There are two Licensed Discharge Points (LDPs) nominated in the current EPL 12870, LDP11 to the south of the site, and LDP12 to the north of the site. No controlled or uncontrolled discharges of water from site occurred during the reporting period.

7.1.3 Supplementary Water Sources

In accordance with PA 10_0015 Schedule 3(20), RCM is to ensure that it has sufficient water for all stages of the project. Given the dry conditions and lack of adequate rainfall during the reporting period, water stocks onsite became depleted to a point at which it became necessary to source water externally. In December, RCM began transporting water from the nearby Canyon Coal Mine void to supplement the lack of water available for dust suppression on site. During December, a total of 412 loads of water were transported to RCM, delivering approximately 7.09ML (as per flow meter reading taken on 7th January 2019) of water to site.

7.2 Groundwater Management

7.2.1 Environmental Performance/Management

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

7.2.2 Groundwater Monitoring

Groundwater sampling and analysis was undertaken by ALS Acril Pty Ltd during the reporting period at the Groundwater Monitoring Points identified in Figure 2. Surface Water Level (SWL), Electrical Conductivity (EC) and pH are recorded on a quarterly basis, with representative metals and ions analysed six monthly in accordance with the approved Water Management Plan.

Groundwater Levels

MP7 and MP8 have both shown a drop in water level of ~8m since sampling on the 8th December 2017. Both of these bores are located within the Project Approval boundary and within close proximity to the open cut pit - given this, drawdown is not unexpected. Prior to the 2018 calendar year, the water level at both of these bores has remained relatively consistent.

WB5, WB11, WB13, WB14 and WB15, located on 'Roseberry', 'Brolga', 'Carlton', 'Barock' and 'Kahana' respectively, all continue to show fluctuating levels, with recent drops in water level observed. The abovementioned bores all have some form of pump connected to them (i.e. solar pumps or windmills), and as such, the fluctuations seen are deemed to be non-mining related.

Water level trends in all other bores have remained relatively consistent over the past monitoring periods.

Groundwater Quality

With the exception of fuels and oils, no materials occur, or are retained on the mine site, which are likely to be a source of groundwater pollution.

Analysis of samples taken during the reporting period has shown that groundwater quality has remained generally consistent with historical data at all locations monitored. Water quality has been compared to the Australian and New Zealand Guidelines for Fresh and Marine Water Quality (2000) (ANZECC) guidelines for stock watering (cattle).

Previous monitoring has shown that after unusually elevated results, analyte concentrations usually return to more typical levels, and it is expected that this trend will continue.

7.2.3 Long Term Trends

The hydrogeological assessment undertaken by Douglas Partners for the Extension EA concluded that drawdown on the surrounding groundwater system as a result of the expanded mining operation would be limited during the operation of the mine. This is due to faulting in the vicinity of the mine and generally low permeability of the Maules Creek Formation Strata, with hydraulic connectivity within the alluvium at the north and south of the site considered to be limited.

As found during the reporting period, standing water levels generally have not lowered at the monitoring and groundwater bores surrounding the mine with the exception MP7 and MP8, as discussed previously. The hydrogeological assessment did however, also predict that groundwater levels will be drawn down by approximately 30 metres in close proximity to the pit and that this drawdown would be "mostly limited to within

the fault block which surrounds the mine.” The drawdown seen at bores MP-7 and MP-8 is consistent with this prediction, though a drop of around 30m has not been observed at this point in time.

7.2.4 Groundwater Management

At the end of the reporting period there was 20.9ML held in the in-pit dams (note that this is not all groundwater however). Inflows into the open cut during the period result from a combination of:

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

Contamination of groundwaters is controlled by the management of chemical, oil and grease spills and storage, with:

- Vehicle maintenance carried out in designated areas;
- Any spills being cleaned up, with contaminated soil placed in the designated bioremediation areas; and
- Fuels, oil and grease being stored within a bunded area, constructed in accordance with EPA requirements.

As discussed previously, groundwater from surrounding bores is monitored on a regular basis to detect and assess any changes in groundwater quality or level that may be attributable to the mine.

7.3 Water Take

The water taken by the operation is summarised in Table 14, and shows compliance with the licence entitlements. At the start of 2017 RCM removed the pump, and as such there was no pumping of pit water out of pit during the reporting period.

Table 14 – Water Take

Water Licence Number	Water Sharing Plan, Source and Management Zone (as applicable)	Entitlement	Passive take/inflows	Active Pumping	TOTAL
WAL29461	Gunnedah-Oxley Basin Mdb Groundwater Source	120 units	0	0	0
WAL36758	Gunnedah-Oxley Basin Mdb Groundwater Source	700 units	30ML	0	30ML

7.4 Site Water Balance

The 2018 Site Water Balance was completed by WRM Water and Environment Pty Ltd. Results are summarised in Table 15 below. The water balance model was run from 1st January 2017 to the 31st June 2018 and validated by comparing the Year 2017 model outputs to recorded data.

Modelling predicted that if a characteristic dry year was to occur during 2019, the site would experience a deficit in water. The prediction has already proven to be correct, with water on site now required to be brought in from external sources due to lack of rainfall. In the event of a wet year, modelling shows that the site will be in surplus, and in a median year, would remain relatively neutral.

Table 15 - Water Balance Results Summary for Year 2019 Mine Plan

	Total Volume (ML/year)				
	Description	Dry Year (1944)	Median Year (2003)	Wet Year (1956)	Average per year from 1890 to 2017
Water Sources (Inputs)	Rainfall runoff	238	410	856	390
	Groundwater inflow	30	30	30	30
	Total Input	268	440	886	420
Water Losses and Usage (Outputs)	Evaporation (from dams)	83	122	182	101
	Moisture loss in coal	26	26	26	26
	Coal crushing	8	8	8	8
	Dust suppression	160	160	160	160
	Controlled discharge	2	65	158	39
	Uncontrolled discharge (wet weather discharge)	0	4	200	40
	Total Output	279	385	734	374
Balance (Input – Output)	Input - Output	-11	55	152	46
	External Water Use	39	11	0	35

8. REHABILITATION

8.1 Rehabilitation Performance during the Reporting Period

8.1.1 Status of Mining and Rehabilitation

The status of mining and rehabilitation at the completion of the reporting period is presented in Table 16 and Figure 10.

Table 16 - Rehabilitation Status

Mine Area Type	Previous Reporting Period (Actual)	This Reporting Period (Actual)	Next Reporting Period (Forecast)
	2017 (ha)	2018 (ha)	2019 (ha)
A. Total Mine Footprint	371.3	371.8	371.8
B. Total Active Disturbance	217.5	208.2	208.4
C. Land Being Prepared for Rehabilitation	38.2	51.2	51.2
D. Land Under Active Rehabilitation	115.4	112.4	112.4
E. Completed Rehabilitation	0	0	0

* Refer to Annual Review Guideline (pg. 11) for description of mine area types

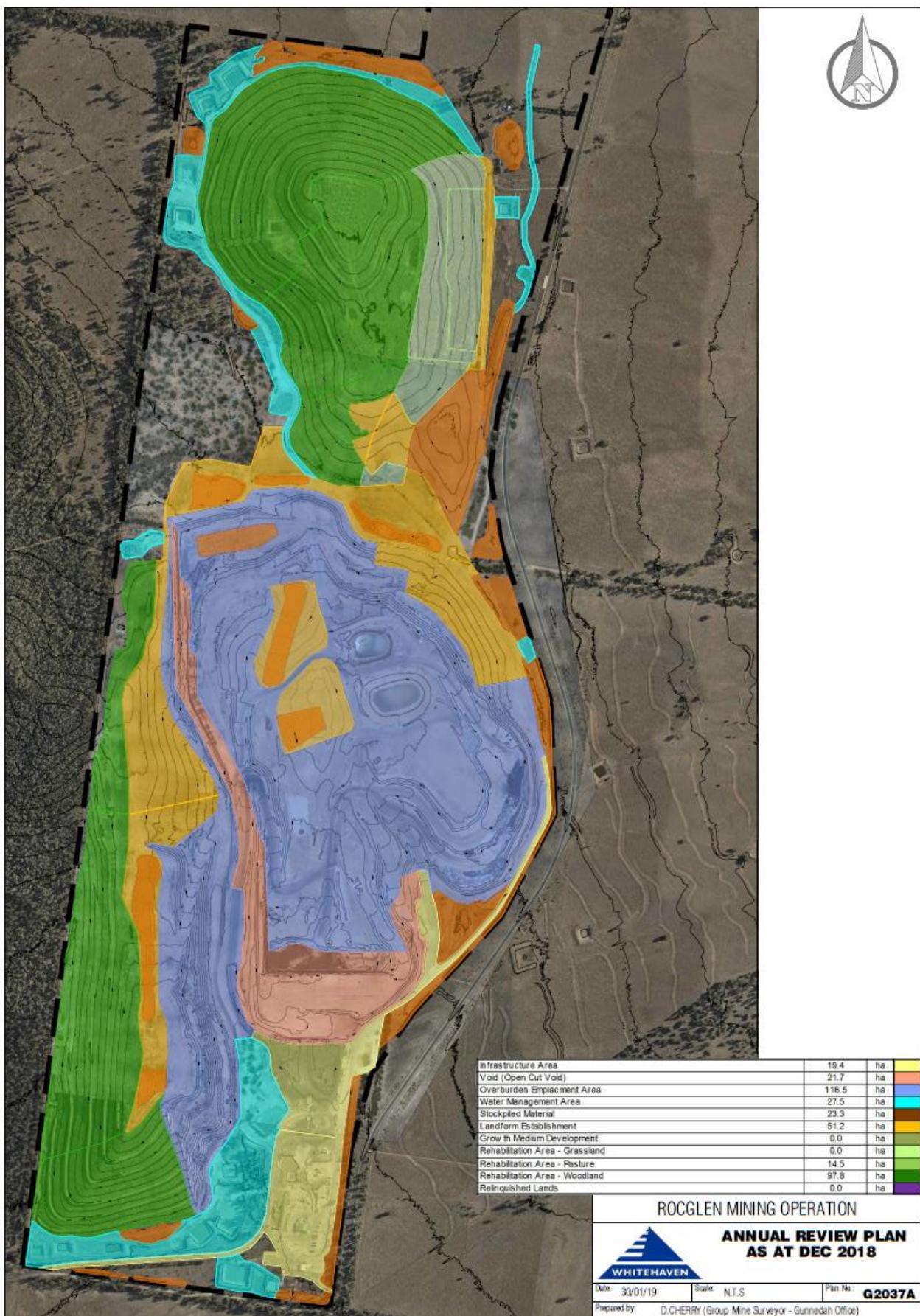


Figure 10 - Rehabilitation and Mining Status

8.1.2 Post Rehabilitation Land Uses

The disturbed area within the Project Site will be restored to either rehabilitated bushland or rehabilitated pasture, with approximately 5 hectares (1%) remaining as a stabilised high-wall of the final void.

8.1.3 Rehabilitation Monitoring

Previously, due to the timing of receipt of reports, rehabilitation reporting within the Annual Review's has been of monitoring undertaken in the year prior to the calendar year of interest. To align rehabilitation monitoring information with the relevant Annual Review calendar year, the 2017 and 2018 rehabilitation monitoring data have both been included below.

In 2018, in addition to the annual rehabilitation monitoring, a gap analysis was undertaken to compare RCM's current rehabilitation status to that stated in the Mining Operations Plan. This in turn, will provide recommendations as to how to progress with future rehabilitation works.

2017 Conclusions and Recommendations (Eco Logical Australia, 2017)

Decreases in Photosynthetically Active Biomass (PAB) were identified through remote sensing, and deemed to be primarily as a result of mine activity (i.e. roadway development, ponding and expansion).

Fauna monitoring identified nine species of bats with a further eight species or species groups listed as probable or possible across monitoring sites.

2018 Conclusions and Recommendations (Eco Logical Australia, 2018)

Several areas of substantial decrease in vegetation cover were identified by remote sensing, this was deemed to be as a result of ponding and expansion of the mine. Decreases in cover on the northern rehabilitation area were as a result of a reduction in groundcover due to drier conditions, with similar trends seen outside of rehabilitation areas. These reductions are not unexpected given the extended dry period.

Exotic pasture species were dominant across rehabilitated pasture areas, whereas natives made up a large proportion of the control sites. Bare ground cover was high across both the control and rehabilitation sites. Vegetative surface cover was less than 70% at all pasture sites however total groundcover including litter and rock was 70% or greater, allowing for good erosion protection.

Woodland rehabilitation sites achieved >70% vegetation cover (inclusive of exotic species). The number of exotic species and individuals at WR01 has declined since 2014, though at WR02 the number of individuals is very high compared to native plant species. Turnip weed has remained the dominant species at WR01 whereas Liverseed Grass (*Urochloa panicoides*) and Coolah Grass (*Panicum coloratum*) are dominant at WR02.

Trees are yet to successfully establish on the rehabilitation area, with soil testing showing nothing to explain the lack of success. Based on observations of vegetative growth, operational actions rather than biophysical reasons are thought to be the most likely cause. Further advice provided in the abovementioned gap analysis (ELA, 2018).

Bird and terrestrial fauna species richness has increased since 2014 in the woodland rehabilitation site, with at least four threatened bat species recorded. These records indicate they may be using the area for foraging. In terms of invertebrates, general observations and counts are made however, it was recommended that a more scientific approach be applied to allow for identification of a broad range of functional indicator groups involved in different ecological processes present.

8.1.4 Renovation or Removal of Buildings

No renovation or removal of buildings occurred during the reporting period.

8.1.5 Other Rehabilitation Undertaken

Infill planting was undertaken on the northern rehabilitation area as well as along Wean Rd during June 2018, after a lack of success during the 2017 calendar year planting campaign. Shaping (i.e. pushing of slopes) also began in the north eastern area of the pit.

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

8.1.6 Departmental Sign-off of Rehabilitated Areas

Departmental sign-off has not been requested for any rehabilitated areas.

8.1.7 Variations in Activities against MOP (RMP)

Operations and activities were undertaken in accordance with the approved modification of the RCM MOP, which was last amended in November 2016. RCM are currently in the process of preparing a Closure MOP for the site.

8.1.8 Trials, Research Projects and Initiatives

In an attempt to improve the survival rates on site, all tubestock were planted with the addition of milk cartons to prevent herbivory and to assist with moisture retention. It should be noted that the cardboard cartons themselves have been subject to herbivory, which is likely due to the lack of feed in the drought conditions. Mulch was also spread around the tubestock to support water retention and to provide organic matter. Differing to last calendar year, maintenance watering has continued to be undertaken to supplement the lack of rain received throughout the year.

As of the 11th December 2018, the survival rate sat at approximately 73%, far better than the estimated 5% (or less) previously encountered. There was additional dieback going into the new reporting year due to extreme meteorological conditions.

8.1.9 Key Issues to Achieving Successful Rehabilitation

There are four key issues in achieving successful rehabilitation, including:

- Poor vegetation establishment and growth due to poor soils/lack of nutrient;
- Weed and feral animal infestation;

- Excessive erosion and sedimentation resulting in land stability and vegetation growth issues; and
- Harsh weather conditions limiting growth, i.e. extended periods of drought.

In cases where performance is sub-optimal, additional management measures will be implemented (e.g. replanting/seeding, repairing landform and water management features, additional soil amelioration, feral animal and weed control etc.). Advice may also be sought from the Whitehaven Biodiversity specialist and/or contractor companies, to determine the best course of action.

8.2 Actions for Next Reporting Period

Rehabilitation on site is undertaken in accordance with the MOP. Although no further rehabilitation is required by the MOP, RCM intends to undertake further infill planting and seeding on previously rehabilitated areas to the north of the site, to enhance poor vegetation establishment that has occurred in the past.

9. COMMUNITY

9.1 Community Consultation

In accordance with Schedule 5 Condition 5 of PA 10_0015, a Community Consultative Committee (CCC) continues to be operated for RCM. The committee comprises representatives of Gunnedah Shire Council, RCM and the community.

Since its inception, the CCC has met on a regular basis. Meetings at present, are generally held every 6 months, although availability of members can result in postponement. During the reporting period, two meetings were held – 21st March 2018 and the 12th September 2018 – minutes are available on the Whitehaven Coal website.

9.2 Community Complaints

RCM has a designated complaints line advertised on the Whitehaven Coal Website. In the event of a complaint, details pertaining to the complainant, complaint, and action taken are recorded. A complaints register is maintained on Whitehaven's website.

One complaint was received during the reporting period relating to waste. A summary of the complaint is provided below. Unlike previous years, no complaints were received regarding blasting (see Table 15).

Table 17 - Calendar Year Complaints Summary

Complaint #	Nature of Complaint	Investigation	Actions Proposed
1	Alleged that a worker from RCM threw rubbish out their car window on Wean Rd.	Follow up with 'person of interest' based off information provided by complainant. Operators and staff spoken to at pre-starts and advised that rubbish is to be disposed of correctly.	Nil

Table 18 - Complaints History

Topic	Calendar Year				
	2014	2015	2016	2017	2018
Air Quality	-	-	-	-	-
Blasting	3	-	3	1	-
Noise	-	-	-	-	-
Water Quality	-	-	-	-	-
Other	-	-	-	-	1

9.3 Community Engagement and Contributions

Community contributions are managed in accordance with the Whitehaven Coal Donations and Sponsorship Policy. A total of \$374,751 worth of donations were made by WHC during the 2018 calendar year, of this, \$246,979 went towards Gunnedah and regional areas. Groups which received contributions included, but were not limited, to the following:

GUNNEDAH

- Role Models and Leaders Australia Ltd
- Rotary Club of Gunnedah
- Gunnedah Cycling & Triathlon Club Inc
- Gunnedah Family Support
- Black & Blue Gym
- Gunnedah Show Society
- Winanga-Li Aboriginal Child & Family Centre
- Gunnedah PCYC
- Gunnedah Ministers Fraternal
- Gunnedah & District Chamber of Commerce
- Gunnedah Eisteddfod Society
- Gunnedah West Rotary Club
- Gunnedah Multiple Sclerosis Club
- Apex Gunnedah
- Gunnedah Men of League
- Gunnedah High School
- Challenge Community Service
- Curlewis Public School
- Old Bank Galley

REGIONAL

- NSW Minerals Council
- Australian Indigenous Oztag
- AUSIMM
- Dorothea Mackellar Memorial Society
- Armajun Health Service Aboriginal Corporation
- Aboriginal Steel Art
- ASX Thomson Reuters Charity Foundation
- Gomeroi Elders
- Uralla Shire Council
- Wee Waa Koori Netball

At the end of November, a group of students from Gunnedah High School were given the opportunity to visit RCM to gain some exposure to the mining industry. Students undertook the site visit as part of the Career Engagement Program run through Gunnedah High School in conjunction with TAFE.

10. INDEPENDENT AUDIT

The most recent Independent Environmental Audit (IEA) occurred during May 2016. Non-compliances identified by the IEA were risk ranked by the auditor in accordance with the compliance status key for Table 2. RCM subsequently developed an Audit Action Plan for these non-compliances. As the Audit Action Plan is available on the Whitehaven Coal website, individual non-compliances have not been replicated in Table 2.

Provided below, is a summary of outstanding audit actions:

- Surrender of PA 06_0198 – surrender has been submitted but is not yet finalised

Future Annual Reviews will include status updates until all outstanding audit actions have been addressed. The next Rocglen IEA is scheduled for the upcoming calendar year (2019).

11. INCIDENTS AND NON-COMPLIANCES DURING THE REPORTING PERIOD

11.1 Reportable Incidents

No reportable incidents occurred during the reporting period.

11.2 Non-compliances

All of the non-compliances with relevant approvals have been ranked as either administrative or low, with very limited potential for environmental harm. These are addressed below:

Table 19 – Non-compliance Summary

Approval(s)	Schedule/Condition	Non-compliance	Action(s)
PA10_0015	Schedule 2(2)	Project not carried out generally in accordance with the EA and conditions of the Project Approval. See non-compliances below.	Refer to non-compliances below.
	Schedule 2(8)	Surrender of PA 06_0198 not yet finalised.	Project Approval surrender has been submitted but is pending Gunnedah Shire Council approval
	Schedule 3(15)	In accordance with the Air Quality and Greenhouse Gas Management Plan, the HVAS is required to run every six days however, there were three occasions at the 'Costa Vale' HVAS where no run occurred, and one occasion of a short run.	Regular maintenance continues to be undertaken. Follow up with the ALS sampler and tenants of the 'Costa Vale' property was undertaken to determine the cause of the power outages and power cord removal.

		On all occasions when no run occurred, the power had been tripped at the metre box. One other occasion, the power cord had also been removed from the unit itself.	Tenants indicated it was the power company. In future, re-runs will be undertaken in the event of a short (or nil) run.
	Schedule 3(18)	Continuous real-time meteorological monitoring not achieved as a result of periodic connection failures as well as planned and unplanned maintenance.	Regular maintenance continues to be undertaken on the monitor.
	Schedule 3(31)	Vegetative screen along Wean Road not yet fully established and “effective”.	Infill planting was undertaken during the reporting period to enhance the screen. Trees are still too small to be effective. Maintenance planting will continue if and when required, to fully establish screen.
EPL 12870	A3.1	Works were not carried out in accordance with the licence.	See non-compliances & actions below.
	M2.1, M2.2	Continuous PM10 monitoring was not achieved due to power outages, communication issues and planned and unplanned maintenance.	Regular maintenance continues to be undertaken on the monitor.
	M2.2	During one round of sampling in September a short run (1054mins) occurred at the ‘Roseberry’ HVAS. According to Australian Standard the monitor should run for 1440mins ± 1hr.	Regular maintenance continues to be undertaken. In future, reruns will be undertaken in the event of a short (or nil) run.
	M4.1, M4.2	Continuous meteorological monitoring not achieved due to periodic connectivity failure and planned and unplanned maintenance.	Regular maintenance continues to be undertaken

11.3 Regulatory Actions

RCM received an Official Caution from DP&E dated 21st March 2018, for the failure to undertake annual road noise monitoring for the 2017 calendar year, in accordance with the Statement of Commitments and Noise Management Plan (NMP). This non-compliance was reported in the previous Annual Review.

12. ACTIVITIES TO BE COMPLETED IN THE NEXT REPORTING PERIOD

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

- Undertake rehabilitation and mining activities in accordance with the MOP timing;
- The continuation of environmental monitoring and management, as per the relevant approvals and environmental management plans;

- Completion of outstanding IEA actions, as per timing indicated in the Audit Action Plan, available on the Whitehaven Coal Website;
- Review and revise (where required) various environmental management plans, as per PA 10_0015;
- Continue community liaison and engagement with local stakeholders, as required; and
- Undertake Independent Environmental Audit in accordance with PA10_0015

APPENDIX 1

Attended Noise Monitoring Results

EPL I.D.	Date	Start Time	Period (mins)	Measured Levels – dB(A) Leq 15min Day	Measured Levels – dB(A) Leq 15min Evening	Measured Levels – dB(A) Leq 15min Night	Measured Levels – dB(A) LA1min Night	Limits	Wind Speed	Compliant (Y/N)
QUARTER 1										
N1 – 'Retreat'	27/02/18	15:56	90	<25				Leq (15 min) Day, Evening & Night = 35 dB(A) LA (1 min) Night = 45dB(A)	2.5	Y
		21:22	30		I/A				3.5	Y
		22:00	60			I/A			3.9	Y
		22:00	60				I/A		3.9	Y
	28/02/18	11:21	90	I/A					1.5	Y
		21:20	30		I/A				1.5	Y
		22:00	60			I/A			1.8	Y
		22:00	60				I/A		1.8	Y
	1/03/18	8:20	90	31					2.3	Y
		21:17	30		<20				1.0	Y
		22:00	60			<20			2.0	Y
		22:00	60				<20		2.0	Y
N2 – 'Surrey'	27/02/18	14:05	90	I/A				Leq (15 min) Day, Evening & Night = 35 dB(A) LA (1 min) Night = 45dB(A)	2.5	Y
		20:30	30		<25				3.8	Y
		22:05	60			<30			4.9	Y
		22:05	60				<30		4.9	Y
	28/02/18	9:33	90	27					1.4	Y
		20:33	30		<20				1.7	Y
		22:01	60			<20			1.8	Y
		22:01	60				<25		1.8	Y
	1/03/18	10:10	90	I/A					2.8	Y
		20:28	30		I/A				0.8	Y
		22:00	60			I/A			2.0	Y
		22:00	60				I/A		2.0	Y
QUARTER 2										
N1 – 'Retreat'	19/06/18	8:58	90	31				Leq (15 min) Day, Evening & Night = 35 dB(A) LA (1 min) Night = 45dB(A)	1-2m/s	Y
		20:54	30		27				2-3m/s	Y
		22:02	60			28			3-4m/s	Y
		22:02	60				33		3-4m/s	Y
	20/06/18	8:42	90	26					2-3m/s	Y
		20:28	30		28				3-4m/s	Y
		23:33	60			24			0-1m/s	Y
		23:33	60				27		0-1m/s	Y
	21/06/18	8:58	90	I/A					0-1m/s	Y
		20:06	30		23				0m/s	Y
		23:30	60			24			0-1m/s	Y
		23:30	60				29		0-1m/s	Y
N2 – 'Surrey'	19/06/18	8:24	90	I/A				Leq (15 min) Day, Evening & Night = 35 dB(A) LA (1 min) Night = 45dB(A)	1-2m/s	Y
		20:38	30		I/A				2-3m/s	Y
		22:56	60			I/A			3-4m/s	Y
		22:56	60				I/A		3-4m/s	Y
	20/06/18	10:50	90	I/A					4m/s	Y
		21:24	30		I/A				0-1m/s	Y
		22:01	60			I/A			0-1m/s	Y
		22:01	60				I/A		0-1m/s	Y
	21/06/18	11:01	90	I/A					2-3m/s	Y
		21:01	30		23				0-1m/s	Y
		22:01	60			25			0-1m/s	Y
		22:01	60				26		0-1m/s	Y

*Due to poor weather conditions, the evening period measurements were conducted on 20/09/18

**Due to poor weather conditions, the evening period measurement 2 was conducted on 20/09/18

N/M = Not measurable

I/A = Inaudible

EPL I.D.	Date	Start Time	Period (mins)	Measured Levels – dB(A) Leq 15min Day	Measured Levels – dB(A) Leq 15min Evening	Measured Levels – dB(A) Leq 15min Night	Measured Levels – dB(A) LA1min Night	Limits	Wind Speed	Compliant (Y/N)
QUARTER 3										
N1 - 'Retreat'	3/09/18	7:56	90	N/M				Leq (15 min) Day, Evening & Night = 35 dB(A)	3-4m/s	Y
		21:32	30		I/A				4m/s	Y
		23:58	60			I/A			3-4m/s	Y
		23:58	60				I/A		3-4m/s	Y
	4/09/18	7:11	90	N/M					3-5m/s	Y
	20/09/18*	20:27	30		<20				1m/s	Y
	5/09/18	1:20	60			I/A			2m/s	Y
	5/09/18	1:20	60				I/A		2m/s	Y
	5/09/18	7:58	90	I/A					2-3m/s	Y
		21:27	30		I/A				4m/s	Y
N2 – 'Survey'	3/09/18**	00:38	60			I/A		LA (1 min) Night = 45dB(A)	1-3m/s	Y
		00:38	60				I/A		1-3m/s	Y
		9:56	90	N/M					4m/s	Y
		20:41	30		I/A				3m/s	Y
	4/09/18*	19:08**							2m/s**	Y
		22:24	60			I/A			1-2m/s	Y
		22:24	60				I/A		1-2m/s	Y
		9:09	90	I/A					3-4m/s	Y
	5/09/18	19:24	30		I/A				1m/s	Y
		23:53	60			I/A			3m/s	Y
		23:53	60				I/A		3m/s	Y
		9:54	90	27					0-3m/s	Y
QUARTER 4										
N1 – 'Retreat'	11/12/18	10:41	90	I/A				Leq (15 min) Day, Evening & Night = 35 dB(A)	1-5m/s	Y
		19:41	30		I/A				3-4m/s	Y
		23:45	60			I/A			1-3m/s	Y
		23:45	60				I/A		1-3m/s	Y
	12/12/18	11:42	90	I/A					1-3m/s	Y
		20:39	30		I/A				3m/s	Y
		23:40	60			I/A			4-6m/s	Y
		23:40	60				I/A		4-6m/s	Y
	13/12/18	11:50	90	I/A					6-7m/s	Y
		20:24	30		I/A				2-3m/s	Y
		23:51	60			I/A			3.5-6.8m/s	Y
		23:51	60				I/A		3.5-6.8m/s	Y
N2 – 'Survey'	11/12/18	8:22	90	I/A				Leq (15 min) Day, Evening & Night = 35 dB(A)	2-6m/s	Y
		18:37	30		I/A				6-7m/s	Y
		22:06	60			I/A			3-5m/s	Y
		22:06	60				I/A		3-5m/s	Y
	12/12/18	9:35	90	26					1-2m/s	Y
		19:34	30		30				2-3m/s	Y
		22:01	60			26			3-4m/s	Y
		22:01	60				27		3-4m/s	Y
	13/12/18	9:48	90	I/A					4-8m/s	Y
		19:23	30		30				2m/s	Y
		22:25	60			I/A			6-7m/s	Y
		22:25	60				I/A		6-7m/s	Y

*Due to poor weather conditions, the evening period measurements were conducted on 20/09/18

**Due to poor weather conditions, the evening period measurement 2 was conducted on 20/09/18

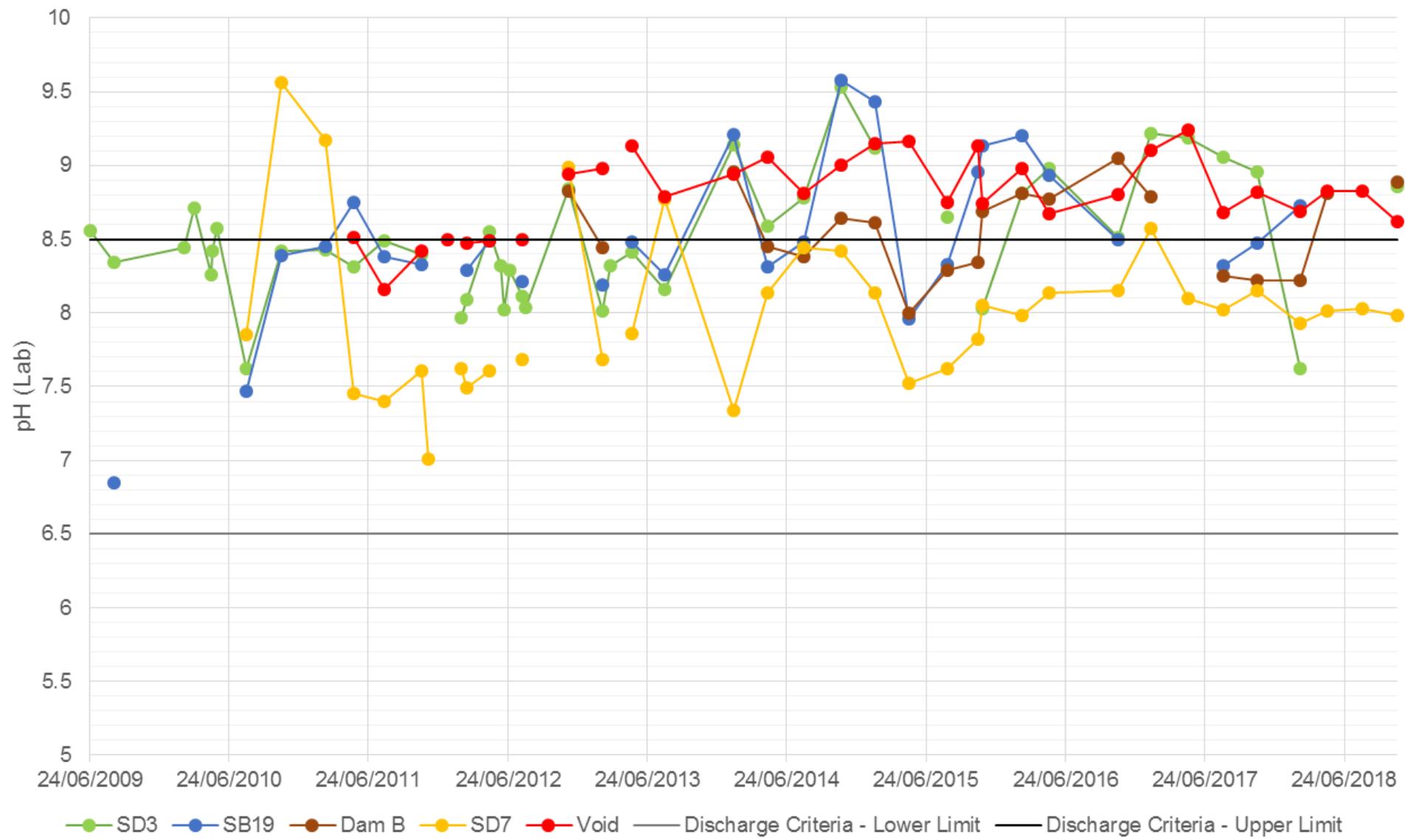
N/M = Not measurable

I/A = Inaudible

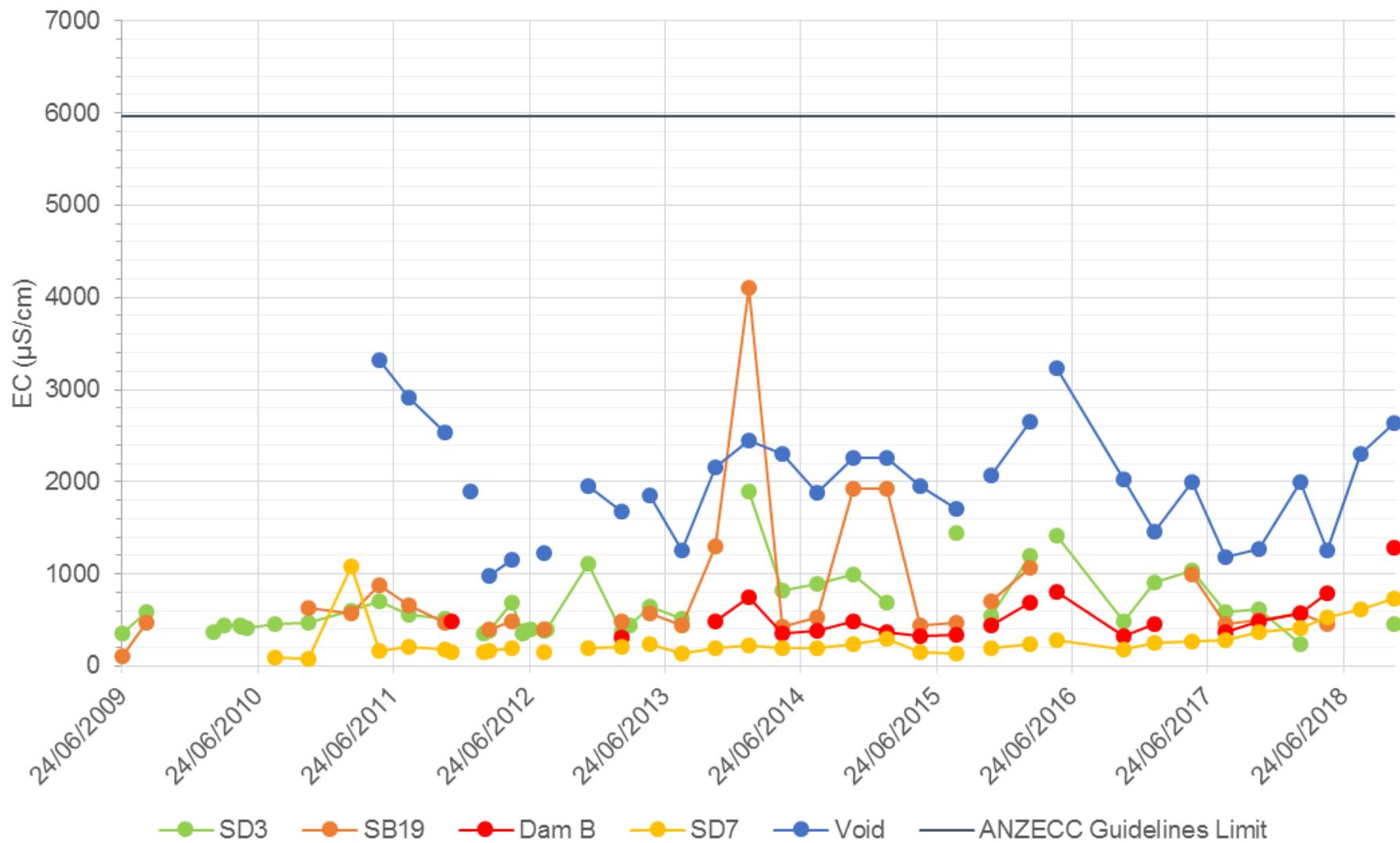
APPENDIX 2

Surface Water Data

Surface Water pH (Lab)

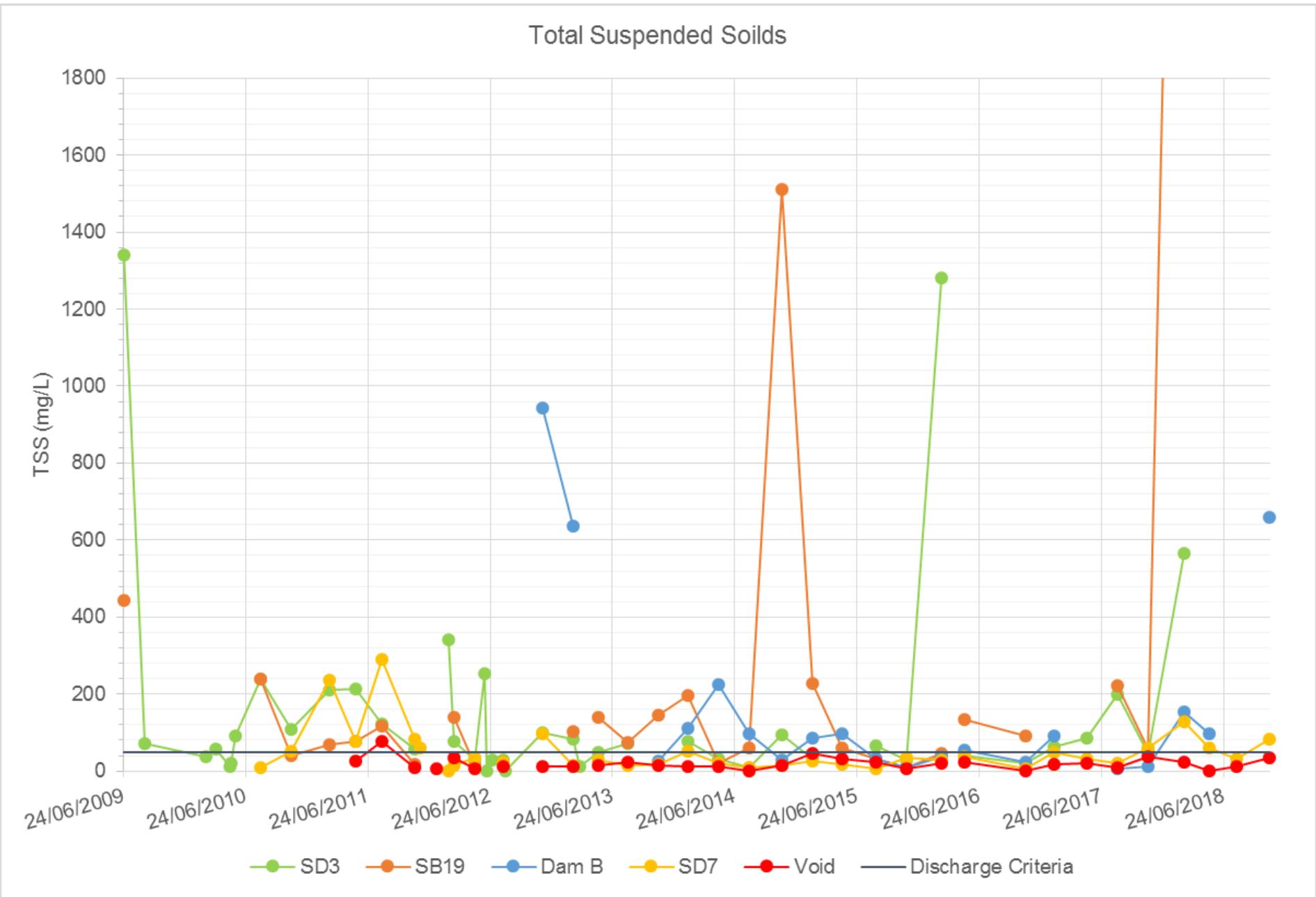


Electrical Conductivity (Lab)

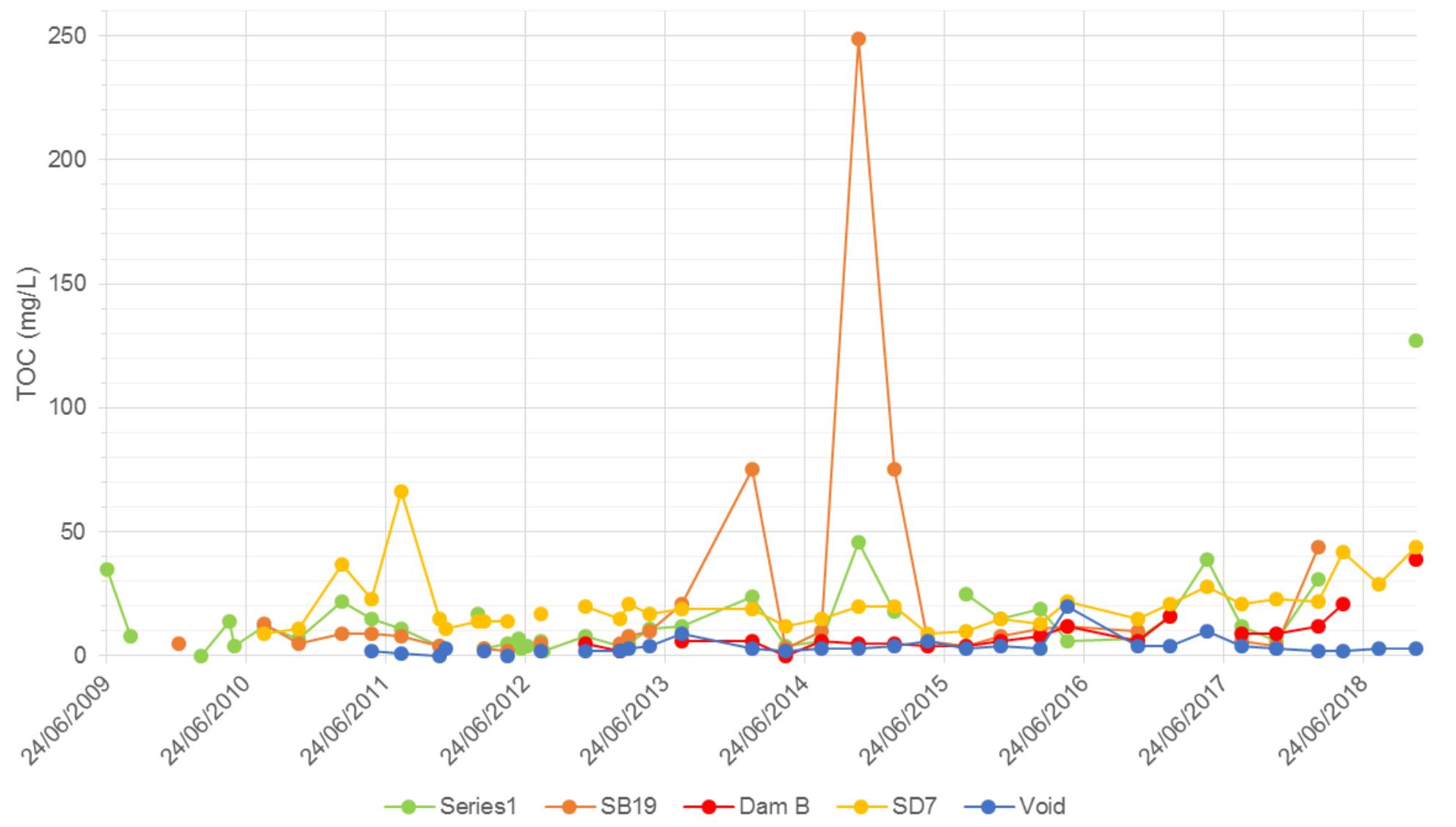


Note:

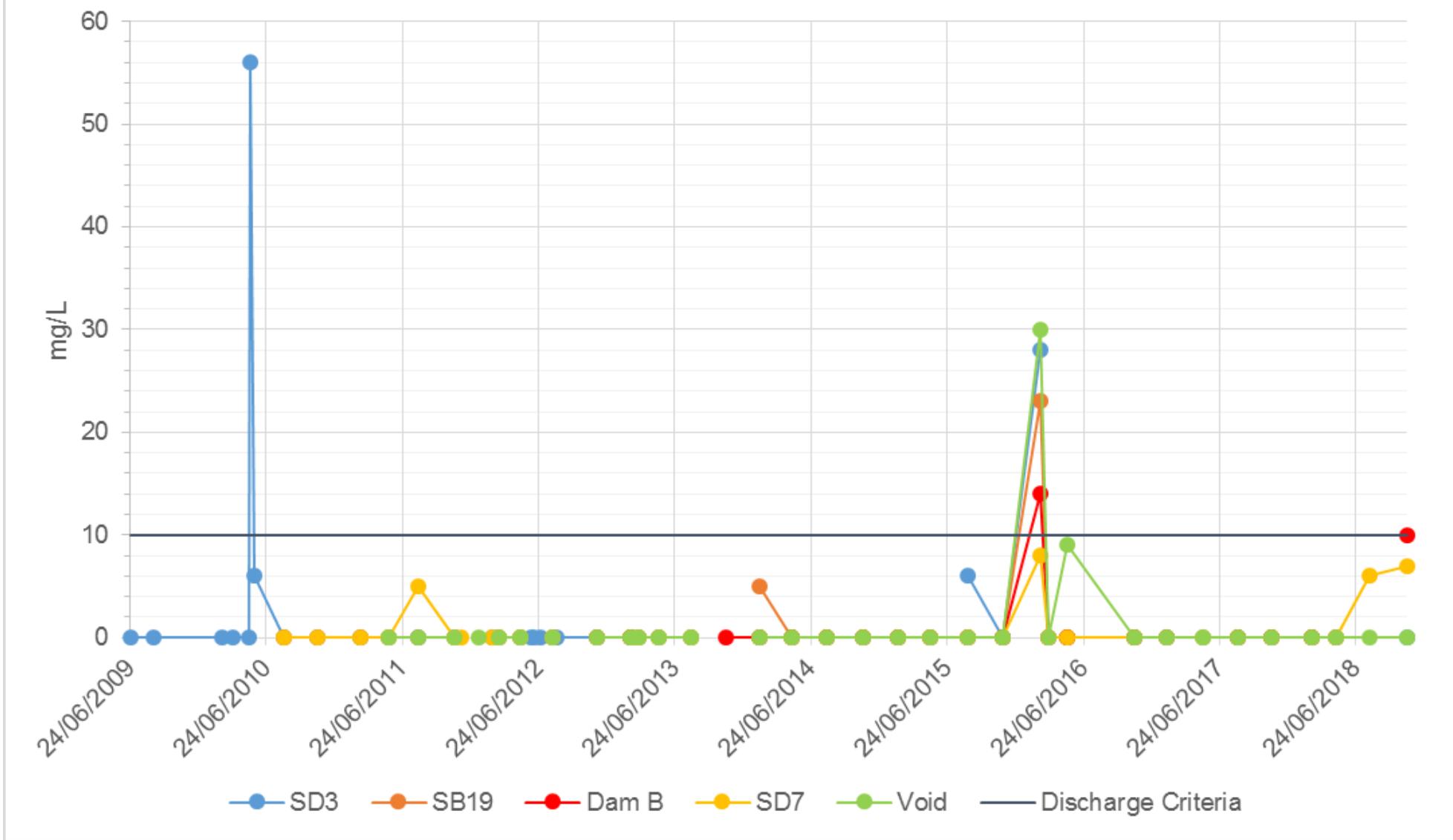
ANZECC Guideline limit refers to the Livestock Water Supply Guidelines for Uncontrolled Streams in the Namoi Catchment (Beef, Cattle, Pigs and Horses limit)

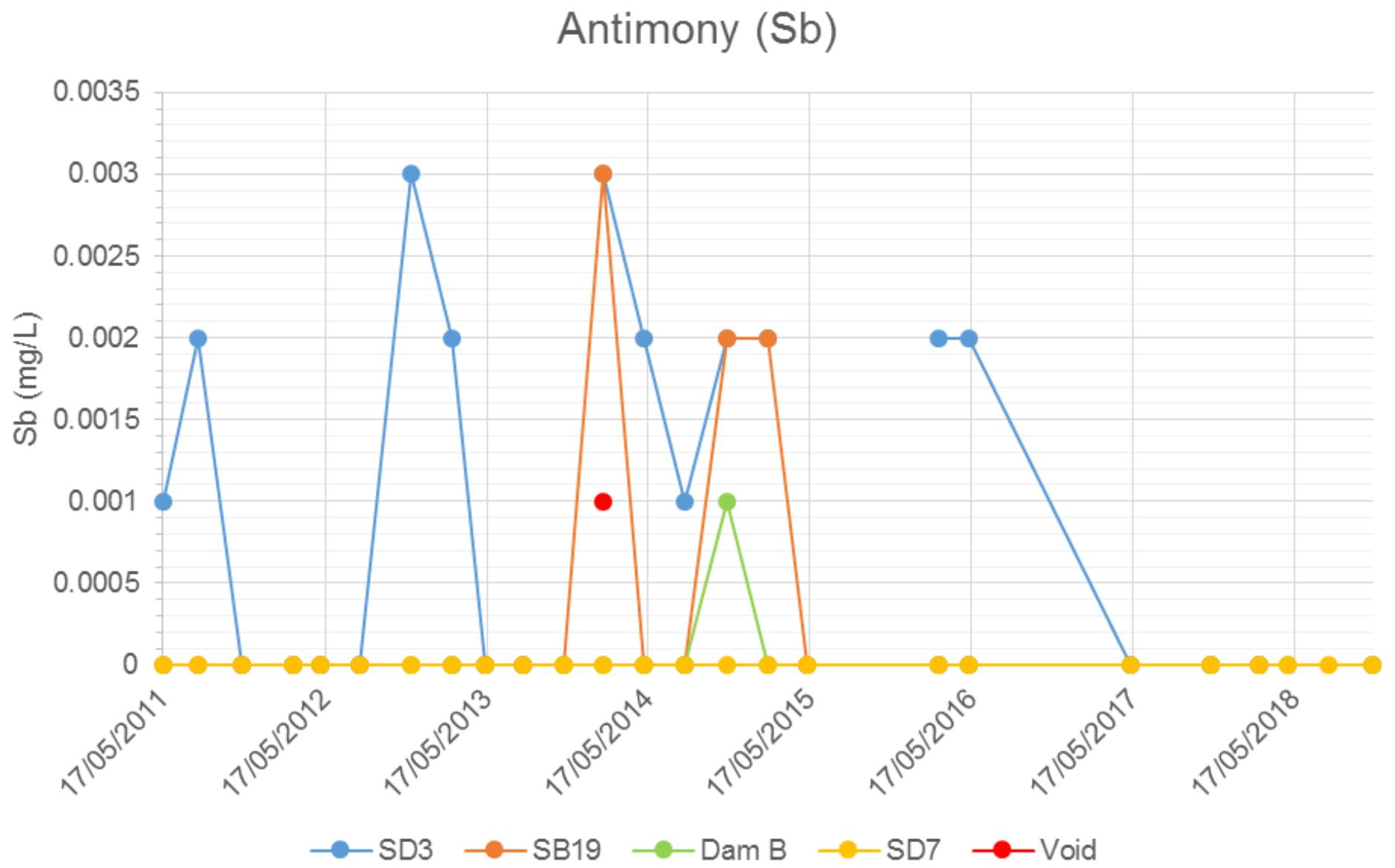


Total Organic Carbon

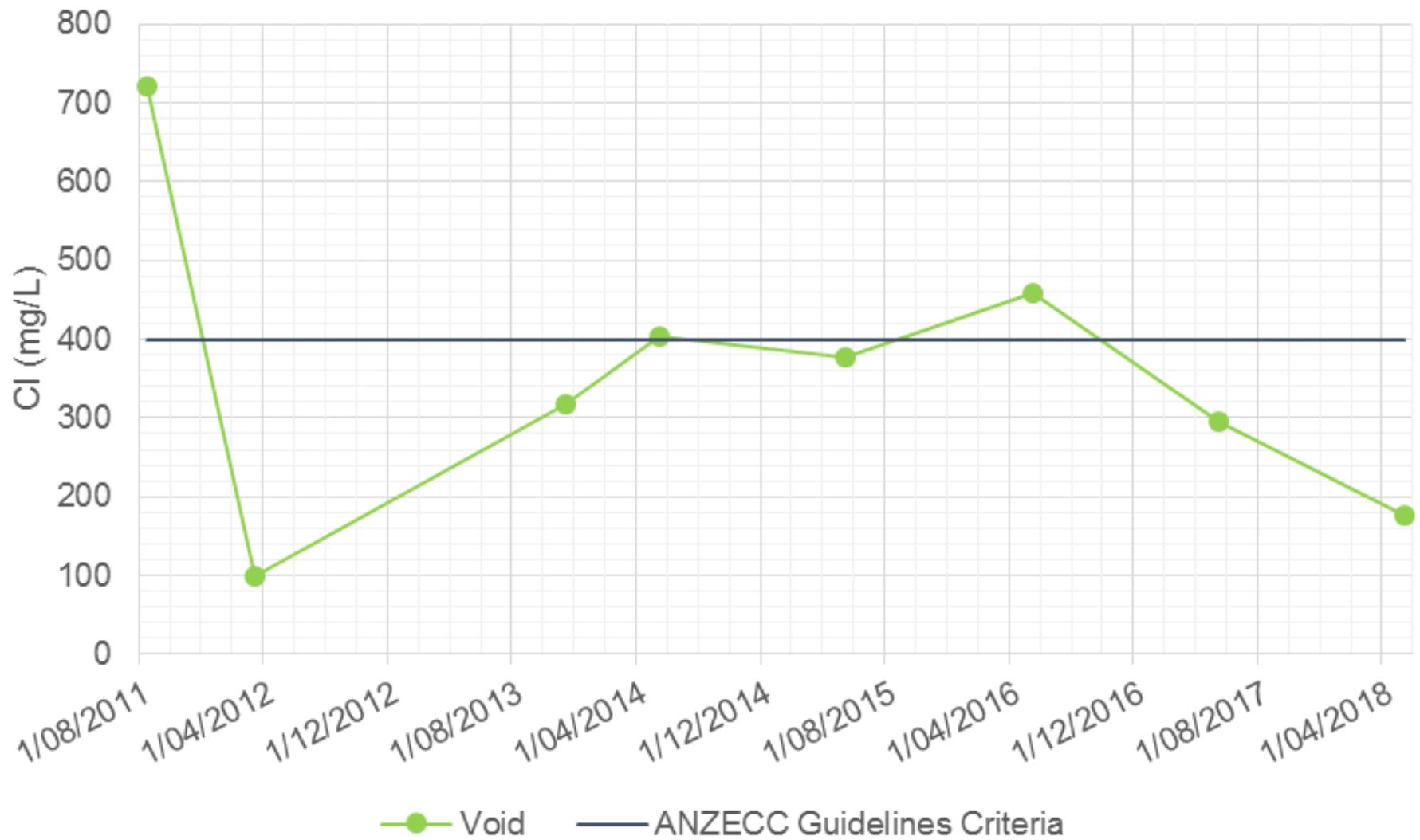


Grease and Oil

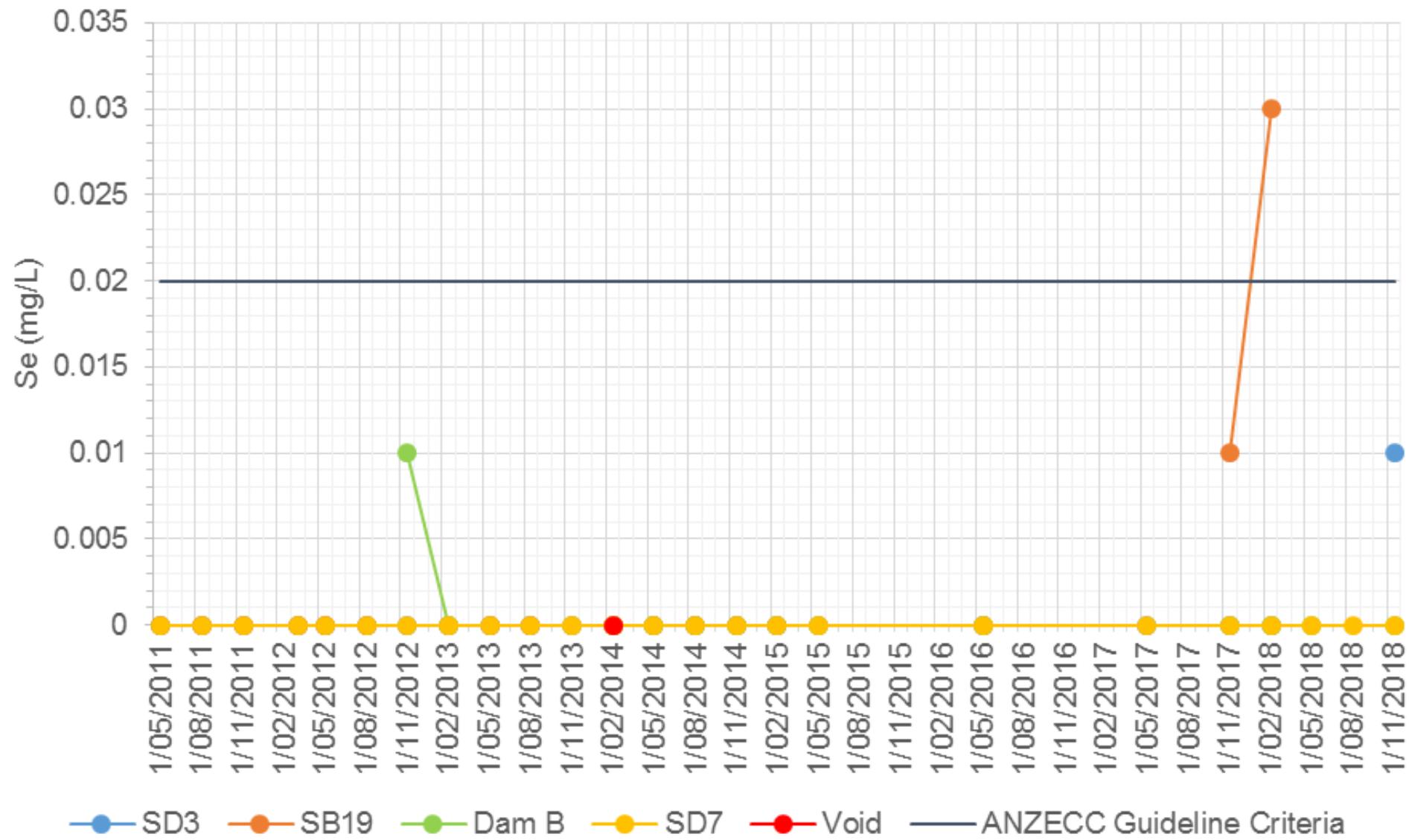


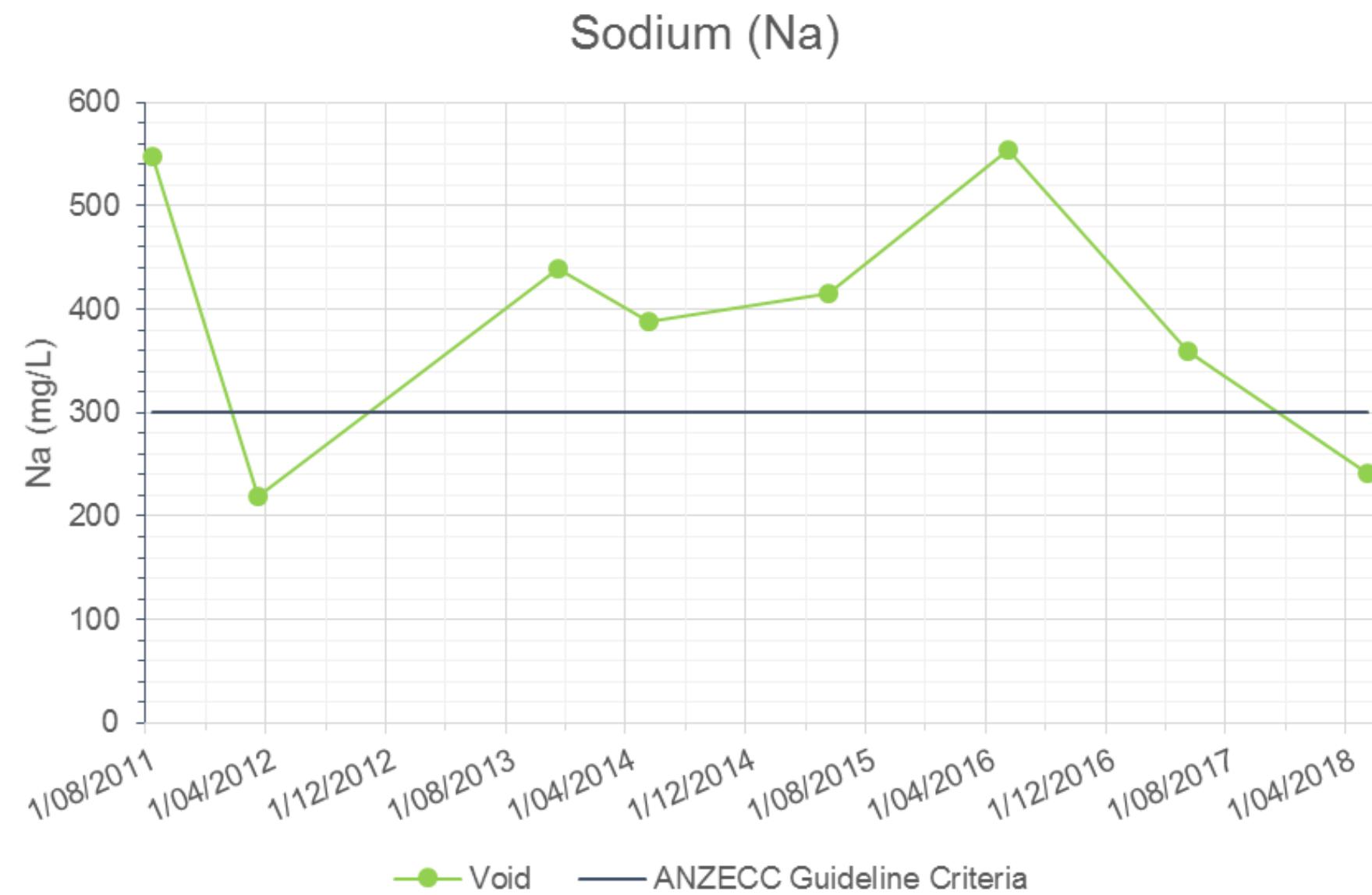


Chloride (Cl)

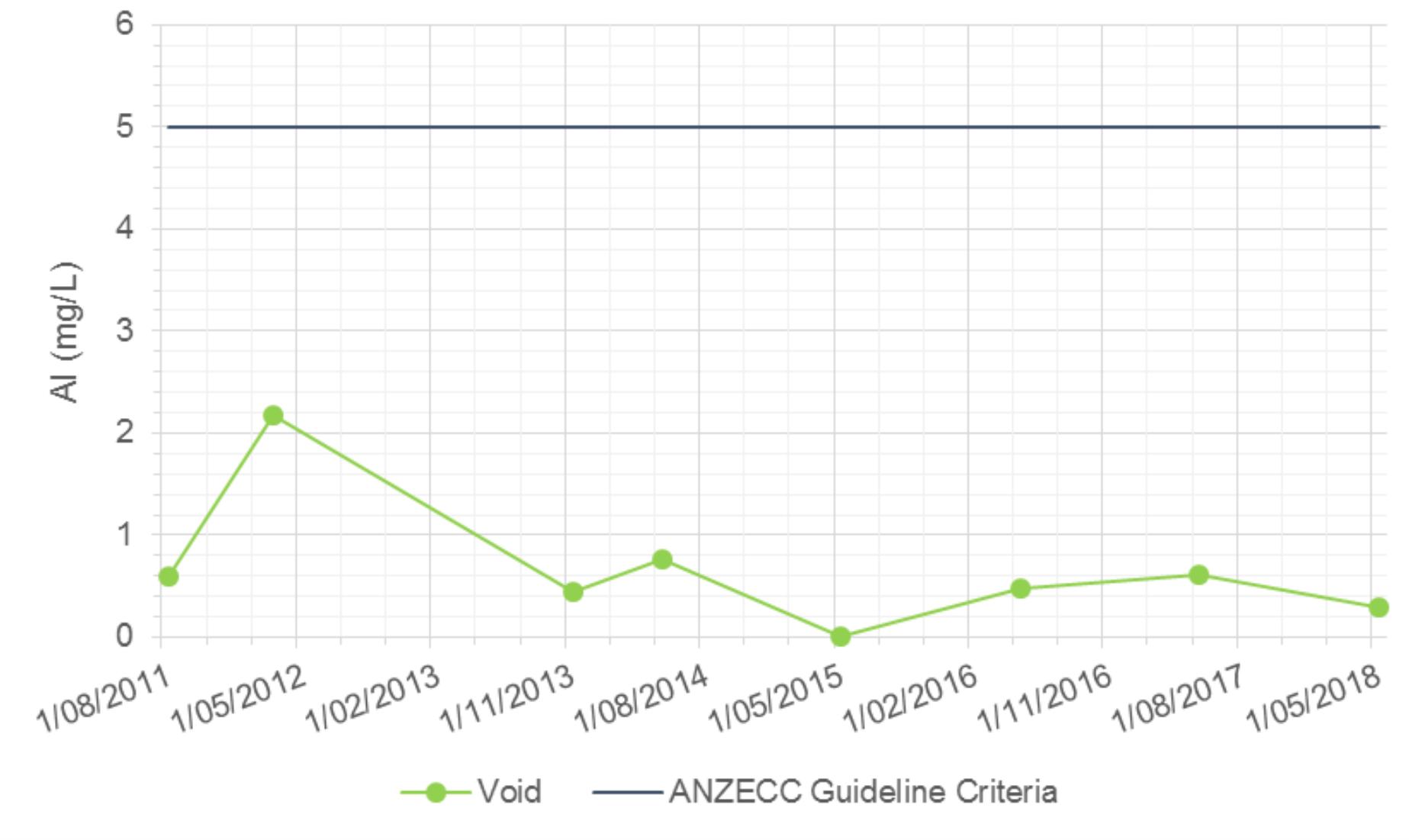


Selenium (Se)

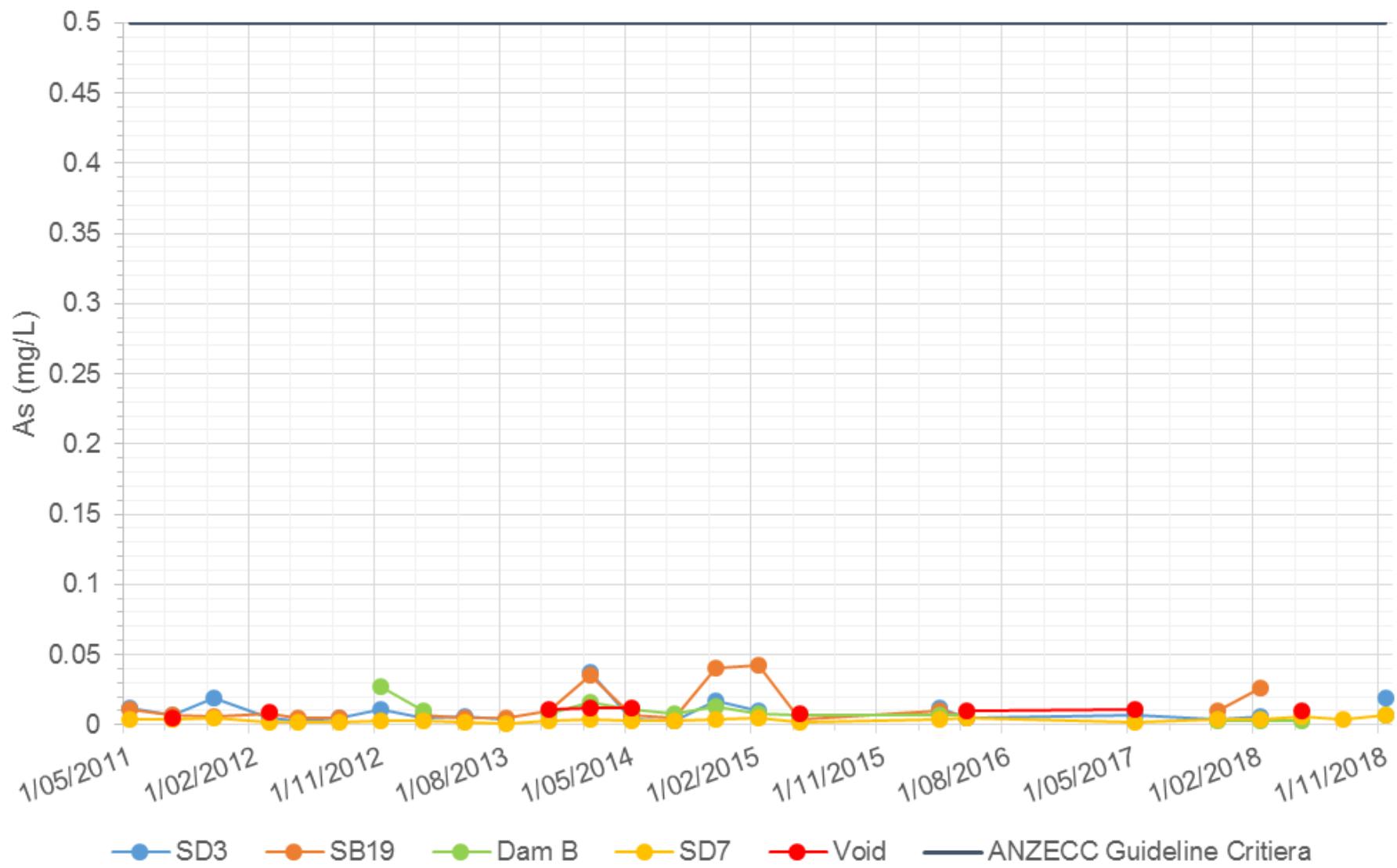




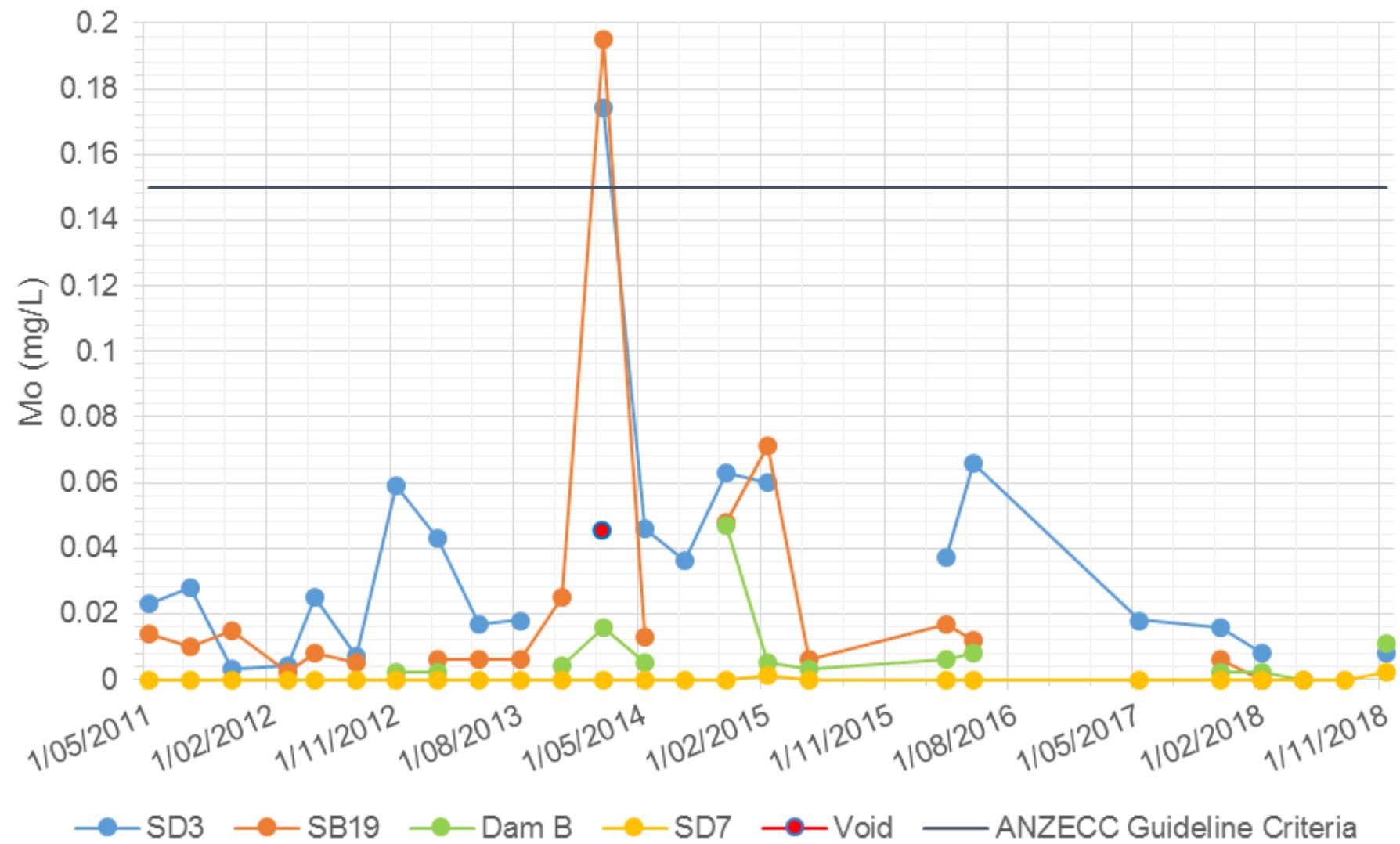
Aluminium (Al)

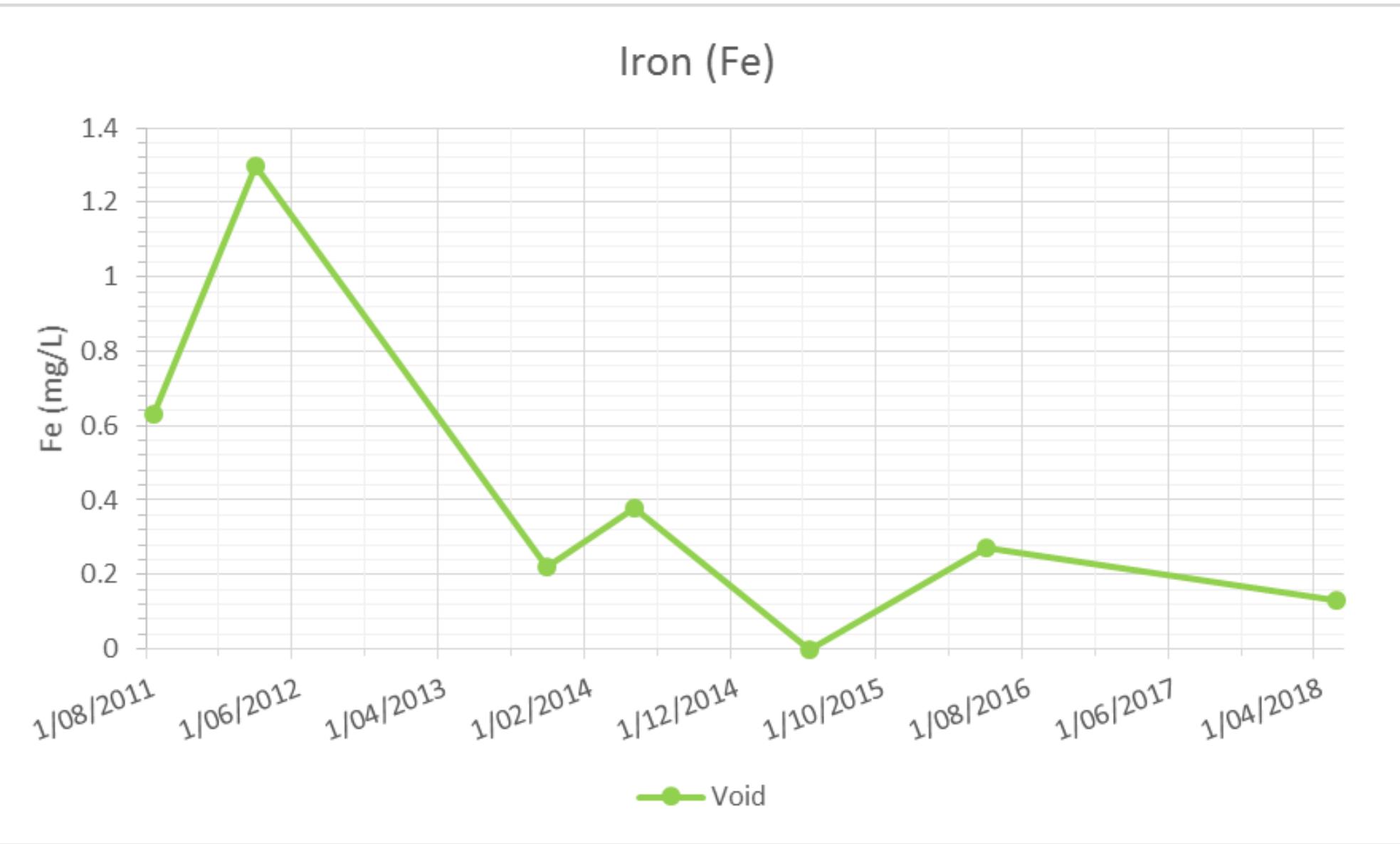


Arsenic (As)

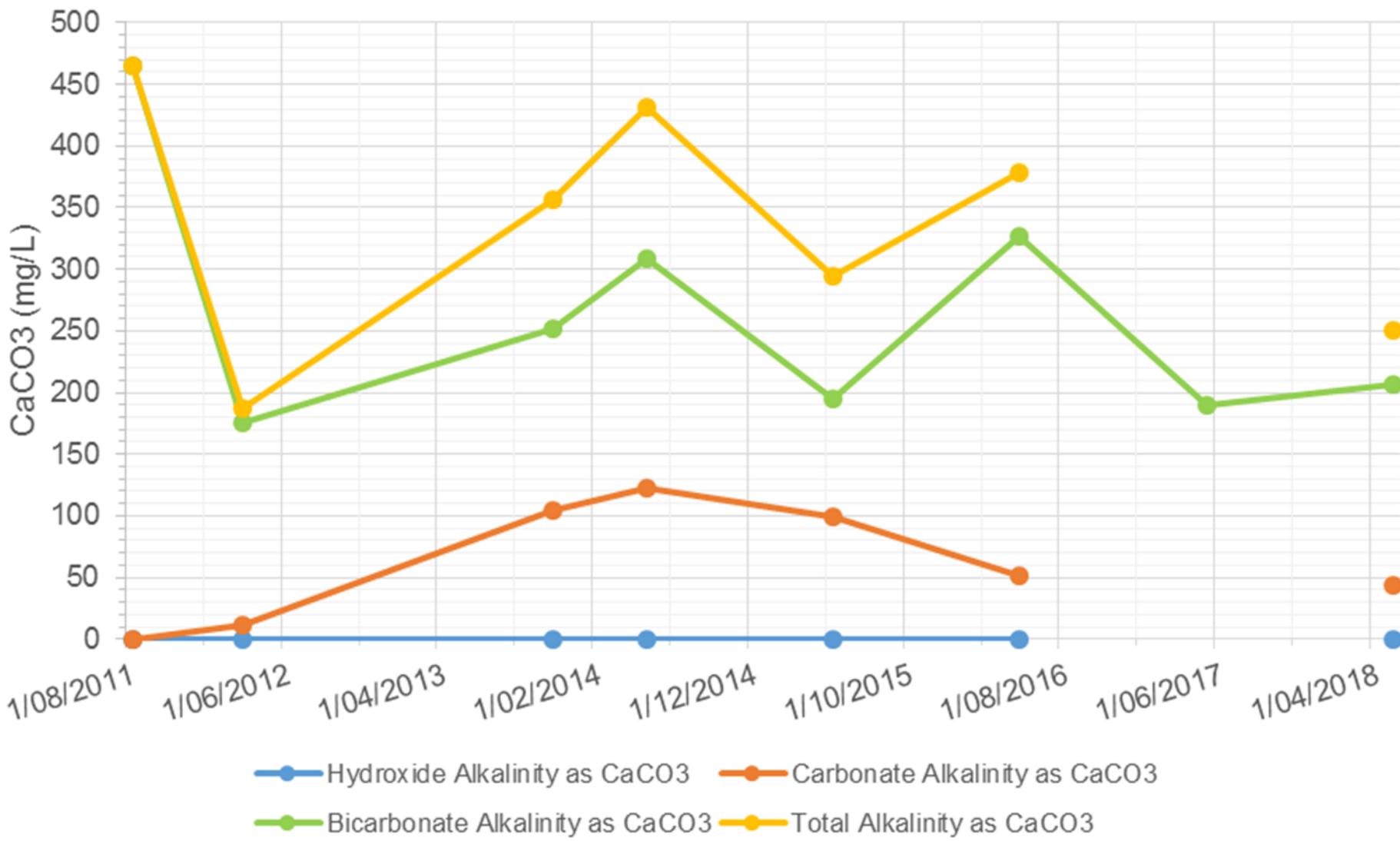


Molybdenum (Mo)





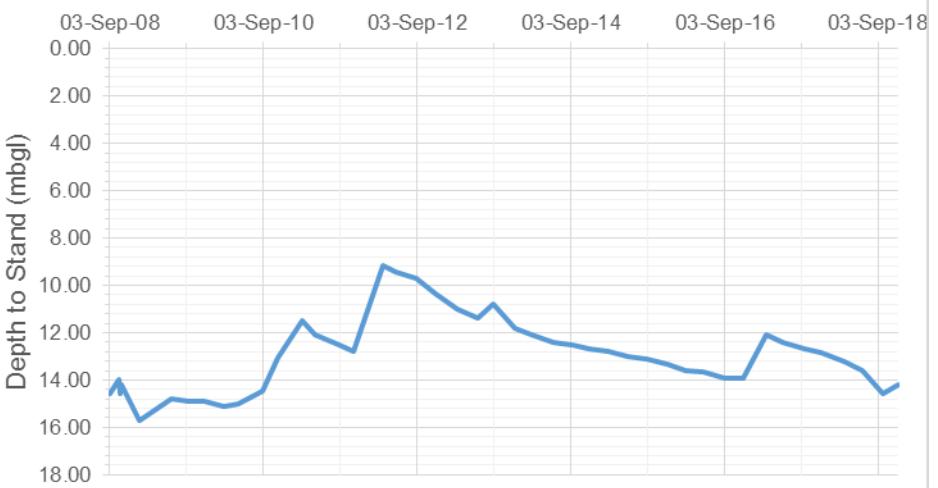
Void Alkalinity



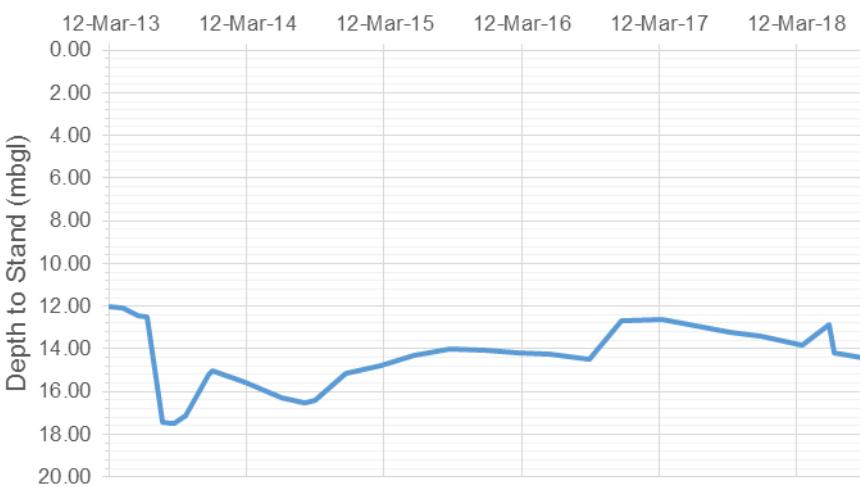
APPENDIX 3

Ground Water Data

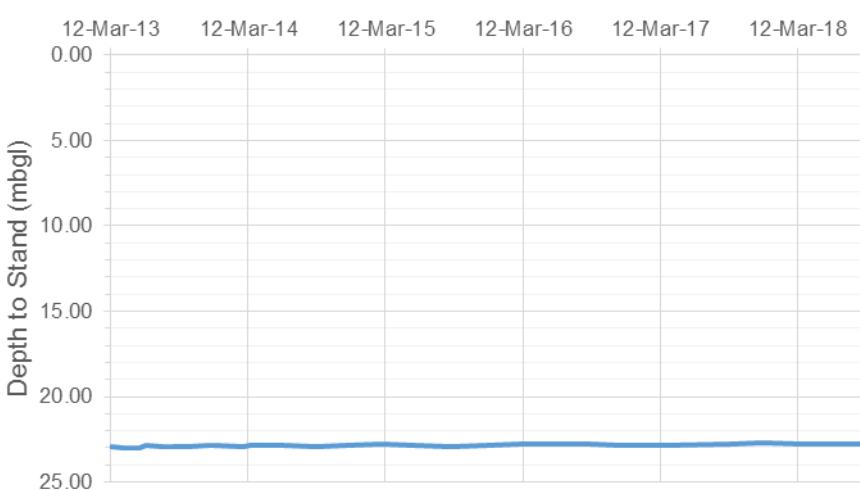
MP-2

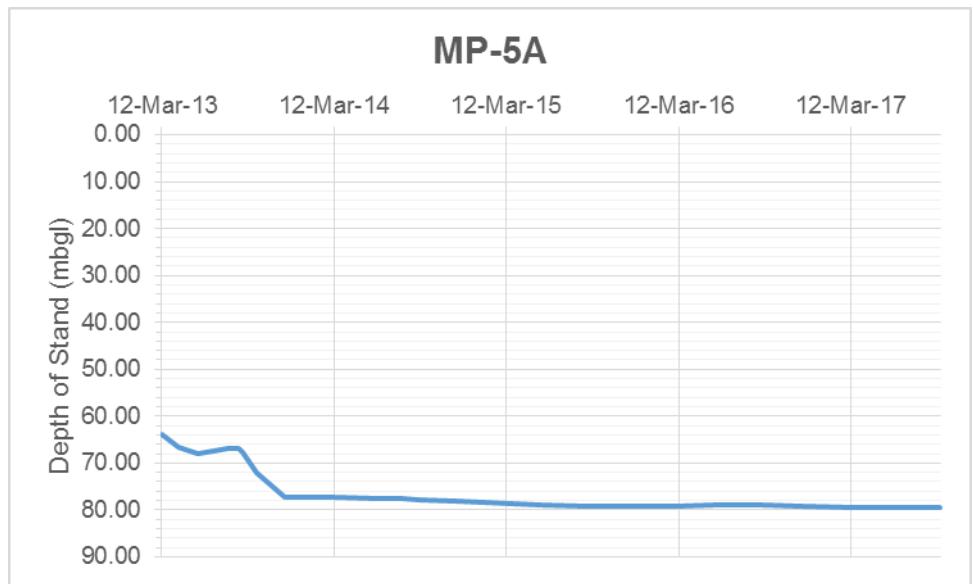
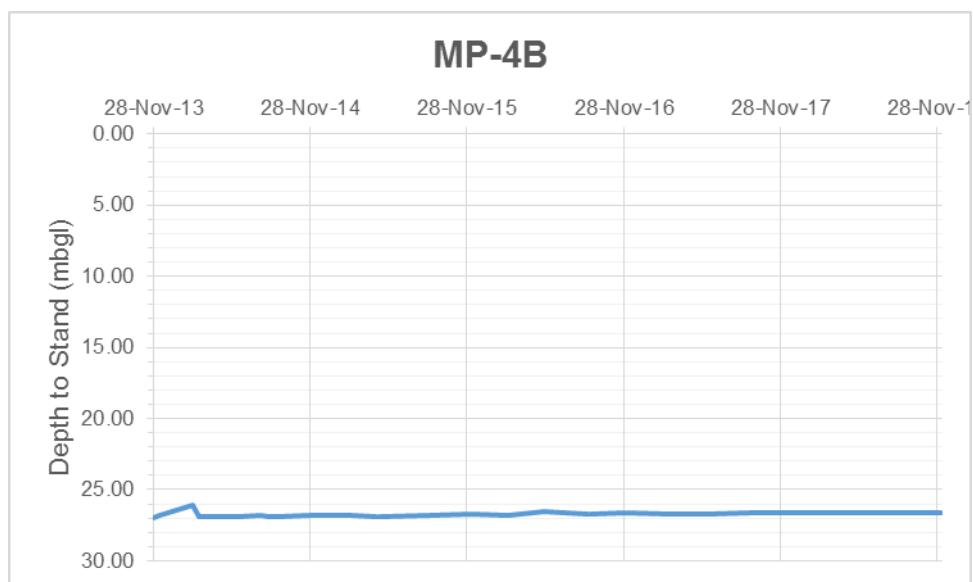
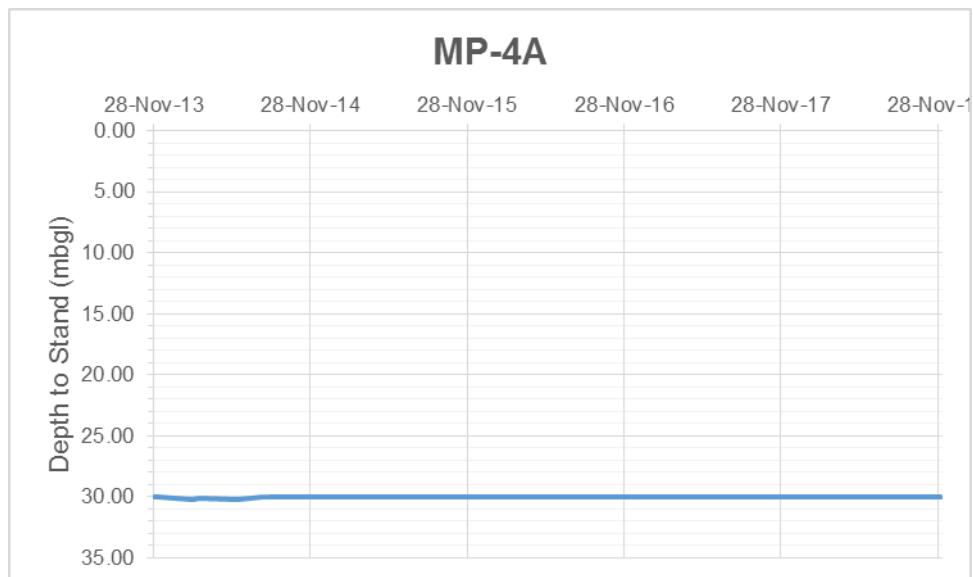


MP-2A

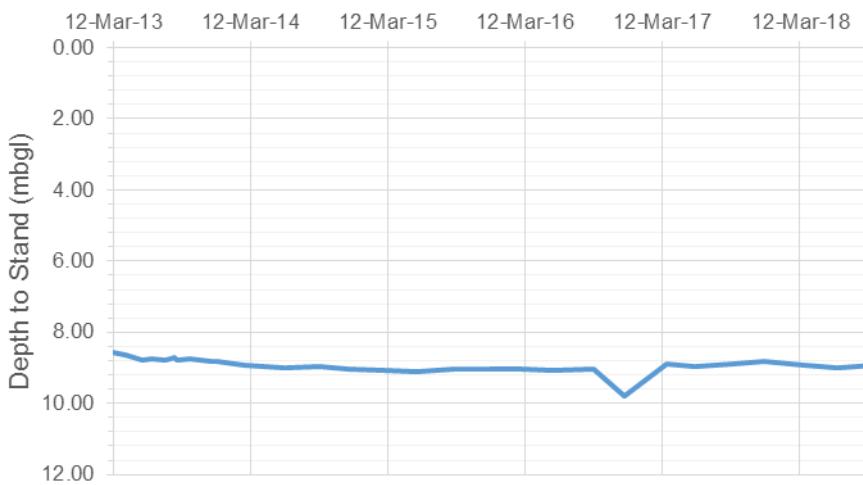


MP-3A

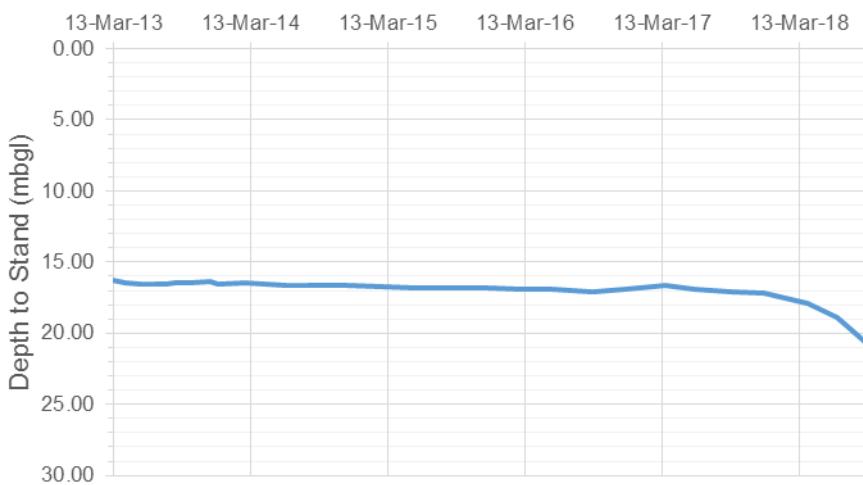




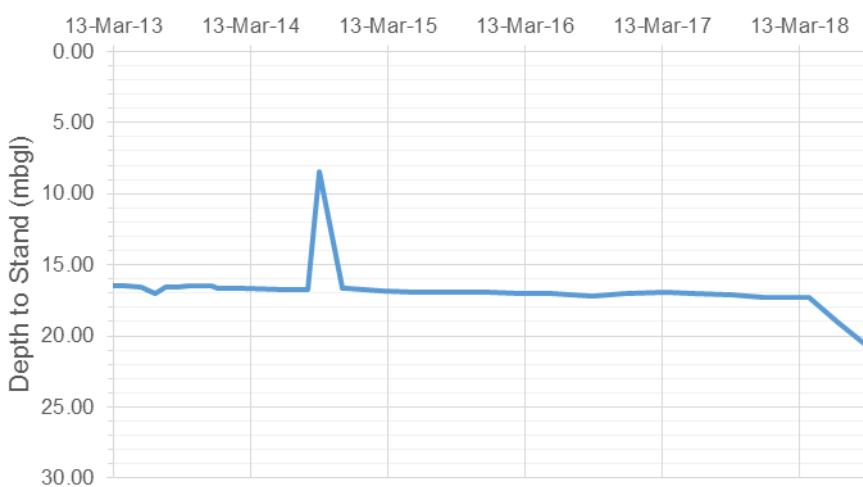
MP-6

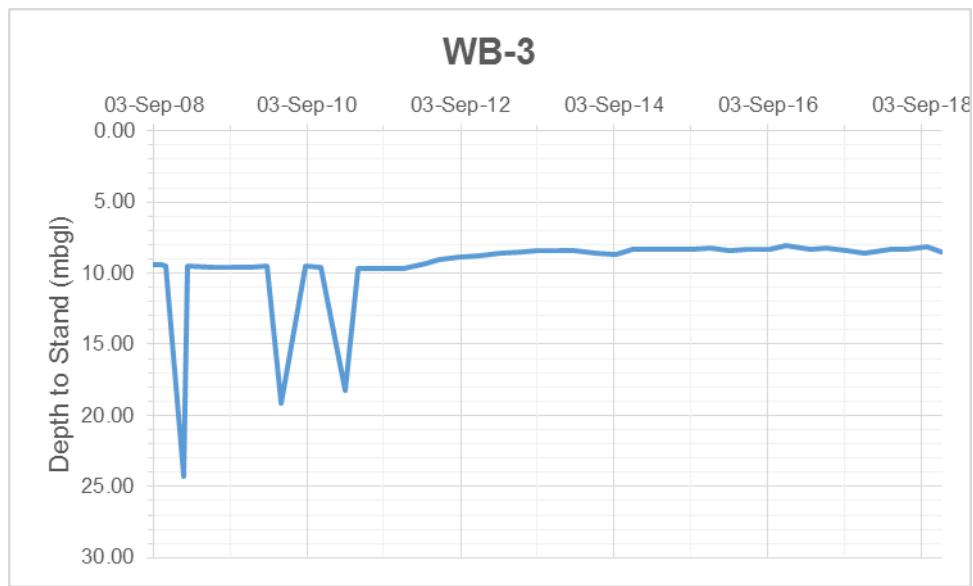
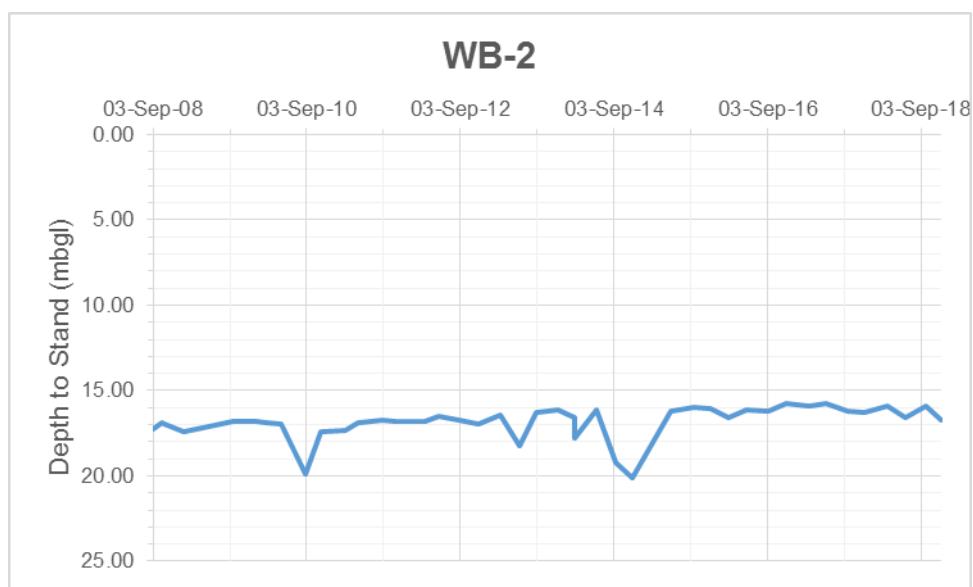
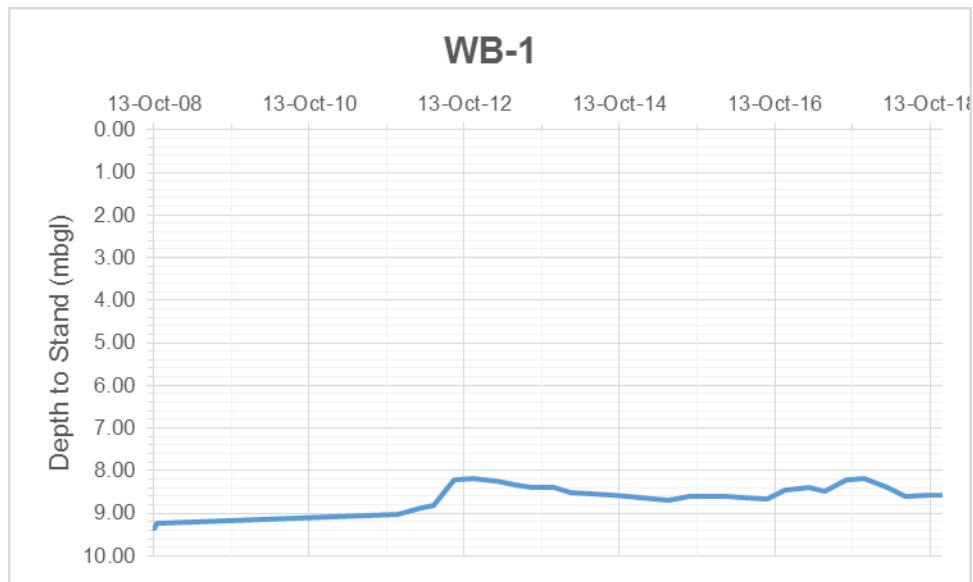


MP-7

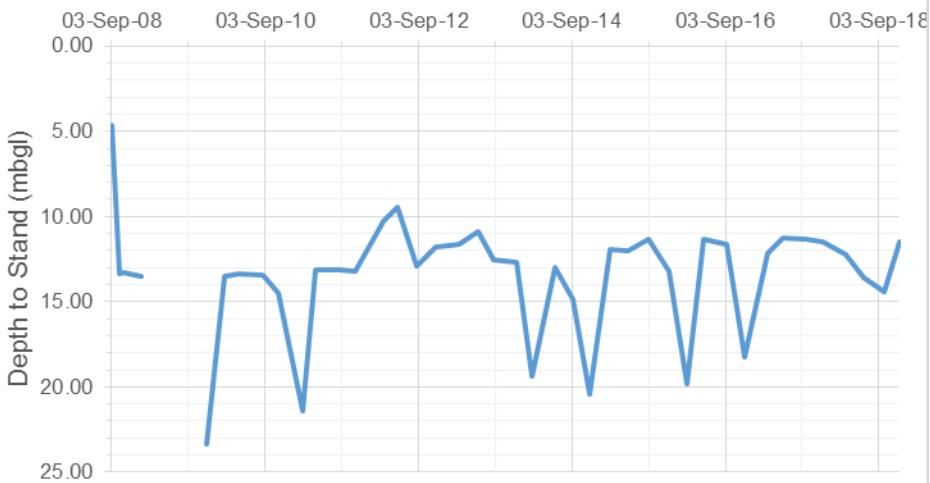


MP-8

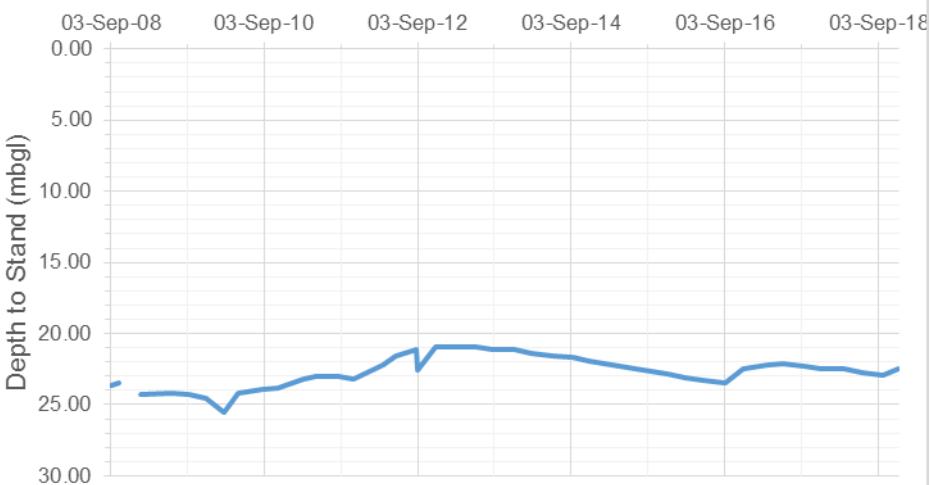




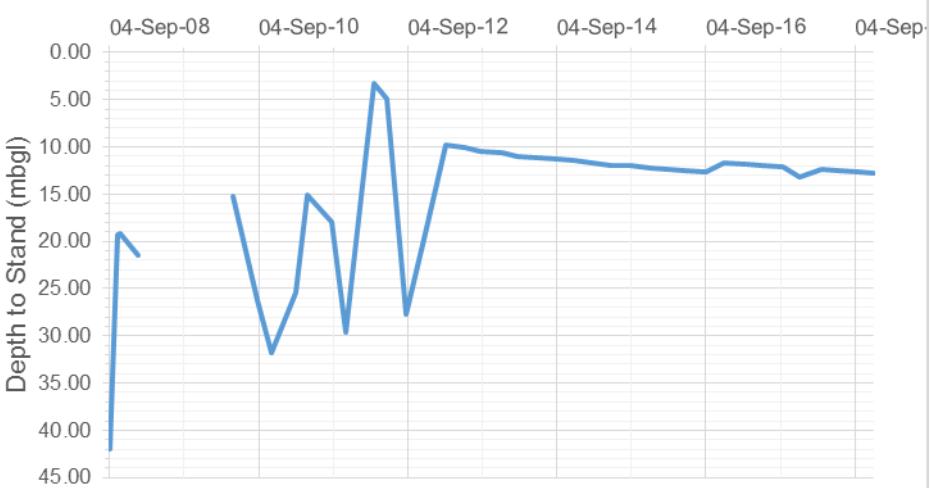
WB-5



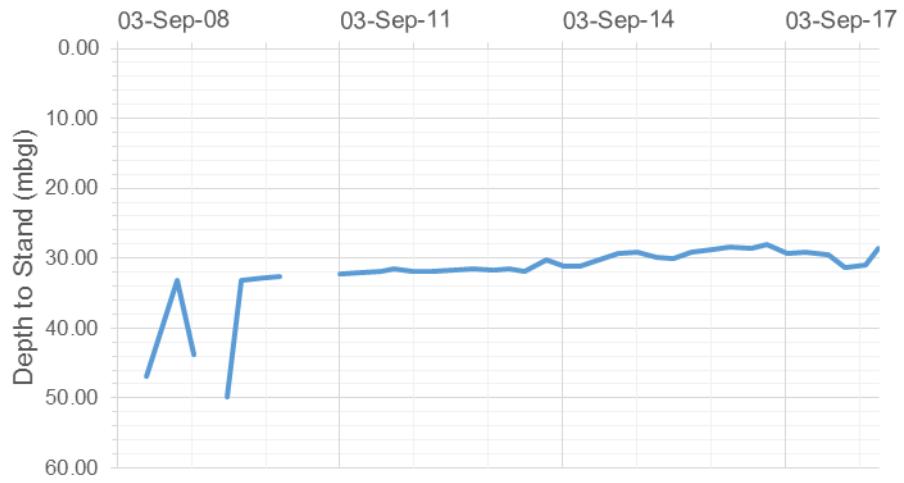
WB-6



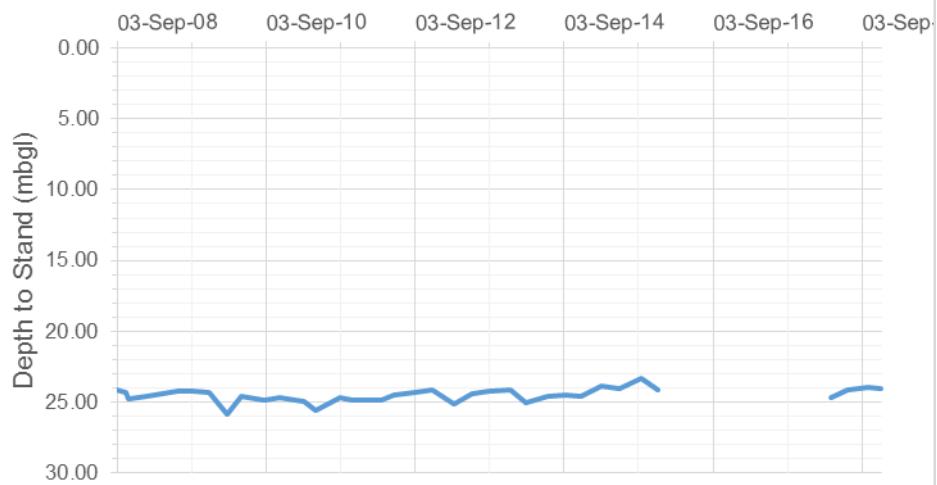
WB-7



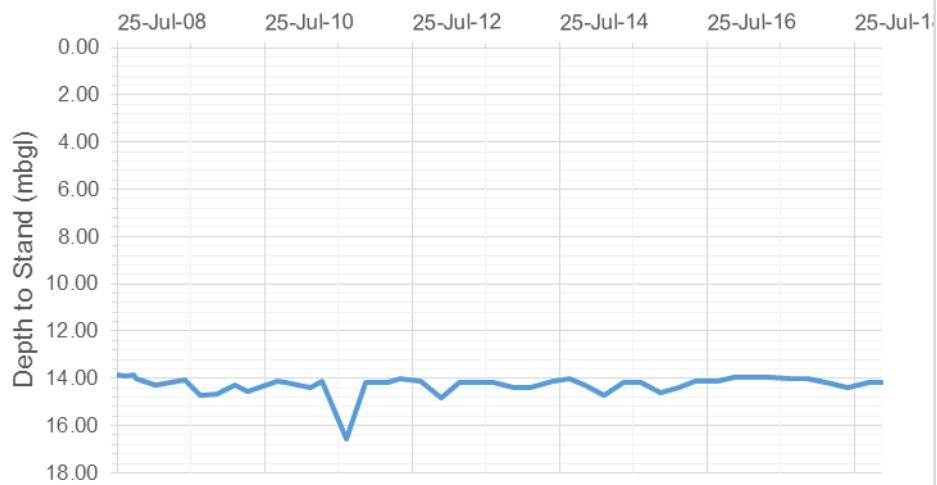
WB-8



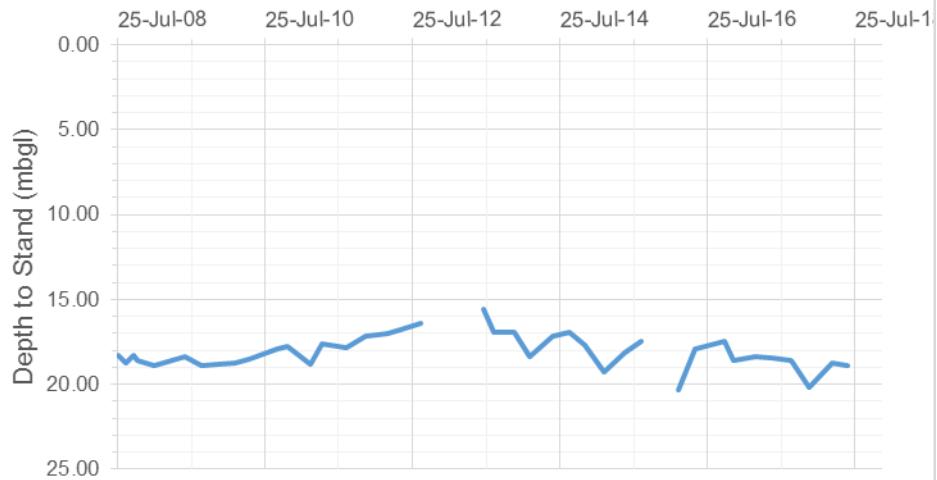
WB-9



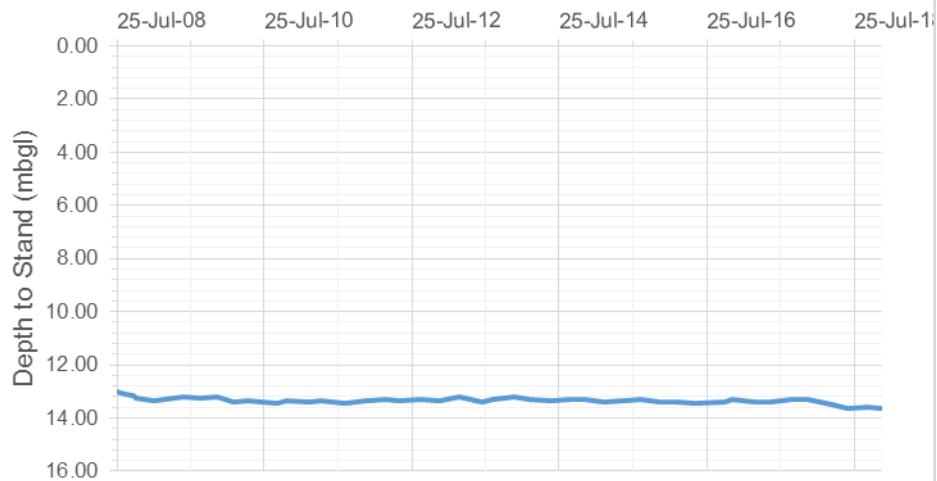
WB-10



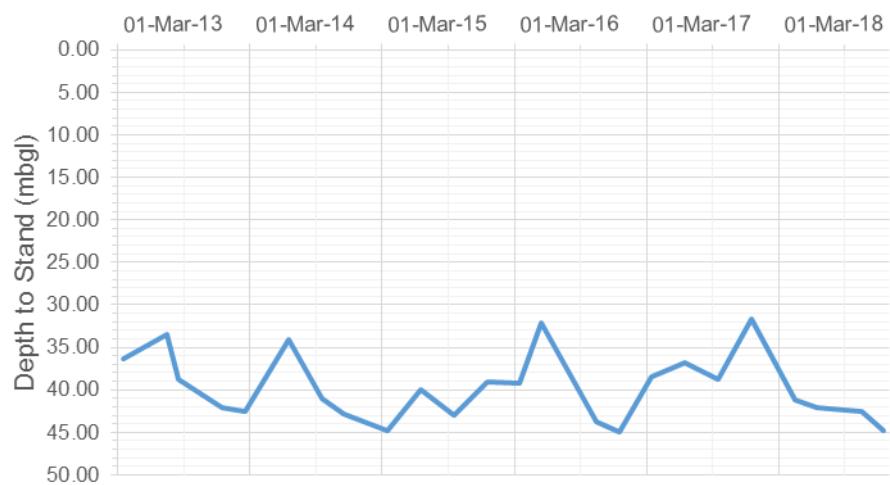
WB-11

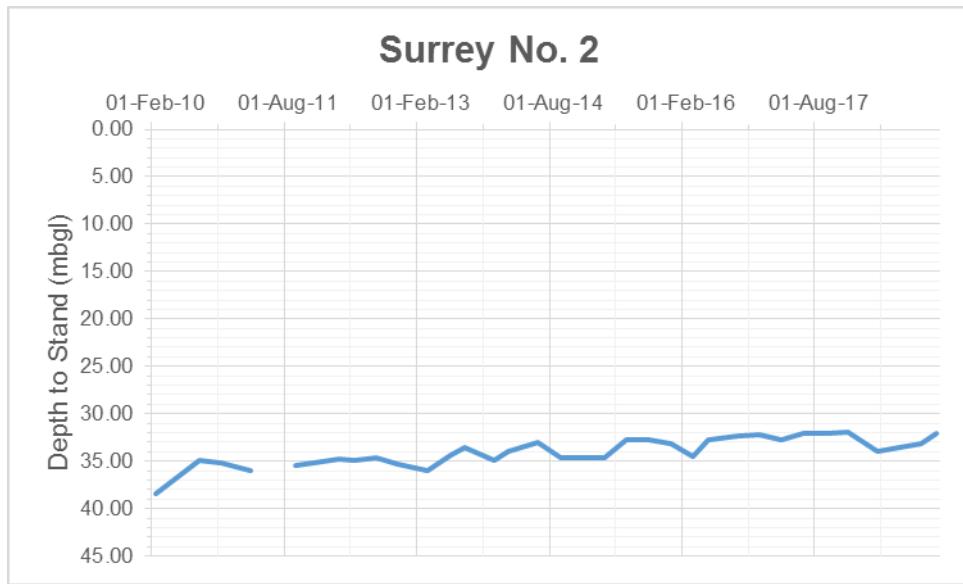
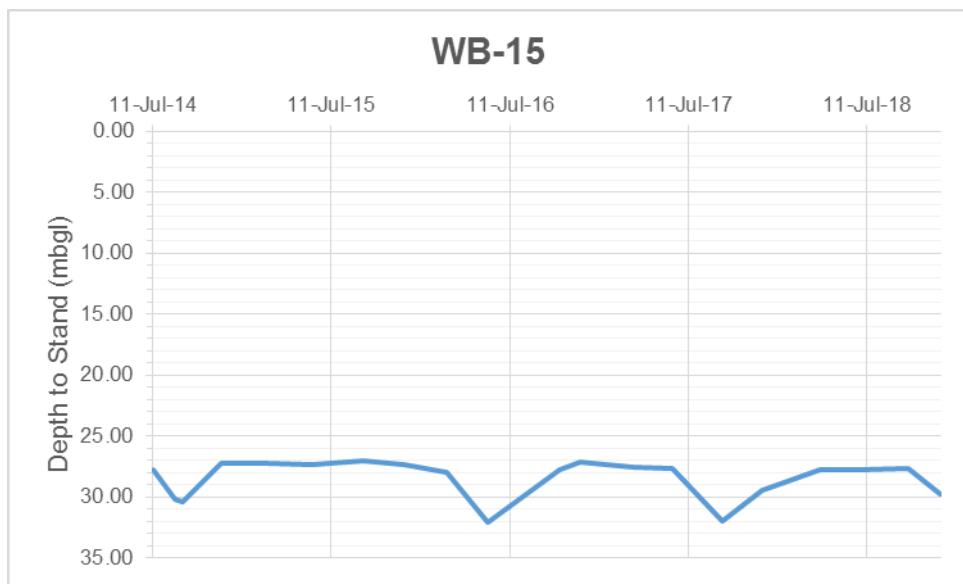
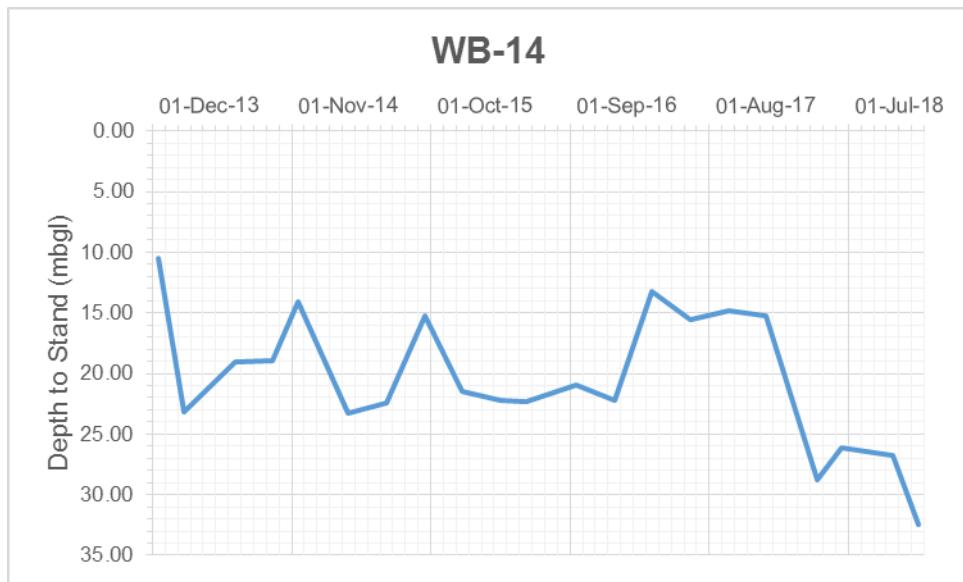


WB-12



WB-13





Bore - MP2

Date	Time	Depth to Stand - mbtoc	Depth to Ground - mbgl	Field Parameters			Lab Parameters		Total Metals																Mercury (Hg) - mg/L
				pH	EC (µS/cm)	Temp. (°C)	pH	EC (µS/cm)	Aluminium (Al) - mg/L	Arsenic (As) - mg/L	Barium (Ba) - mg/L	Beryllium (Be) - mg/L	Boron (B) - mg/L	Cadmium (Cd) - 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	Selenium (Se) - mg/L	Vanadium (V) - mg/L	Zinc (Zn) - mg/L	
DW GVs				6.5-8.0	2200	-	6.5-8.0	2200	0.2	0.007	0.7	-		0.002	0.05	-	2	0.3	0.01	0.1	0.02		-	3	0.001
CW GVs									5	0.5	1	-		0.01	1	1	-	-	0.1	-	1		-	20	0.002
03-Sep-08	1650	14.55	13.55																						
13-Oct-08	1255	14.00	13																						
23-Oct-08	0930	14.58	13.58																						
29-Oct-08	14.22	13.22	7.35	4180	21				0.001	0.618	<0.001			0.0001	0.002	0.001	0.003	11	0.011	0.234	0.234		<0.01	0.042	<0.0001
23-Jan-09	1741	15.7	14.7																						
22-Jun-09	1200	14.8	13.8	7	5210	22.5		4830		0.001	0.766	<0.001		<0.0001	0.01	0.003	0.008	5.01	0.007	0.145	0.011		0.01	0.095	<0.0001
15-Sep-09	1520	14.88	13.88																						
30-Nov-09	1030	14.9	13.9	6.91	5230	30.2	6.99	4560	<0.01	0.002				<0.005		0.019	<0.05	<0.001	0.07	0.006			0.01	<0.0001	
25-Feb-10	1320	15.14	14.14																						
03-May-10	1130	15	14	7.37	5240	22.3		4760		<0.001	0.737	<0.001		<0.0001	0.004	0.002	0.022	4.31	0.012	0.148	0.009		0.01	0.335	<0.0001
26-Aug-10	1040	14.48	13.48	7.07	5060	Probe Broken																			
08-Nov-10	1355	13.04	12.04	6.72	3720	26.9																			
07-Mar-11	1320	11.49	10.49	6.98	4060	25.2	7	5070	0.71	<0.001				0.001		0.057	0.52	0.006	0.077	0.004			0.299	<0.0001	
03-May-11	1210	12.1	11	6.95	4110	217																			
30-Aug-11	1130	12.54	11.54	6.9	3950	22.4	7.27	5320	7.63	0.006	1.28	<0.001		0.0001	0.008	0.005	0.154	9.79	0.019	0.436	0.014		0.02	1.2	<0.0001
04-Nov-11	1140	12.78	11.78	6.80	3820	23.9																			
21-Mar-12	0945	9.17	8.17	7.01	4330	22.3	7.39	5080	0.26	0.003	0.867	<0.001		<0.0001	0.001	<0.001	0.037	0.12	0.003	0.028	0.003		<0.01	0.13	<0.0001
23-May-12	1140	9.43	8.43	7.32	4170	15.4																			
27-Aug-12	1100	9.71	8.71	7.16	4670	20.7	7.54	4650	0.62	0.002	0.86	0.001		0.0005	0.003	0.001	0.036	0.66	0.012	0.073	0.006		<0.01	0.178	<0.0001
26-Nov-12	1045	10.33	9.33	7.07	4530	23.8																			
12-Mar-13	1040	11	10	7.29	4620	22.7	7.48	5150	0.13	0.002	0.819	<0.001		<0.0001	0.004	<0.001	0.044	1.05	0.002	0.024	0.005		<0.01	0.17	<0.0001
20-Jun-13	1120	11.36	10.36	7.12	4710	20.5																			
28-Aug-13	1200	10.8	9.8	7.20	4740	212	7.74	5190	0.24	<0.001	0.8	<0.001	0.09	0.0001	<0.001	<0.001	0.006	0.37	0.005	0.033	0.004	<0.01	<0.01	0.216	<0.0001
11-Dec-13	1240	11.84	10.84	7.20	4870	218																			
26-Feb-14	1310	12.1	11	7.40	4850	22.3	8.06	5250	0.36	0.002	0.933	<0.001	0.009	0.0001	0.006	<0.001	0.243	2.63	0.02	0.064	0.006	<0.01	0.01	0.455	<0.0001
12-Jun-14	1330	12.4	11.4	7.20	4930	20.9																			
10-Sep-14	1050	12.5	11.5	7.2	4930	217	7.6	5240	0.18	0.001	0.868	<0.001	0.07	<0.0001	<0.001	<0.001	0.024	0.29	0.002	0.033	0.004	<0.01	<0.01	0.27	
28-Nov-14	835	12.68	11.68	7.4	4910	215																			
03-Mar-15	0955	12.8	11.8	7.3	4900	22.2	7.7	5320	0.03	<0.001	0.817	<0.001	0.07	<0.0001	<0.001	<0.001	0.015	0.13	<0.001	0.028	0.005	<0.01	<0.01	0.144	<0.0001
29-May-15	0925	13.02	12.02	7.1	5070	20.6																			
02-Sep-15	1425	13.1	12.1	7.1	5060	216	7.66	5170	0.05	<0.001	0.882	<0.001	0.08	<0.0001	<0.001	<0.001	0.014	0.07	<0.001	0.02	0.002	<0.01	<0.01	0.155	<0.0001
07-Dec-15	1105	13.35	12.35	7.1	5090	22																			
02-Mar-16	1310	13.6	12.6	7.2	4970	23.3	7.54	5340	0.24	<0.001	1.03	<0.001	0.09	<0.0001	0.001	<0.001	0.031	0.38	0.002	0.031	0.004	<0.01	<0.01	0.148	<0.0001
24-May-16	1400	13.65	12.65	7.1	5030	21.1																			
07-Sep-16	1315	13.91	12.91	7.1	4850	22.8																			
30-Nov-16	1155	13.93	12.93	7	4880	22.1																			
21-Mar-17	1220	12.06	11.06	7	5030	23.1	7.37	5260	0.07	<0.001	1.03	<0.001	0.08	<0.0001	<0.001	<0.001	0.024	0.26	<0.001	0.036	0.001	<0.01	<0.01	0.073	<0.0001
6-Jun-17	1125	12.39	11.39	6.9	5030	20.5																			
18-Sep-17	1250	12.7	11.7	6.9	5080	214	7.53	5357	0.09	<0.001	1.06	<0.001	0.09	<0.0001	<0.001	<0.001	0.002	0.1	<0.001	0.009	0.001	<0.01	<0.01	0.029	<0.0001
07-Dec-17	1135	12.85	11.85	6.8	5140	22.2																			
26-Mar-18	1150	13.2	12.2	6.8	5290	20.8	7.28	5330	0.16	0.001	1.04	<0.001	0.09	<0.0001	<0.001	<0.001	0.002	0.29	<0.001	0.014	0.002	<0.01	<0.01	0.032	<0.0001
20-Jun-18	1140	13.6	12.6	6.8	5230	21																			
27-Sep-18	1055	14.6	13.6	6.9	5070	212	7.15	5400	0.12	<0.001	1.15	<0.001	0.08	<0.0001	<0.001	<0.001	0.003	0.22	0.001	0.016	0.001	<0.01	<0.01	0.018	<0.0001
6-Dec-18	1210	14.21	13.21	6.8	5280	216																			

Bore – MP2 cont.

Date	Time	Major Cations				Total Cations - meq/L	Major Anions					Total Anions - meq/L	Ionic Balance	Ammonia as Nitrogen (N) (mg/L)	Nitrite as N (mg/L)	Nitrate as N (mg/L)	NOX as N (mg/L)	Total Dissolved Solids	Comments	
		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								
		-	-	180	-		250	250		-	-			0.5	3	50	-	1000		
	1000	-	-	-	-		-	1000		-	-			-	-	30	400	-	-	
03-Sep-08	1650																			
13-Oct-08	1255																			
23-Oct-08	0930																			
29-Oct-08	174	101	529	5	40.1	926	45	<1	<1	559	559	38.2	2.37	0.02						
23-Jan-09	1741																			
22-Jun-09	1200	254	150	646	7	53.3	1490	61	<1	<1	538	538	54.1	0.74	<0.01				3040	
15-Sep-09	1520																			
30-Nov-09	1030	247	161	593	7	51.6	1390	19.5	<1	<1	446	446	48.4	3.16	<0.01	0.6	0.6			
25-Feb-10	1320																			
03-May-10	1130	237	150	584	6	49.8	1510	28.6	<1	<1	527	527	53.8	3.88	0.01				3120	
26-Aug-10	1040																			
08-Nov-10	1355																			
07-Mar-11	1320	247	162	611	9	52.5	1390	22	<1	<1	529	529	50.1	2.3	0.01	0.77	0.78			
03-May-11	1210																			
30-Aug-11	1130	243	152	600	7	50.9	1490	20	<1	<1	477	477	52	1.03	<0.01	<0.01	0.47	0.47	2960	
04-Nov-11	1140																			
21-Mar-12	0945	272	168	639	9	55.4	1530	25	<1	<1	500	500	53.7	1.61	0.18	0.03	0.84	0.87	3770	
23-May-12	1440																			
27-Aug-12	100	256	157	603	8	52.1	1370	23	<1	<1	548	548	50.1	2.01	0.1	0.03	2.06	2.09	3320	
26-Nov-12	1045																			
12-Mar-13	1040	256	163	612	8	53	1350	18	<1	<1	498	498	48.4	4.55	0.01	<0.01	1.48	1.48	3750	
20-Jun-13	1120																			
28-Aug-13	1200	254	169	583	9	52.2	1370	19	<1	<1	504	504	49.1	3.03	0.02				3140	
11-Dec-13	1240																			
26-Feb-14	1310	236	151	495	8	45.9	1160	15	<1	<1	475	475	42.5	3.86	0.07				3650	
12-Jun-14	1330																			
10-Sep-14	1050	243	157	549	7	49.1	1300	19	<1	<1	551	551	48.1	1.06	0.01	<0.01	1.87	1.87	3270	
28-Nov-14	835																			
03-Mar-15	0955	255	163	590	7	52	1480	18	<1	<1	537	537	52.8	0.83	0.02	<0.01	2.12	2.12	3890	
29-May-15	0925																			
02-Sep-15	1425	271	160	631	7	54.3	1030	17	<1	<1	480	480	39	16.4	<0.01	<0.01	2.12	2.12	3390	
07-Dec-15	1105																			
02-Mar-16	1310	254	174	604	7	53.4	1370	18	<1	<1	473	473	48.5	4.88	0.05	<0.01	2.06	2.06	3630	
24-May-16	1400																			
07-Sep-16	1315																			
30-Nov-16	1155																			
21-Mar-17	1220	264	148	555	6	49.6	1430	12	<1	<1	512	512	50.8	1.16	0.02	0.01	0.7	0.71	3640	
6-Jun-17	1125																			
18-Sep-17	1250	261	154	550	5	49.8	1340	11	<1	<1	565	565	49.3	0.46	0.05	<0.01	0.52	0.52	3310	
07-Dec-17	1135																			
26-Mar-18	1150	282	161	723	6	58.9	1560	12	<1	<1	567	567	55.6	2.92	0.05	<0.01	0.54	0.54	3480	
20-Jun-18	1140																			
27-Sep-18	1055	256	168	616	6	53.5	1490	12	<1	<1	458	458	514	2.02	0.1	<0.01	0.56	0.56	3740	
6-Dec-18	1210																			

Bore – MP2A

Date	Time	Depth to Stand - mbtoc	Depth to Ground - mbgl	Field Parameters			Lab Parameters		Total Metals															Mercury (Hg) - mg/L	
				pH	EC (µS/cm)	Temp. (°C)	pH	EC (µS/cm)	Aluminium (Al) - mg/L	Arsenic (As) - mg/L	Barium (Ba) - mg/L	Beryllium (Be) - mg/L	Boron (B) - mg/L	Cadmium (Cd) - 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	Selenium (Se) - mg/L	Vanadium (V) - mg/L	Zinc (Zn) - mg/L	
	DW GVs			6.5-8.0	2200	-	6.5-8.0	2200	0.2	0.007	0.7	-		0.002	0.05	-	2	0.3	0.01	0.1	0.02		-	3	0.001
	CW GVs								5	0.5	1	-		0.01	1	1	-	-	0.1	-	1		-	20	0.002
12-Mar-13	1110	12.00	11.3		1340	23.9	4.44	1380	0.38	0.011	0.351	<0.001		0.0003	0.003	0.016	0.212	3.69	0.02	0.401	0.033		<0.01	2.01	<0.0001
15-Apr-13	1000	12.10	11.4																						
27-May-13	1415	12.45	11.75	6.70																					
20-Jun-13	1245	12.5	11.8	6.90	4490	22.4	7.18	5060	0.02	0.008	1.15	<0.001		<0.0001	<0.001	0.015	0.001	6.68	<0.001	4.12	0.004		<0.01	0.006	<0.0001
29-Jul-13	1410	17.44	16.74																						
23-Aug-13	1006	17.5	16.8	7.00																					
28-Aug-13	1130	17.5	16.8		2360	21.8	5.34	2530	0.37	0.002	0.561	<0.001	0.1	0.0003	0.002	0.017	0.116	5.2	0.008	1.54	0.037	<0.01	<0.01	0.784	<0.0001
30-Sep-13	1610	17.13	16.43	7.00																					
28-Nov-13	1330	15.22	14.52	7.3																					
11-Dec-13	1240	15.03	14.33	7.3	3140	22.6																			
26-Feb-14	1245	15.5	14.8	7.1	3100	22.2	7.68	3250	0.8	0.041	0.833	<0.001	0.09	0.0016	0.046	0.01	1.19	48.8	0.074	2	0.044	<0.01	0.17	2.23	<0.0001
14-Mar-14	1530	15.6	14.9	7																					
12-Jun-14	1340	16.31	15.61	7.1	3180	20.7																			
12-Aug-14	1545	16.52	15.82	7.1																					
10-Sep-14	1110	16.4	15.7	7	3210	21.7	7.47	3320	0.06	0.003	0.67	<0.001	0.08	0.0002	0.003	0.003	0.035	0.28	<0.001	1.75	0.02	<0.01	<0.01	0.147	
28-Nov-14	850	15.17	14.47	7	3220	21.9																			
03-Mar-15	1015	14.8	14.1	7	3280	21.9	7.7	3550	0.04	0.002	0.706	<0.001	0.1	0.0002	0.003	0.003	0.048	0.36	<0.001	1.46	0.029	<0.01	<0.01	0.158	<0.0001
29-May-15	0940	14.31	13.61	7.1	3540	20.6																			
02-Sep-15	1405	14	13.3	7	3470	21.8	7.52	3500	0.12	0.002	0.796	<0.001	0.1	<0.0001	<0.001	<0.001	0.018	0.21	<0.001	0.044	0.002	<0.01	0.02	0.126	<0.0001
07-Dec-15	1130	14.09	13.39	7	3410	22																			
02-Mar-16	1335	14.2	13.5	7.1	3370	23.3	7.59	3440	0.09	0.002	0.765	<0.001	0.1	<0.0001	<0.001	<0.001	0.024	0.29	0.001	0.035	<0.001	<0.01	0.02	0.049	<0.0001
24-May-16	1415	14.22	13.52	7	3321	21.6																			
07-Sep-16	1340	14.51	13.81	7	3180	22.5																			
30-Nov-16	1010	12.7	12	7	3060	22.3																			
21-Mar-17	1240	12.64	11.94	7.1	3190	23.3	7.61	3310	0.12	0.003	0.738	<0.001	0.1	<0.0001	<0.001	<0.001	0.042	0.34	<0.001	0.031	0.002	<0.01	0.02	0.078	<0.0001
6-Jun-18	1145	12.87	12.07	7.1	3310	20.8																			
18-Sep-17	1350	13.2	12.5		3280	21.9	7.77	3360	0.03	0.002	0.78	<0.001	0.1	<0.0001	0.001	<0.001	0.049	<0.05	<0.001	0.003	0.002	<0.01	0.03	0.014	<0.0001
07-Dec-17	1155	13.4	12.7	7	3270	21.8																			
26-Mar-18	1215	13.8	13.1	7.1	3290	20.8	7.46	3230	0.09	0.003	0.72	<0.001	0.11	<0.0001	<0.001	<0.001	0.015	0.19	<0.001	0.012	0.002	<0.01	0.02	0.03	<0.0001
20-Jun-18	1200	14.19	13.49	7	3170	20.5																			
27-Sep-18	1115	14.5	13.8	7	2990	21.1	7.38	3130	0.01	0.003	0.771	<0.001	0.11	<0.0001	<0.001	<0.001	0.008	<0.05	<0.001	0.007	<0.001	<0.01	0.03	0.011	<0.0001
6-Dec-18	1245	14.9	14.2	6.9	3090	22																			

Bore – MP2A cont.

Date	Time	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	Comments
		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							
DW GVs	-	-	180	-		250	250		-	-				0.5	3	50	-	1000	
CW GVs	1000	-	-	-		-	1000		-	-				-	30	400	-	-	
12-Mar-13	1110	61	29	234	21	16.2	208	20	<1	<1	<1	<1	6.28	44	0.03	0.02	0.22	0.24	2990
15-Apr-13	1000																		
27-May-13	1415																		
20-Jun-13	1245	226	140	554	8	47.1	1190	16	<1	<1	466	466	43.2	4.31	0.78	<0.01	0.01	0.01	3090
29-Jul-13	1410																		
23-Aug-13	1006																		
28-Aug-13	1130	112	66	312	15	25	604	<1	<1	<1	278	278	22.6	5.01	0.08				1990
30-Sep-13	1610																		
28-Nov-13	1330																		
11-Dec-13	1240																		
26-Feb-14	1245	146	79	323	13	28.2	668	5	<1	<1	489	489	28.7	0.96	0.84				1970
14-Mar-14	1530																		
12-Jun-14	1340																		
12-Aug-14	1545																		
10-Sep-14	1110	146	84	373	12	30.7	761	10	<1	<1	543	543	32.5	2.84	1.08	0.17	0.01	0.18	1970
28-Nov-14	850																		
03-Mar-15	1015	159	83	421	9	33.3	721	18	<1	<1	520	520	31.1	3.42	<0.01	<0.01	0.7	0.7	2150
29-May-15	0940																		
02-Sep-15	1405	178	77	507	4	37.4	608	46	<1	<1	566	566	29.4	11.9	0.02	<0.01	4.34	4.34	1980
07-Dec-15	1130																		
02-Mar-16	1335	137	73	478	3	33.7	750	52	<1	<1	554	554	33.3	0.59	0.02	<0.01	3.95	3.95	2120
24-May-16	1415																		
07-Sep-16	1340																		
30-Nov-16	1010																		
21-Mar-17	1240	141	68	455	3	32.5	712	46	<1	<1	556	556	32.2	0.54	0.02	0.02	4.08	4.1	1980
6-Jun-18	1145																		
18-Sep-17	1350	142	59	407	3	29.7	685	49	<1	<1	650	650	33.3	5.72	0.02	<0.01	3.6	3.6	1930
07-Dec-17	1155																		
26-Mar-18	1215	158	63	569	3	37.9	745	48	<1	<1	671	671	35.4	3.38	0.02	<0.01	3.7	3.7	1750
20-Jun-18	1200																		
27-Sep-18	1115	142	62	465	3	32.5	671	52	<1	<1	542	542	30.8	2.61	<0.01	<0.01	4.22	4.22	1930
6-Dec-18	1245																		

Bore – MP3

Date	Time	Depth to Stand - mbtoc	Depth to Ground - mbgl	Field Parameters			Lab Parameters		Total Metals															Mercury (Hg) - mg/L	
				pH	EC (µS/cm)	Temp. (°C)	pH	EC (µS/cm)	Aluminium (Al) - mg/L	Arsenic (As) - mg/L	Barium (Ba) - mg/L	Beryllium (Be) - mg/L	Boron (B) - mg/L	Cadmium (Cd) - 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	Selenium (Se) - mg/L	Vanadium (V) - mg/L	Zinc (Zn) - mg/L	
DW GVs				6.5-8.0	2200	-	6.5-8.0	2200	0.2	0.007	0.7	-		0.002	0.05	-	2	0.3	0.01	0.1	0.02	-	3	0.001	
CW GVs									5	0.5	1	-		0.01	1	1	-	-	0.1	-	1	-	-	20	0.002
04-Sep-08	1130	12.75	11.81																						
13-Oct-08	1000	10.00	9.06																						
23-Oct-08	0830	18.3	17.36																						
29-Oct-08																									
23-Jan-09	1800	19.24	18.3																						
22-Jun-09	1240		See comments																						
15-Sep-09	1505		See comments																						
30-Nov-09	1220		See comments																						
25-Feb-10	1140		See comments																						
03-May-10	1050		See comments																						
26-Aug-10	1000		See comments																						
08-Nov-10	1400		See comments																						
07-Mar-11	1150		See comments																						
03-May-11	1315		See comments																						
30-Aug-11	1000		See comments																						
04-Nov-11	1040		See comments																						
20-Mar-12	0950		See comments																						
23-May-12	1000		See comments																						
27-Aug-12	1010		See comments																						
26-Nov-12	0940		See comments																						
12-Mar-13	0930	19.2	18.26																						
12-Jun-13	1150	19.19	18.25																						
28-Aug-13	1020	19.07	18.13																						
11-Dec-13	1145	19.2	18.26																						
24-Feb-14	1410		See comments																						
12-Jun-14	1035	19.21	18.27																						
27-Nov-14	1050		See comments																						
28-May-15	1030		See comments																						
02-Sep-15	1130		See comments																						
07-Dec-15	9:55		See comments																						
02-Mar-16	0940		See comments																						
24-May-16	950		See comments																						
07-Sep-16	10:15		See comments																						
30-Nov-16	9:45		See comments																						
07-Dec-16	945		See comments																						
26-Mar-17	1010		See comments																						
20-Jun-17	945		See comments																						
27-Sep-17	930		See comments																						
07-Dec-17	945		See comments																						
26-Mar-18	1010		See comments																						
20-Jun-18	445		See comments																						
27-Sep-18	930		See comments																						
06-Dec-18	1050		See comments																						

Bore – MP3 cont.

Date	Time	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	Comments
		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								
DW GVs	-	-	-	180	-	250	250	-	-	-	-	0.5	3	50	-	1000			
CW GVs	1000	-	-	-	-	-	1000	-	-	-	-	-	30	400	-	-	-		
04-Sep-08	1130																		
13-Oct-08	1000																		
23-Oct-08	0830																		
29-Oct-08																			
23-Jan-09	1800																		
22-Jun-09	1240																		Dry
15-Sep-09	1505																		Dry
30-Nov-09	1220																		Dry
25-Feb-10	1140																		Dry
03-May-10	1050																		Dry
26-Aug-10	1000																		Dry
08-Nov-10	1400																		Dry
07-Mar-11	1150																		Mud at bottom of bore
03-May-11	1315																		Dry
30-Aug-11	1000																		Dry
04-Nov-11	1040																		Dry
20-Mar-12	0950																		Dry
23-May-12	1000																		Dry
27-Aug-12	1010																		Dry
26-Nov-12	0940																		Mud at bottom of bore
12-Mar-13	0930																		No sample
12-Jun-13	1150																		
28-Aug-13	1020																		
11-Dec-13	1145																		No sample - mud at bottom
24-Feb-14	1410																		Dry
12-Jun-14	1035																		No sample - mud at bottom
27-Nov-14	1050																		Dry
28-May-15	1030																		Dry
02-Sep-15	1130																		Dry
07-Dec-15	9:55																		Dry
02-Mar-16	0940																		Dry
24-May-16	950																		Dry
07-Sep-16	10:15																		Dry
30-Nov-16	9:45																		Dry
07-Dec-16	945																		Dry
26-Mar-17	1010																		Dry
20-Jun-17	945																		Dry
27-Sep-17	930																		Dry
07-Dec-17	945																		Dry
26-Mar-18	1010																		Dry
20-Jun-18	445																		Dry
27-Sep-18	930																		Dry
06-Dec-18	1050																		Dry

Bore – MP3A

Date	Time	Depth to Stand - mbtoc	Depth to Ground - mbgl	Field Parameters			Lab Parameters		Total Metals																Mercury (Hg) - mg/L
				pH	EC (µS/cm)	Temp. (°C)	pH	EC (µS/cm)	Aluminium (Al) - mg/L	Arsenic (As) - mg/L	Barium (Ba) - mg/L	Beryllium (Be) - mg/L	Boron (B) - mg/L	Cadmium (Cd) - 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	Selenium (Se) - mg/L	Vanadium (V) - mg/L	Zinc (Zn) - mg/L	
	DW GVs			6.5-8.0	2200	-	6.5-8.0	2200	0.2	0.007	0.7	-		0.002	0.05	-	2	0.3	0.01	0.1	0.02		-	3	0.001
	CW GVs								5	0.5	1	-		0.01	1	1	-	-	0.1	-	1		-	20	0.002
12-Mar-13	0950	22.90	22.3	7.48	1280	22.3	7.82	1330	1.14	0.007	0.141	<0.001		<0.0001	0.004	0.001	0.051	3.82	0.006	0.087	0.005		0.05	0.24	<0.0001
15-Apr-13	0945	22.98	22.38																						
27-May-13	1315	22.98	22.38																						
12-Jun-13	1220	22.85	22.25	7.79	1225	22.1																			
29-Jul-13	1425	22.94	22.34																						
23-Aug-13	0953	22.92	22.32																						
28-Aug-13	1040	22.9	22.3	7.8	1250	22.6	8.12	1330	2.21	0.005	0.134	<0.001	0.07	<0.0001	0.003	0.002	0.095	2.11	0.008	0.094	0.004	<0.01	0.04	0.154	<0.0001
30-Sep-13	1600	22.92	22.32																						
28-Nov-13	1345	22.86	22.26																						
11-Dec-13	1200	22.87	22.27	7.9	1305	22.1																			
26-Feb-14	0950	22.9	22.3	8.1	1280	22.7	8.37	1340	0.75	0.004	0.123	<0.001	0.07	<0.0001	0.027	<0.001	0.091	0.86	0.008	0.077	0.008	<0.01	0.03	0.078	<0.0001
14-Mar-14	1445	22.86	22.26																						
17-Jun-14	1050	22.88	22.28	7.8	1284	21.3																			
10-Sep-14	1000	22.9	22.3	7.8	1290	22.7	7.98	1330	0.05	0.005	0.118	<0.001	0.05	<0.0001	<0.001	<0.001	0.01	0.07	<0.001	0.089	<0.001	<0.01	0.03	0.021	
27-Nov-14	1110	22.88	22.28	7.9	1295	23																			
03-Mar-15	1340	22.8	22.2	8	1310	23.4	8.13	1440	0.04	0.005	0.085	<0.001	0.06	<0.0001	0.001	<0.001	0.008	0.09	<0.001	0.008	0.002	<0.01	0.03	0.05	<0.0001
28-May-15	1050	22.87	22.27	7.9	1291	21.3																			
02-Sep-15	1125	22.9	22.3	7.7	1290	20.5	8.04	1280	0.08	0.005	0.088	<0.001	0.07	<0.0001	<0.001	<0.001	0.006	0.11	<0.001	0.005	<0.001	<0.01	0.03	0.063	<0.0001
07-Dec-15	1020	22.87	22.27	7.8	1292	22.6																			
02-Mar-16	1005	22.8	22.2	7.7	1280	23.2	8.11	1300	0.05	0.005	0.1	<0.001	0.06	<0.0001	<0.001	<0.001	0.014	0.1	<0.001	0.018	<0.001	<0.01	0.03	0.029	<0.0001
24-May-16	1015	22.81	22.21	7.7	1296	21.6																			
07-Sep-16	1040	22.81	22.21	7.7	1251	21.8																			
30-Nov-16	1000	22.82	22.22	7.8	1265	22.6																			
21-Mar-17	1120	22.82	22.22	7.8	1320	23.1	8.16	1300	0.05	0.005	0.088	<0.001	0.06	<0.0001	<0.001	<0.001	0.024	0.2	<0.001	0.012	<0.001	<0.01	0.03	0.044	<0.0001
14-Sep-17	1200	22.8	22.2	7.7	1340	21	8.1	1330	0.06	0.005	0.085	<0.001	0.05	<0.0001	<0.001	<0.001	0.006	0.1	<0.001	0.006	<0.001	<0.01	0.03	0.13	<0.0001
07-Dec-17	1005	22.71	22.11	7.7	1330	22.8																			
26-Mar-18	1035	22.8	22.2	7.9	1320	20.7	8.02	1310	0.21	0.004	0.096	<0.001	0.06	<0.0001	0.001	<0.001	0.004	0.28	<0.001	0.028	0.002	<0.01	0.03	0.038	<0.0001
20-Jun-18	1010	22.8	22.2	7.8	1320	20.9																			
27-Sep-18	1000	22.8	22.2	7.8	1260	21.5	7.93	1340	0.04	0.005	0.092	<0.001	0.06	<0.0001	<0.001	<0.001	0.002	<0.05	<0.001	0.008	<0.001	<0.01	0.03	0.011	<0.0001
06-Dec-18	955	22.74	22.14	7.8	1313	20.8																			

Bore – MP3A cont.

Date	Time	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	Comments		
		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										
DW GVs	-	-	180	-		250	250	-	-				0.5	3	50	-	1000					
CW GVs	1000	-	-	-		-	1000		-	-			-	30	400	-	-					
12-Mar-13	0950	18	15	312	3	15.8	124	63	<1	<1	478	478	14.4	4.66	0.04	<0.01	0.28	0.28	834			
15-Apr-13	0945																					
27-May-13	1315																					
12-Jun-13	1220																					
29-Jul-13	1425																					
23-Aug-13	0953																					
28-Aug-13	1040	17	15	272	3	14	108	48	<1	<1	475	475	13.5	1.6	<0.01				796			
30-Sep-13	1600																					
28-Nov-13	1345																					
11-Dec-13	1200																					
26-Feb-14	0950	13	12	294	2	14.5	99	44	<1	15	439	454	12.8	6.17	<0.01				761			
14-Mar-14	1445																					
17-Jun-14	1050																					
10-Sep-14	1000	12	11	245	1	12.2	104	42	<1	<1	529	529	14.4	8.3	<0.01	<0.01	0.77	0.77	760			
27-Nov-14	1110																					
03-Mar-15	1340	20	16	277	2	14.4	123	47	<1	<1	503	503	14.5	0.34	0.03	<0.01	0.74	0.74	806			
28-May-15	1050																					
02-Sep-15	1125	20	15	288	2	14.8	61	39	<1	<1	464	464	11.8	11.2	0.03	<0.01	0.8	0.8	710			
07-Dec-15	1020																					
02-Mar-16	1005	15	13	292	2	14.6	101	42	<1	<1	464	464	13	5.67	0.04	<0.01	0.74	0.74	685			
24-May-16	1015																					
07-Sep-16	1040																					
30-Nov-16	1000																					
21-Mar-17	1120	20	15	276	2	14.3	148	34	<1	<1	491	491	13.6	2.6	<0.01	<0.01	0.72	0.72	778			
14-Sep-17	1200	22	14	290	2	14.9	104	34	<1	<1	483	483	13.3	5.46	0.02	<0.01	0.91	0.91	734			
07-Dec-17	1005																					
26-Mar-18	1035	19	13	324	2	16.2	116	34	<1	<1	888	888	14.9	3.97	0.03	<0.01	0.74	0.74	796			
20-Jun-18	1010																					
27-Sep-18	1000	20	16	292	2	15.1	108	38	<1	<1	436	436	12.5	9.12	0.02	<0.01	0.77	0.77	692			
06-Dec-18	955																					

Bore – MP4

Date	Time	Depth to Stand - mbtoc	Depth to Ground - mbgl	Field Parameters			Lab Parameters		Total Metals															Mercury (Hg) - mg/L	
				pH	EC (µS/cm)	Temp. (°C)	pH	EC (µS/cm)	Aluminium (Al) - mg/L	Arsenic (As) - mg/L	Barium (Ba) - mg/L	Beryllium (Be) - mg/L	Boron (B) - mg/L	Cadmium (Cd) - 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	Selenium (Se) - mg/L	Vanadium (V) - mg/L	Zinc (Zn) - mg/L	
DW GVs				6.5-8.0	2200	-	6.5-8.0	2200	0.2	0.007	0.7	-		0.002	0.05	-	2	0.3	0.01	0.1	0.02		-	3	0.001
CW GVs									5	0.5	1	-		0.01	1	1	-	-	0.1	-	1		-	20	0.002
03-Sep-08	1715	23.60	22.62																						
13-Oct-08	1045	24.00	23.02																						
22-Oct-08	1555	24.15	23.17																						
29-Oct-08																									
23-Jan-09	1810	25.14	24.16																						
22-Jun-09	1247	see comments																							
15-Sep-09	1455	see comments																							
30-Nov-09	1220	see comments																							
25-Feb-10	1035	see comments																							
03-May-10	1000	see comments																							
26-Aug-10	830	see comments																							
08-Nov-11	1415	see comments																							
07-Mar-11	1040	25.1	24.12																						
03-May-11	1330	see comments																							
30-Aug-11	0915	see comments																							
04-Nov-11	0950	see comments																							
20-Mar-12	0900	see comments																							
23-May-12	0840	see comments																							
27-Aug-12	915	see comments																							
26-Nov-12	0845	see comments																							
12-Jun-13	0850	see comments																							
28-Aug-13	0650	see comments																							
11-Dec-13	1130	see comments																							
26-Feb-14	0835	see comments																							
12-Jun-14	0830	see comments																							
27-Nov-14	840	see comments																							
28-May-15	0920	see comments																							
07-Dec-15	850	see comments																							
02-Mar-16	0840	see comments																							
24-May-16	850	see comments																							
07-Sep-16	900	see comments																							
30-Nov-16	845	see comments																							
21-Mar-17	1010	see comments																							
06-Jun-17	830	see comments																							
27-Sep-17	830	see comments																							
07-Dec-17	840	see comments																							
26-Mar-18	900	see comments																							
20-Jun-18	830	see comments																							
27-Sep-18	830	see comments																							
06-Dec-18	845	see comments																							

Bore – MP4 cont.

Date	Time	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	Comments	
		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									
DW GVs	-	-	180	-		250	250		-	-					0.5	3	50	-	1000		
CW GVs	1000	-	-	-		-	1000		-	-					-	30	400	-	-		
03-Sep-08	1715																				
13-Oct-08	1045																				
22-Oct-08	1555																				
29-Oct-08																					
23-Jan-09	1810																				
22-Jun-09	1247																				Dry
15-Sep-09	1455																				Dry
30-Nov-09	1220																				Dry
25-Feb-10	1035																				Dry
03-May-10	1000																				Dry
26-Aug-10	830																				Dry
08-Nov-11	1415																				Dry
07-Mar-11	1040																				Mud at bottom of bore
03-May-11	1330																				Dry
30-Aug-11	0915																				Dry
04-Nov-11	0950																				Dry
20-Mar-12	0900																				Dry
23-May-12	0840																				Dry
27-Aug-12	915																				Dry
26-Nov-12	0845																				Dry
12-Jun-13	0850																				Dry
28-Aug-13	0650																				Dry
11-Dec-13	1130																				Dry
26-Feb-14	0835																				Dry
12-Jun-14	0830																				Dry
27-Nov-14	840																				Dry
28-May-15	0920																				Dry
07-Dec-15	850																				Dry
02-Mar-16	0840																				Dry
24-May-16	850																				Dry
07-Sep-16	900																				Dry
30-Nov-16	845																				Dry
21-Mar-17	1010																				Dry
06-Jun-17	830																				Dry
27-Sep-17	830																				Dry
07-Dec-17	840																				Dry
26-Mar-18	900																				Dry
20-Jun-18	830																				Dry
27-Sep-18	830																				Dry
06-Dec-18	845																				Dry

Bore – MP4A

Date	Time	Depth to Stand - mbtoc	Depth to Ground - mbgl	Field Parameters			Lab Parameters		Total Metals															Mercury (Hg) - mg/L	
				pH	EC (µS/cm)	Temp. (°C)	pH	EC (µS/cm)	Aluminium (Al) - mg/L	Arsenic (As) - mg/L	Barium (Ba) - mg/L	Beryllium (Be) - mg/L	Boron (B) - mg/L	Cadmium (Cd) - 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	Selenium (Se) - mg/L	Vanadium (V) - mg/L	Zinc (Zn) - mg/L	
	DW GVs			6.5-8.0	2200	-	6.5-8.0	2200	0.2	0.007	0.7	-		0.002	0.05	-	2	0.3	0.01	0.1	0.02	-	3	0.001	
	CW GVs								5	0.5	1	-		0.01	1	1	-	-	0.1	-	1	-	-	20	0.002
28-Nov-13	1400	29.97	29.12																						
12-Dec-13	1045	30.03	29.18	6.8	3210	28.4																			
26-Feb-14	0920	30.2	29.35	7.1	3660	21.9	7.98	3820	4.56	0.013	1.36	<0.001	0.06	<0.0001	0.014	0.008	0.067	6.7	0.009		4.64	0.016	<0.01	0.22	<0.0001
14-Mar-14	1430	30.15	29.30																						
12-Jun-14	0845	30.18	29.33	7.1	3690	20.5																			
06-Aug-14	1225	29.97	29.12																						
26-Aug-14	1235	29.97	29.36																						
10-Sep-14	0900	29.97	29.35	7.2	3720	20.7	7.66	3900	0.07	0.008	1.27	<0.001	<0.05	<0.0001	<0.001	<0.001	0.001	0.59	<0.001	<0.01	4.21	0.002	<0.01	0.015	
27-Nov-14	920	29.97	29.30	7.2	3700	22.1																			
04-Mar-15	1200	29.97	29.25	7.3	4420	22.6	7.51	4580	<0.01	0.006					<0.001		0.003		<0.001		0.79	0.002		0.018	<0.0001
28-May-15	0940	29.97	29.32	7.2	3870	21.2																			
03-Sep-15	925	29.97	20.05	7.3	3870	20.1	7.65	4000	0.03	0.006	1.14	<0.001	0.05	<0.0001	0.005	<0.001	0.002	0.24	<0.001	<0.01	1.33	0.002	<0.01	0.02	<0.0001
07-Dec-15	935	29.97	29.21	7.4	3900	22.4																			
02-Mar-16	925	29.97	29.25	7.5	3820	22.4	7.86	4030	0.05	0.004	1.1	<0.001	<0.05	<0.0001	<0.001	<0.001	0.017	0.17	<0.001	<0.01	1.16	0.001	<0.01	0.037	<0.0001
24-May-16	925	29.97	29.20	7.5	4010	20.3																			
07-Sep-16	930	29.97	29.26	7.5	3820	21.6																			
30-Nov-16	910	29.97	29.11	7.5	3840	22																			
21-Mar-17	1025	29.97	29.12	7.5	3960	22.6	7.97	4100	0.86	0.003	1.14	<0.001	<0.05	0.0002	0.002	0.001	0.091	6.88	0.012	2.01	0.005	<0.01	<0.01	0.373	<0.0001
06-Jun-17	915	29.97	29.12	7.6	3980	19.6																			
14-Sep-17	1015	29.97	29.05	7.7	3970	20.5	8.02	4140	0.02	<0.001	0.976	<0.001	<0.05	<0.0001	<0.001	<0.001	<0.001	0.33	<0.001	<0.01	1.27	0.001	<0.01	0.012	<0.0001
07-Dec-17	905	29.97	29.16	7.6	4040	23																			
26-Mar-18	930	29.97	29.05	7.7	4180	21.3	7.95	4140	0.17	0.001	0.929	<0.001	0.05	<0.0001	<0.001	<0.001	0.006	0.48	0.001	<0.01	1.22	0.002	<0.01	0.05	<0.0001
20-Jun-18	925	29.97	29.12	7.6	4220	20.7																			
27-Sep-18	845	29.97	29.05	7.2	4640	21.1	7.59	4960	0.1	<0.001	0.829	<0.001	0.05	<0.0001	<0.001	<0.001	0.003	0.18	0.001	<0.01	1.47	0.001	<0.01	0.02	<0.0001
06-Dec-18	900	29.97	29.12	7.5	4280	22																			

Bore – MP4A cont.

Date	Time	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	Comments	
		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									
DW GVs	-	-	180	-		250	250		-	-			0.5	3	50	-	1000				
CW GVs	1000	-	-	-		-	1000		-	-			-	30	400	-	-				
28-Nov-13	1400																				
12-Dec-13	1045																				Need Purging
26-Feb-14	0920	52	26	829	4	40.9	629	1	<1	<1	1000	1000	37.7	3.97	0.06					2270	
14-Mar-14	1430																				
12-Jun-14	0845																				
06-Aug-14	1225																				
26-Aug-14	1235																				
10-Sep-14	0900	44	23	697	3	34.5	700	<1	<1	<1	1190	1190	43.5	11.6	0.01	<0.01	<0.01	<0.01	2120		
27-Nov-14	920																				
04-Mar-15	1200	41	28	975	4	46.9	996	45	<1	<1	919	919	47.4	0.6		<0.01	0.03	0.03			
28-May-15	0940																				
03-Sep-15	925	47	27	857	4	41.9	489	4	<1	<1	1150	1150	36.8	6.42	0.27	<0.01	0.33	<0.01	2130		
07-Dec-15	935																				
02-Mar-16	925	29	25	858	4	40.9	707	6	<1	<1	992	992	39.9	1.24	0.35	<0.01	<0.01	<0.01	2250		
24-May-16	925																				
07-Sep-16	930																				
30-Nov-16	910																				
21-Mar-17	1025	54	29	853	5	42.3	733	<1	<1	<1	1060	1060	41.8	0.54	0.57	<0.01	0.04	0.04	2480		
06-Jun-17	915																				
14-Sep-17	1015	51	27	974	4	47.2	724	5	<1	<1	1090	1090	42.3	5.51	0.47	<0.01	0.01	0.01	2420		
07-Dec-17	905																				
26-Mar-18	930	55	26	1060	5	51.1	801	5	<1	<1	1140	1140	45.5	5.84	0.42	<0.01	0.1	0.1	233		
20-Jun-18	925																				
27-Sep-18	845	39	27	1060	4	50.4	1120	44	<1	<1	736	736	47.2	3.24	0.75	<0.01	0.04	0.04	2610		
06-Dec-18	900																				

Bore – MP4B

Date	Time	Depth to Stand - mbtoc	Depth to Ground - mbgl	Field Parameters			Lab Parameters		Total Metals															Mercury (Hg) - mg/L	
				pH	EC (µS/cm)	Temp. (°C)	pH	EC (µS/cm)	Aluminium (Al) - mg/L	Arsenic (As) - mg/L	Barium (Ba) - mg/L	Beryllium (Be) - mg/L	Boron (B) - mg/L	Cadmium (Cd) - 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	Selenium (Se) - mg/L	Vanadium (V) - mg/L	Zinc (Zn) - mg/L	
	DW GVs			6.5-8.0	2200	-	6.5-8.0	2200	0.2	0.007	0.7	-		0.002	0.05	-	2	0.3	0.01	0.1	0.02		-	3	0.001
	CW GVs								5	0.5	1	-		0.01	1	1	-	-	0.1	-	1		-	20	0.002
28-Nov-13	1405	26.96	26.06																						
12-Dec-13	0850	26.77	25.87	7.30	2960	25.1																			
26-Feb-14	0850	26.1	25.2	7.50	2890	21.7	8.15	3050	0.3	0.007	0.215	<0.001	<0.05	<0.0001	0.012	<0.001	0.021	0.68	0.002	0.874	0.005	<0.01	<0.01	0.034	<0.0001
13-Mar-14	1435	26.87	25.97																						
12-Jun-14	0900	26.9	26	7.30	2960	20.3																			
06-Aug-14	1230	26.77	25.87																						
26-Aug-14	1245	26.865	25.965																						
10-Sep-14	0920	26.9	26	7.4	2950	20.7	7.96	3020	0.1	0.005	0.155	<0.001	<0.05	<0.0001	<0.001	<0.001	0.005	0.34	<0.001	0.534	0.002	<0.01	<0.01	0.016	
27-Nov-14	900	26.84	25.94	7.4	2960	21.5																			
04-Mar-15	1225	26.8	25.9	7.6	2960	23.3	7.95	3040	<0.01	0.005					<0.001		0.002	<0.05	<0.001	0.055	<0.001			0.005	<0.0001
02-May-15	1005	26.86	25.96																						
03-Sep-15	900	26.8	25.9	7.6	3020	20.1	7.6	3090	0.21	0.005	0.128	<0.001	<0.05	<0.0001	0.001	<0.001	0.009	0.28	<0.001	0.356	0.001	<0.01	<0.01	0.03	<0.0001
07-Dec-15	910	26.75	25.85	7.7	3060	22.4																			
02-Mar-16	900	26.8	25.9	7.6	3010	22.5	8.11	3100	0.04	0.005	0.116	<0.001	<0.05	<0.0001	<0.001	<0.001	0.026	0.1	<0.001	0.135	<0.001	<0.01	<0.01	0.037	<0.0001
24-May-16	900	26.56	25.66	7.6	3060	20.7																			
07-Sep-16	1000	26.75	25.85	7.7	2920	21.8																			
30-Nov-16	930	26.65	25.75	7.7	2960	22.1																			
21-Mar-17	1045	26.7	25.8	7.9	3020	22.3	8.22	3110	0.08	0.004	0.124	<0.001	<0.05	<0.0001	<0.001	<0.001	0.027	0.26	<0.001	0.122	0.001	<0.01	<0.01	0.049	<0.0001
6-Jun-17	845	26.7	25.8	7.9	3020	19.4																			
14-Sep-17	1035	26.6	25.7	7.9	3010	19.8	8.01	4140	0.09	0.003	0.124	<0.001	<0.05	<0.0001	0.015	<0.001	0.005	0.34	<0.001	0.144	0.002	<0.01	<0.01	0.019	<0.0001
07-Dec-17	925	26.65	25.75	7.9	3060	22.1																			
26-Mar-18	955	26.6	25.7	8	3120	21.2	8.1	3080	0.22	0.004	0.108	<0.001	<0.05	<0.0001	0.001	<0.001	0.008	0.26	<0.001	0.277	0.002	<0.01	<0.01	0.012	<0.0001
20-Jun-18	900	26.64	25.74	7.8	3090	20.6																			
27-Sep-18	915	26.6	25.7	8	2930	21.5	8.05	3110	0.06	0.004	0.114	<0.001	<0.05	0.0002	<0.001	<0.001	0.005	0.12	<0.001	0.176	0.002	<0.01	<0.01	0.008	<0.0001
6-Dec-18	920	26.59	25.69	7.6	3100	21.6																			

Bore – MP4B cont.

Date	Time	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	Comments	
		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									
DW GVs	-	-	180	-		250	250		-	-				0.5	3	50	-	1000		
CW GVs	1000	-	-	-		-	1000		-	-				-	30	400	-	-		
28-Nov-13	1405																			
12-Dec-13	0850																			Need Purging
26-Feb-14	0850	8	8	720	2	32.4	492	145	<1	<1	640	640	29.7	4.37	0.22				1720	
13-Mar-14	1435																			
12-Jun-14	0900																			
06-Aug-14	1230																			Logger on ground
26-Aug-14	1245																			
10-Sep-14	0920	9	9	613	2	27.9	509	126	<1	<1	723	723	31.4	5.98	0.04	<0.01	0.02	0.02	1680	
27-Nov-14	900																			
04-Mar-15	1225	7	7	687	2	30.9	532	125	<1	<1	698	698	31.6	1.16		<0.01	0.03	0.03		
02-May-15	1005																			
03-Sep-15	900	9	9	691	2	31.3	384	121	<1	<1	734	734	28	5.84	0.03	<0.01	0.02	0.02	1630	
07-Dec-15	910																			
02-Mar-16	900	8	8	695	2	31.3	529	119	<1	<1	639	639	30.2	1.68	0.08	<0.01	0.05	0.05	1870	
24-May-16	900																			
07-Sep-16	1000																			
30-Nov-16	930																			
21-Mar-17	1045	12	11	670	2	30.7	524	112	<1	<1	629	629	29.7	1.68	0.02	<0.01	0.02	0.02	1860	
6-Jun-17	845																			
14-Sep-17	1035	14	11	801	2	36.5	514	107	<1	<1	1040	1040	37.5	1.36	0.01	<0.01	0.02	0.02	2390	
07-Dec-17	925																			
26-Mar-18	955	12	10	844	2	38.2	552	136	<1	<1	775	775	33.9	5.96	0.02	<0.01	0.02	0.02	1800	
20-Jun-18	900																			
27-Sep-18	915	11	10	731	2	33.2	557	126	<1	<1	624	624	30.8	3.77	0.05	<0.01	0.03	0.03	1780	
6-Dec-18	920																			

Bore – MP5

Date	Time	Depth to Stand - mbtoc	Depth to Ground - mbgl	Field Parameters		Lab Parameters		Total Metals														Mercury (Hg) - mg/L		
				pH	EC (µS/cm)	Temp. (°C)	pH	EC (µS/cm)	Aluminium (Al) - mg/L	Arsenic (As) - mg/L	Barium (Ba) - mg/L	Beryllium (Be) - mg/L	Boron (B) - mg/L	Cadmium (Cd) - 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	Selenium (Se) - mg/L	Vanadium (V) - mg/L	Zinc (Zn) - mg/L
	DW GVs			6.5-8.0	2200	-	6.5-8.0	2200	0.2	0.007	0.7	-		0.002	0.05	-	2	0.3	0.01	0.1	0.02	-	3	0.001
	CW GVs								5	0.5	1	-		0.01	1	1	-	-	0.1	-	1	-	20	0.002
04-Sep-08	0940	54.00	53.13																					
13-Oct-08	1515	53.77	52.9																					
23-Oct-08	0900	53.83	52.96																					
29-Oct-08																								
23-Jan-09	1616	55.26	54.39																					
22-Jun-09	1020	see comments																						
15-Sep-09	1608	see comments																						
30-Nov-09	0915	55.52	54.67																					
25-Feb-10	1445	55.58	54.73																					
03-May-10	1330	55.45	54.6																					
26-Aug-10	1210	55.66	54.81																					
08-Nov-10	1140	55.73	54.88																					
02-Mar-11	1130	55.7	54.85																					
03-May-11	1000	55.65	54.8																					
30-Aug-11	1330	55.74	54.89																					
04-Nov-11	1300	55.63	54.78																					
20-Mar-12	1020	55.7	54.85																					
23-May-12	1030	55.26	54.41																					
28-Aug-12	1130	56.28	55.43																					
26-Nov-12	1125	55.8	54.95																					
12-Mar-13	1300	see comments																						
12-Jun-13	1055	see comments																						
29-Aug-13	1140	see comments																						
12-Dec-13	1335	see comments																						
27-Feb-13	1200	see comments																						
12-Jun-14	1400	see comments																						
10-Sep-14	1400	see comments																						
27-Nov-14	1200	see comments																						
28-May-15	1200	see comments																						
02-Sep-15	1155	see comments																						
08-Dec-15	1300	see comments																						
02-Mar-16	1030	see comments																						
24-May-16	1040	see comments																						
07-Sep-16	1100	see comments																						
30-Nov-16	1035	see comments																						
21-Mar-17	1145	see comments																						
6-Jun-17	1020	see comments																						
18-Sep-17	940	see comments																						
07-Dec-17	1035	see comments																						
26-Mar-17	1055	see comments																						
20-Jun-17	1040	see comments																						
28-Sep-18	1130	see comments																						
6-Dec-18	1355	see comments																						

Bore – MP5 cont.

Date	Time	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	Comments
		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								
DW GV	-	-	180	-		250	250		-	-			0.5	3	50	-	1000			
CW GV	1000	-	-	-	-	-	1000		-	-			-	30	400	-	-			
04-Sep-08	0940																			
13-Oct-08	1515																			
23-Oct-08	0900																			
29-Oct-08																				
23-Jan-09	1616																			
22-Jun-09	1020																			Dry
15-Sep-09	1608																			Dry
30-Nov-09	0915																			
25-Feb-10	1445																			
03-May-10	1330																			
26-Aug-10	1210																			
08-Nov-10	1140																			
02-Mar-11	1130																			
03-May-11	1000																			
30-Aug-11	1330																			
04-Nov-11	1300																			
20-Mar-12	1020																			
23-May-12	1030																			
28-Aug-12	1130																			
26-Nov-12	1125																			
12-Mar-13	1300																			Dry
12-Jun-13	1055																			Dry
29-Aug-13	1140																			Dry
12-Dec-13	1335																			Dry
27-Feb-13	1200																			Dry
12-Jun-14	1400																			Dry
10-Sep-14	1400																			Dry
27-Nov-14	1200																			Dry
28-May-15	1200																			Dry
02-Sep-15	1155																			Dry
08-Dec-15	1300																			Dry
02-Mar-16	1030																			Dry
24-May-16	1040																			Dry
07-Sep-16	1100																			Dry
30-Nov-16	1035																			Dry
21-Mar-17	1145																			Dry
6-Jun-17	1020																			Dry
18-Sep-17	940																			Dry
07-Dec-17	1035																			Dry
26-Mar-17	1055																			Dry
20-Jun-17	1040																			Dry
28-Sep-18	1130																			Dry
6-Dec-18	1355																			Dry

Bore – MP5A

Date	Time	Depth to Stand - mbtoc	Depth to Ground - mbgl	Field Parameters		Lab Parameters		Total Metals																Mercury (Hg) - mg/L	
				pH	EC (µS/cm)	Temp. (°C)	pH	EC (µS/cm)	Aluminium (Al) - mg/L	Arsenic (As) - mg/L	Barium (Ba) - mg/L	Beryllium (Be) - mg/L	Boron (B) - mg/L	Cadmium (Cd) - 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	Selenium (Se) - mg/L	Vanadium (V) - mg/L	Zinc (Zn) - mg/L	
		DW GVs		6.5-8.0	2200	-	6.5-8.0	2200	0.2	0.007	0.7	-		0.002	0.05	-	2	0.3	0.01	0.1	0.02		-	3	0.001
		CW GVs							5	0.5	1	-		0.01	1	1	-	-	0.1	-	1		-	20	0.002
12-Mar-13	1240	63.80	63	7.33	2790	24.7	7.7	3010	0.1	0.003		0.115	<0.001	0.001	0.005	0.001	0.21	0.51	0.016	0.204	0.021		<0.01	4.94	<0.0001
15-Apr-13	1400	66.58	65.78																						
27-May-13	1250	67.91	67.11																						
12-Jun-13	1115	67.83	67.03	7.12	2800	22.4																			
29-Jul-13	1500	66.9	66.1																						
23-Aug-13	1018	67	66.2																						
29-Aug-13	1120	67.7	66.9	7	2710	23.2	7.44	2950	0.46	0.001	<0.05	0.119	<0.001	<0.0001	0.002	0.001	0.05	3.44	0.007	0.312	0.006	<0.01	<0.01	0.128	<0.0001
30-Sep-13	1630	72.05	71.25																						
28-Nov-13	1435	77.35	76.55																						
12-Dec-13	1350	77.36	76.56	7	2770	24.8																			
27-Feb-14	1130	77.4	76.6	7.2	2710	26.4	7.32	3070	6.29	0.004	0.06	0.309	0.001	0.0002	0.02	0.012	0.323	25.4	0.05	0.963	0.034	<0.01	0.05	0.537	0.0002
14-Mar-14	1400	77.32	76.52																						
17-Jun-14	1410	77.43	76.63	7	3010	22																			
06-Aug-14	1040	77.59	76.79																						
10-Sep-14	1415	77.7	76.9	6.9	2990	23.5	7.32	3150	12.8	0.01	0.05	0.367	0.001	0.0002	0.02	0.018	0.086	18.8	0.024	0.679	0.037	<0.01	0.05	0.226	
27-Nov-14	1220	78.18	77.38	7	2890	23.7																			
28-May-15	1225	79.02	78.22																						
02-Sep-15	1210	79.1	78.3																						
08-Dec-15	1310	79.12	78.32																						
02-Mar-16	1050	79.1	78.3																						
24-May-16	1105	79.06	78.26																						
07-Sep-16	1120	79.02	78.22																						
30-Nov-16	1100	79.15	78.35																						
21-Mar-17	1200	79.56	78.76																						
6-Jun-17	1040	79.55	78.75																						
18-Sep-17	950	79.58	78.78																						
07-Dec-17	1045	see comments																							
26-Mar-18	1110	see comments																							
20-Jun-18	1055	see comments																							
6-Dec-18	1415	see comments																							

Bore – MP5A cont.

Date	Time	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	Comments
		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								
DW GV's	-	-	180	-		250	250		-	-			0.5	3	50	-	1000			
CW GV's	1000	-	-	-		-	1000		-	-			-	30	400	-	-			
12-Mar-13	1240	68	68	575	23	34.6	493	44	<1	<1	828	828	31.4	4.86	1.63	<0.01	0.13	0.13	1720	
15-Apr-13	1400																			
27-May-13	1250																			
12-Jun-13	1115																			
29-Jul-13	1500																			
23-Aug-13	1018																			
29-Aug-13	1120	69	72	537	21	33.3	460	90	<1	<1	802	802	30.9	3.7	0.24				1540	
30-Sep-13	1630																			
28-Nov-13	1435																			
12-Dec-13	1350																			
27-Feb-14	1130	68	70	569	16	34.3	454	95	<1	<1	875	875	32.3	3.04	0.39				1590	
14-Mar-14	1400																			
17-Jun-14	1410																			
06-Aug-14	1040																			
10-Sep-14	1415	64	67	454	16	28.9	492	76	<1	<1	1030	1030	36	11.1	0.26	<0.01	0.01	0.01	1790	
27-Nov-14	1220																			
28-May-15	1225																		Just slimy grey mud	
02-Sep-15	1210																		Just slimy grey mud	
08-Dec-15	1310																		Just slimy grey mud	
02-Mar-16	1050																		Just slimy grey mud	
24-May-16	1105																		Just slimy grey mud	
07-Sep-16	1120																		Just slimy grey mud	
30-Nov-16	1100																		Just slimy grey mud	
21-Mar-17	1200																		Dry	
6-Jun-17	1040																		Just grey mud at bottom	
18-Sep-17	950																		Grey mud only at bottom	
07-Dec-17	1045																		Dry	
26-Mar-18	1110																		Dry. Grey mud at bottom.	
20-Jun-18	1055																		Dry	
6-Dec-18	1415																		Dry. Just grey mud at bottom	

Bore – MP6

Date	Time	Depth to Stand - mbgl	Depth to Ground - mbgl	Field Parameters			Lab Parameters			Total Metals																Mercury (Hg) - mg/L
				pH	EC (µS/cm)	Temp. (°C)	pH	EC (µS/cm)	Aluminium (Al) - mg/L	Arsenic (As) - mg/L	Barium (Ba) - mg/L	Beryllium (Be) - mg/L	Boron (B) - mg/L	Cadmium (Cd) - 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	Selenium (Se) - mg/L	Vanadium (V) - mg/L	Zinc (Zn) - mg/L		
		DW GVs (from EA)		6.5-8.0	2200	-	6.5-8.0	2200	0.2	0.007	0.7	-		0.002	0.05	-	2	0.3	0.01	0.1	0.02		-	3	0.001	
		CW GVs (from EA)							5	0.5	1	-		0.01	1	1	-	-	0.1	-	1		-	20	0.002	
12-Mar-13	1400	8.56	7.91	5.47	4120	24.3	4.89	4420	1.88	0.005	1.78	<0.001		0.0002	0.006	0.015	0.067	13	0.019	1.85	0.046		0.01	1.06	<0.0001	
15-Apr-13	1330	8.64	7.99																							
27-May-13	1345	8.77	8.12																							
20-Jun-13	1040	8.76	8.11	6.91	3170	20.8	7.43	3430	0.22	0.005	0.882	<0.001		<0.0001	<0.001	0.007	0.009	10.2	0.003	1.11	0.025		<0.01	0.027	<0.0001	
29-Jul-13	1345	8.78	8.13																							
22-Aug-13	1559	8.73	8.08																							
29-Aug-13	1030	8.79	8.14	7.1	2890	22.4	7.46	3130	0.11	0.006	0.65	<0.001	0.09	<0.0001	<0.001	0.003	0.042	8.81	0.004	0.665	0.023	<0.01	<0.01	0.125	<0.0001	
30-Sep-13	1520	8.76	8.11																							
28-Nov-13	1245	8.83	8.18																							
11-Dec-13	1430	8.82	8.17	7.2	2780	22.4																				
24-Feb-14	1245	8.94	8.29	7.4	2580	22.2	7.71	2660	0.14	0.009	0.507	<0.001	0.1	<0.0001	0.002	0.002	0.074	5.99	0.006	0.288	0.015	<0.01	<0.01	0.1	<0.0001	
12-Jun-14	1150	8.99	8.34	7.3	2360	21.4																				
10-Sep-14	1330	8.98	8.33	7.4	2260	21.2	7.7	2330	0.08	0.004	0.316	<0.001	0.09	<0.0001	<0.001	0.002	0.012	2.2	0.002	0.193	0.008	<0.01	<0.01	0.033		
27-Nov-14	1320	9.02	8.37	7.5	2160	22.7																				
03-Mar-15	1130	9.08	8.43	7.6	2110	22.3	7.89	2240	0.3	0.006	0.335	<0.001	0.09	<0.0001	0.004	0.002	0.029	4.79	0.003	0.166	0.016	<0.01	<0.01	0.122	<0.0001	
28-May-15	1310	9.12	8.47	7.51	2100	21.7																				
02-Sep-15	1300	9.02	8.37	7.5	2030	22	7.89	2030	0.03	0.005	0.265	<0.001	0.1	<0.0001	<0.001	<0.001	0.004	1.57	0.001	0.136	0.004	<0.01	<0.01	0.033	<0.0001	
07-Dec-15	1345	9.03	8.38	7.6	1958	22																				
02-Mar-16	1150	9.05	8.4	7.5	1980	23.2	7.97	1990	0.16	0.005	0.237	<0.001	0.08	<0.0001	<0.001	0.001	0.022	1.56	0.002	0.105	0.004	<0.01	<0.01	0.056	<0.0001	
24-May-16	1205	9.07	8.42	7.5	1972	21.6																				
08-Sep-16	1110	9.03	8.38	7.6	1810	22.7	7.92	1950	0.05	0.004	0.225	<0.001	0.08	<0.0001	<0.001	<0.001	0.005	1.06	0.001	0.095	0.004	<0.01	<0.01	0.028	<0.0001	
30-Nov-16	1430	9.79	9.14	7.6	1840	23.7																				
21-Mar-17	1320	8.89	8.24	7.7	1900	23.1	8.07	1910	0.37	0.004	0.233	<0.001	0.09	<0.0001	<0.001	<0.001	0.026	1.82	0.002	0.096	0.004	<0.01	<0.01	0.126	<0.0001	
6-Jun-17	1250	8.97	8.32	7.7	1890	22																				
14-Sep-17	1300	8.88	8.23	7.6	1880	205	8.07	1990	0.05	0.004	0.207	<0.001	0.08	<0.0001	<0.001	<0.001	0.004	1.02	<0.001	0.083	0.003	<0.01	<0.01	0.013	<0.0001	
07-Dec-17	1320	8.82	8.17	7.6	1849	22.7																				
26-Mar-18	1330	8.94	8.29	7.8	1920	21.7	7.98	1890	0.07	0.004	0.2	<0.001	0.09	<0.0001	<0.001	<0.001	0.003	1.14	<0.001	0.067	0.004	<0.01	<0.01	0.016	<0.0001	
20-Jun-18	1315	8.99	8.34	7.7	1886	21.1																				
27-Sep-18	1250	8.94	8.29	7.8	1810	22.4	7.9	1900	0.08	0.004	0.214	<0.001	0.08	<0.0001	<0.001	<0.001	0.005	1.15	<0.001	0.07	0.003	<0.01	<0.01	0.012	<0.0001	
6-Dec-18	1505	8.81	8.16	7.6	1860	22.4																				

Bore – MP6 cont.

Date	Time	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	Comments	
		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								
DW GVs	-	-	180	-		250	250		-	-				0.5	3	50	-	1000		
CW GVs	1000	-	-	-		-	1000		-	-				-	30	400	-	-		
12-Mar-13	1400	91	74	883	48	50.3	927	15	<1	<1	313	313	32.7	21.1	0.03	<0.01	0.17	0.17	5000	
15-Apr-13	1330																			
27-May-13	1345																			
20-Jun-13	1040	48	34	718	13	36.8	426	13	<1	<1	1080	1080	33.9	4.05	2.51	<0.01	<0.01	<0.01	1990	
29-Jul-13	1345																			
22-Aug-13	1559																			
29-Aug-13	1030	34	28	741	14	36.6	423	2	<1	<1	1090	1090	33.8	3.99	1.66					1540
30-Sep-13	1520																			
28-Nov-13	1245																			
11-Dec-13	1430																			
24-Feb-14	1245	16	15	568	10	27	293	<1	<1	<1	982	982	27.9	1.67	1.55					1490
12-Jun-14	1150																			
10-Sep-14	1330	10	9	440	6	20.5	236	<1	<1	<1	998	998	26.6	12.9	1.07	<0.01	0.04	0.04	1390	
27-Nov-14	1320																			
03-Mar-15	1130	13	10	538	6	25	191	3	<1	<1	907	907	23.6	2.94	1.16	<0.01	0.03	0.03	1400	
28-May-15	1310																			
02-Sep-15	1300	7	7	523	6	23.8	139	<1	<1	<1	811	811	20.1	8.37	0.86	<0.01	<0.01	<0.01	1150	
07-Dec-15	1345																			
02-Mar-16	1150	6	6	497	6	22.6	162	<1	<1	<1	781	781	20.2	5.54	1.01	<0.01	0.02	0.02	1270	
24-May-16	1205																			
08-Sep-16	1110	9	8	522	6	24	152	6	<1	<1	921	921	22.8	2.4	0.79	<0.01	<0.01	<0.01	1150	
30-Nov-16	1430																			
21-Mar-17	1320	11	8	427	2		148	<1	<1	<1	807	807								
6-Jun-17	1250																			
14-Sep-17	1300	9	7	489	5	22.4	136	<1	<1	<1	830	830	20.4	4.68	0.93	<0.01	0.04	0.04	1110	
07-Dec-17	1320																			
26-Mar-18	1330	8	7	453	5	20.8	149	<1	<1	<1	888	888	21.9	2.66	0.87	<0.01	<0.01	<0.01	1110	
20-Jun-18	1315																			
27-Sep-18	1250	9	7	476	5	21.8	146	<1	<1	<1	707	707	18.2	9.01	0.92	<0.01	<0.01	<0.01	1502	
6-Dec-18	1505																			

Bore – MP7

Date	Time	Depth to Stand - mbtoc	Depth to Ground - mbgl	Field Parameters			Lab Parameters		Total Metals																Mercury (Hg) - mg/L	
				pH	EC (µS/cm)	Temp. (°C)	pH	EC (µS/cm)	Aluminium (Al) - mg/L	Arsenic (As) - mg/L	Barium (Ba) - mg/L	Beryllium (Be) - mg/L	Boron (B) - mg/L	Cadmium (Cd) - 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	Selenium (Se) - mg/L	Vanadium (V) - mg/L	Zinc (Zn) - mg/L		
	DW GVs			6.5-8.0	2200	-	6.5-8.0	2200	0.2	0.007	0.7	-		0.002	0.05	-	2	0.3	0.01	0.1	0.02		-	3	0.001	
	CW GVs								5	0.5	1	-		0.01	1	1	-	-	0.1	-	1		-	20	0.002	
13-Mar-13	1030	16.30	15.50	6.8	3230	24.5	6.6	3520	0.67	0.008	1.06	<0.001		<0.0001	0.002	0.008	0.031	12	0.006	5.4	0.009		<0.01	0.216	<0.0001	
15-Apr-13	1305	16.44	15.64																							
27-May-13	1445	16.56	15.76																							
02-Jul-13	1120	16.52	15.72	6.81	3830	21.8	7.06	4310	0.03	0.016	2.57	<0.001		<0.0001	<0.001	0.015	<0.001	11.2	<0.001	5.25	0.007		<0.01	<0.005	<0.0001	
29-Jul-13	1435	16.52	15.72																							
23-Aug-13	0936	16.48	15.68																							
29-Aug-13	0900	16.5	15.70	6.81	3040	22.3	7.33	3310	0.05	0.029	1.45	<0.001	0.07	0.0002	<0.001	<0.001	0.148	10.6	0.003	3.75	0.004		<0.01	0.49	<0.0001	
30-Sep-13	1644	16.43	15.63																							
28-Nov-13	1600	16.4	15.60																							
18-Dec-13	1220	16.56	15.76	6.9	2970	23.3																				
27-Feb-14	1915	16.5	15.70	6.9	2850	21.9	7.26	3200	0.43	0.023	1.43	<0.001	0.11	0.0003	0.027	0.001	0.312	8.21	0.026	2.98	0.013	<0.01	<0.01	0.404	<0.0001	
19-Jun-14	0935	16.62	15.82	7	3050	20.1																				
12-Aug-14	1530	16.605	15.81																							
11-Sep-14	0910	16.6	15.80	7	3040	20.7	7.66	3140	0.11	0.017	1.42	<0.001	0.1	<0.0001	<0.001	<0.001	0.006	5.59	0.002	2.74	0.002	<0.01	<0.01	0.03	<0.0001	
27-Nov-14	1130	16.61	15.81	7.1	3060	22.3																				
03-Mar-15	0920	16.7	15.90	7.1	3010	21.8	7.69	3250	0.02	0.004	1.03	<0.001	0.1	<0.0001	<0.001	<0.001	0.003	1.45	<0.001	1.67	0.001	<0.01	<0.01	0.036	<0.0001	
28-May-15	1115	16.85	16.05	7	3070	21.4																				
02-Sep-15	1040	16.8	16.00	7	3080	21.2	7.55	3120	0.03	0.002	1.08	<0.001	0.1	<0.0001	<0.001	<0.001	0.002	1.62	<0.001	1.49	<0.001	<0.01	<0.01	0.045	<0.0001	
08-Dec-15	910	16.85	16.05	7	3120	22																				
03-Mar-16	1300	16.9	16.10	7	3110	23.8	7.78	3210	0.02	0.002	1	<0.001	0.09	<0.0001	<0.001	<0.001	0.009	0.07	<0.001	1.24	0.002	<0.01	<0.01	0.171	<0.0001	
25-May-16	915	16.92	16.12	6.9	3090	20.4																				
08-Sep-16	920	17.12	16.32	6.9	3030	21	7.46	3160	<0.01	0.001	1.02	<0.001	0.1	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.05	<0.001	1.08	<0.001	<0.01	<0.01	0.05	<0.0001
01-Dec-16	900	16.88	16.08	7	2990	21.9																				
22-Mar-17	845	16.67	15.87	7	3090	22.1	7.53	3140	0.04	0.001	0.989	<0.001	0.1	<0.0001	<0.001	<0.001	0.04	0.18	0.001	0.512	0.001	<0.01	<0.01	0.103	<0.0001	
7-Jun-17	915	16.93	16.13	7	3100	19.9																				
14-Sep-17	1235	17.1	16.30	7.1	3100	20.6	7.59	3190	0.02	<0.001	0.939	<0.001	0.09	<0.0001	<0.001	<0.001	0.008	<0.05	<0.001	0.381	<0.001	<0.01	<0.01	0.064	<0.0001	
08-Dec-17	1110	17.15	16.35	7	3090	22.7																				
05-Apr-18	1045	17.92	17.12	7	3080	23.8	7.54	3210	0.07	0.002	1	<0.001	0.1	<0.0001	<0.001	<0.001	0.006	0.34	<0.001	0.562	0.002	<0.01	<0.01	0.082	<0.0001	
21-Jun-18	1020	18.87	18.07	7	3050	20.7																				
3-Oct-18	1040	21.3	20.50	7.2	2680	22	7.25	2880	0.19	0.006	0.895	<0.001	0.11	<0.0001	<0.001	<0.001	0.016	2.26	0.002	0.499	0.004	<0.01	0.02	0.072	<0.0001	
7-Dec-18	1250	25.2	24.40	7	2720	22.6																				

Bore – MP7 cont.

Date	Time	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	Comments
		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							
DW GVs	-	-	180	-		250	250		-	-			0.5	3	50	-	1000		
CW GVs	1000	-	-	-		-	1000		-	-			-	30	400	-	-		
13-Mar-13	1030	140	71	583	8	38.4	680	5	<1	<1	780	780	34.9	4.79	0.09	<0.01	0.12	0.12	2270
15-Apr-13	1305																		
27-May-13	1445																		
02-Jul-13	1120	151	96	549	4	39.4	948	1	<1	<1	493	493	36.6	3.68	0.17	<0.01	0.28	0.28	2270
29-Jul-13	1435																		
23-Aug-13	0936																		
29-Aug-13	0900	100	67	540	4	34.1	700	21	<1	<1	586	586	31.9	3.32	0.2				1720
30-Sep-13	1644																		
28-Nov-13	1600																		
18-Dec-13	1220																		
27-Feb-14	1915	88	55	569	2	33.7	669	27	<1	<1	595	595	31.3	3.66	0.15				1670
19-Jun-14	0935																		
12-Aug-14	1530																		
11-Sep-14	0910	84	54	466	3	29	627	27	<1	<1	547	547	29.2	0.36	0.21	<0.01	0.06	0.06	1650
27-Nov-14	1130																		
03-Mar-15	0920	86	54	508	3	30.9	619	34	<1	<1	614	614	30.4	0.75	0.14	<0.01	0.02	0.02	1650
28-May-15	1115																		
02-Sep-15	1040	99	57	529	30	32.7	513	34	<1	<1	561	561	26.4	10.7	0.08	<0.01	<0.01	<0.01	1710
08-Dec-15	910																		
03-Mar-16	1300	86	63	545	4	33.3	676	37	<1	<1	554	554	30.9	3.68	0.26	<0.01	0.05	0.05	1770
25-May-16	915																		
08-Sep-16	920	92	57	536	3	32.7	666	32	<1	<1	674	674	32.9	0.4	0.08	<0.01	0.01	0.01	1720
01-Dec-16	900																		
22-Mar-17	845	84	57	489	3	30.2	678	34	<1	<1	593	593	31.7	2.34	0.07	<0.01	0.21	0.1	1840
7-Jun-17	915																		
14-Sep-17	1235	103	58	614	3	36.7	646	31	<1	<1	626	626	31.4	7.82	0.05	<0.01	0.38	0.38	1600
08-Dec-17	1110																		
05-Apr-18	1045	86	58	554	3	33.2	698	36	<1	<1	652	652	33.5	0.34	0.02	<0.01	0.29	0.29	1820
21-Jun-18	1020																		
3-Oct-18	1040	82	52	520	3	31.1	526	37	<1	<1	659	659	28.8	3.83	0.03	<0.01	1.07	1.07	1730
7-Dec-18	1250																		Slight Turbid, sandy colour

Bore – MP8

Date	Time	Depth to Stand - mbtoc	Depth to Ground - mbgl	Field Parameters			Lab Parameters		Total Metals															Mercury (Hg) - mg/L	
				pH	EC (µS/cm)	Temp. (°C)	pH	EC (µS/cm)	Aluminium (Al) - mg/L	Arsenic (As) - mg/L	Barium (Ba) - mg/L	Beryllium (Be) - mg/L	Boron (B) - mg/L	Cadmium (Cd) - 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	Selenium (Se) - mg/L	Vanadium (V) - mg/L	Zinc (Zn) - mg/L	
	DW GVs			6.5-8.0	2200	-	6.5-8.0	2200	0.2	0.007	0.7	-		0.002	0.05	-	2	0.3	0.01	0.1	0.02		-	3	0.001
	CW GVs								5	0.5	1	-		0.01	1	1	-	-	0.1	-	1		-	20	0.002
13-Mar-13	1030	16.50	15.80	4.73	1430	25.6	4.45	1500	1.76	0.005	0.186	<0.001		0.0004	0.003	0.017	0.112	5.83	0.03	1.16	0.024		<0.01	2.37	<0.0001
15-Apr-13	1300	16.49	15.79																						
27-May-13	1443	16.6	15.90																						
02-Jul-13	1240	16.98	16.28	6.7	4200	23.3	7.18	4800	1.14	0.01	0.9	<0.001		<0.0001	0.002	0.018	0.005	4.54	0.002	1.43	0.011		<0.01	0.035	<0.0001
29-Jul-13	1440	16.6	15.90																						
23-Aug-13	0935	16.54	15.84																						
29-Aug-13	0930	16.6	15.90	5.44	3180	22.5	6.28	3440	0.9	0.008	0.968	<0.001	0.07	0.0001	0.002	0.015	0.091	7.06	0.008	2.63	0.013	<0.01	<0.01	0.344	<0.0001
30-Sep-13	1646	16.51	15.81																						
28-Nov-13	1605	16.5	15.80																						
18-Dec-13	1200	16.62	15.92	6.4	3620	22.9																			
27-Feb-14	0855	16.7	16.00	6.5	3540	22.1	6.72	3920	0.26	0.005	0.994	<0.001	0.08	0.0001	0.018	0.002	0.093	4.31	0.01	2.29	0.014	<0.01	<0.01	0.397	<0.0001
19-Jun-14	0920	16.71	16.01	6.9	4010	20.1																			
12-Aug-14	1540	16.765	16.07																						
11-Sep-14	0845	8.45	7.75	6.7	4170	20.8	7.47	4420	0.62	0.004	0.949	<0.001	0.08	<0.0001	0.003	0.001	0.018	1.48	0.005	1.55	0.008	<0.01	<0.01	0.106	<0.0001
13-Nov-14	1520	16.665	15.97																						
27-Nov-14	1140	16.7	16.00	7	4130	22.9																			
03-Mar-15	0905	16.8	16.10	6.9	4190	22.4	7.53	4500	0.05	0.001	0.899	<0.001	0.08	<0.0001	0.001	<0.001	0.008	0.66	<0.001	1.64	0.006	<0.01	<0.01	0.08	<0.0001
28-May-15	1135	16.91	16.21	6.9	4210	21.2																			
02-Sep-15	1020	16.9	16.20	6.9	4410	20.7	7.41	4480	0.28	<0.001	0.905	<0.001	0.08	<0.0001	<0.001	<0.001	0.011	0.65	0.002	1.57	0.004	<0.01	<0.01	0.15	<0.0001
08-Dec-15	845	16.92	16.22	6.8	4450	21.8																			
03-Mar-16	1240	17	16.30	7.1	4260	23.7	7.64	4560	0.69	<0.001	0.911	<0.001	0.07	<0.0001	0.001	<0.001	0.059	1.85	0.005	1.49	0.006	<0.01	<0.01	0.156	<0.0001
25-May-16	845	16.98	16.28	6.9	4420	20.1																			
08-Sep-16	850	17.2	16.50	7	4290	21.2	7.36	4580	0.01	<0.001	0.887	<0.001	0.09	<0.0001	<0.001	0.002	0.001	0.67	<0.001	1.77	0.005	<0.01	<0.01	0.024	<0.0001
01-Dec-16	840	17.05	16.35	6.9	4290	21.8																			
22-Mar-17	845	16.9	16.20	7	4530	22.1	7.37	4530	0.15	<0.001	0.851	<0.001	0.08	<0.0001	<0.001	0.001	0.099	1.16	0.004	1.36	0.006	<0.01	<0.01	0.217	<0.0001
7-Jun-17	845	17.02	16.32	6.9	4500	20.4																			
14-Sep-17	1215	17.1	16.40	7	4480	20.9	7.48	4670	0.04	<0.001	0.82	<0.001	0.08	<0.0001	<0.001	0.002	0.004	0.2	<0.001	1.23	0.006	<0.01	<0.01	0.124	<0.0001
08-Dec-17	1045	17.28	16.58	6.9	4440	22.2																			
5-Apr-18	1105	17.27	16.57	6.4	4560	23	7.3	4740	0.2	0.002	0.918	<0.001	0.08	<0.0001	<0.001	0.005	0.024	0.43	0.002	1.6	0.006	<0.01	<0.01	0.193	<0.0001
21-Jun-18	955	18.98	18.28	7	4310	20.6																			
3-Oct-18	1015	21.3	20.60	6.9	4340	22.3	6.93	4830	0.03	0.009	0.894	<0.001	0.08	<0.0001	<0.001	0.001	0.006	1.24	<0.001	1.67	<0.001	<0.01	<0.01	0.026	<0.0001
7-Dec-18	1225	25.34	24.64	6.8	4650	22.9																			

Bore – MP8 cont.

Date	Time	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	Comments	
		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									
DW GVs	-	-	180	-		250	250		-	-				0.5	3	50	-	1000		
CW GVs	1000	-	-	-		-	1000		-	-				-	30	400	-	-		
13-Mar-13	1030	53	27	263	13	16.6	250	48	<1	<1	<1	<1	8.05	34.8	0.19	<0.01	0.29	0.29	1610	
15-Apr-13	1300																			
27-May-13	1443																			
02-Jul-13	1240	179	110	593	4	43.9	1060	22	<1	<1	507	507	40.5	4.02	0.03	0.01	0.35	0.36	2720	
29-Jul-13	1440																			
23-Aug-13	0935																			
29-Aug-13	0930	133	88	473	8	34.7	836	1	<1	<1	389	389	31.4	4.96	0.16				2220	
30-Sep-13	1646																			
28-Nov-13	1605																			
18-Dec-13	1200																			
27-Feb-14	0855	153	93	590	5	41.1	968	<1	<1	<1	453	453	36.9	5.37	0.54				2280	
19-Jun-14	0920																			
12-Aug-14	1540																			
11-Sep-14	0845	164	102	526	5	39.6	982	2	<1	<1	524	524	38.2	1.76	0.42	<0.01	0.03	0.03	2620	Probable false measurement - same as the time of sampling.
13-Nov-14	1520																			
27-Nov-14	1140																			
03-Mar-15	0905	183	113	615	5	45.3	1160	4	<1	<1	578	578	44.4	1.06	0.41	<0.01	0.04	0.04	2910	
28-May-15	1135																			
02-Sep-15	1020	190	114	633	5	46.5	587	2	<1	<1	536	536	34.9	14.2	0.5	<0.01	0.05	0.05	2650	
08-Dec-15	845																			
03-Mar-16	1240	172	116	592	6	44	1080	3	<1	<1	524	524	41	3.56	0.65	<0.01	0.04	0.04	2940	
25-May-16	845																			
08-Sep-16	850	179	107	671	5	47	1120	2	<1	<1	650	650	44.6	2.64	0.97	<0.01	4.87	4.87	2720	
01-Dec-16	840																			
22-Mar-17	845	172	109	594	5	43.5	1090	2	<1	<1	556	556	41.9	1.9	0.87	<0.01	0.1	0.1	2960	
7-Jun-17	845																			
14-Sep-17	1215	189	104	658	4	46.7	1110	2	<1	<1	597	597	43.3	3.81	0.52	<0.01	0.1	0.1	2920	
08-Dec-17	1045																			
5-Apr-18	1105	188	115	640	4	46.8	1230	4	<1	<1	659	659	47.9	1.22	0.68	<0.01	0.03	0.03	2810	
21-Jun-18	955																			
3-Oct-18	1015	197	121	661	4	48.6	1150	4	<1	<1	570	570	43.9	5.11	0.55	<0.01	<0.01	<0.01	3120	
7-Dec-18	1225																			

Bore – WB1

Date	Time	Depth to Stand - mbtoc	Depth to Ground - mbgl	Field Parameters		Lab Parameters		Total Metals																	Mercury (Hg) - mg/L
				pH	EC (µS/cm)	Temp. (°C)	pH	EC (µS/cm)	Aluminium (Al) - mg/L	Arsenic (As) - mg/L	Barium (Ba) - mg/L	Beryllium (Be) - mg/L	Boron (B) - mg/L	Cadmium (Cd) - 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	Selenium (Se) - mg/L	Vanadium (V) - mg/L	Zinc (Zn) - mg/L	
	DW GVs			6.5-8.0	2200	-	6.5-8.0	2200	0.2	0.007	0.7	-		0.002	0.05	-	2	0.3	0.01	0.1	0.02		-	3	0.001
	CW GVs								5	0.5	1	-		0.01	1	1	-	-	0.1	-	1		-	20	0.002
13-Oct-08	1640	9.35	8.95																						
28-Oct-08		9.25	8.85	7.93	1996	22.4				0.018	0.355	<0.001		0.0001	<0.001	<0.001	0.009	8.7	0.027	0.045	0.045		<0.01	1.19	<0.0001
06-Dec-11	1230	9.04	8.64	8.08	1450	22.3																			
21-Mar-12	1030	8.89	8.49	7.98	1640	23.6	8.1	1730	0.1	0.022	0.386	<0.001		0.0001	<0.001	<0.001	0.015	9.31	0.006	0.039	<0.001		<0.01	0.468	<0.0001
24-May-12	1310	8.82	8.42	8.03	1537	22																			
27-Aug-12	1320	8.22	7.82																						
26-Nov-12	1200	8.18	7.78																						
12-Mar-13	1340	8.25	7.85																						
10-Jun-13	900	8.34	7.94																						
29-Aug-13	1100	8.39	7.99																						
11-Dec-13	1420	8.4	8.00																						
24-Feb-14	1300	8.51	8.11																						
12-Jun-14	1140	8.55	8.15																						
10-Sep-14	1310	8.57	8.17																						
27-Nov-14	1330	8.62	8.22																						
28-May-15	1250	8.71	8.31																						
02-Sep-15	1245	8.62	8.22																						
07-Dec-15	1320	8.61	8.21																						
02-Mar-16	1130	8.62	8.22																						
24-May-16	1145	8.64	8.24																						
08-Sep-16	1125	8.67	8.27																						
30-Nov-16	1410	8.47	8.07																						
26-Mar-17	1310	8.4	8.00																						
06-Jun-17	1305	8.49	8.09																						
14-Sep-17	1315	8.23	7.83																						
07-Dec-17	1330	8.2	7.80																						
26-Mar-18	1310	8.4	8.00																						
20-Jun-18	1325	8.62	8.22																						
27-Sep-18	1230	8.57	8.17																						
06-Dec-18	1445	8.57	8.17																						

Bore – WB1 cont.

Date	Time	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	Comments
		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								
DW GV	-	-	180	-		250	250		-	-			0.5	3	50	-	1000			
CW GV	1000	-	-	-		-	1000		-	-			-	30	400	-	-			
13-Oct-08	1640																			
28-Oct-08		9	12	388	4	18.4	286	30	<1	<1	483	483	17.8	1.57	1.23				1050	
06-Dec-11	1230																			
21-Mar-12	1030	12	13	420	7	20.1	286	10	<1	<1	508	508	18.4	4.34	2.04	<0.01	0.07	0.07	932	
24-May-12	1310																			
27-Aug-12	1320																			
26-Nov-12	1200																			
12-Mar-13	1340																			
10-Jun-13	900																		No sample - windmill over bore	
29-Aug-13	1100																		No sample - windmill over bore	
11-Dec-13	1420																		No sample - windmill over bore	
24-Feb-14	1300																		No sample - windmill over bore	
12-Jun-14	1140																		No sample - windmill over bore	
10-Sep-14	1310																		No sample - windmill over bore	
27-Nov-14	1330																		No sample - windmill over bore	
28-May-15	1250																		No sample - windmill over bore	
02-Sep-15	1245																		No sample - windmill over bore	
07-Dec-15	1320																		No sample - windmill over bore	
02-Mar-16	1130																		No sample - windmill over bore	
24-May-16	1145																		No sample - windmill over bore	
08-Sep-16	1125																		No sample - windmill over bore	
30-Nov-16	1410																		No sample - windmill over bore	
26-Mar-17	1310																		No sample - windmill over bore	
06-Jun-17	1305																		No sample - windmill over bore	
14-Sep-17	1315																		No sample - windmill over bore	
07-Dec-17	1330																		No sample - windmill over bore	
26-Mar-18	1310																		No sample - windmill over bore	
20-Jun-18	1325																		No sample - windmill over bore	
27-Sep-18	1230																		No sample - windmill over bore	
06-Dec-18	1445																		No sample - windmill over bore	

Bore – WB2

Date	Time	Depth to Stand - mboc	Depth to Ground - mbgl	Field Parameters			Lab Parameters		Total Metals														Mercury (Hg) - mg/L		
				pH	EC (µS/cm)	Temp. (°C)	pH	EC (µS/cm)	Aluminium (Al) - mg/L	Arsenic (As) - mg/L	Barium (Ba) - mg/L	Beryllium (Be) - mg/L	Boron (B) - mg/L	Cadmium (Cd) - 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	Selenium (Se) - mg/L	Vanadium (V) - mg/L	Zinc (Zn) - mg/L	
		DW GVs		6.5-8.0	2200	-	6.5-8.0	2200	0.2	0.007	0.7	-		0.002	0.05	-	2	0.3	0.01	0.1	0.02		-	3	0.001
		CW GVs							5	0.5	1	-		0.01	1	1	-	-	0.1	-	1		-	20	0.002
03-Sep-08	1400	17.25	16.87																						
13-Oct-08	1630	16.87	16.49																						
28-Oct-08		16.98	16.60	7.72	3430	22.7				<0.001	0.127	<0.001		<0.0001	<0.001	<0.001	0.011	0.15	<0.001	0.01	0.01		0.02	0.023	<0.0001
23-Jan-09	1532	17.39	17.01																						
22-Jun-09	0830	17.03	16.65	7.2	3160	19.6		3050		0.003	0.128	<0.001		<0.0001	0.001	<0.001	0.132	20.1	0.012	0.826	0.024		0.05	1.32	<0.0001
15-Sep-09	1552	16.83	16.45																						
06-Jan-10	0930	16.83	16.45	8.5	2070	24.1	7.51	2010	<0.01	<0.001					<0.001		0.021	<0.05	<0.001	0.036	0.009			0.334	<0.0001
25-Feb-10	1355	16.86	16.48																						
03-May-10	1250	16.94	16.56	7.84	1821	23.1		2190		0.001	0.084	<0.001		0.0002	<0.001	<0.001	0.138	11.8	0.007	0.541	0.01		0.03	1.03	<0.0001
26-Aug-10	1315	19.92	19.54	7.4	3000	Probe Broken																			
08-Nov-10	1050	17.38	17.00	7.3	2410	24.1																			
02-Mar-11	1050	17.34	16.96	7.31	2450	27.3	7.53	2750	<0.01	<0.001					<0.001		0.007	<0.05	<0.001	0.004	<0.001			0.009	<0.0001
03-May-11	925	16.91	16.53	7.55	2360	15																			
30-Aug-11	1400	16.74	16.36	8.3	2170	21.8	7.87	2880	<0.01	<0.001	0.083	<0.001		<0.0001	<0.001	<0.001	0.016	0.19	<0.001	0.002	<0.001		0.01	0.025	<0.0001
04-Nov-11	1330	16.82	16.44	8.4	2110	25.4																			
20-Mar-12	1330	16.8	16.42	8.46	2410	24.5	8.64	2650	<0.01	0.002	0.023	<0.001		<0.0001	<0.001	<0.001	0.002	0.08	<0.001	0.007	<0.001		0.01	0.007	<0.0001
23-May-12	1300	16.52	16.14	8.56	2610	15.7																			
27-Aug-12	1250	16.7	16.32	7.57	2240	21.8	7.91	2480	0.04	<0.001	0.076	<0.001		<0.0001	<0.001	<0.001	0.107	1.03	0.003	0.103	0.001		<0.01	0.502	<0.0001
26-Nov-12	1150	16.98	16.60	7.85	2560	24.3																			
12-Mar-13	1320	16.4	16.02	7.89	2570	24.8	7.29	2740	0.01	<0.001	0.092	<0.001		<0.0001	<0.001	<0.001	0.008	0.15	<0.001	0.006	<0.001		0.01	0.023	<0.0001
12-Jun-13	1035	18.26	17.88	7.28	2620	20.6																			
28-Aug-13	1350	16.3	15.92	7.1	2840	22.9	7.61	3020	0.07	<0.001	0.119	<0.001	0.08	<0.0001	<0.001	<0.001	0.042	0.84	0.002	0.02	<0.001	<0.01	0.02	0.09	<0.0001
11-Dec-13	1410	16.11	15.73																						
26-Feb-14	1410	16.6	16.22	7.9	2870	26	8.15	3070	0.01	0.001	0.118	<0.001	0.11	<0.0001	<0.001	<0.001	0.004	0.08	<0.001	0.021	<0.001	<0.01	0.01	0.021	<0.0001
12-Jun-14	1210	16.14	15.76	8.7	2700	14.8																			
10-Sep-14	1250	19.2	18.82	7.8	2090	19.3	7.81	3040	0.02	<0.001	0.121	<0.001	0.08	<0.0001	<0.001	<0.001	0.011	<0.05	<0.001	0.004	<0.001	<0.01	0.02	0.023	
28-Nov-14	0950	20.13	19.75	8.2	2120	22.2																			
03-Mar-14	1200	17.8	17.42	7.7	2960	25.3	7.83	3200	0.01	<0.001	0.116	<0.001	0.09	<0.0001	<0.001	<0.001	0.005	0.28	<0.001	0.016	<0.001	<0.01	0.02	0.033	<0.0001
29-May-15	1100	16.19	15.81	8.6	2470	16.5																			
20-Sep-15	1325	16	15.62	8.6	2610	20.1	8.87	2620	0.04	<0.001	0.038	<0.001	0.06	<0.0001	<0.001	<0.001	0.003	0.59	<0.001	0.025	<0.001	<0.01	<0.01	0.018	<0.0001
07-Dec-15	1300	16.06	15.68	8.6	3400	25.8																			
02-Mar-16	1245	16.6	16.22	7.3	2980	27.8	7.44	3100	0.02	<0.001	0.129	<0.001	0.07	<0.0001	<0.001	<0.001	0.091	0.19	<0.001	0.008	<0.001	<0.01	0.02	0.067	<0.0001
24-May-16	1230	16.12	15.74	7.6	3120	17.1																			
08-Sep-16	1150	16.2	15.82	8	2540	20.7	8.14	2590	<0.01	<0.001	0.048	<0.001	0.08	<0.0001	<0.001	<0.001	0.004	<0.05	<0.001	0.004	<0.001	<0.01	<0.01	0.008	<0.0001
30-Nov-16	1350	15.76	15.38	8	2710	26.1																			
22-Mar-17	1100	15.89	15.51	7.7	3100	23.9	7.87	3200	<0.01	<0.001	0.105	<0.001	0.09	<0.0001	<0.001	<0.001	0.015	0.22	<0.001	0.01	<0.001	<0.01	0.02	0.042	<0.0001
06-Jun-17	1330	15.72	15.34	7.7	3120	19.4																			
18-Sep-17	920	16.2	15.82	7.7	2920	17.5	7.96	2990	0.05	<0.001	0.114	<0.001	0.07	<0.0001	<0.001	<0.001	0.016	0.1	<0.001	0.008	<0.001	<0.01	0.02	0.03	<0.0001
07-Dec-17	1355	16.28	15.90	7.8	2800	23.2																			
26-Mar-18	1400	15.9	15.52	7.8	3010	22.6	7.92	3050	0.05	<0.001	0.123	<0.001	0.08	<0.0001	<0.001	<0.001	0.006	0.06	<0.001	0.006	<0.001	<0.01	0.02	0.01	<0.0001
20-Jun-18	1350	16.58	16.20	7.8	3080	15.3																			
27-Sep-18	1320	15.9	15.52	7.7	2880	20.1	7.67	3100	0.01	0.001	0.138	<0.001	0.09	<0.0001	<0.001	<0.001	6.5	0.41	<0.001	0.15	0.001	<0.01	0.01	0.027	<0.0001
07-Dec-18	1400	16.76	16.38	7.5	3090	24.6																			

Bore – WB2 cont.

Date	Time	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	Comments
		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							
DW GVs	-	-	180	-		250	250		-	-				0.5	3	50	-	1000	
CW GVs	1000	-	-	-		-	1000		-	-				-	30	400	-	-	
03-Sep-08	1400																		
13-Oct-08	1630																		
28-Oct-08	207	120	281	3	32.5	816	6	<1	<1	389	389	31.4	1.7	0.17					2310
23-Jan-09	1532																		
22-Jun-09	0830	205	103	274	4	30.7	798	27	<1	<1	464	464	32.3	2.52	0.08				1750
15-Sep-09	1552																		
06-Jan-10	0930	126	62	159	7	18.5	326	13.7	<1	<1	330	330	16.7	5	0.02	8.96	8.98		
25-Feb-10	1355																		
03-May-10	1250	148	73	194	7	22	505	35.5	<1	<1	364	364	22.3	0.47	2.77				1290
26-Aug-10	1315																		From Windmill
08-Nov-10	1050																		From windmill outlet
02-Mar-11	1050	184	109	271	4	30	753	28	<1	<1	320	320	28.2	3.16	0.04	1.74	1.78		
03-May-11	925																		
30-Aug-11	1400	127	103	269	3	26.6	778	32	<1	<1	290	290	28.4	3.3	<0.01	<0.01	0.5	0.5	1460
04-Nov-11	1330																		
20-Mar-12	1330	57	110	335	4	26.6	804	17	<1	32	114	146	26	1.18	0.07	<0.01	0.08	0.08	1540
23-May-12	1300																		
27-Aug-12	1250	167	84	218	5	24.9	591	34	<1	<1	414	414	25.6	1.56	<0.01	<0.01	4.8	4.8	1510
26-Nov-12	1150																		
12-Mar-13	1320	110	107	282	4	26.7	692	33	<1	<1	230	230	24.8	3.62	0.05	<0.01	0.12	0.12	1420
12-Jun-13	1035																		
28-Aug-13	1350	194	111	261	3	30.2	694	35	<1	<1	440	440	29.1	1.94	<0.01				1970
11-Dec-13	1410																		No Sample - Tank Empty/Windmill broken + logs stuck in bore.
26-Feb-14	1410	141	112	236	4	26.6	1980	26	<1	<1	307	307	26.3	0.65	0.3				2320
12-Jun-14	1210																		
10-Sep-14	1250	191	105	235	3	28.5	708	35	<1	<1	470	470	30.1	2.76	0.03	0.02	3.68	3.7	2040
28-Nov-14	0950																		
03-Mar-14	1200	187	118	283	3	31.4	689	33	<1	<1	415	415	28.4	5.04	0.61	0.03	0.79	0.82	2580
29-May-15	1100																		
20-Sep-15	1325	67	111	300	4	25.6	589	1	<1	46	93	139	19.4	13.8	0.05	<0.01	<0.01	<0.01	1620
07-Dec-15	1300																		
02-Mar-16	1245	197	113	262	2	30.6	747	36	<1	<1	429	429	30.4	0.31	0.06	<0.01	4.84	4.84	2230
24-May-16	1230																		
08-Sep-16	1150	111	98	271	3	25.5	666	30	<1	<1	291	291	25.2	0.48	0.03	<0.01	0.06	0.06	1620
30-Nov-16	1350																		
22-Mar-17	1100	167	118	281	4	30.4	804	86	<1	<1	374	374	31.9	2.52	0.14	0.05	1.35	1.4	2430
06-Jun-17	1330																		
18-Sep-17	920	152	100	241	3	26.4	692	31	<1	<1	402	402	28.2	3.34	0.05	0.002	2.05	2.07	1630
07-Dec-17	1355																		
26-Mar-18	1400	204	110	334	3	33.8	788	30	<1	<1	476	476	32.4	2.23	0.05	0.02	1.56	1.58	2020
20-Jun-18	1350																		
27-Sep-18	1320	142	121	303	6	30.4	827	54	<1	<1	262	262	29.7	1.15	0.74	0.02	<0.01	0.01	2200
07-Dec-18	1400																		

Bore – WB3

Date	Time	Depth to Stand - mbtoc	Depth to Ground - mbgl	Field Parameters			Lab Parameters			Total Metals																Mercury (Hg) - mg/L
				pH	EC (µS/cm)	Temp. (°C)	pH	EC (µS/cm)	Aluminium (Al) - mg/L	Arsenic (As) - mg/L	Barium (Ba) - mg/L	Beryllium (Be) - mg/L	Boron (B) - mg/L	Cadmium (Cd) - 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	Selenium (Se) - mg/L	Vanadium (V) - mg/L	Zinc (Zn) - mg/L		
				6.5-8.0	2200	-	6.5-8.0	2200	0.2	0.007	0.7	-		0.002	0.05	-	2	0.3	0.01	0.1	0.02		-	3	0.001	
									5	0.5	1	-		0.01	1	1	-	-	0.1	-	1		-	20	0.002	
03-Sep-08	1430	9.40	8.82							0.002	0.012	<0.001		0.0004	0.05	0.001	0.009	0.61	0.003	0.026	0.026		0.04	0.026	<0.0001	
13-Oct-08	1555	9.45	8.87																							
29-Oct-08		9.53	8.95	7.2	4480	21.7				0.002																
23-Jan-09	1545	24.3	23.72																							
09-Feb-09	1600	9.5	8.92																							
22-Jun-09	0905	9.57	8.99	7.5	4380	15.9		4080		<0.001	0.005	<0.001		<0.0001	<0.001	<0.001	0.028	0.06	<0.001	0.004	0.006		0.04	0.131	<0.0001	
15-Sep-09	1549	9.57	8.99																							
30-Nov-09	0845	9.61	9.03	7.67	2900	25.6	7.74	3890	<0.01	0.001					<0.005		0.017	<0.05	<0.001	0.003	0.005		0.078	<0.0001		
25-Feb-10	1410	9.5	8.92																							
03-May-10	1320	19.11	18.53	7.88	4290	23.5		4000		0.001	0.006	<0.001		<0.0001	<0.001	<0.001	<0.001	<0.05	<0.001	<0.001	<0.001		0.04	<0.005	<0.0001	
26-Aug-10	1250	9.52	8.94	8.28	3260	Probe Broken																				
08-Nov-10	1110	9.56	8.98	8.02	2360	25.8																				
02-Mar-11	1150	18.21	17.63	7.44	3770	27.4	7.6	4820	<0.01	0.003					<0.001		0.009	<0.05	<0.001	0.004	0.002		0.015	<0.0001		
03-May-11	945	9.65	9.07	7.7	3790	14.3																				
01-Sep-11	1010	9.72	9.14	8.1	3830	16.9	8.32	4860	<0.01	0.001	0.01	<0.001		<0.0001	<0.001	<0.001	0.006	<0.05	<0.001	0.005	<0.001		0.02	0.016	<0.0001	
06-Dec-11	1100	9.65	9.07	7.05	3650	22.2																				
20-Mar-12	1300	9.29	8.71	6.95	3720	24.3	7.36	4280	<0.01	0.001	0.002	<0.001		<0.0001	<0.001	<0.001	0.002	<0.05	0.04	<0.001	<0.001		<0.001	0.009	<0.0001	
23-May-12	1255	9.07	8.49	see comments																						
27-Aug-12	1350	8.9	8.32	see comments																						
26-Nov-12	1330	8.78	8.20	see comments																						
13-Mar-13	1415	8.56	7.98	see comments																						
20-Jun-13	1100	8.53	7.95	see comments																						
30-Aug-13	0815	8.44	7.86	see comments																						
18-Dec-13	1250	8.45	7.87	see comments																						
27-Feb-14	1100	8.38	7.80	see comments																						
12-Jun-14	1225	8.63	8.05	see comments																						
11-Sep-14	0950	8.67	8.09	see comments																						
28-Nov-14	1155	8.32	7.74	see comments																						
28-May-15	1340	8.32	7.74	see comments																						
03-Sep-15	1040	8.35	7.77	see comments																						
08-Dec-15	1355	8.24	7.66	see comments																						
03-Mar-16	1330	8.4	7.82	see comments																						
24-May-16	1250	8.32	7.74	see comments																						
08-Sep-16	1000	8.31	7.73	see comments																						
30-Nov-16	1330	8.02	7.44	see comments																						
22-Mar-17	1130	8.34	7.76	see comments																						
06-Jun-17	1355	8.23	7.65	see comments																						
18-Sep-17	1140	8.45	7.87	see comments																						
08-Dec-17	1205	8.56	7.98	see comments																						
05-Apr-18	1140	8.34	7.76	see comments																						
21-Jun-18	1050	8.36	7.78	see comments																						
03-Oct-18	1135	8.12	7.54	7.1	3950	22.4	7.2	4320	0.02	0.001	0.013	<0.001		<0.0001	<0.001	<0.001	0.002	<0.05	<0.001	0.004	<0.001		0.04	0.014	<0.0001	
07-Dec-18	1320	8.54	7.96	7.1	3820	22.5																				

Bore – WB3 cont.

Date	Time	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	Comments		
		Calcium (Ca) - mg/L	Magnesium (Mg) - mg/L	Sodium (Na) - mg/L	Potassium (K) - mg/L		Chloride (Cl) - mg/L	Sulfate (SO ₄) - mg/L	Hydroxide Alkalinity as CaCO ₃ - mg/L	Carbonate Alkalinity as CaCO ₃ - mg/L	Bicarbonate Alkalinity as CaCO ₃ - mg/L	Alkalinity - mg/L										
DW GVs	-	-	180	-		250	250		-	-				0.5	3	50	-	1000				
CW GVs	1000	-	-	-		-	1000		-	-				-	30	400	-	-				
03-Sep-08	1430																					
13-Oct-08	1555																					
29-Oct-08		264	196	363	2	45.1	1210	29	<1	<1	395	395	42.7	2.75	0.06							
23-Jan-09	1545																					
09-Feb-09	1600																					
22-Jun-09	0905	259	184	407	2	45.8	1270	22	<1	<1	434	434	44.8	1.1	0.18					2690		
15-Sep-09	1549																					
30-Nov-09	0845	215	185	360	3	41.7	1220	21.2	<1	<1	324	324	41.3	0.5		<0.01	3.78	3.78				
25-Feb-10	1410																					
03-May-10	1320	229	168	354	2	40.7	1210	29.8	<1	<1	428	428	43.2	3.06	<0.01					2680	Sampled from tank fed by bore	
26-Aug-10	1250																					From tank
08-Nov-10	1110																					From tank near WB4
02-Mar-11	1150	274	157	498	8	48.5	1460	26	<1	<1	145	145	44.7	4.05		0.09	0.88	0.97				From trough outlet newar WB4
03-May-11	945																					from trough outlet near MP4
01-Sep-11	1010	147	191	411	3	41	1300	31	<1	3	171	174	40.8	0.27	0.11	<0.01	0.12	0.12	2480	Water from trough near MP4		
06-Dec-11	1100																					
20-Mar-12	1300	256	184	393	2	45.1	1160	33	<1	<1	398	398	41.4	4.29	0.06	<0.01	3.64	3.64	2750			
23-May-12	1255																					Pump not working, no sample
27-Aug-12	1350																					
26-Nov-12	1330																					No sample-pump over bore-Glenrock house
13-Mar-13	1415																					
20-Jun-13	1100																					Pump over bore
30-Aug-13	0815																					
18-Dec-13	1250																					Pump off & Covering Bore
27-Feb-14	1100																					Pump covering bore
12-Jun-14	1225																					Pump over bore
11-Sep-14	0950																					Pump over bore
28-Nov-14	1155																					Pump over bore
28-May-15	1340																					Pump over bore
03-Sep-15	1040																					Pump over bore
08-Dec-15	1355																					Pump over bore
03-Mar-16	1330																					Pump over bore
24-May-16	1250																					Pump over bore
08-Sep-16	1000																					Pump over bore
30-Nov-16	1330																					Pump over bore
22-Mar-17	1130																					Pump over bore
06-Jun-17	1355																					Pump/pipe in bore
18-Sep-17	1140																					Pipes/pumps in bore
08-Dec-17	1205																					Pump over bore
05-Apr-18	1140																					Pipes/pumps in bore
21-Jun-18	1050																					Pipes/pumps in bore
03-Oct-18	1135	255	182	350	2	43	1070	30	<1	<1	420	420	39.2	4.6	0.02	<0.01	4.29	4.29	3380			
07-Dec-18	1320																					

Bore – WB4

Date	Time	Depth to Stand - mbtoc	Depth to Ground - mbgl	Field Parameters			Lab Parameters		Total Metals														Mercury (Hg) - mg/L		
				pH	EC (µS/cm)	Temp. (°C)	pH	EC (µS/cm)	Aluminium (Al) - mg/L	Arsenic (As) - mg/L	Barium (Ba) - mg/L	Beryllium (Be) - mg/L	Boron (B) - mg/L	Cadmium (Cd) - 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	Selenium (Se) - mg/L	Vanadium (V) - mg/L	Zinc (Zn) - mg/L	
DW GVs				6.5-8.0	2200	-	6.5-8.0	2200	0.2	0.007	0.7	-		0.002	0.05	-	2	0.3	0.01	0.1	0.02		-	3	0.001
CW GVs									5	0.5	1	-		0.01	1	1	-	-	0.1	-	1		-	20	0.002
03-Sep-08		see comments																							
13-Oct-08		see comments																							
29-Oct-08		see comments																							
22-Jun-09		see comments																							
15-Sep-09		see comments																							
30-Nov-09		see comments																							
25-Feb-10		see comments																							
26-Aug-10	1230			7.83	3650	Probe Broken																			
08-Nov-10	1205	see comments																							
02-Mar-11	1200			7.03	3320	29.2	7.16	4010	<0.01	0.001					<0.001		0.005	<0.05	<0.001	0.002	<0.001		0.027	<0.0001	
03-May-11	1030			7.1	3160	14.5																			
01-Sep-11	1030			7.15	3650	16.8																			
06-Dec-11	1200			7.36	3590	22.3																			
20-Mar-12	1040			7.32	3680	21.7	7.61	4260	<0.01	0.002	0.003	<0.001		<0.0001	<0.001	<0.001	0.028	<0.05	0.001	0.002	<0.001		0.04	0.022	<0.0001
24-May-12	1330			7.91	3580	15.3																			
28-Aug-12	1200	see comments																							
26-Nov-12	1250	see comments																							
12-Jun-13	1120	see comments																							
29-Aug-13	1150	see comments																							
12-Dec-13	1400	see comments																							
27-Feb-14	1215	see comments																							
12-Jun-14	1420	see comments																							
11-Sep-14	930	see comments																							
27-Nov-14	1235	see comments																							
28-May-15	1240	see comments																							
02-Sep-15	1225	see comments																							
08-Dec-15	1330	see comments																							
02-Mar-16	1105	see comments																							
24-May-16	1115	see comments																							
07-Sep-16		see comments																							
30-Nov-16		see comments																							
21//Mar/17		see comments																							
06-Jun-17		see comments																							
18-Sep-17		see comments																							
07-Dec-17		see comments																							
26-Mar-18		see comments																							
20-Jun-18		see comments																							
28-Sep-18		see comments																							
06-Dec-18		see comments																							

Bore – WB4 cont.

Date	Time	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	Comments		
		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										
DW GVs	-	-	180	-		250	250		-	-			0.5	3	50	-	1000					
CW GVs	1000	-	-	-		-	1000		-	-			-	30	400	-	-					
03-Sep-08																			casing sealed			
13-Oct-08																			casing sealed			
29-Oct-08																			casing sealed			
22-Jun-09																			casing sealed			
15-Sep-09																			casing sealed			
30-Nov-09																			casing sealed			
25-Feb-10																			casing sealed			
26-Aug-10	1230																		Bore covered by pump unable to dip-Sample taken from tank			
08-Nov-10	1205																		Bore covered by pump unable to dip. Thank empty, unable to sample			
02-Mar-11	1200	247	183	363	2	43.2	1200	26	<1	<1	312	312	40.6	3.13		<0.01	3.79	3.79	Bore covered by pump unable to dip, Sample taken from tank			
03-May-11	1030																		Bore covered by pump unable to dip, Sample taken from tank			
01-Sep-11	1030																		Bore covered by pump unable to dip, Sample taken from tank			
06-Dec-11	1200																					
20-Mar-12	1040	244	182	402	2	44.7	1170	33	<1	<1	378	378	41.2	4.02	0.05	0.02	3.21	3.23	2710			
24-May-12	1330																		Bore covered by pump unable to dip, Sample taken from tank			
28-Aug-12	1200																		From tank-no sample -tank empty			
26-Nov-12	1250																		Pump over bore			
12-Jun-13	1120																		Pump over bore			
29-Aug-13	1150																		Pump over bore			
12-Dec-13	1400																		Pump over bore - Tank Empty			
27-Feb-14	1215																		Pump over bore - Tank Empty			
12-Jun-14	1420																		Pump over bore-Tank empty			
11-Sep-14	930																		Pump over bore-Tank empty			
27-Nov-14	1235																		Pump over bore-Tank empty			
28-May-15	1240																		Pump over bore			
02-Sep-15	1225																		Pump over bore			
08-Dec-15	1330																		Pump over bore			
02-Mar-16	1105																		Pump over bore			
24-May-16	1115																		Pump over bore			
07-Sep-16																			Pump over bore			
30-Nov-16																			Pump over bore			
21//Mar/17																			Pump over bore			
06-Jun-17																			Pump over bore			
18-Sep-17																			Pump over bore			
07-Dec-17																			Pump over bore			
26-Mar-18																			Pump over bore			
20-Jun-18																			Pump over bore			
28-Sep-18																			Pump over bore			
06-Dec-18																			Pump over bore			

Bore – WB5

Date	Time	Depth to Stand - mbtoc	Depth to Ground - mbgl	Field Parameters			Lab Parameters		Total Metals															Mercury (Hg) - mg/L	
				pH	EC (µS/cm)	Temp. (°C)	pH	EC (µS/cm)	Aluminium (Al) - mg/L	Arsenic (As) - mg/L	Barium (Ba) - mg/L	Beryllium (Be) - mg/L	Boron (B) - mg/L	Cadmium (Cd) - 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	Selenium (Se) - mg/L	Vanadium (V) - mg/L	Zinc (Zn) - mg/L	
	DW GVs			6.5-8.0	2200	-	6.5-8.0	2200	0.2	0.007	0.7	-		0.002	0.05	-	2	0.3	0.01	0.1	0.02		-	3	0.001
	CW GVs								5	0.5	1	-		0.01	1	1	-	-	0.1	-	1		-	20	0.002
03-Sep-08	1540	4.65	4.23																						
13-Oct-08	1600	13.34	12.92																						
28-Oct-08		13.27	12.85	7.29	8400	22.5			<0.001	0.165	<0.001		0.0002	<0.001	<0.001	0.003	0.47	<0.001	0.267	0.267		<0.01	0.103	<0.0001	
23-Jan-09	1700	13.5	13.08																						
22-Jun-09	1045	-0.42	6.60	7930	21.3	7590			<0.001	0.163	<0.001		<0.0001	<0.001	<0.001	0.002	2.36	<0.001	0.231	0.002		<0.01	0.045	<0.0001	
15-Sep-09	1620		-0.42																						
30-Nov-09	0930	23.33	22.91	7.06	4880	27.9	7250	7.26	<0.01	<0.001				<0.005		0.002	<0.05	<0.001	0.253	0.001			0.086	<0.0001	
25-Feb-10	1345	13.54	13.12																						
03-May-10	1215	13.37	12.95	7.43	7500	23	6720			<0.001	0.124	<0.001		<0.0001	<0.001	<0.001	0.003	0.21	<0.001	0.124	0.001		<0.01	0.085	<0.0001
26-Aug-10	1125	13.41	12.99	7.47	7480	Probe Broken																			
08-Nov-10	1255	14.46	14.04	7.86	5810	25.5																			
02-Mar-11	1315	21.39	20.97	6.45	5590	26.2	7540	6.67	<0.01	<0.001				<0.005		<0.001	<0.05	<0.001	0.243	<0.001			0.017	<0.0001	
03-May-11	1150	13.1	12.68	6.80	5760	16.1																			
30-Aug-11	1240	13.1	12.68	7.80	5610	19.5	7780	7.85	0.6	0.001	0.154	<0.001		0.0002	<0.001	<0.001	0.022	1.02	0.004	0.102	0.006		<0.01	0.201	<0.0001
04-Nov-11	1230	13.19	12.77	7.90	5550	26.1																			
20-Mar-12	1026	10.26	9.84	7.82	6670	24.5	7870	7.86	<0.01	0.001	0.091	<0.001		<0.0001	0.001	<0.001	0.004	0.65	<0.001	0.044	<0.001		0.02	0.022	<0.0001
23-May-12	1245	9.46	9.04	8.17	6360	16.8																			
27-Aug-12	1220	12.9	12.48	8.19	6930	18.7	7780	7.65	0.07	<0.001	0.156	<0.001		<0.0001	<0.001	<0.001	0.006	0.78	<0.001	0.198	0.001		<0.01	0.07	<0.0001
26-Nov-12	1125	11.82	11.40	7.68	6740	27.1																			
12-Mar-13	1210	11.6	11.18	7.70	6890	24.1	7750	7.81	<0.01	<0.001	0.084	<0.001		<0.0001	<0.001	<0.001	<0.001	0.41	<0.001	0.039	<0.001		<0.01	0.007	<0.0001
12-Jun-13	1010	10.87	10.45	7.86	6930	17.4																			
28-Aug-13	1310	12.5	12.08	8.20	6910	20.5	7630	8.17	<0.01	<0.001	0.059	<0.001	0.08	<0.0001	<0.001	<0.001	0.002	0.28	<0.001	0.141	<0.001	<0.01	<0.01	0.01	<0.0001
11-Dec-13	1350	12.71	12.29	7.80	7130	24.3																			
26-Feb-14	1340	19.4	18.98	7.60	7200	26.8	7840	7.86	<0.01	<0.001	0.157	<0.001	0.09	<0.0001	<0.001	<0.001	0.002	0.78	<0.001	0.174	<0.001	<0.01	<0.01	0.014	<0.0001
12-Jun-14	1240	12.96	12.54	7.90	7740	15																			
10-Sep-14	1220	14.9	14.48	7.6	5340	20.7	7940	7.71	0.02	<0.001	0.209	<0.001	0.07	<0.0001	<0.001	<0.001	0.004	0.3	<0.001	0.07	<0.001	<0.01	<0.01	0.03	
28-Nov-14	0930	20.39	19.97	7.9	5352	20.9																			
03-Mar-15	1225	11.9	11.48	7.8	7620	24.7	8360	8.16	<0.01	<0.001	0.093	<0.001	<0.05	<0.0001	<0.001	<0.001	<0.001	0.1	<0.001	0.029	<0.001	<0.01	<0.01	0.008	<0.0001
29-May-15	1040	11.98	11.56	7.4	7390	17.8																			
02-Sep-15	1345	11.3	10.88	7.5	7560	18.5	7660	7.9	0.01	<0.001	0.104	<0.001	0.07	<0.0001	<0.001	<0.001	<0.001	0.23	<0.001	0.036	<0.001	<0.01	<0.01	0.014	<0.0001
07-Dec-15	1230	13.23	12.81	7.5	8926	26.7																			
02-Mar-16	1245	19.8	19.38	7.4	7460	29.1	7860	7.69	<0.01	<0.001	0.154	<0.001	0.07	<0.0001	<0.001	<0.001	0.002	0.67	<0.001	0.159	<0.001	<0.01	<0.01	0.012	<0.0001
24-May-16	1315	11.3	10.88	7.5	7680	17.4																			
08-Sep-16	1220	11.62	11.20	7.8	6920	20.4	7540	7.96	<0.01	<0.001	0.088	<0.001	0.07	<0.0001	<0.001	<0.001	<0.001	0.12	<0.001	0.028	<0.001	<0.01	<0.01	0.005	<0.0001
30-Nov-16	1300	18.26	17.84	7.8	6980	26.7																			
22-Mar-17	1100	12.19	11.77	7.9	7130	24.4	7980	7.95	<0.01	<0.001	0.115	<0.001	0.06	<0.0001	<0.001	<0.001	<0.001	0.31	<0.001	0.042	<0.001	<0.01	<0.01	0.015	<0.0001
06-Jun-17	1420	11.23	10.81	7.5	5230	14.3																			
18-Sep-17	1220	11.3	10.88	7.7	7390	18.1	7880	8.07	0.02	<0.001	0.087	<0.001	0.06	<0.0001	<0.001	<0.001	<0.001	0.15	<0.001	0.013	<0.001	<0.01	<0.01	0.008	<0.0001
07-Dec-17	1415	11.46	11.04	7.7	7360	25.7																			
26-Mar-18	1225	12.2	11.78	8.1	7780	23.6	7820	8.14	<0.01	>0.001	0.075	<0.001	0.07	<0.0001	<0.001	<0.001	<0.001	0.1	<0.001	0.07	<0.001	<0.01	<0.01	0.006	<0.0001
20-Jun-18	1415	13.6	13.18	7.4	7820	15.4																			
27-Sep-18	1350	14.4	13.98	7.6	7210	18.9	8050	7.74	<0.01	<0.001	0.132	<0.001	0.08	<0.0001	<0.001	<0.001	0.03	0.33	<0.001	0.106	0.001	<0.01	<0.01	0.032	<0.0001
07-Dec-18	1415	11.46	11.04	7.7	7360	25.7																			

Bore - WB5 cont.

Date	Time	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	Comments	
		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									
DW GVs	-	-	180	-		250	250		-	-				0.5	3	50	-	1000			
CW GVs	1000	-	-	-		-	1000		-	-				-	30	400	-	-			
03-Sep-08	1540																				
13-Oct-08	1600																				
28-Oct-08	314	288	979	8	82.1	2350	89	<1	<1	505	505	78.2	2.39	0.22					5680		
23-Jan-09	1700																				
22-Jun-09	1045	318	270	1080	9	85.3	2680	67	<1	<1	612	612	89.4	2.36	0.02					4580	Sampled from tank fed by bore
15-Sep-09	1620																				Bore unable to be dipped
30-Nov-09	0930	282	280	965	10	79.3	2330	63.8	<1	<1	494	494	77	1.45	<0.01	2.23	2.23				Bore unable to be dipped
25-Feb-10	1345																				
03-May-10	1215	217	268	1020	9	77.5	2360	91	<1	<1	415	415	76.8	0.41	<0.01					4570	
26-Aug-10	1125																				From tank
08-Nov-10	1255																				Water from tank
02-Mar-11	1315	301	259	958	10	78.3	2420	75	<1	<1	216	216	74	2.79	0.02	2.13	2.14				Water from tank
03-May-11	1150																				
30-Aug-11	1240	191	266	1020	9	76	2500	70	<1	<1	328	328	78.5	1.63	<0.01	<0.01	2.1	2.1	4290	Water from tank	
04-Nov-11	1230																				
20-Mar-12	1026	176	301	1220	11	86.9	2680	95	<1	<1	258	258	82.7	2.45	<0.10	0.02	1.59	1.61	4810		
23-May-12	1245																				
27-Aug-12	1220	281	256	964	8	77.2	2050	93	<1	<1	600	600	71.8	3.67	<0.10	0.02	2.85	2.87	4900		
26-Nov-12	1125																				
12-Mar-13	1210	176	289	1060	12	79	2450	71	<1	<1	288	288	76.3	1.69	0.15	0.03	0.34	0.37	5320		
12-Jun-13	1010																				
28-Aug-13	1310	136	290	964	11	72.9	2500	57	<1	<1	230	230	76.3	2.31	0.09						5140
11-Dec-13	1350																				
26-Feb-14	1340	256	254	833	10	70.2	1980	79	<1	<1	471	471	66.9	2.38	0.14						5540
12-Jun-14	1240																				
10-Sep-14	1220	286	269	899	10	75.8	2420	90	<1	<1	630	630	82.7	4.39	0.35	0.09	0.62	0.71	5780		
28-Nov-14	0930																				
03-Mar-15	1225	171	282	1080	90	79	2470	86	<1	<1	261	261	76.7	1.45	0.08	0.02	0.25	0.27	6300		
29-May-15	1040																				
02-Sep-15	1345	248	263	1020	8	78.6	1740	75	<1	<1	446	446	59.6	13.8	0.03	0.02	1.54	1.56	4890		
07-Dec-15	1230																				
02-Mar-16	1245	248	274	955	8	76.7	2340	85	<1	<1	467	467	77.1	0.29	0.08	<0.01	2.72	2.72	5410		
24-May-16	1315																				
08-Sep-16	1220	172	303	1080	8	80.7	2400	70	<1	<1	341	341	76	3.01	0.02	<0.01	0.04	0.04	4480		
30-Nov-16	1300																				
22-Mar-17	1100	233	246	955	8	73.6	2510	104	<1	<1	430	430	81.6	5.12	0.04	0.02	1.05	1.07	5500		
06-Jun-17	1420																				
18-Sep-17	1220	178	243	893	7	67.9	2300	62	<1	19	408	427	74.7	4.77	0.03	0.02	0.86	0.88	4800		
07-Dec-17	1415																				
26-Mar-18	1225	169	278	1260	8	86.3	2580	76	<1	<1	276	276	79.9	3.88	0.02	<0.01	0.1	0.1	4680		
20-Jun-18	1415																				
27-Sep-18	1350	269	264	984	9	78.2	2480	80	<1	<1	518	518	82	2.37	0.1	0.05	1.25	1.3	5230		
07-Dec-18	1415																				

Bore – WB6

Date	Time	Depth to Stand - mbtoc	Depth to Ground - mbgl	Field Parameters			Lab Parameters		Total Metals															Mercury (Hg) - mg/L
				pH	EC (µS/cm)	Temp. (°C)	pH	EC (µS/cm)	Aluminium (Al) - mg/L	Arsenic (As) - mg/L	Barium (Ba) - mg/L	Beryllium (Be) - mg/L	Boron (B) - mg/L	Cadmium (Cd) - 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	Selenium (Se) - mg/L	Vanadium (V) - mg/L	Zinc (Zn) - mg/L
	DW GVs			6.5-8.0	2200	-	6.5-8.0	2200	0.2	0.007	0.7	-		0.002	0.05	-	2	0.3	0.01	0.1	0.02	-	3	0.001
	CW GVs								5	0.5	1	-		0.01	1	1	-	-	0.1	-	1	-	20	0.002
03-Sep-08	1626	23.64	23.18																					
13-Oct-08	1315	23.51	23.05																					
29-Oct-08			-0.46																					
23-Jan-09	1720	24.3	23.84																					
22-Jun-09	1110	24.2	23.74																					
15-Sep-09	1528	24.32	23.86																					
30-Nov-09	1000	24.51	24.05																					
25-Feb-10	1335	25.54	25.08																					
03-May-10	1155	24.2	23.74																					
26-Aug-10	1055	23.96	23.50																					
08-Nov-10	1310	23.8	23.34																					
07-Mar-11	1340	23.23	22.77																					
03-May-11	1140	23.02	22.56																					
30-Aug-11	1150	23.04	22.58																					
04-Nov-11	1155	23.16	22.70																					
20-Mar-12	1140	22.21	21.75																					
23-May-12	1200	21.55	21.09																					
27-Aug-12	1130	21.11	20.65																					
26-Nov-12	1100	20.91	20.45																					
12-Mar-13	1130	20.92	20.46																					
12-Jun-13	0935	20.95	20.49																					
28-Aug-13	1230	21.08	20.62																					
11-Dec-13	1320	21.15	20.69																					
24-Feb-14	1315	21.35	20.89																					
12-Jun-14	1255	21.57	21.11																					
10-Sep-14	1130	21.7	21.24																					
28-Nov-14	1215	21.93	21.47																					
29-May-15	1005	22.37	21.91																					
03-Sep-12	1010	22.53	22.07																					
07-Dec-15	1210	22.87	22.41																					
02-Mar-16	1410	23.11	22.65																					
24-May-16	1335	23.29	22.83																					
07-Sep-16	1245	23.46	23.00																					
30-Nov-16	1245	22.51	22.05																					
22-Mar-17	1005	22.17	21.71																					
06-Jun-17	1220	22.13	21.67																					
18-Sep-17	1100	22.3	21.84																					
07-Dec-17	1220	22.51	22.05																					
26-Mar-18	1230	22.46	22.00																					
20-Jun-18	1225	22.73	22.27																					
27-Sep-18	1145	22.97	22.51																					
07-Dec-18	1220	22.51	22.05																					

Bore - WB6 cont.

Date	Time	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	Comments		
		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										
DW GVs	-	-	180	-		250	250		-	-			0.5	3	50	-	1000					
CW GVs	1000	-	-	-		-	1000		-	-			-	30	400	-	-					
03-Sep-08	1626																					Windmill over bore
13-Oct-08	1315																					Windmill over bore
29-Oct-08																						Windmill over bore
23-Jan-09	1720																					Windmill over bore
22-Jun-09	1110																					Windmill over bore
15-Sep-09	1528																					Windmill over bore
30-Nov-09	1000																					Windmill over bore
25-Feb-10	1335																					Windmill over bore
03-May-10	1155																					Windmill over bore
26-Aug-10	1055																					Windmill over bore
08-Nov-10	1310																					Windmill over bore
07-Mar-11	1340																					Windmill over bore
03-May-11	1140																					Windmill over bore
30-Aug-11	1150																					Windmill over bore
04-Nov-11	1155																					
20-Mar-12	1140																					
23-May-12	1200																					
27-Aug-12	1130																					
26-Nov-12	1100																					No sample-broken windmill over bore
12-Mar-13	1130																					
12-Jun-13	0935																					
28-Aug-13	1230																					
11-Dec-13	1320																					No Sample - Windmill over bore
24-Feb-14	1315																					No Sample - Windmill over bore
12-Jun-14	1255																					
10-Sep-14	1130																					
28-Nov-14	1215																					
29-May-15	1005																					Windmill over bore
03-Sep-12	1010																					Windmill over bore
07-Dec-15	1210																					Windmill over bore
02-Mar-16	1410																					Windmill over bore
24-May-16	1335																					Windmill over bore
07-Sep-16	1245																					Windmill over bore
30-Nov-16	1245																					Windmill over bore
22-Mar-17	1005																					Windmill over bore
06-Jun-17	1220																					Windmill over bore
18-Sep-17	1100																					Broken windmill over bore
07-Dec-17	1220																					Windmill over bore
26-Mar-18	1230																					Broken windmill over bore
20-Jun-18	1225																					Windmill over bore
27-Sep-18	1145																					Windmill over bore
07-Dec-18	1220																					Broken windmill over bore

Bore – WB7

Date	Time	Depth to Stand - mbtoc	Depth to Ground - mbgl	Field Parameters			Lab Parameters		Total Metals															Mercury (Hg) - mg/L	
				pH	EC (µS/cm)	Temp. (°C)	pH	EC (µS/cm)	Aluminium (Al) - mg/L	Arsenic (As) - mg/L	Barium (Ba) - mg/L	Beryllium (Be) - mg/L	Boron (B) - mg/L	Cadmium (Cd) - 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	Selenium (Se) - mg/L	Vanadium (V) - mg/L	Zinc (Zn) - mg/L	
	DW GVs			6.5-8.0	2200	-	6.5-8.0	2200	0.2	0.007	0.7	-		0.002	0.05	-	2	0.3	0.01	0.1	0.02		-	3	0.001
	CW GVs								5	0.5	1	-		0.01	1	1	-	-	0.1	-	1		-	20	0.002
04-Sep-08	0830	42.00	41.75																						
13-Oct-08	1240	19.36	19.11																						
28-Oct-08		19.15	18.90	7.25	2730	22.1				0.002	0.609	<0.001			<0.0001	<0.001	<0.001	0.021	0.19	<0.001	0.012	0.012	0.02	0.052	<0.0001
23-Jan-09	1752	21.43	21.18																						
22-Jun-09	1210			7.4	2690	18.8		2660		0.001	0.665	<0.001			<0.0001	<0.001	<0.001	0.02	0.09	<0.001	0.012	<0.001	0.02	0.046	<0.0001
15-Sep-09	1508																								
30-Nov-09	1200			7.39	2640	30.8	7.3	2260	<0.01	0.002						<0.005		0.019	<0.05	<0.001	0.006	<0.001		0.029	<0.001
25-Feb-10	1300																								
03-May-10	1100	15.27	15.02	7.45	2890	21.4		2470		0.002	0.663	<0.001			<0.0001	<0.001	<0.001	0.038	0.45	0.006	0.024	0.003	0.02	5.72	<0.0001
26-Aug-10	1020	26.18	25.93																						
08-Nov-10	1340	31.8	31.55	7.24	2240	31.3																			
07-Mar-11	1240	25.4	25.15	7.24	2230	28.5	7.23	2440	<0.01	0.002						<0.001		0.035	<0.05	0.001	0.008	<0.001		1.57	<0.0001
03-May-11	1230	15.05	14.80	7.45	2130	18																			
30-Aug-11	1035	17.93	17.68	7.9	2060	18.7	7.91	2750	55.1	0.072	2.72	0.002			0.0002	0.053	0.042	1.46	108	0.442	3.67	0.069	0.26	16.1	<0.0001
04-Nov-11	1100	29.68	29.43	7.7	2080	23.8																			
20-Mar-12	1110	3.23	2.98	7.41	3120	23.7	7.74	3550	0.07	0.027	1	<0.001			<0.0001	0.005	<0.001	0.35	12.3	0.149	0.067	<0.001	0.07	2.48	<0.0001
23-May-12	1100	4.87	4.62	8.11	3070	14.9																			
27-Aug-12	1030	27.7	27.45	7.4	2840	15.5	7.79	3090	0.03	0.004	0.694	<0.001			<0.0001	<0.001	<0.001	0.069	1.01	0.012	0.017	<0.001	0.03	0.626	<0.0001
26-Nov-12	1015	19.14	18.89	7.18	2620	24.4																			
12-Mar-13	1020	9.77	9.52																						
12-Jun-13	0915	10.1	9.85																						
28-Aug-13	1100	10.42	10.17																						
11-Dec-13	1220	10.63	10.38																						
24-Feb-14	1345	10.95	10.70																						
12-Jun-14	1340	11.14	10.89																						
10-Sep-14	1020	11.27	11.02																						
28-Nov-14	0820	11.47	11.22																						
29-May-15	1130	11.92	11.67																						
02-Sep-15	1100	12.01	11.76																						
07-Dec-15	1045	12.19	11.94																						
03-Mar-16	1220	12.35	12.10																						
25-May-16	935	12.47	12.22																						
07-Sep-16	1145	12.69	12.44																						
30-Nov-16	1130	11.71	11.46																						
22-Mar-17	930	11.78	11.53																						
06-Jun-17	1100	11.93	11.68																						
18-Sep-17	1030	12.08	11.83																						
07-Dec-17	1110	13.16	12.91																						
26-Mar-18	1115	12.3	12.05																						
20-Jun-18	1115	12.53	12.28																						
27-Sep-18	1025	12.68	12.43																						
06-Dec-18	1140	12.82	12.57																						

Bore – WB7 cont.

Date	Time	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	Comments	
		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									
DW GVs	-	-	180	-		250	250		-	-				0.5	3	50	-	1000			
CW GVs	1000	-	-	-		-	1000							-	30	400	-	-			
04-Sep-08	0830																				
13-Oct-08	1240																				
28-Oct-08		113	63	387	4	27.8	529	25	<1	<1	489	489	25.2	4.78	<0.001				1540		
23-Jan-09	1752																				
22-Jun-09	1210	117	58	417	4	28.9	604	33	<1	<1	533	533	28.4	0.92	1.4				1460	Sample from tank	
15-Sep-09	1508																			Bore covered by pump	
30-Nov-09	1200	102	58	367	4	25.9	571	21.7	<1	<1	497	497	26.5	1.06		0.09	5.94	6.03		Sample from tank	
25-Feb-10	1300																			Sample from tank	
03-May-10	1100	122	58	360	3	26.6	535	28.1	<1	<1	572	572	27.1	0.84	<0.01				1320	Sampled from tank fed by bore	
26-Aug-10	1020																			Windmill over bore, no access to water	
08-Nov-10	1340																				
07-Mar-11	1240	126	59	378	4	27.6	535	22	<1	<1	573	573	27	1.19		<0.01	6.45	6.45		Water from tank on windmill	
03-May-11	1230																			water from tank on windmill	
30-Aug-11	1035	122	57	382	4	27.5	585	27	<1	<1	516	516	27.4	0.21	0.04	<0.01	6.8	6.8	1470	water from tank on windmill	
04-Nov-11	1100																				
20-Mar-12	1110	203	71	475	5	36.8	845	49	<1	<1	482	482	34.5	3.19	0.06	<0.01	40.5	40.5	2420		
23-May-12	1100																				
27-Aug-12	1030	165	63	418	3	31.7	684	41	<1	<1	554	554	31.2	0.73	<0.01	<0.01	16.3	16.3	1810		
26-Nov-12	1015																				
12-Mar-13	1020																				
12-Jun-13	0915																			No sample	
28-Aug-13	1100																				
11-Dec-13	1220																			No sample - windmill over bore/no pressure off taps at tank	
24-Feb-14	1345																			No sample - windmill over bore/no pressure off taps at tank	
12-Jun-14	1340																			Windmill over bore-no pressure @ taps	
10-Sep-14	1020																				
28-Nov-14	0820																			Windmill over bore	
29-May-15	1130																			Windmill over bore	
02-Sep-15	1100																			Windmill over bore	
07-Dec-15	1045																			Windmill over bore	
03-Mar-16	1220																			Windmill over bore	
25-May-16	935																			Windmill over bore	
07-Sep-16	1145																			Windmill over bore	
30-Nov-16	1130																			Windmill over bore	
22-Mar-17	930																			Windmill over bore	
06-Jun-17	1100																			Windmill over bore	
18-Sep-17	1030																			Windmill over bore	
07-Dec-17	1110																			Windmill over bore	
26-Mar-18	1115																			Windmill over bore	
20-Jun-18	1115																			Windmill over bore	
27-Sep-18	1025																			Windmill over bore	
06-Dec-18	1140																			Windmill over bore	

Bore - WB8

Date	Time	Depth to Stand - mbtoc	Depth to Ground - mbgl	Field Parameters			Lab Parameters		Total Metals															Mercury (Hg) - mg/L	
				pH	EC (µS/cm)	Temp. (°C)	pH	EC (µS/cm)	Aluminium (Al) - mg/L	Arsenic (As) - mg/L	Barium (Ba) - mg/L	Beryllium (Be) - mg/L	Boron (B) - mg/L	Cadmium (Cd) - 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	Selenium (Se) - mg/L	Vanadium (V) - mg/L	Zinc (Zn) - mg/L	
DW GVs				6.5-8.0	2200	-	6.5-8.0	2200	0.2	0.007	0.7	-		0.002	0.05	-	2	0.3	0.01	0.1	0.02		-	3	0.001
CW GVs									5	0.5	1	-		0.01	1	1	-	-	0.1	-	1		-	20	0.002
03-Sep-08	no access																								
13-Oct-08	no access																								
29-Oct-08	no access																								
23-Jan-09	1840	46.9	46.4																						
22-Jun-09	1255	33.17	32.67	8.2	2240	18.5																			
15-Sep-09	1450	43.88	43.38																						
30-Nov-09	1350																								
25-Feb-10	1045	49.82	49.32																						
03-May-10	1035	33.09	32.59																						
26-Aug-10	925	32.73	32.23																						
09-Nov-10	1350	32.64	32.14																						
07-Mar-11	1050																								
03-May-11																									
01-Sep-11	1130	32.27	31.77																						
06-Dec-11	1010	32.08	31.58																						
21-Mar-12	1340	31.93	31.43																						
24-May-12	1240	31.53	31.03																						
28-Aug-12	1030	31.93	31.43																						
27-Nov-12	1345	31.81	31.31																						
13-Mar-13	1240	31.69	31.19																						
20-Jun-13	1315	31.47	30.97																						
30-Sep-13	0855	31.69	31.19																						
12-Dec-13	1235	31.6	31.1																						
27-Feb-14	1235	31.8	31.3																						
12-Jun-14	1015	30.27	29.77																						
11-Sep-14	1240	31.15	30.65																						
27-Nov-14	945	31.18	30.68																						
03-Jun-15	1040	29.3	28.8																						
03-Sep-15	1130	29.21	28.71																						
08-Dec-15	1045	29.82	29.32																						
03-Mar-16	1145	29.96	29.46																						
25-May-16	1150	29.15	28.65																						
08-Sep-16	1305	28.78	28.28																						
01-Dec-16	1020	28.45	27.95																						
22-Mar-17	1335	28.52	28.02																						
07-Jun-17	1045	28.03	27.53																						
14-Sep-17	1110	29.3	28.8																						
08-Dec-17	1245	29.07	28.57																						
05-Apr-18	1300	29.52	29.02																						
21-Jun-18	1315	31.25	30.75																						
03-Oct-18	1300	31.02	30.52																						
07-Dec-18	1225	28.63	28.13																						

Bore - WB8 cont.

Date	Time	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	Comments
		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								
DW GVs	-	-	180	-		250	250		-	-			0.5	3	50	-	1000		
CW GVs	1000	-	-	-		-	1000		-	-			-	30	400	-	-		
03-Sep-08	no access																		
13-Oct-08	no access																		
29-Oct-08	no access																		
23-Jan-09	1840																		
22-Jun-09	1255																		
15-Sep-09	1450																		
30-Nov-09	1350																		Dry
25-Feb-10	1045																		
03-May-10	1035																		
26-Aug-10	925																		
09-Nov-10	1350																		
07-Mar-11	1050																		Unable to sample
03-May-11																			Unable to sample
01-Sep-11	1130																		Unable to sample
06-Dec-11	1010																		Unable to sample
21-Mar-12	1340																		Unable to sample
24-May-12	1240																		Unable to sample
28-Aug-12	1030																		Unable to sample
27-Nov-12	1345																		Unable to sample
13-Mar-13	1240																		Pump over bore
20-Jun-13	1315																		Pump over bore
30-Sep-13	0855																		Pump over bore
12-Dec-13	1235																		Pump over bore
27-Feb-14	1235																		Pump over bore
12-Jun-14	1015																		Pump over bore
11-Sep-14	1240																		Pump over bore
27-Nov-14	945																		Pump over bore
03-Jun-15	1040																		Pump over bore
03-Sep-15	1130																		Pump over bore
08-Dec-15	1045																		Pump over bore
03-Mar-16	1145																		Pump over bore
25-May-16	1150																		Pump over bore
08-Sep-16	1305																		Pump over bore
01-Dec-16	1020																		Pump over bore
22-Mar-17	1335																		Pump over bore
07-Jun-17	1045																		Pump over bore
14-Sep-17	1110																		Pump over bore
08-Dec-17	1245																		Pump over bore
05-Apr-18	1300																		Pump over bore
21-Jun-18	1315																		Pump over bore
03-Oct-18	1300																		Pump over bore
07-Dec-18	1225																		Pump over bore

Bore - WB9

Date	Time	Depth to Stand - mbtoc	Depth to Ground - mbgl	Field Parameters			Lab Parameters		Total Metals																	Mercury (Hg) - mg/L
				pH	EC (µS/cm)	Temp. (°C)	pH	EC (µS/cm)	Aluminium (Al) - mg/L	Arsenic (As) - mg/L	Barium (Ba) - mg/L	Beryllium (Be) - mg/L	Boron (B) - mg/L	Cadmium (Cd) - 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	Selenium (Se) - mg/L	Vanadium (V) - mg/L	Zinc (Zn) - mg/L		
				6.5-8.0	2200	-	6.5-8.0	2200	0.2	0.007	0.7	-		0.002	0.05	-	2	0.3	0.01	0.1	0.02		-	3	0.001	
									5	0.5	1	-		0.01	1	1	-	-	0.1	-	1		-	20	0.002	
3-Sep-08	1740	24.15	23.84																							
13-Oct-08	1100	24.36	24.05																							
28-Oct-08		24.77	24.46	7.53	931	23.3				0.021	0.459	<0.001			0.0008	0.001	<0.001	0.023	37.3	0.034	0.157	0.157		0.02	2.44	<0.0001
23/Jan/09	1816	24.57	24.26																							
22/Jun/09	1345	24.26	23.95	7.9	1080	20.6		1040		0.005	0.648	<0.01			0.0017	<0.001	<0.001	0.004	11.8	0.005	0.034	0.002		<0.001	0.792	<0.0001
15/Sep/09	1443	24.25	23.94																							
30/Nov/09	1400	24.36	24.05	7.17	1261	25.3	7.14	1020	<0.01	<0.001					<0.005		<0.001	0.33	<0.001	0.158	0.002			1.78	<0.001	
25/Feb/10	1120	25.89	25.58																							
03/May/10	1010	24.57	24.26																							
26/Aug/10	900	24.49	24.59	7.72	1057	15.5																				
09/Nov/10	1340	24.65	24.34																							
07/Mar/11	1130	24.99	24.68	7.44	1143	26.7	7.46	1020	<0.01	0.002					<0.001		0.014	0.66	<0.001	0.004	<0.001			0.063	<0.0001	
03/May/11	1345	25.57	25.26	7.6	1014	18.9																				
30/Aug/11	930	24.67	24.36	7.9	981	17.4	7.92	1260	<0.01	0.001	0.111	<0.001		<0.0001	<0.001	<0.001	0.005	0.51	<0.001	0.005	<0.001		0.01	0.037	<0.0001	
04/Nov/11	1015	24.89	24.58	7.7	937	23.1																				
20/Mar/12	0930	24.9	24.59	7.58	1126	23.5	7.85	1220	<0.01	0.01	0.523	<0.001		<0.0001	0.004	<0.001	0.067	16.3	0.002	0.044	<0.001		0.08	0.597	<0.0001	
23/May/12	0930	24.52	24.21	8.15	902	17.8																				
27/Aug/12	0945	24.3	23.99	8.27	1010	15	8.29	1050	0.06	0.003	0.065	<0.001		<0.0001	<0.001	<0.001	0.022	3.46	0.002	0.02	<0.001		0.02	0.197	<0.0001	
26/Nov/12	0910	24.17	23.86	8.15	995	24.3																				
12/Mar/13	0910	25.16	24.85																							
10/Jun/13	0910	24.37	24.06																							
28/Aug/13	0910	24.25	23.94																							
12/Dec/13	1250	24.09	23.78																							
26/Feb/14	1130	25	24.69	7.5	1180	27.8	8.12	1240	0.78	0.057	0.562	<0.001	0.08	0.0004	0.057	0.003	0.872	80.3	0.08	0.169	0.019	<0.01	0.34	3.35	<0.0001	
12/Jun/14	0915	24.58	24.27	7.7	1250	16																				
11/Sep/14	1145	24.5	24.19	7.5	1180	22.6	7.96	1220	<0.01	0.002	0.125	<0.001	0.07	<0.0001	0.004	<0.001	<0.001	0.14	<0.001	0.005	<0.001	<0.01	0.02	0.02	<0.0001	
27/Nov/14	1005	24.61	24.30	8.1	1067	26.1																				
04/Mar/15	1315	23.9	23.59	7.3	1240	27.3	7.61	1300	<0.01	0.002				<0.001		<0.001	<0.05	<0.001	0.001	<0.001			<0.005	<0.0001		
03/Jun/15	1020	24.02	23.71	7.6	1120	11.3																				
15/Sep/15	1115	23.3	22.99	7.7	1160	18.1	8.18	1170	0.01	0.003	0.1	<0.001	0.12	<0.0001	<0.001	<0.001	0.005	0.69	<0.001	0.003	<0.001	<0.01	0.02	0.023	<0.0001	
08/Dec/15	1140	24.1	23.79	7.6	1120	27.3																				
03/Mar/16	1045			7.6	1210	25	7.85	1240	0.1	0.002	0.13	<0.001	0.05	<0.0001	<0.001	<0.001	0.002	0.15	<0.001	0.008	<0.001	<0.01	0.02	0.043	<0.0001	
25/May/16	1210																									
01/Dec/16	1100																									
22/Mar/17	1245																									
7-Jun-17	1200																									
14-Sep-17																										
08/Dec-17																										
5-Apr-18	1345	24.68	24.37																							
21-Jun-18	1200	24.13	23.82																							
3-Oct-18	1300	23.96	23.65																							
7-Dec-18	1120	24.07	23.76																							

Bore - WB9 cont.

Date	Time	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	Comments		
		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										
DW GVs	-	-	180	-		250	250		-	-				0.5	3	50	-	1000				
CW GVs	1000	-	-	-		-	1000		-	-				-	30	400	-	-				
3-Sep-08	1740																					
13-Oct-08	1100																					
28-Oct-08	40	32	99	5	9.04	88	17	<1	<1	300	300	8.83	1.12	4.54					417			
23/Jan/09	1816																					
22/Jun/09	1345	21	27	104	8	8.03	84	<10	<1	<1	403	403	10.4	13	1.34					508		
15/Sep/09	1443																					
30/Nov/09	1400	91	46	115	2	13.3	56.1	64.5	<1	<1	527	527	13.4	0.48		<0.01	0.2	0.2				
25/Feb/10	1120																				Windmill over bore	
03/May/10	1010																				Bore covered by pump, tank fed by pump empty, could not sample	
26/Aug/10	900																				Windmill	
09/Nov/10	1340																				Windmill over bore	
07/Mar/11	1130	92	44	122	2	13.6	58	61	<1	<1	525	525	13.4	0.61		<0.01	0.3	0.3				
03/May/11	1345																				from windmill outlet	
30/Aug/11	930	85	44	116	2	13	61	67	<1	<1	480	480	12.7	0.97	<0.01	<0.01	0.16	0.16	712			
04/Nov/11	1015																					
20/Mar/12	0930	102	49	141	2	15.3	67	80	<1	<1	517	517	13.9	4.85	0.06	<0.01	0.31	0.31	780			
23/May/12	0930																					
27/Aug/12	0945	45	44	124	2	11.3	65	73	<1	<1	428	428	11.9	2.58	0.02	<0.01	0.39	0.39	666			
26/Nov/12	0910																					
12/Mar/13	0910																					
10/Jun/13	0910																				Unable to collect sample-tank empty	
28/Aug/13	0910																					
12/Dec/13	1250																				No sample - pump over bore/tank empty	
26/Feb/14	1130	87	46	114	2	13.1	85	71	<1	<1	447	447	12.8	1.26	0.01					764		
12/Jun/14	0915																					
11/Sep/14	1145	85	44	114	2	12.9	71	69	<1	<1	455	455	12.5	1.33	0.03	<0.01	0.27	0.27	731			
27/Nov/14	1005																					
04/Mar/15	1315	87	48	128	2	13.9	76	72	<1	<1	520	520	14	0.45		<0.01	0.39	0.39				
03/Jun/15	1020																					
15/Sep/15	1115	83	48	121	2	13.4	65	66	<1	<1	497	497	13.1	0.99	0.06	<0.01	0.28	0.28	708			
08/Dec/15	1140																					
03/Mar/16	1045	95	51	122	2	14.3	64	68	<1	<1	474	474	12.7	5.93	0.13	<0.01	0.26	0.26	682	Pump over bore		
25/May/16	1210																				Pump over bore	
01/Dec/16	1100																				Pump over bore. Tank empty.	
22/Mar/17	1245																				Pump over bore	
7-Jun-17	1200																				Pump over bore	
14-Sep-17																					Pump over bore	
08/Dec/17																					Pump over bore	
5-Apr-18	1345																				Pump over bore	
21-Jun-18	1200																				Pump over bore	
3-Oct-18	1300																				Pump over bore	
7-Dec-18	1120																				Pump over bore	

Bore – WB10

Date	Time	Depth to Stand - mbtoc	Depth to Ground - mbgl	Field Parameters			Lab Parameters		Total Metals																Mercury (Hg) - mg/L		
				pH	EC (µS/cm)	Temp. (°C)	pH	EC (µS/cm)	Aluminium (Al) - mg/L	Arsenic (As) - mg/L	Barium (Ba) - mg/L	Beryllium (Be) - mg/L	Boron (B) - mg/L	Cadmium (Cd) - 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	Selenium (Se) - mg/L	Vanadium (V) - mg/L	Zinc (Zn) - mg/L			
		DW GVs		6.5-8.0	2200	-	6.5-8.0	2200	0.2	0.007	0.7	-		0.002	0.05	-	2	0.3	0.01	0.1	0.02		-	3	0.001		
		CW GVs							5	0.5	1	-		0.01	1	1	-	-	0.1	-	1		-	20	0.002		
25-Jul-08	1050	13.85	13.78																								
04-Sep-08	0750	13.90	13.83																								
13-Oct-08	1200	13.87	13.80																								
28-Oct-08		14	13.93	7.45	2235	17.8				0.002	0.045	<0.001		<0.0001	0.001	<0.001	0.002	6.47	0.004	0.02	0.02			0.01	0.571	<0.0001	
27-Jan-09	1119	14.27	14.20																								
22-Jun-09	1530	14.08	14.01	7	2220	21.2		2180		0.002	0.05	<0.001		<0.0001	<0.001	<0.001	0.004	6.91	0.003	0.021	0.002			0.01	0.858	<0.0001	
11-Sep-09	1432	14.72	14.65																								
30-Nov-09	1450	14.69	14.62	7.11	2052	23.8	6.89	1690	<0.01	<0.001					<0.005		0.008	<0.05	<0.001	0.014	0.001			0.195	<0.0001		
25-Feb-10	1015	14.3	14.23																								
03-May-10	1440	14.54	14.47	7.93	2300	22.5			2010		0.005	0.089	<0.001		0.0003	0.001	0.001	0.02	18	0.016	0.069	0.005			0.03	1.12	<0.0001
24-Sep-10	1020	14.12	14.05	6.7	1833	23.5																					
10-Nov-10	1150	14.17	14.10	6.72	1905	24.2																					
07-Mar-11	950	14.41	14.34	6.75	1910	24.7	6.91	1850	0.27	0.004					0.002		0.042	21.7	0.009	0.136	0.002				1.11	<0.0001	
03-May-11	1425	14.14	14.07	6.8	1685	21																					
01-Sep-11	1240	16.54	16.47	6.95	1745	22.6	7.74	2050	0.14	<0.001	0.045	<0.001		<0.0001	<0.001	<0.001	0.006	2.23	0.002	0.029	0.001			<0.01	0.203	<0.0001	
06-Dec-11	0920	14.19	14.12	6.92	1780	21.1																					
21-Mar-12	1220	14.2	14.13	6.94	1880	24.3	7.4	2020	0.04	<0.001	0.047	<0.001		<0.0001	<0.001	>0.001	0.02	0.99	0.002	0.026	<0.001			<0.01	0.259	<0.0001	
24-May-12	1135	14.02	13.95	6.68	1902	21.7																					
04-Sep-12	0925	14.1	14.03	6.92	1870	20.3	7.61	2010	0.02	<0.001	0.041	<0.001		<0.0001	<0.001	<0.001	0.014	1.13	<0.001	0.019	<0.001			<0.01	0.204	<0.0001	
13-Dec-12	925	14.83	14.76	6.94	1969	22.4																					
13-Mar-13	1030	14.2	14.13	6.97	2020	23.3	7.05	2150	0.05	<0.001	0.049	<0.001		0.0002	<0.001	<0.001	0.02	4.21	0.002	0.022	0.001			<0.01	0.287	<0.0001	
10-Jul-13	1040	14.15	14.08	6.95	1883	20.1																					
30-Aug-13	1030	14.2	14.13	6.9	1880	21.5	7.53	2050	0.51	0.003	0.059	<0.001	0.09	0.0001	<0.001	<0.001	0.086	6.57	0.008	0.08	0.002	<0.01	0.01	0.772	<0.0001		
12-Dec-13	1440	14.37	14.30	7	1925	22																					
26-Feb-14	1040	14.4	14.33	7	2010	23.2	7.58	2110	0.06	<0.001	0.064	<0.001	0.1	<0.0001	0.004	<0.001	0.017	1.21	0.001	0.057	<0.001	<0.01	<0.01	0.106	<0.0001		
19-Jun-14	1040	14.14	14.07	7.1	2010	20.3																					
11-Sep-14	1050	14	13.93	7	1960	20.9	7.6	2020	0.11	0.009	0.086	<0.001	0.09	0.0002	0.001	<0.001	0.007	26.7	0.008	0.064	0.002	<0.01	0.04	0.259	<0.0001		
28-Nov-14	1050	14.31	14.24	7.1	2050	22.3																					
03-Mar-15	1415	14.7	14.63	7	2070	22.9	7.46	2220	0.18	0.002	0.055	<0.001	0.08	<0.0001	<0.001	<0.001	0.005	9.44	0.002	0.055	0.002	<0.01	<0.01	0.33	<0.0001		
03-Jun-15	0820	14.16	14.09	7	2210	18.9																					
02-Sep-15	0925	14.2	14.13	7	2060	20.2	7.41	2060	0.03	0.005	0.049	<0.001	0.1	<0.0001	<0.001	<0.001	0.004	9.48	<0.001	0.026	0.001	<0.01	0.01	0.26	<0.0001		
08-Dec-15	940	14.63	14.56	6.9	2080	21.9																					
03-Mar-16	0900	14.4	14.33	7	2090	22	7.61	2120	0.06	0.003	0.081	<0.001	0.08	<0.0001	<0.001	<0.001	0.005	15.7	0.001	0.044	<0.001	<0.01	<0.01	0.106	<0.0001		
25-May-16	1015	14.13	14.06	7	2050	20																					
08-Sep-16	1340	14.1	14.03	7.1	1980	20.8	7.33	2080	0.03	0.005	0.066	<0.001	0.08	<0.0001	<0.001	<0.001	0.001	16	<0.001	0.136	<0.001	<0.01	<0.01	0.074	<0.0001		
01-Dec-16	1155	13.95	13.88	7	1972	21.6																					
21-Mar-17	940	13.97	13.90	7	1960	22.3	7.39	2040	0.24	0.005	0.066	<0.001	0.08	<0.0001	<0.001	<0.001	0.033	21.7	0.003	0.138	0.002	<0.01	<0.01	0.202	<0.0001		
07-Jun-17	1325	13.98	13.91	7.1	2030	20.1																					
14-Sep-17	900	14	13.93	6.9	2090	19.3	7.49	2100	0.08	0.004	0.057	<0.001	0.09	<0.0001	<0.001	<0.001	<0.001	12.7	<0.001	0.073	<0.001	<0.01	<0.01	0.112	<0.0001		
08-Dec-17	900	14.03	13.96	6.9	2070	23																					
05-Apr-18	1015	14.22	14.15	6.9	2060	22.1	7.38	2100	0.06	0.004	0.057	<0.001	0.08	<0.0001	<0.001	<0.001	<0.001	10.1	<0.001	0.063	<0.001	<0.01	<0.01	0.066	<0.0001		
21-Jun-18	915	14.37	14.30	6.9	1916	20.4																					
03-Oct-18	845	14.2	14.13	6.8	2000	21.1	7.05	2130	0.08	0.005	0.059	<0.001	0.09	<0.0001	<0.001	<0.001	0.011	12.4	<0.001	0.076	<0.001	<0.01	<0.01	0.067	<0.0001		
06-Dec-18	1005	14.2	14.13	6.9	2110	21.3																					

Bore - WB10 cont.

Date	Time	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	Comments	
		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									
DW GVs	-	-	180	-		250	250		-	-				0.5	3	50	-	1000		
CW GVs	1000	-	-	-	-	-	1000		-	-				-	30	400	-	-		
25-Jul-08	1050																			
04-Sep-08	0750																			
13-Oct-08	1200																			
28-Oct-08		138	79	248	<1	24.2	141	280	<1	<1	632	632	22.4	3.72	0.04				1310	
27-Jan-09	1119																			
22-Jun-09	1530	139	70	283	1	25	150	279	<1	<1	751	751	25.1	0.06	0.21				1320	
11-Sep-09	1432																			
30-Nov-09	1450	123	67	259	<1	23	117	225	<1	<1	717	717	22.3	1.47		<0.01	0.15	0.15		
25-Feb-10	1015																			
03-May-10	1440	137	70	266	<1	24.2	155	360	<1	<1	722	722	26.3	4.17	<0.01				1260	
24-Sep-10	1020																			From bore
10-Nov-10	1150																			
07-Mar-11	950	136	73	266	2	24.4	147	251	<1	<1	735	735	24.1	0.64		<0.01	0.15	0.15		
03-May-11	1425																			
01-Sep-11	1240	126	64	234	<1	21.7	164	274	<1	<1	504	504	20.4	3.15	0.06	<0.01	0.16	0.16	1230	In small shed
06-Dec-11	0920																			
21-Mar-12	1220	140	71	246	1	23.6	175	326	<1	<1	635	635	24.4	1.8	0.03	>0.01	0.29	0.29	1320	
24-May-12	1135																			
04-Sep-12	0925	137	73	239	1	23.2	170	262	<1	<1	704	704	24.3	2.22	0.09	0.02	0.11	0.13	1310	
13-Dec-12	925																			Brolga house
13-Mar-13	1030	131	73	278	1	24.7	158	266	<1	<1	725	725	24.5	0.35	0.01	<0.01	0.11	0.11	1370	
10-Jul-13	1040																			
30-Aug-13	1030	143	76	265	1	24.9	159	275	<1	<1	630	630	22.8	4.48	0.02				1220	
12-Dec-13	1440																			
26-Feb-14	1040	132	68	204	<1	21.1	140	239	<1	<1	670	670	22.3	2.91	<0.01				1250	
19-Jun-14	1040																			
11-Sep-14	1050	130	70	216	<1	21.6	150	301	<1	<1	579	579	22.1	0.98	0.03	0.02	0.12	0.14	1170	
28-Nov-14	1050																			
03-Mar-15	1415	144	78	270	1	25.4	155	293	<1	<1	734	734	25.1	0.45	0.66	<0.01	0.02	0.02	1340	
03-Jun-15	0820																			
02-Sep-15	0925	146	78	270	<1	25.4	130	274	<1	<1	636	636	22.1	7.07	0.02	<0.01	0.02	0.02	1270	
08-Dec-15	940																			
03-Mar-16	0900	139	89	290	1	26.9	159	293	<1	<1	638	638	23.3	7.08	0.65	<0.01	<0.01	<0.01	1380	
25-May-16	1015																			
08-Sep-16	1340	136	67	249	<1	23.1	166	258	<1	<1	742	742	24.9	3.66	0.22	<0.01	0.07	0.07	1310	
01-Dec-16	1155																			
21-Mar-17	940	129	71	236	<1	22.5	156	251	<1	<1	680	680	23.2	1.46	0.29	0.01	<0.01	<0.01	1360	
07-Jun-17	1325																			
14-Sep-17	900	154	73	284	<1	26	149	249	<1	<1	688	688	23.1	5.92	0.16	<0.01	<0.01	<0.01	1350	
08-Dec-17	900																			
05-Apr-18	1015	138	76	252	<1	24.1	158	283	<1	<1	727	727	24.9	1.58	0.27	<0.01	0.09	0.09	1280	
21-Jun-18	915																			
03-Oct-18	845	145	77	246	<1	24.3	156	289	<1	<1	640	640	23.2	2.25	0.35	<0.01	<0.01	<0.01	1070	
06-Dec-18	1005																			

Bore - WB11

Date	Time	Depth to Stand - mbtoc	Depth to Ground - mbgl	Field Parameters			Lab Parameters		Total Metals														Mercury (Hg) - mg/L		
				pH	EC (µS/cm)	Temp. (°C)	pH	EC (µS/cm)	Aluminium (Al) - mg/L	Arsenic (As) - mg/L	Barium (Ba) - mg/L	Beryllium (Be) - mg/L	Boron (B) - mg/L	Cadmium (Cd) - 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	Selenium (Se) - mg/L	Vanadium (V) - mg/L	Zinc (Zn) - mg/L	
		DW GVs		6.5-8.0	2200	-	6.5-8.0	2200	0.2	0.007	0.7	-		0.002	0.05	-	2	0.3	0.01	0.1	0.02	-	3	0.001	
		CW GVs							5	0.5	1	-		0.01	1	1	-	-	0.1	-	1	-	20	0.002	
25-Jul-08	1105	18.28	18.03																						
04-Sep-08	0740	18.78	18.53																						
13-Oct-08	1150	18.30	18.05																						
28-Oct-08		18.57	18.32	7.57	1086	19.6			<0.001	0.124	<0.001		<0.0001	<0.001	<0.001	0.004	4.24	0.004	0.253	0.253		<0.01	0.048	<0.0001	
23-Jan-09	1109	18.91	18.66																						
22-Jun-09	1505	18.35	18.10	8	880	21.3		917		<0.001	0.1	<0.001		<0.0001	<0.001	<0.001	0.002	5.4	0.004	0.298	0.002		<0.01	0.041	<0.0001
11-Sep-09	1425	18.88	18.63																						
30-Nov-09	1425	18.85	18.60	7.89	938	23.1	6.65	929	<0.01	<0.001				<0.001		0.001	<0.05	<0.001				0.005	<0.0001		
25-Feb-10	1000	18.72	18.47																						
03-May-10	1515	18.49	18.24	8.37	1083	22.5		921		<0.001	0.08	<0.001		<0.0001	<0.001	<0.001	0.001	6.02	0.003	0.379	0.002		<0.01	0.016	<0.0001
24-Sep-10	1000	17.91	17.66	7.59	865	24																			
10-Nov-10	1140	17.74	17.49	7.49	867	25.8																			
07-Mar-11	930	18.82	18.57	7.05	944	24.5	7.38	845	0.13	<0.001					0.001		0.014	8.99	0.002	0.586	0.001		0.438	<0.0001	
03-May-11	1400	17.59	17.34	7.25	867	20.3																			
01-Sep-11	1220	17.82	17.57	7.55	926	22.7	8.13	1200	0.1	<0.001	0.078	<0.001		<0.0001	<0.001	<0.001	0.002	10.6	<0.001	0.538	<0.001		<0.01	0.009	<0.0001
06-Dec-11	0900	17.18	16.93	7.5	905	21																			
21-Mar-12	1150	17	16.75	7.93	910	23.2	7.97	1020	0.03	<0.001	0.057	<0.001		<0.0001	<0.001	<0.001	0.005	3.24	0.001	0.397	<0.001		<0.01	0.016	<0.0001
24-May-12	1115	16.75	16.50																						
04-Sep-12	0905	16.42	16.17																						
13-Dec-12																									
13-Mar-13																									
10-Jul-13	1020	15.57	15.32	7.75	1241	19.9																			
30-Aug-13	1000	16.92	16.67	7.6	1120	21.8	7.99	1220	0.16	0.001	0.13	<0.001	0.21	<0.0001	<0.001	<0.001	0.035	5.59	0.007	0.189	0.001	<0.01	<0.01	0.078	<0.0001
12-Dec-13	1455	16.95	16.70	7.8	1310	22.4																			
26-Feb-14	1020	18.4	18.15	8.2	1550	23.3	8.37	1690	0.04	0.001	0.058	<0.001	0.14	<0.0001	0.004	<0.001	0.068	1.13	0.005	0.093	0.001	<0.01	<0.01	0.06	<0.0001
19-Jun-14	1020	17.18	16.93	7.7	1420	20.2																			
11-Sep-14	1030	16.9	16.65	7.8	1210	20.8	8.16	1250	0.38	0.002	0.143	<0.001	0.17	<0.0001	0.002	<0.001	0.009	6.45	0.01	0.229	0.004	<0.01	<0.01	0.034	<0.0001
28-Nov-14	1120	17.68	17.43	8.1	1310	22.8																			
03-Mar-15	1400	19.3	19.05	8	1320	24.2	7.96	1440	0.1	0.001	0.19	<0.001	0.41	<0.0001	0.003	<0.001	0.002	6.94	0.003	0.313	0.002	<0.01	<0.01	0.055	<0.0001
09-Jun-15	1230	18.14	17.89	7.7	1567	22																			
02-Sep-15	0900	17.5	17.25	7.6	1780	19.2	8.09	1780	0.05	<0.001	0.028	<0.001	0.1	<0.0001	<0.001	<0.001	0.006	0.96	<0.001	0.028	<0.001	<0.01	<0.01	0.039	<0.0001
08-Dec-15	1000																								
03-Mar-16	0940	20.3	20.05	7.8	1360	22.6	8.09	1410	0.57	0.001	0.141	<0.001	0.4	<0.0001	<0.001	<0.001	0.015	6.19	0.002	0.316	<0.001	<0.01	<0.01	0.064	<0.0001
25-May-16	955	17.92	17.67	7.7	978	18.5																			
20-Oct-16	1205	17.5	17.25	7.4	948	25.2	7.8	956	<0.01	<0.001	0.069	<0.001	0.06	<0.0001	<0.001	<0.001	0.016	0.21	<0.001	0.003	<0.001	<0.01	<0.01	0.026	<0.0001
01-Dec-16	1130	18.59	18.34	7.4	965	22.3																			
21-Mar-17	900	18.35	18.10	7.5	990	22.6	7.79	968	0.07	<0.001	0.076	<0.001	0.06	<0.0001	<0.001	<0.001	0.012	0.13	0.003	0.006	<0.001	<0.01	<0.01	0.042	<0.0001
07-Jun-17	1355	18.45	18.20	7.5	986	20.3																			
14-Sep-17	0940	18.6	18.35	7.3	997	18.2	7.8	986	<0.01	<0.001	0.074	<0.001	0.06	<0.0001	<0.001	<0.001	0.016	0.08	0.002	0.002	<0.001	<0.01	<0.01	0.022	<0.0001
08-Dec-17	950	20.15	19.90	7.3	984	22.5																			
05-Apr-18	925	18.74	18.49	7.6	977	22.8	7.81	1000	0.01	<0.001	0.078	<0.001	0.07	<0.0001	<0.001	<0.001	0.011	<0.05	<0.001	0.002	<0.001	<0.01	<0.01	0.02	<0.0001
21-Jun-18	845	18.89	18.64	7.6	943	19.2																			
03-Oct-18																									
06-Dec-18	1030	20.28	20.03	7.4	990	22.3																			

Bore - WB11 cont.

Date	Time	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	Comments	
		Calcium (Ca) - mg/L	Magnesium (Mg) - mg/L	Sodium (Na) - mg/L	Potassium (K) - mg/L		Chloride (Cl) - mg/L	Sulfate (SO ₄) - mg/L	Hydroxide Alkalinity as CaCO ₃ - mg/L	Carbonate Alkalinity as CaCO ₃ - mg/L	Bicarbonate Alkalinity as CaCO ₃ - mg/L	Alkalinity - mg/L									
DW GVs		-	-	180	-		250	250		-	-				0.5	3	50	-	1000		
CW GVs		1000	-	-	-		-	1000		-	-				-	30	400	-	-		
25-Jul-08	1105																				
04-Sep-08	0740																				
13-Oct-08	1150																				
28-Oct-08		34	28	149	6	10.6	133	31	<1	<1	323	323	10.9	1.15	0.78					576	
23-Jan-09	1109																				
22-Jun-09	1505	360	24	130	2	9.2	132	10	<1	<1	247	247	8.86	1.86	1.79					476	
11-Sep-09	1425																				
30-Nov-09	1425	29	24	122	2	8.79	138	2.52	<1	<1	251	251	8.97	1.05	<0.01	0.08	0.08				
25-Feb-10	1000																				
03-May-10	1515	33	24	127	2	9.19	156	5.84	<1	<1	246	246	9.44	1.34	0.95					474	
24-Sep-10	1000																				From Bore
10-Nov-10	1140																				
07-Mar-11	930	37	25	132	3	9.71	181	<1	<1	<1	238	238	9.88	0.88	<0.01	0.02	0.02				
03-May-11	1400																				
01-Sep-11	1220	37	25	132	2	9.7	229	<1	<1	<1	176	176	9.98	1.43	0.34	<0.01	0.02	0.02	528	Near irrigation pump	
06-Dec-11	0900																				
21-Mar-12	1150	31	24	140	4	9.71	258	1	<1	<1	156	156	10.4	3.5	0.15	0.23	0.69	0.92	522		
24-May-12	1115																				No sample. New pump over bore
04-Sep-12	0905																				
13-Dec-12																					New electric pump over bore-Brolga
13-Mar-13																					Pump over bore
10-Jul-13	1020																				
30-Aug-13	1000	52	41	196	1	14.5	74	80	<1	<1	480	480	13.3	4.19	0.07					719	
12-Dec-13	1455																				
26-Feb-14	1020	47	61	202	<1	16.2	130	214	<1	15	446	462	17.4	3.62	0.23					1010	
19-Jun-14	1020																				
11-Sep-14	1030	36	46	167	<1	12.8	79	121	<1	<1	396	396	12.7	0.7	0.05	<0.01	0.08	0.08	686		
28-Nov-14	1120																				
03-Mar-15	1400	44	35	233	1	15.2	85	65	<1	<1	578	578	15.3	0.25	0.05	<0.01	0.02	0.02	815		
09-Jun-15	1230																				
02-Sep-15	0900	70	74	264	1	21.1	125	258	<1	<1	471	471	18.3	7.04	0.04	<0.01	0.26	0.26	1030		
08-Dec-15	1000																				No access- gate locked
03-Mar-16	0940	34	38	246	1	15.6	75	75	<1	<1	583	583	15.2	1.02	0.08	<0.01	<0.01	<0.01	798		
25-May-16	955																				
20-Oct-16	1205	76	43	94	1	11.4	27	70	<1	<1	391	391	10	6.59	0.02	<0.01	0.3	0.3	520		
01-Dec-16	1130																				
21-Mar-17	900	76	39	83	1	10.6	28	86	<1	<1	382	382	10.2	2.04	<0.01	<0.01	0.22	0.22	604		
07-Jun-17	1355																				
14-Sep-17	0940	82	37	88	<1	11	31	72	<1	<1	415	415	10.7	1.38	0.04	<0.01	0.24	0.24	615		
08-Dec-17	950																				
05-Apr-18	925	81	42	88	1	11.4	30	86	<1	<1	457	457	11.8	1.8	0.01	<0.01	0.22	0.22	645		
21-Jun-18	845																				
03-Oct-18																					No access - temporary yards/cattle blocking track
06-Dec-18	1030																				

Bore - WB12

Date	Time	Depth to Stand - mbgl	Depth to Ground - mbgl	Field Parameters			Lab Parameters			Total Metals															Mercury (Hg) - mg/L
				pH	EC (µS/cm)	Temp. (°C)	pH	EC (µS/cm)	Aluminium (Al) - mg/L	Arsenic (As) - mg/L	Barium (Ba) - mg/L	Beryllium (Be) - mg/L	Boron (B) - mg/L	Cadmium (Cd) - 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	Selenium (Se) - mg/L	Vanadium (V) - mg/L	Zinc (Zn) - mg/L	
				6.5-8.0	2200	-	6.5-8.0	2200	0.2	0.007	0.7	-		0.002	0.05	-	2	0.3	0.01	0.1	0.02		-	3	0.001
									5	0.5	1	-		0.01	1	1	-	-	0.1	-	1		-	20	0.002
25-Jul-08	1120	13.03	12.81																						
04-Sep-08	0800	13.10	12.88																						
13-Oct-08	1213	13.13	12.91																						
28-Oct-08		13.25	13.03	8.15	2152	19.4				0.001	0.102	<0.001		0.0001	0.001	0.001	0.005	5.55	0.003	0.099	0.099		<0.01	0.314	<0.0001
27-Jan-09	1129	13.33	13.11																						
22-Jun-09	1550	13.21	12.99	8	2070	22.2		1990		0.001	0.108	<0.001		<0.0001	0.004	0.001	0.002	8.97	0.003	0.13	0.007		<0.01	0.871	<0.0001
11-Sep-09	1438	13.27	13.05																						
30-Nov-09	1425	13.21	12.99	8.6	1537	22.8	8.34	1640	<0.01	<0.001					<0.005		0.009	<0.05	<0.001	0.029	0.001		0.017	<0.0001	
25-Feb-10	1020	13.41	13.19																						
03-May-10	1500	13.37	13.15	8.27	1490	22.5		1390		0.002	0.069	<0.001		0.0001	<0.001	<0.001	0.004	6.2	0.003	0.111	0.003		<0.01	1.27	<0.0001
24-Sep-10	1035	13.44	13.22	8.71	873	23.7																			
10-Nov-10	1210	13.35	13.13	7.07	891	25.9																			
07-Mar-11	1010	13.4	13.18	7.37	1867	24	7.38	1780	0.49	<0.001					<0.001		0.054	17.4	0.004	0.427	0.007			0.842	<0.0001
03-May-11	1440	13.37	13.15	7.45	1657	20.8																			
01-Sep-11	1310	13.45	13.23	7.65	1720	22.9	8.57	2130	1.03	<0.001	0.106	<0.001		0.0002	0.001	<0.001	0.008	6.08	0.006	0.226	0.002		<0.01	0.148	<0.0001
06-Dec-11	0950	13.35	13.13	7.66	1390	21.1																			
21-Mar-12	0945	13.3	13.08	7.92	885	24	7.99	1150	0.14	<0.001	0.044	<0.001		<0.0001	0.001	<0.001	0.016	3.84	0.001	0.212	0.001		<0.01	0.064	<0.0001
24-May-12	1200	13.36	13.14	7.19	2150	21.9																			
04-Sep-12	0950	13.3	13.08	7.3	2150	20.7	7.83	2290	0.34	<0.001	0.14	<0.001		<0.0001	<0.001	<0.001	0.044	20.4	0.002	0.154	0.002		<0.01	0.41	<0.0001
13-Dec-12	945	13.35	13.13	7.61	1907	22.2																			
13-Mar-13	1030	13.2	12.98	7.73	1800	23.4	7.72	1940	0.04	<0.001	0.086	<0.001		0.0002	<0.001	<0.001	0.006	5.3	<0.001	0.076	0.001		<0.01	0.121	<0.0001
10-Jul-13	1100	13.38	13.16	7.95	1692	20.6																			
30-Aug-13	1100	13.3	13.08	8.1	1690	21.7	8.12	1860	0.23	0.001	0.079	<0.001	0.09	<0.0001	<0.001	<0.001	0.025	5.09	0.003	0.068	0.002	<0.01	<0.01	0.217	<0.0001
12-Dec-13	1425	13.2	12.98	7.9	1730	22.7																			
26-Feb-14	1100	13.3	13.08	8.2	1830	22.6	8.38	1930	0.2	0.002	0.095	<0.001	0.09	<0.0001	0.011	<0.001	0.096	4.2	0.008	0.097	0.004	<0.01	<0.01	0.217	<0.0001
19-Jun-14	1100	13.36	13.14	8	1694	20.5																			
11-Sep-14	1115	13.3	13.08	7.9	1800	21.7	8.19	1930	0.05	0.002	0.081	<0.001	0.09	<0.0001	<0.001	<0.001	0.005	3.97	0.002	0.089	0.002	<0.01	<0.01	0.221	<0.0001
28-Nov-14	1105	13.28	13.06	8.3	1476	22.6																			
03-Mar-15	1435	13.4	13.18	8.3	1630	23.7	8.23	1800	0.04	0.001	0.054	<0.001	0.08	<0.0001	<0.001	<0.001	0.004	2.36	<0.001	0.069	0.002	<0.01	<0.01	0.12	<0.0001
03-Jun-15	0835	13.37	13.15	8.2	1628	20.3																			
02-Sep-15	0950	13.3	13.08	8.3	1590	20.2	8.35	1600	0.02	0.003	0.039	<0.001	0.07	<0.0001	<0.001	<0.001	0.003	1.41	<0.001	0.052	<0.001	<0.01	<0.01	0.034	<0.0001
08-Dec-15	1000	13.4	13.18	8.3	1471	22																			
03-Mar-16	0920	13.4	13.18	8.3	1520	22.1	8.48	1580	0.16	0.001	0.029	<0.001	<0.05	<0.0001	<0.001	<0.001	0.007	1.14	<0.001	0.062	0.002	<0.01	<0.01	0.046	<0.0001
25-May-16	1035	13.44	13.22	8.4	1480	20.5																			
20-Oct-16	1140	13.4	13.18	9	1350	22.7	9	1350	0.89	0.004	0.029	<0.001	<0.05	<0.0001	0.001	0.002	0.011	6.73	0.003	0.3	0.005	<0.01	<0.01	0.361	<0.0001
01-Dec-16	1220	13.3	13.08	9	1394	21.9																			
21-Mar-17	920	13.41	13.19	9.2	1370	22.9	9.08	1330	0.17	0.003	0.009	<0.001	<0.05	0.0001	<0.001	<0.001	0.067	0.98	0.004	0.074	0.004	<0.01	<0.01	0.572	<0.0001
07-Jun-17	1300	13.41	13.19	9.2	1342	21																			
14-Sep-17	9:20	13.3	13.08	9.1	1520	20.1	8.38	1910	0.04	0.003	0.016	<0.001	<0.05	<0.0001	<0.001	<0.001	<0.001	0.71	<0.001	0.035	<0.001	<0.01	<0.01	0.028	<0.0001
08-Dec-17	925	13.31	13.09	8.3	1823	21.9																			
05-Apr-18	950	13.49	13.27	8.4	1825	22	8.5	1880	0.28	0.002	0.041	<0.001	0.09	<0.0001	<0.001	<0.001	0.001	2.41	<0.001	0.162	0.001	<0.01	<0.01	0.107	<0.0001
21-Jun-18	935	13.62	13.40	8.4	1810	20.3																			
03-Oct-18	915	13.6	13.38	8.6	1670	21.2	8.85	1840	0.26	0.002	0.03	<0.001	0.08	<0.0001	<0.001	<0.001	0.004	1.89	<0.001	0.094	<0.001	<0.01	<0.01	0.045	<0.0001
06-Dec-18	940	13.65	13.43	8.6	1740	22.1																			

Bore - WB12 cont.

Date	Time	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	Comments	
		Calcium (Ca) - mg/L	Magnesium (Mg) - mg/L	Sodium (Na) - mg/L	Potassium (K) - mg/L		Chloride (Cl) - mg/L	Sulfate (SO ₄) - mg/L	Hydroxide Alkalinity as CaCO ₃ - mg/L	Carbonate Alkalinity as CaCO ₃ - mg/L	Bicarbonate Alkalinity as CaCO ₃ - mg/L									
DW GVs	-	-	180	-		250	250		-	-				0.5	3	50	-	1000		
CW GVs	1000	-	-	-		-	1000		-	-				-	30	400	-	-		
25-Jul-08	1120																			
04-Sep-08	0800																			
13-Oct-08	1213																			
28-Oct-08		34	78	301	3	21.3	254	2	<1	<1	649	649	20.2	2.57	6.95				1040	
27-Jan-09	1129																			
22-Jun-09	1550	31	79	325	2	22.2	261	<5	<1	<1	725	725	21.8	0.81	6.82				1050	LOR raised for Turbidimetric Sulfate due to matrix interference
11-Sep-09	1438																			
30-Nov-09	1425	16	43	284	6	16.8	149	10.8	<1	86	516	602	16.4	1.13		0.02	1.37	1.39		
25-Feb-10	1020																			
03-May-10	1500	19	43	266	4	16.2	137	13.6	<1	15	567	582	15.8	1.17	3.1				750	
24-Sep-10	1035																			From bore
10-Nov-10	1210																			
07-Mar-11	1010	28	68	274	10	19.1	213	2	<1	<1	744	744	20.9	4.48		0.01	0.04	0.05		Plant material in water
03-May-11	1440																			
01-Sep-11	1310	34	70	277	3	19.6	260	4	<1	83	591	674	20.9	3.25	9.19	0.02	0.14	0.16	1030	Gate No 4
06-Dec-11	0950																			
21-Mar-12	0945	17	26	190	11	11.5	71	6	<1	<1	489	489	11.9	1.6	21.7	0.02	0.12	0.14	556	
24-May-12	1200																			
04-Sep-12	0950	42	87	318	7	23.3	235	2	<1	<1	926	926	25.2	3.97	43.2	<0.01	0.01	0.01	1180	
13-Dec-12	945																			Brolga front paddock
13-Mar-13	1030	29	64	324	5	20.9	199	7	<1	<1	774	774	21.2	0.73	15	0.01	0.12	0.13	1000	
10-Jul-13	1100																			
30-Aug-13	1100	29	71	302	4	20.5	214	5	<1	<1	678	678	19.7	2.05	9.09				922	
12-Dec-13	1425																			
26-Feb-14	1100	33	64	231	2	17.7	234	<1	<1	22	612	634	19.3	4.4	8.57				1010	
19-Jun-14	1100																			
11-Sep-14	1115	31	72	258	2	18.8	242	2	<1	<1	615	615	19.2	1.12	5.67	0.05	0.63	0.68	976	
28-Nov-14	1105																			
03-Mar-15	1435	29	52	291	3	18.5	193	11	<1	<1	626	626	18.2	0.72	3.94	0.01	0.05	0.06	944	
03-Jun-15	0835																			
02-Sep-15	0950	22	46	312	3	18.5	131	13	<1	15	586	601	16	7.36	2.47	<0.01	0.03	0.03	800	
08-Dec-15	1000																			
03-Mar-16	0920	12	28	336	4	17.6	142	22	<1	29	551	580	16	4.61	1.14	0.02	0.04	0.06	876	
25-May-16	1035																			
20-Oct-16	1140	9	16	326	4	16	72	17	<1	188	376	564	13.6	8.06	0.63	<0.01	0.12	0.12	776	
01-Dec-16	1220																			
21-Mar-17	920	9	12	321	5	15.5	76	19	<1	134	436	570	13.9	5.43	0.68	0.04	0.68	0.72	776	
07-Jun-17	1300																			
14-Sep-17	9:20	30	75	335	2	22.3	210	4	<1	33	674	708	20.2	5.04	1.15	0.01	0.05	0.06	990	
08-Dec-17	925																			
05-Apr-18	950	25	54	348	2	20.9	267	10	<1	43	621	664	21	0.3	1.95	0.42	0.2	0.62	1060	
21-Jun-18	935																			
03-Oct-18	915	18	49	345	3	20	254	11	<1	73	504	577	18.9	2.8	1.59	0.13	0.1	0.23	1070	
06-Dec-18	940																			

Bore – WB13

Date	Time	Depth to Stand - mbtoc	Depth to Ground - mbgl	Field Parameters			Lab Parameters		Total Metals															Mercury (Hg) - mg/L	
				pH	EC (µS/cm)	Temp. (°C)	pH	EC (µS/cm)	Aluminium (Al) - mg/L	Arsenic (As) - mg/L	Barium (Ba) - mg/L	Beryllium (Be) - mg/L	Boron (B) - mg/L	Cadmium (Cd) - 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	Selenium (Se) - mg/L	Vanadium (V) - mg/L	Zinc (Zn) - mg/L	
	DW GVs			6.5-8.0	2200	-	6.5-8.0	2200	0.2	0.007	0.7	-		0.002	0.05	-	2	0.3	0.01	0.1	0.02		-	3	0.001
	CW GVs								5	0.5	1	-		0.01	1	1	-	-	0.1	-	1		-	20	0.002
13-Mar-13	1030	36.40	36.20	6.91	3410	25.6	7.11	3620	0.02	<0.001	0.016	<0.001		<0.0001	<0.001	<0.001	0.016	<0.05	0.001	0.003	<0.001		<0.01	0.038	<0.0001
10-Jul-13	0950	33.42	33.22	6.77	3550	19.8																			
28-Aug-13	0950	38.70	38.50	6.9	3730	21.4	7.5	3730	0.02	<0.001	0.016	<0.001	0.1	<0.0001	<0.001	<0.001	0.011	<0.001	<0.001	<0.001	<0.001	<0.01	<0.01	0.013	0.0002
12-Dec-13	1315	42.02	41.82	7.0	3460	23.7																			
26-Feb-14	1200	42.6	42.40	7.0	3460	23.5	7.93	3690	<0.01	<0.001	0.016	<0.001	0.09	<0.0001	<0.001	<0.001	0.02	<0.05	0.003	<0.001	<0.001	<0.01	<0.01	0.026	0.0001
12-Jun-14	0945	34.13	33.93	7.1	3540	17.1																			
11-Sep-14	1215	41.1	40.90	7	3380	22.8	7.63	3570	0.02	<0.001	0.017	<0.001	0.09	<0.0001	0.001	<0.001	0.009	0.23	0.001	0.002	<0.001	<0.01	<0.01	0.012	0.0007
27-Nov-14	1030	42.84	42.64	7.1	3510	23.1																			
04-Mar-15	1330	44.8	44.60	7	3500	23.9	7.32	3640	<0.01	<0.001					<0.001		0.001	<0.05	<0.001	<0.001	<0.001		<0.005	<0.0001	
03-Jun-15	0935	40.03	39.83	7	3410	20.7																			
15-Sep-15	1050	43.05	42.85	7.2	3410	21.4	7.56	3610	0.03	<0.001	0.015	<0.001	0.1	<0.0001	0.011	<0.001	0.009	0.07	<0.001	<0.001	0.001	<0.01	<0.01	0.008	<0.0001
08-Dec-15	1110	39.07	38.87	7.1	3590	22.9																			
03-Mar-16	1110	39.2	39.00	7.1	3540	23.4	7.62	3640	0.06	<0.001	0.02	<0.001	0.07	<0.0001	<0.001	<0.001	0.022	0.13	0.006	0.005	<0.001	<0.01	<0.01	0.042	0.0003
25-May-16	1235	32.16	31.96	7.1	3460	20.3																			
20-Oct-16	1255	43.8	43.60	7.2	3290	22.7	7.56	3490	<0.01	<0.001	0.018	<0.001	0.08	<0.0001	<0.001	<0.001	0.002	<0.05	<0.001	0.002	<0.001	<0.01	<0.01	0.014	0.0001
01-Dec-16	1050	44.96	44.76	7	3470	23.1																			
22-Mar-17	1230	38.45	38.25	7	3560	22.2	7.43	3650	0.02	<0.001	0.017	<0.001	0.1	<0.0001	<0.001	<0.001	0.026	0.13	0.004	0.001	<0.001	<0.01	<0.01	0.05	0.0003
07-Jun-17	1120	36.82	36.62	7	3570	19.7																			
14-Sep-17	11:30	38.8	38.60	7	3600	20.7	7.57	3590	<0.01	<0.001	0.02	<0.001	0.08	<0.0001	<0.001	<0.001	0.018	0.07	0.001	0.001	<0.001	<0.01	<0.01	0.031	0.0001
08-Dec-17	1315	31.6	31.40	7	3480	22.9																			
05-Apr-18	1330	41.2	41.00	7.2	3350	23.2	7.62	3550	0.02	<0.001	0.02	0.001	0.09	<0.0001	<0.001	<0.001	<0.001	<0.05	<0.001	<0.001	<0.001	<0.01	<0.01	0.013	0.0001
21-Jun-18	1230	42.03	41.83	7.1	3410	19																			
03-Oct-18	1330	42.6	42.40	7.2	3320	22.2	7.37	3600	0.05	<0.001	0.021	<0.001	0.09	<0.0001	<0.001	<0.001	0.004	0.14	<0.001	0.007	<0.001	<0.01	<0.01	0.013	0.0001
07-Dec-18	1140	44.8	44.60	7	3540	23.4																			

Bore – WB13 cont.

Date	Time	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	Comments		
		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										
DW GVs	-	-	180	-		250	250		-	-				0.5	3	50	-	1000				
CW GVs	1000	-	-	-		-	1000		-	-				-	30	400	-	-				
13-Mar-13	1030	263	79	422	4	38.1	853	90	<1	<1	438	438	34.7	4.68	<0.01	<0.01	2.55	2.55	2510			
10-Jul-13	0950																					
28-Aug-13	0950	276	86	384	4	37.7	857	100	<1	<1	422	422	34.7	4.11	<0.01				2400			
12-Dec-13	1315																					
26-Feb-14	1200	250	76	324	4	32.9	773	92	<1	<1	405	405	31.8	1.73	<0.01				2390			
12-Jun-14	0945																					
11-Sep-14	1215	233	72	341	4	32.5	787	97	<1	<1	386	386	31.9	0.87	0.02	<0.01	2.66	2.66	2200			
27-Nov-14	1030																					
04-Mar-15	1330	254	81	383	4	36.1	913	96	<1	<1	451	451	36.8	0.9		<0.01	2.51	2.51				
03-Jun-15	0935																					
15-Sep-15	1050	255	75	369	4	35	821	87	<1	<1	463	463	34.2	1.21	0.05	<0.01	2.4	2.4	2470			
08-Dec-15	1110																					
03-Mar-16	1110	255	88	417	4	38.2	853	96	<1	<1	408	408	34.2	5.53	0.02	<0.01	2.66	2.66	2660			
25-May-16	1235																					
20-Oct-16	1255	236	78	392	3	35.3	793	78	<1	<1	421	421	32.4	4.31	<0.01	<0.01	2.61	2.61	2350			
01-Dec-16	1050																					
22-Mar-17	1230	248	76	372	4	34.9	851	93	<1	<1	440	440	34.7	0.26	0.02	<0.01	2.47	2.47	2800			
07-Jun-17	1120																					
14-Sep-17	11:30	239	70	412	3	35.7	837	92	<1	<1	450	450	34.5	1.66	0.04	<0.01	2.88	2.88	2460			
08-Dec-17	1315																					
05-Apr-18	1330	255	73	397	4	36.1	835	100	<1	<1	496	496	35.5	0.78	<0.01	<0.01	2.74	2.74	2280			
21-Jun-18	1230																					
03-Oct-18	1330	259	75	398	4	36.5	820	101	<1	<1	441	441	34	3.5	0.03	<0.01	2.64	2.64	2580	Pump on		
07-Dec-18	1140																					

Bore – WB14

Date	Time	Depth to Stand - mbgl	Depth to Ground - mbgl	Field Parameters		Lab Parameters		Total Metals																Mercury (Hg) - mg/L	
				pH	EC (µS/cm)	Temp. (°C)	pH	EC (µS/cm)	Aluminium (Al) - mg/L	Arsenic (As) - mg/L	Barium (Ba) - mg/L	Beryllium (Be) - mg/L	Boron (B) - mg/L	Cadmium (Cd) - 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	Selenium (Se) - mg/L	Vanadium (V) - mg/L	Zinc (Zn) - mg/L	
	DW GVs			6.5-8.0	2200	-	6.5-8.0	2200	0.2	0.007	0.7	-		0.002	0.05	-	2	0.3	0.01	0.1	0.02		-	3	0.001
	CW GVs								5	0.5	1	-		0.01	1	1	-	-	0.1	-	1		-	20	0.002
18-Dec-13	1320	10.46	10.16	7.6	1315	25.7																			
27-Feb-14	1015	23.20	22.90	7.8	1150	23	7.83	1300	<0.01	0.009	0.401	<0.001	0.07	<0.0001	<0.001	<0.001	0.006	<0.05	<0.001	<0.001	<0.001	<0.01	0.07	0.012	<0.0001
12-Jun-14	1120	19.07	18.77	7.7	1260	21.2																			
11-Sep-14	1015	18.9	18.60	7.7	1280	21.5	7.97	1330	0.02	0.011	0.421	<0.001	0.08	0.0002	0.001	<0.001	0.042	0.1	0.002	0.009	<0.001	<0.01	0.07	0.033	<0.0001
27-Nov-14	1300	14.03	13.73	7.7	1288	23.5																			
04-Mar-15	1100	23.3	23.00	7.8	1280	22.5	7.84	1350	<0.01	0.011					<0.001		0.004	<0.05	<0.001	<0.001	<0.001			0.016	<0.0001
03-Jun-15	1055	22.45	22.15	7.7	1260	20.6																			
03-Sep-15	1200	15.2	14.90	7.5	1260	14.3	7.78	1290	<0.01	0.011	0.367	<0.001	0.07	<0.0001	<0.001	<0.001	0.008	<0.05	<0.001	0.001	<0.001	<0.01	0.06	0.017	<0.0001
08-Dec-15	1205	21.52	21.22	7.6	1309	23.4																			
03-Mar-16	1400	22.2	21.90	7.6	1290	25.6	8.06	1290	0.05	0.011	0.38	<0.001	0.06	<0.0001	0.001	<0.001	0.096	0.22	0.015	0.007	<0.001	<0.01	0.07	0.079	<0.0001
25-May-16	1310	22.37	22.07	7.6	1295	21.4																			
08-Sep-16	1040	20.95	20.65	7.6	1264	22.4	7.94	1320	<0.01	0.011	0.401	<0.001	0.07	<0.0001	0.001	<0.001	0.008	<0.05	<0.001	<0.001	<0.001	<0.01	0.07	0.019	<0.0001
01-Dec-16	935	22.17	21.87	7.6	1238	23.4																			
22-Mar-17	1035	13.27	12.97	7.6	1320	22.4	7.83	1340	<0.01	0.01	0.406	<0.001	0.07	<0.0001	<0.001	<0.001	0.01	<0.05	0.001	0.008	<0.001	<0.01	0.07	0.021	<0.0001
07-Jun-17	950	15.54	15.24	7.6	1367	18.8																			
14-Sep-17	1350	14.8	14.50	7.6	1350	20.4	7.96	1360	<0.01	0.01	0.418	<0.001	0.06	<0.0001	<0.001	<0.001	0.007	<0.05	<0.001	0.001	0.002	<0.01	0.07	0.023	<0.0001
08-Dec-17	1140	15.28	14.98	7.6	1321	22.6																			
05-Apr-18	1215	28.73	28.43	7.6	1254	25.1	7.9	1320	<0.01	0.011	0.386	<0.001	0.08	<0.0001	<0.001	<0.001	0.008	<0.05	<0.001	<0.001	<0.001	<0.01	0.07	0.013	<0.0001
21-Jun-18	1350	26.11	25.81	7.7	1268	21.4																			
03-Oct-18	1215	26.8	26.50	7.7	1310	24.3	7.61	1430	<0.01	0.01	0.424	<0.001	0.08	<0.0001	<0.001	<0.001	0.006	<0.05	<0.001	0.003	<0.001	<0.01	0.07	0.014	<0.0001
07-Dec-18	1425	32.47	32.17	7.5	1302	23.9																			

Bore – WB14 cont.

Date	Time	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	Comments
		Calcium (Ca) - mg/L	Magnesium (Mg) - mg/L	Sodium (Na) - mg/L	Potassium (K) - mg/L		Chloride (Cl) - mg/L	Sulfate (SO ₄) - mg/L	Hydroxide Alkalinity as CaCO ₃ - mg/L	Carbonate Alkalinity as CaCO ₃ - mg/L	Bicarbonate Alkalinity as CaCO ₃ - mg/L	Alkalinity - mg/L								
DW GVs	-	-	180	-		250	250		-	-			0.5	3	50	-	1000			
CW GVs	1000	-	-	-		-	1000		-	-			-	30	400	-	-			
18-Dec-13	1320																			
27-Feb-14	1015	37	20	249	<1	14.3	113	12	<1	<1	488	488	13.2	4.09	0.02				751	
12-Jun-14	1120																			
11-Sep-14	1015	35	18	217	2	12.7	126	12	<1	<1	452	452	12.8	0.5	0.02	<0.01	1.27	1.27	754	
27-Nov-14	1300																			
04-Mar-15	1100	33	19	240	2	13.7	120	12	<1	<1	511	511	13.8	0.56		<0.01	1.53	1.53		
03-Jun-15	1055																			
03-Sep-15	1200	43	22	227	2	13.9	68	16	<1	<1	521	521	12.7	4.56	0.03	<0.01	1.13	1.13	690	
08-Dec-15	1205																			
03-Mar-16	1400	34	21	244	2	14.1	117	12	<1	<1	460	460	12.7	4.98	0.1	<0.01	0.93	0.93	668	
25-May-16	1310																			
08-Sep-16	1040	43	22	259	2	15.3	129	12	<1	<1	556	556	15	0.87	0.04	<0.01	1.16	1.16	700	
01-Dec-16	935																			
22-Mar-17	1035	41	20	236	2	14	146	12	<1	<1	515	515	14.6	2.26	<0.01	<0.01	1.21	1.21		
07-Jun-17	950																			
14-Sep-17	1350	46	20	264	2	15.5	128	11	<1	<1	533	533	14.5	3.29	0.02	<0.01	1.23	1.23	806	
08-Dec-17	1140																			
05-Apr-18	1215	43	22	251	2	14.9	119	12	<1	<1	554	554	14.7	0.84	<0.01	<0.01	1.08	1.08	806	
21-Jun-18	1350																			
03-Oct-18	1215	47	23	262	2	15.7	143	12	<1	<1	503	503	14.3	4.5	0.04	<0.01	1.37	1.37	820	
07-Dec-18	1425																			

Bore – WB15

Date	Time	Depth to Stand - mbgl	Depth to Ground - mbgl	Field Parameters			Lab Parameters		Total Metals															Mercury (Hg) - mg/L	
				pH	EC (µS/cm)	Temp. (°C)	pH	EC (µS/cm)	Aluminium (Al) - mg/L	Arsenic (As) - mg/L	Barium (Ba) - mg/L	Beryllium (Be) - mg/L	Boron (B) - mg/L	Cadmium (Cd) - 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	Selenium (Se) - mg/L	Vanadium (V) - mg/L	Zinc (Zn) - mg/L	
	DW GVs			6.5-8.0	2200	-	6.5-8.0	2200	0.2	0.007	0.7	-		0.002	0.05	-	2	0.3	0.01	0.1	0.02		-	3	0.001
	CW GVs								5	0.5	1	-		0.01	1	1	-	-	0.1	-	1		-	20	0.002
11-Jul-14	1525	27.74	27.62																						
26-Aug-14	1300	30.23	30.11																						
11-Sep-14	1330	30.40	30.28	6.9	1390	22.1	7.55	1440	0.52	0.002	0.198	<0.001	0.07	0.0002	0.003	0.003	0.301	12	0.072	0.621	0.008	<0.01	0.01	4.8	<0.0001
27-Nov-14	1355	27.25	27.13	7	1403	21.9																			
04-Mar-15	1400	27.20	27.08	7.4	1280	22.9	8.19	1360	<0.01	<0.001					<0.001		0.002	<0.05	<0.001	0.002	<0.001			0.006	<0.0001
03-Jun-15	900	27.37	27.25	7.2	1380	19.8																			
15-Sep-15	1155	27.00	26.88	7.6	1410	18.9	8.01	1420	<0.01	<0.001	0.138	<0.001	0.08	<0.0001	<0.001	0.001	0.002	0.36	<0.001	0.229	<0.001	<0.01	<0.01	0.032	<0.0001
08-Dec-15	1230	27.4	27.28	7.1	1404	22.8																			
03-Mar-16	1015	28	27.88	8	1290	25	8.15	1320	0.01	<0.001	0.137	<0.001	0.06	<0.0001	<0.001	<0.001	0.004	0.38	<0.001	0.142	<0.001	<0.01	<0.01	0.054	<0.0001
25-May-16	0:00	32.09	31.97	7.7	1382	17.2																			
20-Oct-16	1340	27.8	27.68	7.7	1350	16.6	7.85	1340	0.01	<0.001	0.162	<0.001	0.06	<0.0001	<0.001	<0.001	0.003	0.42	<0.001	0.149	<0.001	<0.01	<0.01	0.045	<0.0001
01-Dec-16	0:00	27.14	27.02	7.8	1189	23.3																			
21-Mar-17	1350	27.56	27.44	8.1	1260	23.3	8.29	1240	0.02	<0.001	0.116	<0.001	0.08	<0.0001	<0.001	<0.001	<0.001	0.07	<0.001	0.006	<0.001	<0.01	<0.01	0.037	<0.0001
07-Jun-17	1230	27.65	27.53	8.1	1413	13.7																			
18-Sep-17	1345	32	31.88	7	1460	19.7	7.65	1460	0.48	<0.001	0.208	<0.001	0.07	<0.0001	<0.001	<0.001	0.011	3.53	0.001	0.268	<0.001	<0.01	<0.01	0.158	<0.0001
08-Dec-17	1025	29.47	29.35	7.3	1445	22.5																			
05-Apr-18	900	27.8	27.68	7	1463	22.3	7.47	1500	0.08	<0.001	0.19	<0.001	0.08	<0.0001	<0.001	<0.001	<0.001	4.02	<0.001	0.546	<0.001	<0.01	<0.01	0.056	<0.0001
21-Jun-18	1130	27.77	27.65	7	1483	21.2																			
03-Oct-18	950	27.7	27.58	7.1	1620	22	7.16	1760	0.03	<0.001	0.207	<0.001	0.07	<0.0001	<0.001	<0.001	0.003	4.36	<0.001	0.769	<0.001	<0.01	<0.01	0.094	<0.0001
07-Dec-18	1050	29.76	29.64	6.9	1630	22.9																			

Bore – WB15 cont.

Date	Time	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	Comments
		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							
DW GVs	-	-	180	-		250	250		-	-			0.5	3	50	-	1000		
CW GVs	1000	-	-	-		-	1000		-	-			-	30	400	-	-		
11-Jul-14	1525																		
26-Aug-14	1300																		
11-Sep-14	1330	140	46	94	1	14.9	121	92	<1	<1	471	471	14.7	0.5	0.55	0.02	0.16	0.18	790
27-Nov-14	1355																		
04-Mar-15	1400	59	58	132	2	13.5	179	53	<1	<1	387	387	13.9	1.38		<0.01	0.84	0.84	
03-Jun-15	900																		
15-Sep-15	1155	131	55	114	2	16.1	149	50	<1	<1	518	518	15.6	1.51	0.15	0.01	0.54	0.55	862
08-Dec-15	1230																		
03-Mar-16	1015	101	60	118	2	15.2	143	66	<1	<1	408	408	13.6	5.57	0.08	<0.01	0.42	0.42	740
25-May-16	0:00																		
20-Oct-16	1340	121	51	101	1	14.6	135	46	<1	<1	492	492	14.6	0.2	0.11	<0.01	0.74	0.74	846
01-Dec-16	0:00																		
21-Mar-17	1350	59	56	124	2	13	159	56	<1	<1	369	369	13	0.1	<0.01	<0.01	1.09	1.09	720
07-Jun-17	1230																		
18-Sep-17	1345	137	45	90	1	14.5	122	65	<1	<1	602	602	16.8	7.48	0.06	<0.01	0.24	0.24	838
08-Dec-17	1025																		
05-Apr-18	900	154	49	100	2	16.1	114	46	<1	<1	658	658	17.3	3.59	2.29	<0.01	0.04	0.04	858
21-Jun-18	1130																		
03-Oct-18	950	188	59	119	2	19.5	173	17	<1	<1	657	657	18.4	2.92	0.57	<0.01	<0.01	<0.01	961
07-Dec-18	1050																		

Bore – Yarrari Production

Date	Time	Depth to Stand - mbtoc	Depth to Ground - mbgl	Field Parameters			Lab Parameters			Total Metals												Mercury (Hg) - mg/L			
				pH	EC (µS/cm)	Temp. (°C)	pH	EC (µS/cm)	Aluminum (Al) - mg/L	Arsenic (As) - mg/L	Barium (Ba) - mg/L	Beryllium (Be) - mg/L	Boron (B) - mg/L	Cadmium (Cd) - 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	Selenium (Se) - mg/L	Vanadium (V) - mg/L	Zinc (Zn) - mg/L	
	DW GVs			6.5-8.0	2200	-	6.5-8.0	2200	0.2	0.007	0.7	-		0.002	0.05	-	2	0.3	0.01	0.1	0.02	-	3	0.001	
	CW GVs								5	0.5	1	-		0.01	1	1	-	-	0.1	-	1	-	20	0.002	
03-Sep-08	1555	56.06	55.24																						
13-Oct-08	1310	51.00	50.18							<0.001	0.1	<0.001		0.0002	0.001	<0.001	0.005	0.11	<0.001	0.011	0.011	<0.01	0.013	0.0001	
29-Oct-08									0.003	0.104	<0.001		<0.0001	<0.001	<0.001	0.004	0.08	<0.001	0.011	<0.001	<0.01	0.016	<0.0001		
29-Oct-08																									
23-Jan-09	1714	50.58	49.76																						
22-Jun-09	1120	>50		7.10	3580	21.3																			
27-Aug-09	1500			7.34	3330	22.1		3070		<0.001	0.061	<0.001		<0.0001	<0.001	<0.001	0.013	<0.05	<0.001	0.026	<0.001	<0.01	0.041	<0.0001	
30-Nov-09	1005			7.25	3480	27.4	7.2	3160	<0.01	<0.001				<0.005	0.004		<0.05	<0.001	<0.001	<0.001	<0.001	0.006	<0.0001		
25-Feb-10	1330																								
03-May-10	1205			7.52	3520	22		3310		<0.001	0.063	<0.001		<0.0001	<0.001	<0.001	0.005	<0.05	<0.001	0.018	<0.001	<0.01	0.007	<0.0001	
26-Aug-10	1105			7.42	3340	Probe Broken																			
08-Nov-10	1320																								
07-Mar-11	1350			6.97	2880	27.1	7.29	3410	<0.01	<0.001				<0.001		0.007	<0.05	0.003	0.002	<0.001			0.039	<0.0001	
03-May-11	1115			7.00	2930	20.2																			
30-Aug-11	1200			7.00	2780	18.8	7.25	3800	<0.01	<0.001	0.071	<0.001		<0.0001	<0.001	<0.001	0.007	<0.05	<0.001	0.005	<0.001	<0.01	0.08	<0.0001	
04-Nov-11	1200			7.10	2790	18.8																			
20-Mar-12	1200			6.92	3380	25.2	7.37	3800	<0.01	0.001	0.084	<0.001		<0.0001	<0.001	<0.001	0.012	<0.05	<0.001	0.002	<0.001	<0.01	0.047	<0.0001	
23-May-12	1230			7.51	3330	20.5																			
27-Aug-12	1150			7.11	3390	20.1	7.46	3680	<0.01	<0.001	0.078	<0.001		<0.0001	<0.001	<0.001	0.003	<0.05	<0.001	0.002	<0.001	<0.01	0.007	<0.0001	
26-Nov-12	1115			7.05	3360	25.6																			
12-Mar-13	1150			7.04	3420	25.4	7.6	3700	<0.01	<0.001	0.071	<0.001		<0.0001	<0.001	<0.001	0.004	<0.05	<0.001	<0.001	<0.001	<0.01	0.008	<0.0001	
12-Jun-13	0950			7.23	3510	18.1																			
28-Aug-13	1245			6.9	3430	20.8	7.49	3720	<0.01	<0.001	0.077	<0.001	0.11	<0.0001	<0.001	<0.001	0.006	<0.05	<0.001	<0.001	<0.01	<0.01	0.007	<0.0001	
11-Dec-13	1335			7.0	3630	24.5																			
24-Feb-14	1330			6.9	3490	25.3	7.55	3730	<0.01	<0.001	0.078	<0.001	0.09	<0.0001	<0.001	<0.001	0.017	<0.05	<0.001	0.003	<0.001	<0.01	0.024	<0.0001	
12-Jun-14	1310			7.0	3590	21.7																			
10-Sep-14	1150			6.9	3620	19	7.32	3720	0.01	<0.001	0.093	<0.001	0.09	<0.0001	<0.001	<0.001	0.111	<0.05	0.014	0.02	0.001	<0.01	0.115		
28-Nov-14	1230			7	3550	28.2																			
03-Mar-15	1100			7.1	3520	25.4	7.48	3820	0.01	<0.001	0.08	<0.001	0.09	<0.0001	<0.001	<0.001	0.004	<0.05	<0.001	0.01	<0.001	<0.01	0.06	<0.0001	
29-May-15	1020			6.9	3630	19.4																			
03-Sep-15	0950			6.9	3590	21.4	7.32	3720	<0.01	<0.001	0.079	<0.001	0.09	<0.0001	<0.001	<0.001	0.004	0.16	<0.001	0.01	<0.001	<0.01	0.008	<0.0001	
07-Dec-15	1150			7.1	3550	25.3																			
02-Mar-16	1355			7	3470	25.3	7.43	3710	0.09	0.002	0.108	<0.001	0.09	0.0016	<0.001	<0.001	0.006	0.14	<0.001	0.031	<0.001	<0.01	<0.01	0.028	<0.0001
24-May-16	1345			7	3540	23.6																			
07-Sep-16	1230			7	3480	18.3																			
30-Nov-16	1230			7.1	3420	24.3																			
22-Mar-17	950			7.3	3610	23.7	7.6	3720	0.02	<0.001	0.103	<0.001	0.08	<0.0001	<0.001	<0.001	0.005	0.08	<0.001	0.017	0.001	<0.01	<0.01	0.06	<0.0001
06-Jun-17	1205			7.3	3610	21.8																			
18-Sep-17	1120			7	3640	22.3	7.68	3610	0.13	<0.001	0.088	<0.001	0.09	<0.0001	<0.001	<0.001	0.003	0.1	<0.001	0.017	<0.001	<0.01	<0.01	0.012	<0.0001
07-Dec-17	1240			7.1	3530	25																			
26-Mar-18	1245			7.9	3620	22.2	7.93	3660	0.03	<0.001	0.084	<0.001	0.11	<0.0001	<0.001	<0.001	0.001	<0.05	<0.001	0.011	<0.001	<0.01	<0.01	0.007	<0.0001
21-Jun-18	1245			7.8	3680	15.7																			
27-Sep-18	1200			7	2880	21.3	7.22	3760	<0.01	<0.001	0.09	<0.001	0.1	<0.0001	<0.001	<0.001	0.006	<0.05	<0.001	0.004	<0.001	<0.01	<0.01	0.016	<0.0001
06-Dec-18	1330			7.6	3610	24.7																			

Bore - Yarrari Production cont.

Date	Time	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	Comments		
		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										
DW GVs	-	-	180	-		250	250		-	-			0.5	3	50	-	1000					
CW GVs	1000	-	-	-		-	1000		-	-			-	30	400	-	-					
03-Sep-08	1555																					
13-Oct-08	1310																					
29-Oct-08	51	50	558	3	39.4	987	46	<1	<1	372	372	36.2	4.12	0.1								
29-Oct-08	214	50	563	3	39.3	1040	46	<1	<1	374	374	37.8	1.94	<0.01								
23-Jan-09	1714																					
22-Jun-09	1120																					Sample not analysed due to lab administrative error
27-Aug-09	1500	167	32	504	3	33	803	42.9	<1	<1	430	430	32.1	1.31	<0.01							1980
30-Nov-09	1005	178	35	508	3	33.9	882	34.7	<1	<1	377	377	33.1	1.19	<0.01	0.51	0.51					
25-Feb-10	1330																					Bore covered by pump unable to dip. Sample taken from tap
03-May-10	1205	175	32	528	3	34.4	930	52.4	<1	<1	314	314	33.6	1.14	<0.01							1900
26-Aug-10	1105																					Bore covered by pump unable to dip. Sample taken from tap
08-Nov-10	1320																					Unable to obtain tap sample without pump. PUMP TURNED OFF
07-Mar-11	1350	180	35	530	4	35	877	38	<1	<1	409	409	33.7	1.88	<0.01	0.3	0.3					Bore covered by pump unable to dip. Sample taken from tap
03-May-11	1115																					Bore covered by pump unable to dip. Sample taken from tap
30-Aug-11	1200	190	34	526	3	35.2	990	44	<1	<1	384	384	36.5	1.78	<0.01	<0.01	0.23	0.23	2020		Bore covered by pump unable to dip. Sample taken from tap	
04-Nov-11	1200																					
20-Mar-12	1200	213	42	591	4	39.9	1000	51	<1	<1	405	405	37.4	3.28	0.05	<0.01	0.46	0.46	2320			
23-May-12	1230																					
27-Aug-12	1150	194	36	553	3	36.8	949	50	<1	<1	433	433	36.5	0.42	<0.01	<0.01	0.39	0.39	2160			
26-Nov-12	1115																					
12-Mar-13	1150	193	40	558	4	37.3	896	42	<1	<1	312	312	34.2	4.3	0.08	<0.01	25.6	25.6	2330			
12-Jun-13	0950																					
28-Aug-13	1245	207	40	516	4	36.2	887	47	<1	<1	408	408	34.2	2.87	0.02							2140
11-Dec-13	1335																					
24-Feb-14	1330	182	40	516	3	34.9	867	48	<1	<1	408	408	33.6	1.88	0.01							2160
12-Jun-14	1310																					
10-Sep-14	1150	195	37	482	3	33.8	891	48	<1	<1	443	443	35	1.69	0.04	<0.01	0.4	0.4	2100			
28-Nov-14	1230																					
03-Mar-15	1100	206	41	566	3	38.4	980	50	<1	<1	417	417	37	1.77	0.03	<0.01	0.67	0.67	2310			
29-May-15	1020																					
03-Sep-15	0950	208	39	512	3	35.9	709	44	<1	<1	426	426	29.4	9.96	0.04	<0.01	0.33	0.33	2120			
07-Dec-15	1150																					
02-Mar-16	1355	184	40	532	3	35.7	907	49	<1	<1	381	381	34.2	2.11	0.05	<0.01	0.32	0.32	2480			
24-May-16	1345																					
07-Sep-16	1230																					
30-Nov-16	1230																					
22-Mar-17	950	197	38	495	4	34.6	906	47	<1	<1	397	397	34.5	0.18	<0.01	<0.01	1.38	1.38	2400			
06-Jun-17	1205																					Pump over bore
18-Sep-17	1120	190	40	470	3	33.3	906	43	<1	<1	425	425	34.9	2.42	0.02	<0.01	0.4	0.4	2120		Pump over bore	
07-Dec-17	1240																					Pump over bore
26-Mar-18	1245	134	38	675	3	39.2	1040	45	<1	<1	244	244	35.1	5.51	0.03	<0.01	0.36	0.36	2140		Pump over bore	
21-Jun-18	1245																					Pump over bore
27-Sep-18	1200	207	39	548	3	37.4	974	48	<1	<1	372	372	35.9	2.11	<0.01	<0.01	0.35	0.35	2370		Pump over bore	
06-Dec-18	1330																					Pump over bore

Bore - Surrey No. 2

Date	Time	Depth to Stand - mbtoc	Depth to Ground - mbgl	Field Parameters			Lab Parameters		Total Metals													Mercury (Hg) - mg/L		
				pH	EC (µS/cm)	Temp. (°C)	pH	EC (µS/cm)	Aluminium (Al) - mg/L	Arsenic (As) - mg/L	Barium (Ba) - mg/L	Beryllium (Be) - mg/L	Boron (B) - mg/L	Cadmium (Cd) - 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	Selenium (Se) - mg/L	Vanadium (V) - mg/L	Zinc (Zn) - mg/L
DW GVs				6.5-8.0	2200	-	6.5-8.0	2200	0.2	0.007	0.7	-		0.002	0.05	-	2	0.3	0.01	0.1	0.02	-	3	0.001
CW GVs									5	0.5	1	-		0.01	1	1	-	-	0.1	-	1	-	20	0.002
25-Feb-10	1100	38.44	38.13																					
26-Aug-10	930	34.97	34.66	7.25	3140	16.8																		
09-Nov-10	1400	35.23	34.92	6.92	2380	25.7																		
07-Mar-11	1100	35.97	35.66	7.2	2710	24.9	7.15	3180	0.62	<0.001					<0.001		0.074	0.82	0.004	0.044	0.001		0.154	
03-May-11		-0.31																					<0.0001	
01-Sep-11	1110	35.42	35.11	7.15	2760	23.6	7.97	3320	0.22	<0.001	0.058	<0.001		<0.0001	<0.001	<0.001	0.004	0.37	<0.001	0.012	<0.001	0.02	0.022	<0.0001
21-Mar-12	1320	34.80	34.49	7.6	1520	24.2	7.88	1630	5.9	0.004	0.082	<0.001		<0.0001	0.008	0.003	0.033	8.88	0.004	0.102	0.005	0.05	0.062	<0.0001
24-May-12	1225	34.9	34.59	7.2	2790	21.8																		
28-Aug-12	1100	34.6	34.29	7.15	3090	22.1	7.77	3490	0.09	<0.001	0.086	<0.001		<0.0001	<0.001	<0.001	0.013	0.16	<0.001	0.009	0.001	0.02	0.103	<0.0001
27-Nov-12	1325	35.25	34.94	7.34	3100	22.6																		
13-Mar-13	1030	36	35.69	7.44	3250	24.5	7.41	3540	0.13	<0.001	0.084	<0.001		<0.0001	<0.001	<0.001	0.036	0.38	0.003	0.011	<0.001	0.02	0.103	<0.0001
20-Jun-13	1315	34.38	34.07	7.35	3310	20.7																		
30-Aug-13	0855	33.6	33.29	7.21	3110	21.7	7.72	3360	3.34	0.003	0.117	<0.001	0.11	0.0001	0.005	0.002	0.277	6.74	0.026	0.09	0.005	<0.01	0.04	0.256
12-Dec-13	1220	34.86	34.55	7.3	3420	23.1																		
26-Feb-14	1250	33.9	33.59	7.3	3060	23.2	7.47	3430	12.4	0.003	0.239	<0.001	0.11	0.0002	0.031	0.014	0.791	29	0.059	0.241	0.023	<0.01	0.12	0.653
12-Jun-14	1000	33.05	32.74	7.3	3310	21.1																		
11-Sep-14	1230	34.6	34.29	7.2	3620	22.3	7.83	3720	1.07	0.002	0.136	<0.001	0.11	<0.0001	0.003	0.002	0.047	1.52	0.005	0.059	0.012	<0.01	0.02	0.126
27-Nov-14	925	34.64	34.33	7.4	3170	22.3																		
04-Mar-15	1245	34.6	34.29	7.4	3210	23.8	7.51	3410	<0.01	<0.001				<0.001		0.002	<0.05	<0.001	0.01	<0.001			0.015	
03-Jun-15	1030	32.8	32.49	7.4	3210	21.2																		
03-Sep-15	1125	32.8	32.49	7.2	3400	20.9	7.53	3560	0.09	<0.001	0.106	<0.001	0.11	<0.0001	<0.001	<0.001	0.003	0.14	<0.001	0.022	0.002	<0.01	0.02	0.059
08-Dec-15	1030	33.21	32.90	7.1	3460	23																		
03-Mar-16	1135	34.5	34.19	7.4	3120	23.6	7.82	3400	0.14	<0.001	0.065	<0.001	0.09	<0.0001	<0.001	<0.001	0.014	0.43	<0.001	0.022	<0.001	<0.01	0.02	0.06
25-May-16	1135	32.78	32.47	7.4	3130	21.8																		
08-Sep-16	1250	32.27	31.96	7.2	3280	21.5	7.64	3480	0.2	>0.001	0.087	<0.001	0.1	<0.0001	<0.001	<0.001	0.002	0.34	<0.001	0.011	<0.001	<0.01	0.02	0.017
01-Dec-16	1000	32.15	31.84	7.2	3320	22.8																		
22-Mar-17	1310	32.69	32.38	7.4	3280	23	7.56	3360	0.03	<0.001	0.106	<0.001	0.1	<0.0001	<0.001	<0.001	0.02	0.11	<0.001	0.023	<0.001	<0.01	0.02	0.054
07-Jun-17	1030	32.01	31.7	7.6	3180	21.1																		
14-Sep-17	1100	32	31.69	7.4	3370	20.4	7.72	3450	0.24	<0.001	0.099	<0.001	0.1	<0.0001	<0.001	<0.001	0.001	0.39	<0.001	0.022	<0.001	<0.01	0.02	0.02
08-Dec-17	1235	31.93	31.62	7.2	3310	22.7																		
05-Apr-18	1245	34.01	33.70	7.2	3280	22.9	7.69	3510	0.39	<0.001	0.098	0.002	0.098	<0.0001	0.001	<0.001	<0.001	0.64	<0.001	0.027	<0.001	<0.01	0.02	0.011
21-Jun-18	1300	33.64	33.33	7.3	3160	21.3																		
03-Oct-18	1245	33.21	32.90	7.4	3260	23.1	7.43	3460	0.28	<0.001	0.091	<0.001	0.1	<0.0001	<0.001	<0.001	0.004	0.5	<0.001	0.02	<0.001	<0.01	0.02	0.007
07-Dec-18	1210	32.1	31.79	7.2	3260	23.5																		

Bore – Surrey No. 2 cont.

Date	Time	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	Comments
		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								
DW GVs	-	-	180	-		250	250		-	-				0.5	3	50	-	1000	
CW GVs	1000	-	-	-		-	1000		-	-				-	30	400	-	-	
25-Feb-10	1100																		
26-Aug-10	930																		
09-Nov-10	1400																		
07-Mar-11	1100	104	92	465	10	33.2	751	43	<1	<1	545	545	33	0.33	<0.01	1.54	1.54		
03-May-11																			No Access. Gate Locked.
01-Sep-11	1110	100	88	475	8	33.1	763	50	<1	<1	402	402	30.6	3.92	0.04	<0.01	1.59	1.59	1670
21-Mar-12	1320	36	26	291	9	16.8	341	62	<1	<1	235	235	15.6	3.74	0.18	<0.01	9.4	9.4	1000
24-May-12	1225																		
28-Aug-12	1100	111	94	495	10	35.1	829	58	<1	<1	558	558	35.7	0.97	<0.01	<0.01	1.89	1.89	1850
27-Nov-12	1325																		
13-Mar-13	1030	111	100	525	11	36.9	779	53	<1	<1	544	544	34	4.14	0.02	<0.01	1.81	1.81	1910
20-Jun-13	1315																		
30-Aug-13	0855	109	97	513	9	36	775	56	<1	<1	480	480	32.6	4.87	<0.01				1800
12-Dec-13	1220																		
26-Feb-14	1250	105	92	513	8	35.3	771	56	<1	<1	524	524	33.4	2.82	0.01				1820
12-Jun-14	1000																		
11-Sep-14	1230	118	103	450	10	34.2	792	58	<1	<1	462	462	32.8	2.1	0.03	<0.01	2.12	2.12	1980
27-Nov-14	925																		
04-Mar-15	1245	112	100	475	9	34.7	809	56	<1	<1	542	542	34.8	0.16	<0.01	1.62	1.62		
03-Jun-15	1030																		
03-Sep-15	1125	122	102	481	9	35.6	653	52	<1	<1	520	520	29.9	8.75	0.04	<0.01	1.96	1.96	1920
08-Dec-15	1030																		
03-Mar-16	1135	102	101	488	9	34.8	734	55	<1	<1	508	508	32	4.26	0.04	0.01	1.45	1.46	1940
25-May-16	1135																		
08-Sep-16	1250	119	96	532	8	37.2	797	55	<1	<1	557	557	34.8	3.36	<0.01	<0.01	1.86	1.86	1940
01-Dec-16	1000																		
22-Mar-17	1310	108	91	444	8	32.4	747	53	<1	<1	552	552	33.2	1.23	0.13	<0.01	0.41	0.41	1900
07-Jun-17	1030																		
14-Sep-17	1100	123	96	549	8	38.1	766	51	<1	<1	556	556	33.8	6.04	0.02	<0.01	1.71	1.71	1950
08-Dec-17	1235																		
05-Apr-18	1245	120	103	523	10	37.5	798	59	<1	<1	612	612	36	2.05	0.02	<0.01	1.52	1.52	1970
21-Jun-18	1300																		
03-Oct-18	1245	116	100	506	9	36.2	772	60	<1	<1	535	535	33.7	3.63	0.04	<0.01	1.55	1.55	2040
07-Dec-18	1210																		