Annual Review
Sunnyside Coal Mine

Name of operation	Sunnyside Coal Mine
Name of operator	Whitehaven Coal Mining Pty Ltd
Development consent/project approval number	PA 06_0308
Name of holder of development consent/project approval	Namoi Mining Pty Ltd
Mining lease number	ML 1624
Name of holder of mining lease	Namoi Mining Pty Ltd
Water licence number	WAL 29537
Name of holder of water licence	Namoi Mining Pty Ltd
MOP start date	06-05-2016
MOP end date	03-11-2017
Annual review start date [1]	01-12-2015
Annual review end date	30-11-2016
I, Nigel Wood, certify that this audit report is a true and accurate record of the compliance status of Sunnyside Coal Mine for the period December 1st 2015 until November 30th 2016, and that I am authorised to make this statement on behalf of Namoi 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	NIGEL WOOD
Title of authorised reporting officer	G.M. OPEN CUTS
Signature of authorised reporting officer	
Date	8.3.2017
[1] NSW Annual Review Guideline was released in October 2015	

TABLE OF CONTENTS

1 STATEMENT OF COMPLIANCE 5
2 INTRODUCTION 7
2.1 Mine Contacts 7
3 APPROVALS 9
3.1 Tenements, Licences, and Approvals 9
4 OPERATIONS SUMMARY 10
4.1 Mining Operations 10
4.2 Other Operations 10
4.2.1 Hours of Operations 10
4.2.2 Infrastructure Management 11
4.3 Next Reporting Period 11
5 ACTIONS REQUIRED FROM PREVIOUS ANNUAL REVIEW 12
6 ENVIRONMENTAL PERFORMANCE 12
6.1 Air Quality 12
6.1.1 Criteria 12
6.1.2 Environmental Management Measures 13
6.1.3 Dust Monitoring 13
6.1.4 Key Environmental Performance/Management Issues 14
6.1.5 Proposed Improvements to Environmental Management 14
6.2 Biodiversity 16
6.2.1 Threatened Flora 16
6.2.2 Threatened Fauna 16
6.2.3 Weeds 17
6.2.4 Feral Animal Control 18
6.2.5 Koala Management 18
6.2.6 Key Environmental Performance/Management Issues 18
6.2.7 Proposed Improvements to Environmental Management 18
6.3 Blasting 18
6.3.1 Criteria 18
6.3.2 Key Environmental Performance/Management Issues 19
6.3.3 Proposed Improvements to Environmental Management 19
6.4 Operational Noise 19
6.4.1 Criteria 19
6.4.2 Environmental Management Measures 19
6.4.3 Key Environmental Performance/Management Issues 19
6.4.4 Proposed Improvements to Environmental Management 19
6.5 Aboriginal Heritage Management 19
6.5.1 Environmental Management Measures 19
6.5.2 Consultation 20
6.5.1 Environmental Management Measures 21
6.5.2 Key Environmental Performance/Management Issues 21
6.5.3 Proposed Improvements to Environmental Management 21

6.6 Natural Heritage 21
6.7 Spontaneous Combustion 21
6.7.1 Environmental Management Measures 21
6.7.2 Key Environmental Performance/Management Issues 22
6.7.3 Proposed Improvements to Environmental Management 22
6.8 Bushfire Management 22
6.8.1 Environmental Management Measures 22
6.8.2 Key Environmental Performance/Management Issues 22
6.8.3 Proposed Improvements to Environmental Management 22
6.9 Environmental Performance Summary 22
7 WATER MANAGEMENT 24
7.1.1 Surface Water Management 24
7.1.2 Surface Water Monitoring Results 24
7.1.3 Key Environmental Performance/Management Issues 25
7.1.4 Proposed Improvements to Environmental Management 25
7.1.5 Water Take 25
7.2 Groundwater Management 26
7.2.1 Environmental Performance/Management 26
7.2.2 Groundwater Monitoring 26
7.2.3 Groundwater Management 27
7.2.4 Key Environmental Performance/Management Issues 28
7.2.5 Proposed Improvements to Environmental Management 28
8 REHABILITATION 29
8.1 Rehabilitation Performance during the Reporting Period 29
8.1.1 Status of Mining and Rehabilitation 29
8.1.2 Post Rehabilitation Land Uses 29
8.1.3 Rehabilitation Undertaken 31
8.1.4 Rehabilitation Monitoring 31
8.1.5 Weeds Management 31
8.1.6 Renovation or Removal of Buildings 32
8.1.7 Other Rehabilitation Undertaken 32
8.1.8 Departmental Sign-off of Rehabilitated Areas 32
8.1.9 Variations in Activities against MOP/RMP 32
8.1.10 Trials, Research Projects and Initiatives 32
8.1.11 Key Issues to Achieving Successful Rehabilitation 32
8.2 Actions for Next Reporting Period 32
9 COMMUNITY 34
10 INDEPENDENT AUDIT 34
11 INCIDENTS AND NON-COMPLIANCES DURING THE REPORTING PERIOD 36
11.1 Reportable Incidents 36
11.2 Non-compliances 37
11.3 Regulatory Actions 38
12 ACTIONS TO BE COMPLETED IN THE NEXT REPORTING PERIOD 38

TABLES

Table 1 - Statement of Compliance 5
Table 2 - Non-compliances 5
Table 3 - Tenements, Licences and Approvals 9
Table 4 – Production Summary 10
Table 5 - Actions Required from the Previous Annual Review 12
Table 6 - Deposited Dust Monitoring Data Summary (December 2015 to November 2016) 13
Table 7 - Aboriginal Artefacts 20
Table 8 - Environmental Performance 23
Table 9 - Water Take 25
Table 10 - Groundwater Monitoring Points 26
Table 11 - Rehabilitation Status 29
Table 12- 2016 IEA Outstanding Action Table 35

FIGURES

Figure 1 Locality Plan 8
Figure 2 Environmental Monitoring Locations 15
Figure 3 Status of Mining and Rehabilitation 30

APPENDICES

Appendix 1 Surface Water Monitoring Data

Appendix 2 Groundwater Monitoring Data

1 STATEMENT OF COMPLIANCE

The compliance status of the Sunnyside Coal Mine as at 30th November 2016 is summarised in Table 1. Table 2 notes non-compliances that occurred during the reporting period, and non-compliances from previous reporting periods that still require management action.

Table 1 - Statement of Compliance

Were all conditions of the relevant approval(s) complied with?	
PA 06_0308 Consolidated	No
EPL 12957	Yes
ML 1624	Yes
WAL 29537	Yes

Table 2 - Non-compliances

Relevant Approval	Schedule (Condition) Number	Condition Description (summary)	Compliance status	Comment	Where Addressed in Annual Review
PA 06_0308	2(2)	Carry out project generally in accordance.	Non-compliant	Refer following conditions.	n/a
PA 06_0308	3(20)	Meteorological station on site.	Non-compliant	No meteorological station located on Sunnyside Coal Mine.	Section 11.2
PA 06_0308	3(23)	Site water balance must be reviewed and recalculated each year.	Non-compliant	Site water balance not reviewed during the reporting period.	Section 11.2
PA 06_0308	3(26)	Impact assessment criteria clearly defined in the Water Management Plan (WMP).	Non-compliant	Impact assessment criteria are not clearly defined within the WMP.	Sections 7.2.4, 7.2.5 11.2
PA 06_0308	3(27)	Trigger values clearly defined in WMP.	Non-compliant	Trigger values are not clearly defined in the WMP.	Section 11.2
PA 06_0308	3(28)	Implement koala habitat management and enhancement actions	Non-compliant	Koala habitat management and enhancement actions have not all been competed during reporting period.	Sections 8.2, 11.2
PA 06_0308	3(40)	Minimise visual impacts to the satisfaction of the Secretary	Non-compliant	Secretary satisfaction not received on visual impact	Section 11.2

				minimisation.	
PA 06_0308	5(2)	Prepare and implement an Environmental Monitoring Program	Non-compliant	Environmental Monitoring Program has not been revised since 2011.	Section 11.2
PA 06_0308	5(5A)	Proponent shall review, and if necessary revise, the strategies, plans and programmes required under this approval to the satisfaction of the Secretary	Non-compliant	Not all strategies, plans and programmes required under approval were reviewed during the reporting period.	Section 11.2

Note: Non-compliances identified within the Independent Environmental Audit undertaken during the reporting period are listed in Table 12.

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

2 INTRODUCTION

This is the eighth Annual Review (AR), formerly Annual Environmental Management Report, produced for the Sunnyside Coal Mine (SCM), and it has been prepared in accordance with Conditions 4 and 5 of Mining Lease (ML 1624) (Mining Act 1992) and Condition 5 (Schedule 5) of PA 06_0308 MOD 1. The AR follows the format required by the NSW Government Annual Review Guideline (October, 2015).

Though primarily covering the period from 1st December 2015 to 30th November 2016 (the reporting period), where relevant the AR provides information on historical aspects of the operation and longer term trends in environmental monitoring results.

The Sunnyside Coal Mine is located within the Gunnedah Shire, approximately 15 km west of Gunnedah (Figure 1). The mine is owned by Namoi Mining Pty Ltd (NMPL) and operated by Whitehaven Coal Mining Pty Ltd. Both companies are wholly owned subsidiaries of Whitehaven Coal Limited (WCL).

On the 25th October 2012, Whitehaven announced that mining operations would be suspended at Sunnyside and the mine would be placed into a care and maintenance phase. Mining operations ceased in November 2012, with the remaining ROM coal stockpiled at site crushed and transported to the CHPP until stockpiles were exhausted in May 2013.

2.1 Mine Contacts

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

- Mr Blair Meyers, Manager Mining Engineering - retains statutory responsibility for mining activities at the site. Contact: (02) 6740 7000.
- Mr Nigel Wood, General Manager, Open Cut Operations - oversees Open Cut Operations for the Whitehaven Group. Contact: (02) 6741 9309.
- Mrs Madeline Whitten, Graduate - Environment – oversees day to day environmental and rehabilitation performance across the site. Contact: (02) 6741 9324.

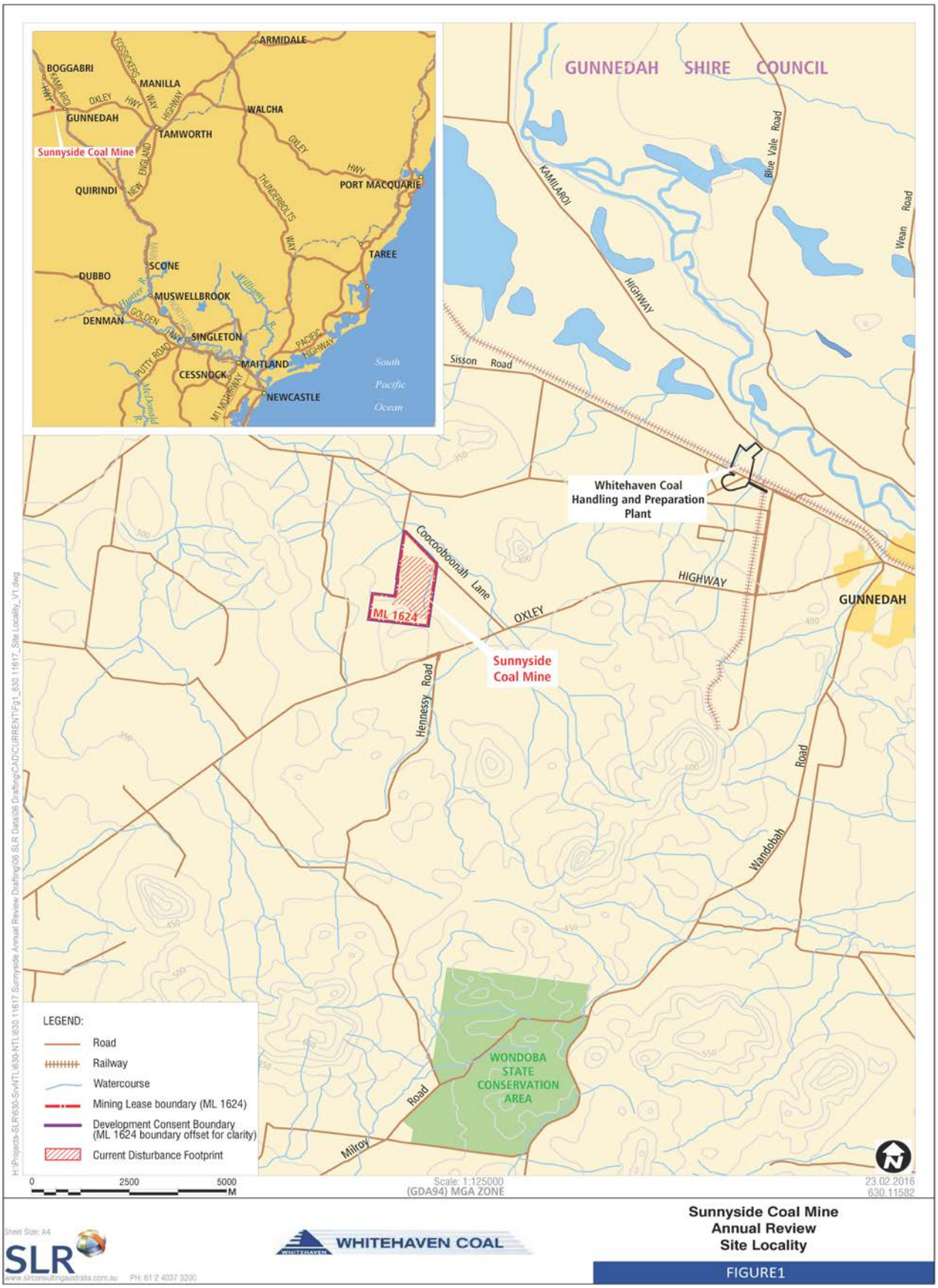


Figure 1 Locality Plan

3 APPROVALS

3.1 Tenements, Licences, and Approvals

Table 3 identifies the approvals in place for SCM 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

Issuing / Responsible Authority	Type of Lease, Licence, Approval	Date of Issue	Expiry	Comments
Department of Planning and Environment	Project Approval (PA) 06_0308 MOD 1	3rd November 2015	5th November 2020	PA modified to extend expiry date
Environment Protection Authority	Environment Protection Licence No. 12957	1st November 2016	N/A	EPL varied November 2016 to update location descriptions for premises, and meteorological blast and water monitoring, with other changes consistent with the care and maintenance status of the site.
Department of Primary Industry – Division of Resources and Energy	ML 1624	5th November 2008	5th November 2029	
Division of Resources and Energy (DRE)	Care and Maintenance MOP	6th May 2016	3 November 2017	A Closure MOP is required during the next reporting period.
Department of Primary Industry - Water	WAL 29537 (90WA822534) 90BL253767 90BL253768 90BL253769 90BL254686 90BL254687 90BL254688 90BL254689 90BL254690	27th April 2009 9th Feb 2007 9th Feb 2007 9th Feb 2007 26th Mar 2008 26th Mar 2008 26th Mar 2008 26th Mar 2008 26th Mar 2008	17th January 2025 Perpetuity Perpetuity Perpetuity Perpetuity Perpetuity Perpetuity Perpetuity Perpetuity	Mining Test Test Test Monitoring Monitoring Monitoring Monitoring Monitoring

4 OPERATIONS SUMMARY

4.1 Mining Operations

Mining operations during the period were limited to minor rehabilitation maintenance earth works, and the reestablishment of windrows around the crest of the pit. Table 4 presents the Production Summary at the end of the reporting period.

Table 4 – Production Summary

Material	Approved Limit	Previous Reporting Period (actual)	This Reporting Period (actual)	Next Reporting Period (forecast)
Waste Rock/Overburden	4.9 M m^3 [1]	0	0	0
ROM Coal/Ore	1 Mtpa [2] 0.5 Mtpa [3]	0	0	0
Coarse Reject	n/a	0	0	0
Fine Reject (Tailings)	n/a	0	0	0
Saleable Product	n/a	0	0	0

[1] Environmental Assessment
[2] PA 06_0308 MOD 1
[3] EPL 12957

4.2 Other Operations

4.2.1 Hours of Operations

Some minor works associated with demobilisation of mining equipment, road maintenance, and rehabilitation maintenance were undertaken during the reporting period within permitted operating times, i.e. 7:00am to 10:00pm Monday to Friday and 7:00am to 6:00pm on Saturdays, and not on public holidays.

No coal production (including blasting), processing or transport was undertaken during the reporting period.

4.2.2 Infrastructure Management

Management of infrastructure (e.g. buildings, roads, generators and pumps) and other facilities not specified elsewhere within this AR is undertaken on an as-needs basis or in accordance with statutory requirements in order to maintain them in an operationally efficient, safe, neat and tidy condition, and one which does not result in the direct or indirect generation of unacceptable environmental impacts.

4.3 Next Reporting Period

Operations forecast for the next reporting period are expected to be limited to the following:-

- Environmental monitoring,
- Maintenance earthworks (as required), and
- Equipment maintenance (as required).

5 ACTIONS REQUIRED FROM PREVIOUS ANNUAL REVIEW

Actions from the previous Annual Review are noted in Table 5.

Table 5 - Actions Required from the Previous Annual Review

Action Required from Previous Annual Review	Requested By	Action Taken by the Operator	Where Discussed in Annual Review
Remedial work on areas of rill erosion observable on the rehabilitated waste rock emplacement outer batter and within the drainage alignment along the eastern toe of the waste rock emplacement area.	DRE	Remedial works undertaken, and areas seeded.	Section 8 Rehabilitation
Results of monitoring undertaken against the rehabilitation completion criteria as presented in the Mining Operations Plan, to be reported in the rehabilitation section of future ARs.	DRE	Included in this document.	Section 8 Rehabilitation

6 ENVIRONMENTAL PERFORMANCE

The following sub-sections document the implementation and effectiveness of the various control strategies adopted at the SCM, together with monitoring data for the reporting period. Existing monitoring sites are shown in Figure 2. Life of mine monitoring data is included as Appendices in this AR, where relevant, to allow for discussion on longer-term trends.

6.1 Air Quality

6.1.1 Criteria

The air quality criteria applicable to the SCM are specified in PA 06_0308 MOD 1 Schedule 3, Tables 7, 8 & 9, which are summarised below.

- 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 $\mu g/m^3$.

- Mean annual PM_{10} particulate level – 30 μg/m^3.
- 24 hour average PM_{10} particulate level – 50 μg/m^3.

Monitoring of deposited dust is undertaken on a monthly basis whilst PM_{10} levels are monitored every 6 days.

6.1.2 Environmental Management Measures

In order to satisfy the criteria identified above, SCM has ensured that revegetation of disturbed areas has progressed as far as practicable and been maintained.

6.1.3 Dust Monitoring

Table 6 presents a summary of the deposited dust monitoring data. Figure 2 identifies the locations of the various deposited dust gauges maintained during the reporting period.

Table 6 - Deposited Dust Monitoring Data Summary (December 2015 to November 2016)

Site (see Error! Reference source not found.**)**	**EPL ID no.**	**Property Name**	**Annual Mean Total Insoluble Solids (g/m^2/month)**	**Annual Mean Ash (g/m^2/month)**
SD1	1	Ferndale	0.7	0.4
SD3	2	Plainview	1.5	1.0
SD4		Lilydale	1.4	0.7
SD5	4	Ivanhoe	2.1	1.0
SD6	5	Illili	1.1	0.5
SD7	6	Innisvale	0.6	0.4
SD8		Woodlawn	1.1	0.5

A review of Table 6 shows that the annual average limit for deposited dust was not exceeded at any location during the reporting period.

SCM has one High Volume Air Sampler (HVAS - PM_{10}) located at the property Illili (EPL ID 7), to the north-west of the mine site (refer Figure 2).

The PM_{10} results for the reporting period show compliance with the 24hr criteria, and the annual average criteria. Results have remained relatively stable, with the annual average

rising only slightly to 12.74µg/m^3 at the end of the reporting period. This is below the EA annual prediction of 22.1 µg/m^3.

6.1.4 Key Environmental Performance/Management Issues

No key environmental performance/management issues were identified during the reporting period.

6.1.5 Proposed Improvements to Environmental Management

No improvements are proposed within the next reporting period.

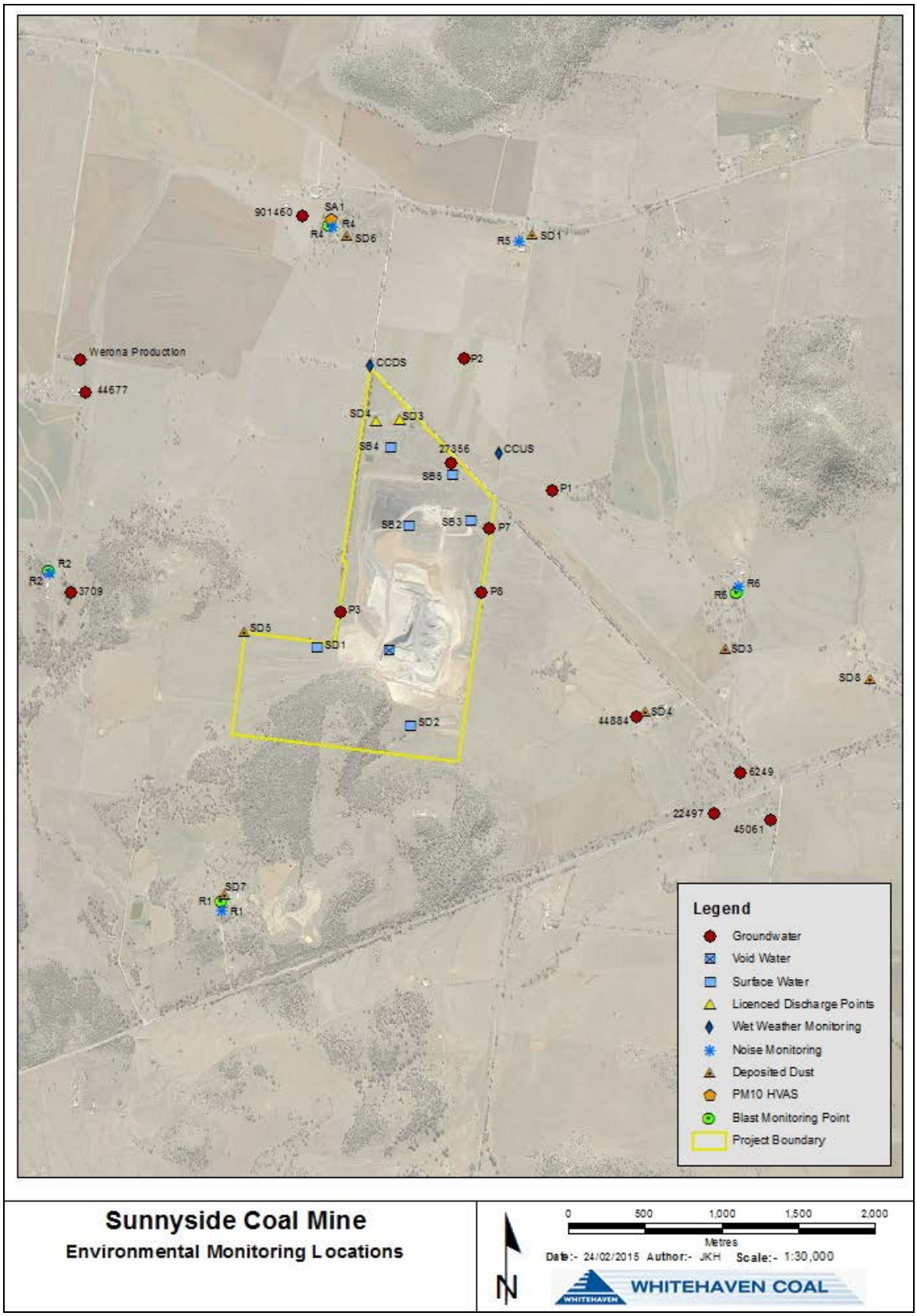


Figure 2 Environmental Monitoring Locations

6.2 Biodiversity

6.2.1 Threatened Flora

Investigations into the occurrence of threatened flora within the Project Approval Area were undertaken as part of the Environmental Assessment by Geoff Cunningham Natural Resource Consultants Pty Ltd in 2007, following field surveys in October and December 2006. The investigation identified no significant impact on threatened flora species, endangered ecological communities, endangered flora populations or critical habitat as a consequence of the development, either because they do not exist in the area or avoidance is possible due to project design.

Investigations identified a remnant of the White Box Yellow Box Blakely's Red Gum Woodland endangered ecological community within the study area but concluded that it would not be affected in any significant manner by the mine.

A remnant of the Native Vegetation on Cracking Clay Soils of the Liverpool Plains endangered ecological community was also identified within the study area. It was noted that a small section of this community would be temporarily affected by the Coocooboonah Lane re-alignment but the community would be rehabilitated and enhanced following rehabilitation after mining ceases. It was assessed that this action, due to its temporary impact and final environmental enhancement, would not require approval under the Commonwealth EPBC Act.

Much of the area has been cleared in the past and most of this cleared area has been cultivated. The vegetation on the cleared areas has been invaded by introduced species. The establishment of the mine site did not involve clearing of native vegetation and as such no biodiversity offsets were required.

6.2.2 Threatened Fauna

Investigations into the occurrence of threatened fauna within the Project Approval Area were undertaken by Kevin Mills and Associates as part of the Environmental Assessment, following surveys conducted in September 2006. These investigations identified that the proposed development was unlikely to significantly affect any of the threatened species, fauna populations or communities listed under the *Threatened Species Conservation Act 1995*, or their habitats.

It was also concluded that development of the mine was not likely to have a significant impact on any matter of national environmental significance listed under the *Environment Protection and Biodiversity Conservation Act 1999*. Referral to the Commonwealth Minister for the Environment for assessment and approval was therefore not warranted.

The area surrounding the mine site supports a viable koala population. NMPL has undertaken a number of measures to minimise the impacts on this population, including:

- Relocating the southern section of Coocooboonah Lane to avoid disturbing remnant koala habitat;
- Erecting a koala-proof fence around the active mine area;
- Minimising clearing and utilising local tree species for revegetation with an emphasis on koala feed trees. This has continued since the last reporting period with koala feed trees planted in koala corridor.

Fauna quadrat establishment was undertaken in November 2010 by Dr Leong Lim (Countrywide Ecological Services), where two grassland monitoring plots were established. Since establishment, roof tiles have been scattered throughout the quadrats to enhance the ground habitat structure and provide refuges for the ground fauna. The establishment of two woodland plots to the south of the active mining area occurred in February 2011, during a monitoring campaign. These plots are placed in open woodland, and open woodland with grassy understory communities.

Monitoring undertaken in September 2012 identified seven new bird species and the reoccurrence of a family group of Grey-crowned Babblers. The previously identified koala population was noted as not having been impacted by mining operations, and up to 10 species of micro bats were noted as being active in the vicinity of the mine, including the listed Yellow-bellied Sheathtail Bat.

No monitoring was conducted during the reporting period.

6.2.3 Weeds

Weed management within the project area involves targeted monthly inspections to determine levels of weed infestation. Weed control is undertaken by Whitehaven's own qualified personnel. All persons involved with weed control hold required chemical handling certificates. Coolatai grass (*Hyparrhenia hirta*) was found on the site during the reporting period, with spraying undertaken.

A number of other weed infestations occurred on site following several months of frequent rain during the reporting period. These included Star thistle (*Centaurea calcitrapa*), St Barnaby's thistle (*Centaurea solstitialis*), and Milk thistle (*Silybum marianum*). Minor ongoing weed management of these infestations comprised general weed spraying on three occasions during the reporting period, once in May, and twice in July 2016.

6.2.4 Feral Animal Control

Feral animal control for the SCM consisted of targeted trapping of pigs, with 10 captured and disposed of during the reporting period.

In view of the low frequency of occurrence, and in the absence of an extensive programme by all surrounding landowners, no other broad scale feral animal control programmes were considered warranted during the reporting period. In accordance with prior commitments, mine personnel will continue to monitor feral animal occurrences and implement further necessary control programmes if and when necessary.

6.2.5 Koala Management

During the reporting period no koalas were recorded onsite. The koala fence was inspected each month during the environmental inspections, and remains in functional condition. Additional tree plantings in the koala corridor are planned to be undertaken during the next reporting period.

6.2.6 Key Environmental Performance/Management Issues

No key environmental performance/management issues were identified during the reporting period.

6.2.7 Proposed Improvements to Environmental Management

No improvements are proposed within the next reporting period.

6.3 Blasting

6.3.1 Criteria

Blasting criteria for the SCM are noted in PA 06_0308, and Condition L5 of EPL 12957, however they are not relevant for this reporting period, as no blasting has been undertaken onsite.

6.3.2 Key Environmental Performance/Management Issues

No blasts were undertaken during the reporting period.

6.3.3 Proposed Improvements to Environmental Management

No blasting is proposed within the next reporting period.

6.4 Operational Noise

6.4.1 Criteria

The Project Approval and EPL detail the noise criteria for site operations and coal haulage, however there is no requirement for noise monitoring whilst the site is in care and maintenance.

6.4.2 Environmental Management Measures

Given the care and maintenance status of the site the environmental management measures for noise are limited to ensuring that any minor mechanical and earthwork maintenance is restricted to the approved hours of operation.

6.4.3 Key Environmental Performance/Management Issues

No key environmental performance/management issues were identified during the reporting period.

6.4.4 Proposed Improvements to Environmental Management

No improvements are proposed within the next reporting period.

6.5 Aboriginal Heritage Management

6.5.1 Environmental Management Measures

An assessment of the cultural heritage of the mine site was conducted by Archaeological Surveys and Reports Pty Ltd (ASR). Prior to the investigation, ASR contacted the Red Chief Local Aboriginal Land Council (LALC) and Bigundi Biame Gunnedarr Traditional People to arrange for site officers to assist in the survey. A representative from each group was present for the site survey conducted on the 12th September 2006 and the coal transport route survey on the 7th December 2006. The ASR assessment was used in the preparation of the Environmental Assessment for the mine, undertaken by R.W. Corkery & Co. Pty Ltd on behalf of Namoi Mining Pty.

Four sites were recorded during the investigation, as detailed in Table 7. Only one site (AGG1) was recorded within the mine site while the three isolated artefact sites were identified to the south of the mine site.

All Aboriginal Heritage sites are managed in accordance with the Sunnyside Coal Mine Aboriginal Cultural Heritage Management Plan, prepared in accordance with Schedule 3 Condition 32 of PA 06_0308 MOD 1.

6.5.2 Consultation

On the basis of the mine being in care and maintenance, no soil stripping took place during the reporting period. No additional Aboriginal cultural heritage items have been discovered during the reporting period and no consultation with Aboriginal stakeholders was conducted.

Table 7 - Aboriginal Artefacts

Site Name	Site Type	Site Description/Comments
Sunnyside AGG1	Axe Grinding Groove	Axe grinding groove at the rim of a cliff-like scarp (beside a small water-filled natural depression in the rock). Dimensions: 28cm (L) x 6cm (W) x 2cm (D). Located approximately 150m from the southern side of the open cut area.
Sunnyside ISO1	Isolated Artefact	Flake with possible retouch to one margin located on the bank beside the upper reaches of a dry creek (on a vehicle track). Dimensions: 21 x 12 x 3mm
Sunnyside ISO2	Isolated Artefact	Proximal fragment of a flake located on the bank beside the upper reaches of a dry creek. Dimensions: 22 x 22 x 5mm.
Sunnyside OS1	Artefact Scatter	Artefact scatter of at least ten artefacts in a lozenge-shaped area of 30 x 8m, on the upper slopes down slope of a contour bank down slope of a saddle. Artefact types: flakes and flaked pieces, including a backed blade.
Source: Modified after ASR (2007) – EA SCSC Part 7		

6.5.1 Environmental Management Measures

Given the care and maintenance status of the site the environmental management measures for Aboriginal Heritage are limited to ensuring that any identified heritage sites remain protected.

6.5.2 Key Environmental Performance/Management Issues

No key environmental performance/management issues were identified during the reporting period.

6.5.3 Proposed Improvements to Environmental Management

No improvements are proposed within the next reporting period.

6.6 Natural Heritage

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

6.7 Spontaneous Combustion

6.7.1 Environmental Management Measures

SCM is located within the Hoskissons Coal Seam which has been mined for over 120 years with a number of reported outbreaks of spontaneous combustion. Tests confirmed that coal from the SCM has the potential to spontaneously combust and this has been evident during the care and maintenance phase. A Spontaneous Combustion Management Plan was developed when the mine was operational to prevent and manage spontaneous combustion issues.

Following spontaneous combustion management earthworks in previous reporting periods, weekly onsite inspections have occurred. No visible sign of spontaneous combustion has been observed during the regular onsite inspections, however, a sulphur odour was detected in spring 2016, within the previously affected area of the pit. Infrared imaging of the area was captured utilising a drone, and minor earth works found areas of heating within the previously affected areas.

Based on infrared imaging obtained, ongoing management will include monitoring of areas affected by spontaneous combustion, and other areas that may develop spontaneous

combustion, on a weekly basis throughout the next AR period, along with an additional drone flight, scheduled during the cooler weather for comparison and ongoing management.

6.7.2 Key Environmental Performance/Management Issues

Odour was detected within the pit during the reporting period, and earthworks confirmed areas of heating. Management will be undertaken as per Section 6.7.1.

6.7.3 Proposed Improvements to Environmental Management

Infrared imaging was captured of the area, and additional imaging will be collected via drone in the cooler months of the next reporting period, for comparison and ongoing management. Weekly spontaneous combustion inspections will continue to be undertaken.

6.8 Bushfire Management

6.8.1 Environmental Management Measures

SCM is located within an area of cleared agricultural land. Whitehaven Coal personnel liaise with the local (Coocooboonah) Rural Fire Service, as required.

There have been no bushfire incidents on, or adjacent, to the mine site since development commenced.

6.8.2 Key Environmental Performance/Management Issues

No key environmental performance/management issues were identified during the reporting period.

6.8.3 Proposed Improvements to Environmental Management

No improvements are proposed within the next reporting period.

6.9 Environmental Performance Summary

An environmental performance summary for SCM is presented in Table 8.

Table 8 - Environmental Performance

Aspect	Approval Criteria / EIS Prediction	Performance during the reporting period	Trend / Key Management Implications	Implemented / proposed management actions
Air Quality	Refer Section 6.1.1	Approval criteria met.	Nil	Nil
Biodiversity	EIS prediction of no impact on known koala population.	No recorded impact on koala population.	Nil	Ongoing maintenance of koala fence.
Heritage	EIS prediction of potential blast impact on a recorded site.	No recorded impact on site.	Nil	Nil
Spontaneous Combustion	EIS prediction of no material spontaneous combustion	Detection of heating in previously mitigated spontaneous combustion area.	Nil	Based on infrared imaging obtained management will include ongoing implementation of Spontaneous Combustion Management Plan, including weekly visual inspections of previously mitigated area, and scheduled drone flight for the cooler months.

7 WATER MANAGEMENT

The SCM lies within the catchment of the Namoi River. The majority of the surface water runoff flows northwards across the mine site. It then flows into Coocooboonah Creek which flows north-west within a constructed waterway paralleling Coocooboonah Lane. From there, it flows into Rock Well Creek then into Native Cat Creek which continues to flow north-west for 6km. Runoff then flows northwards within Collygra Creek where it flows across a floodplain area before flowing into the Namoi River some 25km north of the Mine Site. The remainder of the mine's surface water flows south into Coocooboonah Creek ultimately flowing into the Namoi River to the north.

The design of sediment detention basins within the disturbed area of the mine limits the opportunity for discharge of runoff from mine-disturbed area, i.e. after appropriate detention time to satisfy licensed discharge criteria.

Two wet weather discharge points are nominated in the current EPL 12957. These are Storage Dam 3 (EPL ID No. 9) and Storage Dam 4 (EPL ID No. 10) (refer Figure 2). Two additional monitoring points are nominated on the EPL for water quality monitoring during discharge events. These are Coocooboonah Creek Upstream (CCUS – EPL ID No. 11) and Coocooboonah Creek Downstream (CCDS – EPL ID No. 12) (refer Figure 2).

7.1.1 Surface Water Management

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).

As directed by the EPA (EPA letter dated 21st August 2015), where runoff from coal contact areas is captured in storage dams designed for sediment control, Sunnyside Coal Mine will need to establish whether the discharge from these structures contains pollutants that pose a risk of non-trivial harm to human health and/or the environment. Whitehaven is working with the EPA to determine appropriate licencing measures to address coal contact water requirements.

7.1.2 Surface Water Monitoring Results

SCM has a requirement to undertake surface water monitoring on a quarterly basis in addition to the monitoring of any wet weather discharge event. Due to below average

rainfall for much of the year, several dams were dry and unable to be sampled at each quarterly monitoring event.

Water quality monitoring locations are shown on Figure 2, and complete surface water quality monitoring results are provided in Appendix 1.

The quarterly monitoring results show that water quality within onsite storages was generally consistent with results from previous years. Total Suspended Solids have dropped for SB2, SB4, and SB5. Electrical conductivity (EC) has also dropped for SD1 and SB2. Results of Total Organic Carbon remain generally consistent with previous years. Void water results were largely consistent with previous reporting periods with the exception of a slight decrease in EC to 5390 µS/cm, still remaining well below the previous maximum of 7270µS/cm. The November 2016 results for the Void EC have dropped just below the range predicted within the Project's Environmental Assessment, being 5831 µS/cm – 10999 µS/cm. The water in all sediment basins and storage dams can be described as fresh, neutral to slightly alkaline, and well within the discharge limits for oil and grease.

There were no wet weather discharges during the reporting period.

7.1.3 Key Environmental Performance/Management Issues

No key environmental performance/management issues were identified during the reporting period.

7.1.4 Proposed Improvements to Environmental Management

No improvements are proposed within the next reporting period.

7.1.5 Water Take

During the reporting period no water was used on site. The water taken by the operation is summarised in Table 9.

Table 9 - Water Take

Water Licence Number	Water Sharing Plan, Source and Management Zone (as applicable)	Entitlement	Passive take/ inflows	Active Pumping	TOTAL
WAL 29537	Gunnedah - Oxley Basin Mdb Groundwater Source	120 units	0	0	0

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 piezometers and bores within the Project Area and adjacent properties.

7.2.2 Groundwater Monitoring

The details of groundwater monitoring throughout the reporting period are listed in Table 10. Monitoring sites are shown in Figure 2 and complete monitoring datasets are provided in Appendix 2.

Groundwater sampling and analysis was undertaken by ALS Acirl Pty Ltd during the reporting period. Below are some points to note regarding monitoring locations and frequencies:

- Bore 27356 has not been monitored since June 2012, as there is a windmill over the bore which no longer functions.
- Standing Water Level (SWL) data is unavailable for bores 27356, 44884, 3709, and Werona due to pumps in place over the bores.

Table 10 - Groundwater Monitoring Points

Site ID (see Error! Reference source not found.**)**	**Registered Bore No. & Licence No**	**Property/ Location**	**Frequency**		**Purpose**
			SWL*[2], EC*[3] and pH	**Representative Metals and Ions**	
P1*[1]	GW968386 90BL253767	"Plainview"	Quarterly	Six monthly	To determine existing status and any impacts
P2*[1]	GW968387 90BL253768	"Ferndale"	Quarterly	Six monthly	
P3	GW968388 90BL253769	"Sunnyside"	Quarterly	Six monthly	
P7	GW968392 90BL254689	"Sunnyside"	Quarterly	Six monthly	To determine existing status and any impacts
P8	GW968393 90BL254690	"Sunnyside"	Quarterly	Six monthly	

3709*[1]	N/A	"Ivanhoe"	Quarterly	Six monthly*[5]	
22497*[1]	N/A	"Coocooboonah"	Quarterly	Six monthly	
44677*[1]	N/A	"Werona"	Quarterly*[5]	Six monthly	
44884*[1]	N/A	"Lilydale"	Quarterly	Six monthly	
6249*[1]	N/A	"Lilydale"	Quarterly	Six monthly	
901460	GW901460 90BL249138	"Illili"	Quarterly	Six monthly*[5]	To determine existing status and any impacts
27356	GW027356 90BL020042	"Sunnyside"	Quarterly	Six monthly*[5]	
45061	N/A	"Coocooboonah"	Quarterly	Six monthly*[5]	
Werona Production	90BL255246	"Werona"	Quarterly	Six monthly*[5]	

*[1] Non-Company owned bore *[2] SWL – Standing Water Level *[3] EC = Electrical Conductivity

*[4] Company production bore *[5] – Not available this reporting period due to lack of access

Groundwater levels

Groundwater levels have remained relatively consistent at all locations monitored during the reporting period.

Groundwater quality

Analysis of samples taken during the reporting period has shown that groundwater quality has remained generally in line 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). P3 continues to show Total Dissolved Solids (TDS) levels above the guidelines, (greater than 4000mg/L), finishing the period with a reading of 9270mg/L, while P2 showed a spike in aluminium of 5.54mg/L above the guideline limit of 5mg/L early in the period, before returning to a normal level during the next quarterly testing.

All other parameters remained stable during the reporting period.

7.2.3 Groundwater Management

Inflows into the open cut result from a combination of:

- Direct rainfall runoff and infiltration through the emplaced overburden which flows down-dip to the open cut sump(s); and

- Inflows from the exposed coal seam.

At the end of the reporting period an estimated 23.9 ML of water was held in the pit from rainfall and groundwater seepage.

Contamination of groundwater 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; and
- Fuels, oil and grease being stored within a bunded area, constructed in accordance with AS 1940-2004 and/or EPA requirements.

Groundwater from surrounding bores, as well as the mine production bore, is monitored on a regular basis to detect and assess any changes in groundwater quality or level that may be attributable to the mine. The mine production bore is not currently operating as the generator supplying power to the pump was removed. As such the water meter has not been read to assess usage in comparison to the allocation.

7.2.4 Key Environmental Performance/Management Issues

The 2016 Independent Environmental Audit identified that the suite of water quality parameters currently analysed does not fully align with those described in the SCM EA and/or SCM Water Management Plan.

7.2.5 Proposed Improvements to Environmental Management

SCM will undertake a review of water quality data to determine appropriate parameters to be assessed and apply for variations to approval documents as required.

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 11 and Figure 3.

Table 11 - Rehabilitation Status

Mine Area Type [1]	Previous Reporting Period	This Reporting Period (Actual)	Next Reporting Period (Forecast)
	2014/15 (ha)	2015/16 (ha)	2016/17 (ha)
A. Total Mine Footprint	136.7	136.7	136.7
B. Total Active Disturbance	118.9	118.9	118.9
C. Land Being Prepared for Rehabilitation	0	0	0
D. Land Under Active Rehabilitation	17.8	17.8	17.8
E. Completed Rehabilitation	0	0	0

[1] Refer Annual Review Guideline (p.11) for description of mine area types.

8.1.2 Post Rehabilitation Land Uses

Two final rehabilitation land uses are to be established at Sunnyside, being Pasture and Woodland. The eastern, northern and western slopes of the out of pit emplacement area will be planted with locally occurring tree and shrub species, with the objective of re-establishing woodland areas and providing habitat and food trees for the local koala population. The plateau on top of the waste emplacement and the flatter areas around the base of the emplacement area will be returned to pasture.

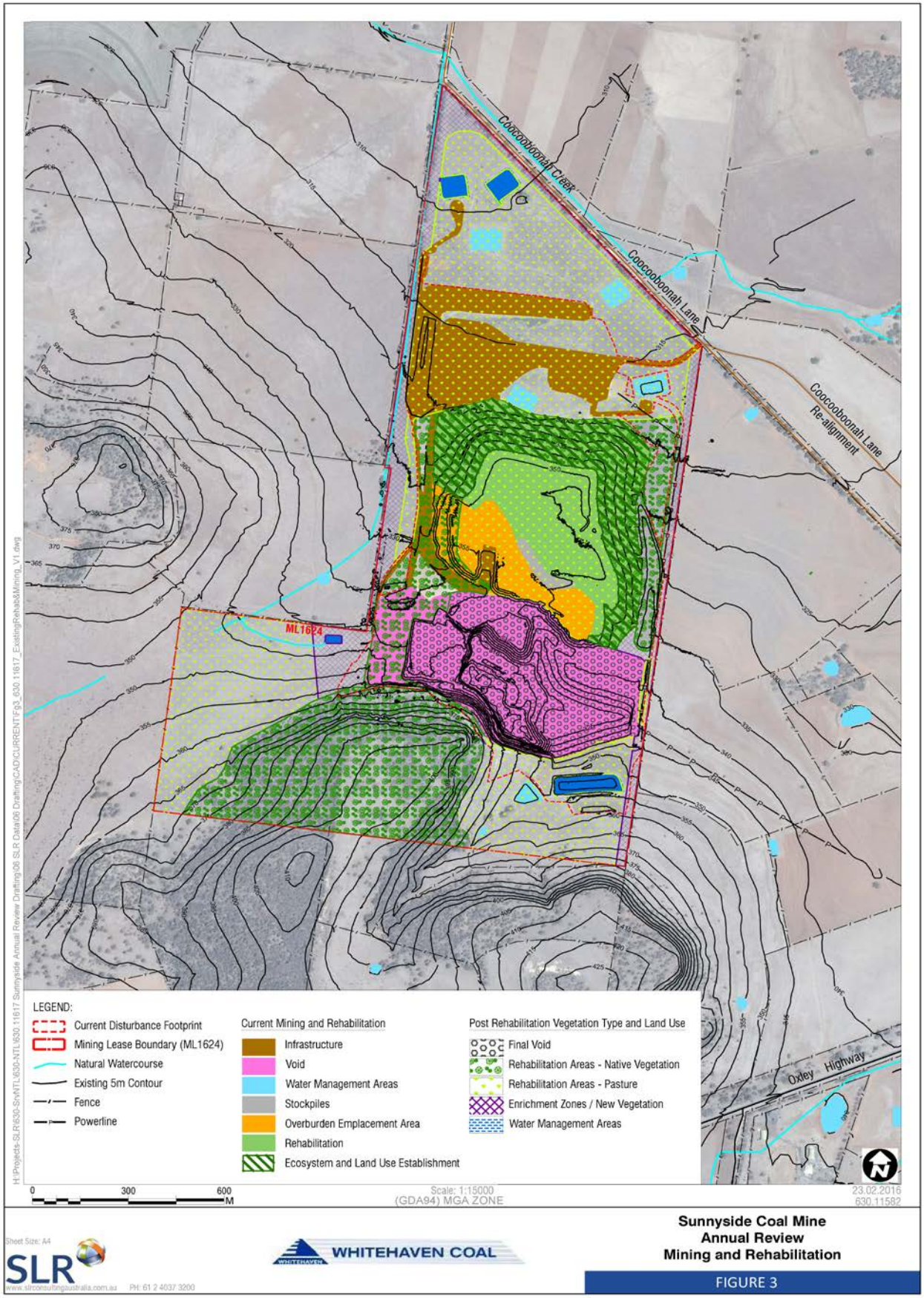


Figure 3 - Status of Mining and Rehabilitation

8.1.3 Rehabilitation Undertaken

There was no additional rehabilitation undertaken on site during the reporting period, although maintenance works were carried out on two areas of previously rehabilitated land in accordance with a request made from the DRE, following the site inspection for the 2014/2015 AR. Minor earth works were undertaken on the rehabilitated waste rock emplacement area, and within the drainage alignment along the eastern toe of the waste rock emplacement area to address instances of rill erosion. Following maintenance, both areas were seeded with a cover crop.

8.1.4 Rehabilitation Monitoring

Winter and spring monitoring programmes were historically undertaken on site in accordance with the then Rehabilitation Management Plan. Part of this monitoring provided an annual snapshot of the habitats available in these areas and habitat utilisation by fauna. This was then compared to baseline data collected from adjacent unaffected land surrounding the mine to determine its success and progression in regards to habitat value for native and threatened species. No rehabilitation monitoring was undertaken during the reporting period.

Rehabilitation condition is monitored through monthly environmental inspections. The monitoring of rehabilitation condition involves the regular inspections of ground cover, trees and the presence of erosion and weeds.

A formal rehabilitation monitoring program will commence during the next reporting period in accordance with the approved 2016 MOP.

8.1.5 Weeds Management

Monthly inspections of rehabilitation areas, as well as periodic general observations of the site, are undertaken in order to identify the presence of noxious weeds. No noxious weed infestations were identified within rehabilitated areas during the reporting period. As detailed in Section 6.2.3 there were occurrences of non-noxious weeds across the site, with spraying undertaken on three occasions during the reporting period, once in May, and twice in July 2016.

Weed spraying is scheduled to be undertaken again early in the next reporting period, dry weather permitting.

8.1.6 Renovation or Removal of Buildings

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

8.1.7 Other Rehabilitation Undertaken

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

8.1.8 Departmental Sign-off of Rehabilitated Areas

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

8.1.9 Variations in Activities against MOP/RMP

A Care and Maintenance MOP was approved by the DRE in May 2016. A Closure MOP is due for submission within the next reporting period.

8.1.10 Trials, Research Projects and Initiatives

No rehabilitation trials, research projects or other initiatives were undertaken during the reporting period.

8.1.11 Key Issues to Achieving Successful Rehabilitation

Two key issues to achieving successful rehabilitation are:-

- Landform stability (Final Void), and
- Spontaneous combustion.

Ongoing management of spontaneous combustion will continue to be undertaken on site, as per the Spontaneous Combustion Management Plan. Management measures to address the issues of landform instability will be described in the site Closure MOP to be developed in consultation with DRE.

8.2 Actions for Next Reporting Period

The submission and approval of the Closure MOP will provide the strategies to achieve agreed final rehabilitation outcomes.

Additional tree plantings within the koala corridor will be undertaken during the next reporting period.

Rehabilitation condition is monitored through monthly environmental inspections. The monitoring of rehabilitation condition involves the regular inspections of ground cover, trees and the presence of erosion and weeds.

9 COMMUNITY

SCM maintains a designated complaints line and, in the event of a complaint, details pertaining to the complainant, complaint and action taken are recorded.

One complaint concerning odour was received during the reporting period, with a report containing all requested information submitted to the EPA, which illustrated that there was no indication that SCM was the source of the odour. The five year period of records indicate a low steady trend of complaints, with 0 compliants in 2014/15, 1 in 2013/14, 7 in 2012/13, 2 in 2011/12 and 4 in 2010/11.

Any complaints that are made are reported to the Community Consultative Committee and documented in the AR. A complaints register is also maintained on Whitehaven's website.

Community contributions are managed in accordance the Whitehaven Coal Donations and Sponsorship Policy.

10 INDEPENDENT AUDIT

An Independent Environmental Audit (IEA) was undertaken by ERM during the reporting period.

Non-compliances with project approvals identified by the IEA were risk ranked by the auditor in accordance with the compliance status key for Table 3, and SCM subsequently developed an Audit Action Plan for these non-compliances. The Audit Action Plan is available on the Whitehaven Coal website and the individual non-compliances have not been replicated in Table 3.

Outstanding items from the 2016 Audit Action Plan, and how they are being addressed, are summarised in Table 12 below.

Table 12- 2016 IEA Outstanding Action Table

Condition/Plan	IEA Proposed Action	IEA Action Plan Timing
PA 06_0308 Condition		
3.26, 3.27	Water Management Plan to be updated in accordance with Schedule 5 Condition 5.	22nd March 2017
3.28	Undertake additional tree plantings to fill identified gaps in koala corridor.	30th June 2017
3.40	Seek DP&E satisfaction of condition to minimise the visual impacts of the project	31st March 2017
5.2	Revised EMP to be submitted in accordance with Schedule 5 Condition 5.	22nd March 2017
5.5A	Develop document and record tracking system.	30th June 2017
Statement of Commitments		
7.5	Ensure that the potentially contaminated wash down water can be collected and treated from all workshop areas if operational in future.	Prior to recommencement of mining operations.
7.7	Review the need for a second dam for operational purposes and construct as may be required.	Prior to recommencement of mining operations.
9.3	Review of the existing koala proof fence to confirm alignment with requirements of the EA.	When active mining recommences.
9.4	Incorporate speed requirement into site specific induction	Prior to recommencement of mining operations.
9.11	Incorporate on site weed monitoring and control into WHC group programs.	31st March 2017
9.12	Corridors will require enhancement plantings to improve connectivity linkages especially the eastern boundary corridor. Future work towards mine closure and relinquishment will require significant renewed rehabilitation efforts to improve the currently poor native non-tree species presence (e.g. ground and shrub layers).	30th June 2017 As per Mining Operations Plan
9.13, 9.19	Corridors will require enhancement plantings to improve connectivity linkages especially the eastern boundary corridor.	30th June 2017
9.20	Activities described in the Rehabilitation and Landscape Management Plan were not undertaken in the 2013/2014 or 2014/2015 AEMR periods because of low feral species prevalence. Pig trapping is ongoing.	31st March 2017
10.3	Ensure that the potentially contaminated wash down water can be collected and treated from all workshop areas if operational in future	Prior to recommencement of mining operations.
11.1	Identify areas suitable for fencing to encourage natural regeneration in those boundary corridors as stated.	30th June 2017

11.29, 11.34	WHC to seek DP&E agreement that current EPL 12957 weather monitoring location (Gunnedah BOM Station) satisfies this condition.	31st March 2017
14.3	No evidence of SMU segregation aside from topsoil emplacement.	Review currently stockpiled material prior to recommencement of mining activity.
14.4	Recommended that soil pH is recorded during soil management and emplacement.	As required
14.5	If mining is recommenced in future, recommendation for sediment fencing around bare stockpiles.	As required upon recommencement of mining operations.
14.6	Topsoil stockpiles exceed committed height.	Review currently stockpiled material prior to recommencement of mining activity.
14.8	Soil stockpile segregation should be improved.	Soil resource audit to be undertaken prior to commencement of final rehabilitation activities.
14.12	Review monthly inspection procedure to include follow up actions.	31st March 2017
17.5	Future tree planting should be done with a more random planting.	Incorporate into final revegetation works.
EPL 12957		
L5.1, L5.2	A Blast Management Plan will be prepared and implemented in accordance with Schedule 3 Condition 17B	Prior to recommencement of ROM coal mining operations.
R2.1	Ensure decision making process, records of receipt or telephone communications are recorded and maintained in relation to incident notifications.	Ongoing.
Mining Lease 1624		
15.b	A Blast Management Plan will be prepared and implemented in accordance with Schedule 3 Condition 17B	Prior to recommencement of ROM coal mining operations.

11 INCIDENTS AND NON-COMPLIANCES DURING THE REPORTING PERIOD

11.1 Reportable Incidents

No environmental incidents occurred at SCM during the reporting period.

11.2 Non-compliances

All of the non-compliances with PA 06_0308 have been ranked as either administrative or low, with very limited potential for significant environmental harm, and are addressed below.

- Schedule 3 Condition 20 requires a suitable continuously operating meteorological station on site. EPL 12957 has been varied to allow the Gunnedah BOM station to satisfy this condition, and DP&E agreement will be sought during the next reporting period.
- Schedule 3 Condition 23 requires that the site water balance be reviewed and recalculated each year, however with no operations occurring and the site placed in Care and Maintenance it was not undertaken during the reporting period. A site water balance will be reviewed upon recommencement of mining operations.
- Schedule 3 Conditions 26 and 27 both relate to requirements within the WMP. 3(26) concerns a lack of clearly defined impact assessment criteria, while 3(27) concerns a lack of clearly defined trigger values. The WMP is scheduled to be updated to address both conditions during the next reporting period.
- Schedule 3 Condition 28 requires the proponent to implement the koala habitat management and enhancement actions described in the EA in consultation with the OEH and to the satisfaction of the Secretary. This condition was found to be non-compliant in the IEA, and SCM have agreed to undertake additional planting within the koala corridor during the next reporting period.
- Schedule 3 Condition 40 requires the Proponent to minimise the visual impacts of the project to the satisfaction of the Secretary. SCM shall seek satisfaction from DP&E during the next reporting period.
- Schedule 5 Condition 2 required the proponent to prepare and implement an Environmental Monitoring Program (EMP) for the project to the satisfaction of the Secretary. The most recent approval for the EMP is dated October 2011. A revised EMP is to be submitted in the next reporting period.
- Schedule 5 Condition 5A requires that review and any necessary revision of strategies, plans and programs be undertaken within 3 months of the submission of an AEMR/AR, an incident report, an audit, and/or any modification to the conditions of this approval. As Whitehaven do not have a document and record tracking system it therefore has a limited ability to track the need to update or revise documents. A

document and record tracking system will be developed and implemented during the next reporting period.

11.3 Regulatory Actions

No regulatory actions (official cautions or warning letters, penalty notices or prosecution proceedings) were undertaken with respect to the Sunnyside Coal Mine during the reporting period.

12 ACTIONS TO BE COMPLETED IN THE NEXT REPORTING PERIOD

The following measures will be continued, or implemented, in the next reporting period to improve the environmental or community performance of the operation:-

- Undertake activities in accordance with the MOP;
- The continuation of environmental monitoring and management;
- Completion of outstanding IEA actions;
- Review and revision of various Environmental Management Plans; and
- Continued community liaison and engagement with local stakeholders.

Appendix 1

SURFACE WATER MONITORING DATA

Surface Water Monitoring Data- Sunnyside Coal Mine

Sample No.	Sample Location	Date	Time	pH Field	pH Lab	Electrical Conductivity @25C (µS/cm)	Electrical Conductivity (µS/cm)	Total Suspended Solids (mg/L)	Total Organic Carbon (TOC)	Grease & Oil (mg/L)	Total Alkalinity	Hydroxide Alkalinity as CaCO3	Carbonate Alkalinity as CaCO3	Bicarbonate Alkalinity as CaCO3	Aluminium	Antimony	Chloride	Molybdenum	Selenium	Sodium	Arsenic	Manganese	Iron	Comments
ES1117295-002	SB1	10-Aug-11	10:45	9.3	9.07	648	536	46	47	<5						<0.001		0.007	<0.01		0.002			
ES1125734-002	SB1	22-Nov-11	10:15	10.1	9.22	592	486	208	73	<5						<0.001		0.008	<0.01		0.009			
ES1203324-002	SB1	14-Feb-12	10:00	9.1	9.02	329	279	100	14	<5						0.001		0.004	<0.01		0.005			
ES1210728-003	SB1	01-May-12	10:00	8.7	9.82	422	364	136	21	<5						<0.001		0.005	<0.01		0.006			
ES1303279002	SB1	12-Feb-13	11:10	8.79	8.23	310	296	86	4	<5						<0.001		0.002	<0.01		0.006			
ES1318099-002	SB1	13-Aug-13	8:30	8.87	8.47	405	513	343	22	<5						<0.001		0.003	0.01		0.005			
ES1325115-001	SB1	18-Nov-13	10:20	9.7	8.88	399	390	46	13	<5						<0.001		0.007	<0.01		0.005			
ES1410234-002	SB1	07-May-14	10:15	8.8	8.35	452	453	196	4	<5						<0.001		0.003	<0.01		0.005			
ES1417254-001	SB1	05-Aug-14	11:10	8.6	8.53	609	644	40	20	<5						<0.001		0.006	<0.01		0.003			
ES1521694-002	SB1	11-May-15	14:05	9	8.32	323	314	107	6	<5						<0.001		0.002	<0.01		0.002			
ES1528398-002	SB1	13-Aug-15	9:25	9.2	8.58	508	497	24	7	5						<0.001		0.004	<0.01		0.003			
ES1536059-004	SB1	11-Nov-15	9:10	9.5	8.64	366	391	194	8	<5						<0.001		0.003	<0.01		0.007			
ES1004139	SB2	04-Mar-10	13:00		8.3		554	17	<1	8														
ES1009878	SB2	24-May-10	9:35		8.14		586	30	2	7														
ES1109425-002	SB2	05-May-11	10:30		8.85		663	233	9	<1														Turbid/Odour
ES1117295-003	SB2	10-Aug-11	10:30	8.9	8.2	608	513	82	11	<5						<0.001		0.005	<0.01		0.001			
ES1125734-003	SB2	22-Nov-11	10:00	10.2	9.24	486	389	64	5	<5						<0.001		0.018	<0.01		0.002			
ES1203324-003	SB2	14-Feb-12	11:50	9.5	9.12	481	398	51	3	<5						<0.001		0.018	<0.01		0.002			
ES1210728-004	SB2	01-May-12	9:40	8.2	8.92	682	562	356	9	<5						<0.001		0.017	<0.01		0.007			
ES1219038-002	SB2	02-Aug-12	10:40	8.85	8.84	376	441	24	11	<5						<0.001		0.008	<0.01		<0.001			
ES1303279003	SB2	12-Feb-13	10:40	8.33	8.2	322	309	436	2	<5						<0.001		0.004	<0.01		0.004			
ES1310164-001	SB2	02-May-13	9:30	8.62	7.92	402	396	61	3	<5						<0.001		0.004	<0.01		0.002			
ES1318099-003	SB2	13-Aug-13	9:50	8.19	8.15	312	318	82	4	<5						<0.001		0.002	<0.01		0.003			
ES1325115-002	SB2	18-Nov-13	11:15	9.2	8.31	410	420	27	8	<5						<0.001		0.002	<0.01		0.005			
ES1402292-001	SB2	04-Feb-14	11:30	9.9	8.97	713	663	66	31	<5											0.002			
ES1410234-003	SB2	07-May-14	11:30	8	8.45	492	474	59	3	<5											0.001			
ES1417254-002	SB2	05-Aug-14	12:00	9.3	8.53	522	494	11	5	<5											0.001			
ES142449-001	SB2	06-Nov-14	9:00	9.1	8.41	738	702	21	6	<5														
ES1503593-001	SB2	12-Feb-15	925	9.2	8.49	497	446	20	4	<5						<0.001		0.003	<0.01		0.002			
ES1521694-004	SB2	11-May-15	12:45	8.7	8.27	283	278	40	3	<5						<0.001		0.002	<0.01		0.002			
ES1528398-003	SB2	13-Aug-15	10:35	8.9	8.38	332	315	5	<1	<5						<0.001		0.001	<0.01		0.001			
ES1536059-003	SB2	11-Nov-15	10:20	9.2	8.85	384	371	13	5	<5						<0.001		0.003	<0.01		<0.001			
ES1602640-002	SB2	04-Feb-16	9:25	9.1	8.6	308	294	29	4	<5														
ES1609755-002	SB2	05-May-16	9:20	8.7	8.11	292	292	33	8	<5						<0.001		<0.001	<0.01		0.002			
ES1617490-003	SB2	08-Aug-16	9:25	7.9	8.27	386	390	40	4	<5						<0.001		<0.001	<0.01		<0.001			
ES1624857-002	SB2	01-Nov-16	9:50	8.4	8.05	243	279	14	4	<5														
ES1104965-001	SB3	08-Mar-11	9:30		8.49		1300	20	<1	<5														
ES1109425-001	SB3	05-May-11	9:55		8.3		3020	147	6	<5														Turbid/Odour
ES1117295-004	SB3	10-Aug-11	10:10	8.8	8.35	2250	1800	82	12	<5						<0.001		0.012	<0.01		<0.001			
ES1123157-001	SB3	18-Oct-11	16:00	7.84	7.84		267	91	4	<5														
ES1125734-004	SB3	22-Nov-11	9:15	8.8	8.26	353	283	79	3	<5						<0.001		0.003	<0.01		0.002			
ES1203324-004	SB3	14-Feb-12	12:10	9.3	8.83	437	360	26	1	<5						<0.001		0.014	<0.01		0.002			
ES1210728-005	SB3	01-May-12	9:00	8	8.44	498	417	42	2	<5						<0.001		0.015	<0.01		0.002			
ES1219038-003	SB3	02-Aug-12	10:20	8.78	8.47	349	393	14	5	<5						<0.001		0.008	<0.01		0.002			
ES1227200-002	SB3	15-Nov-12	9:45	9.18	8.89	1120	926	96	29	<5						<0.001		0.025	<0.01		0.004			Dam level low
ES1303279004	SB3	12-Feb-13	10:00	8.29	7.96	324	315	18	3	<5						<0.001		0.004	<0.01		0.003			
ES1310164-002	SB3	02-May-13	9:50	8.25	8.09	394	403	144	4	<5						<0.001		0.004	<0.01		0.002			
ES1318099-004	SB3	13-Aug-13	10:10	8.45	8.35	331	320	72	5	<5						<0.001		0.002	<0.01		0.003			
ES1521694-005	SB3	11-May-15	12:25	7.5	7.6	353	343	26	7	<5						<0.001		0.002	<0.01		0.002			
ES1109617-002	SB4	09-May-11	12:05		8.65		512	32	14	<5														
ES1117295-005	SB4	10-Aug-11	11:40	8.8	8.36	546	474	62	8	<5						<0.001		0.008	<0.01		<0.001			
ES1125734-005	SB4	22-Nov-11	10:30	9.7	8.95	352	286	40	4	<5						<0.001		0.006	<0.01		<0.001			
ES1203324-005	SB4	14-Feb-12	11:30	9	8.74	335	276	13	2	<5						<0.001		0.011	<0.01		<0.001			
ES1210728-006	SB4	01-May-12	10:30	8.1	8.21	400	334	39	1	<5						<0.001		0.011	<0.01		0.001			
ES1219038-004	SB4	02-Aug-12	11:10	8.89	8.79	298	339	8	3	<5						<0.001		0.008	<0.01		<0.001			
ES1227200-003	SB4	15-Nov-12	9:20	8.37	8.36	939	754	149	5	<5						<0.001		0.02	<0.01		0.001			Dam level low
ES1303279005	SB4	12-Feb-13	11:40	8.37	7.79	243	234	113	2	<5						<0.001		0.005	<0.01		0.001			
ES1318099-005	SB4	13-Aug-13	9:00	7.99	8.07	347	340	110	9	<5						<0.001		0.001	<0.01		0.005			
ES1410234-004	SB4	07-May-14	11:05	8.2	7.76	484	457	647	6	<5											0.005			
ES1521694-006	SB4	11-May-15	13:30	8.6	7.95	209	204	32	4	<5						<0.001		0.001	<0.01		0.001			
ES1624857-003	SB4	01-Nov-16	11:50	8.5	7.62	235	255	98	15	<5														
ES1004139	SB5	04-Mar-10	12:50		7.85		412	30	6	<5														
ES1109425-003	SB5	05-May-11	11:40		8.93		759	36	4	<5														Turbid/Odour
ES1117295-006	SB5	10-Aug-11	8:45	9.3	8.9	940	768	88	24	<5						<0.001		0.01	<0.01		0.002			
ES1125734-006	SB5	22-Nov-11	9:30	9.5	8.65	636	504	352	43	<5						<0.001		0.002	<0.01		0.012			
ES1203324-006	SB5	14-Feb-12	12:00	8.8	8.46	464	382	14	3	<5						<0.001		0.016	<0.01		<0.001			
ES1210728-007	SB5	01-May-12	9:20	8.3	8.74	543	452	34	3	<5						<0.001		0.016	<0.01		0.001			
ES1219038-005	SB5	02-Aug-12	11:00	8.48	7.98	351	401	10	2	<5						<0.001		0.009	<0.01		<0.001			
ES1303279006	SB5	12-Feb-13	10:20	8.02	7.53	152	144	266	2	<5						<0.001		<0.001	<0.01		0.008			

Sample No.	Sample Location	Date	Time	pH Field	pH Lab	Electrical Conductivity @25C (µS/cm)	Electrical Conductivity (µS/cm)	Total Suspended Solids (mg/L)	Total Organic Carbon (TOC)	Grease & Oil (mg/L)	Total Alkalinity	Hydroxide Alkalinity as CaCO3	Carbonate Alkalinity as CaCO3	Bicarbonate Alkalinity as CaCO3	Aluminium	Antimony	Chloride	Molybdenum	Selenium	Sodium	Arsenic	Manganese	Iron	Comments
ES1318099-006	SB5	13-Aug-13	10:30	7.55	7.63	160	158	471	10	<5						<0.001		0.012	0.02		<0.001			Dam level low
ES1410234-005	SB5	07-May-14	12:05	8.5	7.48	225	221	6750	56	<5											0.019			
ES1417254-003	SB5	05-Aug-14	12:10	8.1	7.81	177	162	5500	54	8											<0.001			
ES1521694-007	SB5	11-May-15	12:00	8.2	7.66	104	102	202	2	25						<0.001		<0.001	0.02		0.012			
ES1528398-004	SB5	13-Aug-15	10:15	8.4	7.61	130	138	2330	4	6						<0.001		<0.001	0.04		0.021			
ES1536059-002	SB5	11-Nov-15	9:55	8.8	7.54	184	169	568	9	<5						<0.001		<0.001	0.01		0.01			
ES1602640-003	SB5	04-Feb-16	9:10	8	7.44	106	105	696	4	<5														
ES1609755-003	SB5	05-May-16	9:00	8.3	7.69	101	135	344	6	<5						<0.001	0.004	<0.001	<0.01					
ES1617490-004	SB5	08-Aug-16	10:45	7.8	7.66	150	142	91	4	<5						<0.001	<0.001	<0.001	<0.01					
ES1624857-004	SB5	01-Nov-16	11:35	8	7.67	117	143	26	4	<5														
ES1318099-002	SD1	13-Aug-13	8:30	8.87	8.47	405	513	343	22	<5						<0.001		0.005	0.01		0.003			Dam level low
ES1325115-001	SD1	18-Nov-13	10:20	9.7	8.88	399	390	46	13	<5						<0.001		0.005	<0.01		0.007			Low water level
ES1410234-002	SD1	07-May-14	10:15	8.8	8.35	453	452	196	4	<5											0.005			
ES1417254-001	SD1	05-Aug-14	11:10	8.6	8.53	609	644	40	20	<5											0.003			
ES1521694-002	SD1	11-May-15	14:05	9	8.32	323	314	107	6	<5						<0.001		0.002	<0.01		0.002			
ES1528398-002	SD1	13-Aug-15	9:25	9.2	8.58	508	497	24	7	5						<0.001		0.004	<0.01		0.003			
ES1536059-004	SD1	11-Nov-15	9:10	9.5	8.64	366	391	194	8	<5						<0.001		0.003	<0.01		0.007			
ES1602640-001	SD1	04-Feb-16	10:25	9.2	8.03	228	240	193	55	6														
ES1609755-001	SD1	05-May-16	10:00	9.4	8.45	217	332	24	6	<5						<0.001		0.002	<0.01		0.006			
ES1617490-002	SD1	08-Aug-16	11:15	8.3	7.97	265	258	65	6	<5						<0.001		0.001	<0.01		0.004			
ES1023171-002	SD3	15-Nov-10	9:40		7.54		166	140	3	<5														
ES1004139	SD4	04-Mar-10	13:15		8.08		321	12	<1	<5														
ES1009878	SD4	24-May-10	9:25		8.11		351	9	2	6														
ES1016142-001	SD4	11-Aug-10	13:00		7.82		312	26	<1	<5														
ES1023171-001	SD4	15-Nov-10	9:20		7.81		186	56	3	<5														
ES1104965-002	SD4	08-Mar-11	9:50		8.72		271	15	2	<5														
ES1109617-001	SD4	09-May-11	11:51		8.43		394	62	5	<5														
ES1117295-001	SD4	10-Aug-11	11:15	8.9	8.17	360	313	13	10	<5						<0.001		0.003	<0.01		<0.001			
ES1016142-001	SD4	11-Aug-11	13:00		7.82	312		26	<1	<5														
ES1125734-001	SD4	22-Nov-11	10:45	9.5	8.74	372	299	19	8	<5						<0.001		0.005	<0.01		0.002			
ES1203324-001	SD4	14-Feb-12	10:40	8.9	8.2	274	227	16	5	<5						<0.001		0.006	<0.01		<0.001			
ES1210728-002	SD4	01-May-12	11:00	8.1	7.9	330	276	26	2	<5						<0.001		0.005	<0.01		0.001			
ES1219038-001	SD4	02-Aug-12	11:30	8.94	8.63	269	311	8	5	<5						<0.001		0.005	<0.01		<0.001			
ES1227200-001	SD4	15-Nov-12	9:10	8.22	8.24	582	546	66	6	<5						<0.001		0.007	<0.01		0.003			
ES1303279001	SD4	12-Feb-13	12:00	9.14	8.49	458	429	248	9	<5						<0.001		0.005	<0.01		0.004			
ES1318099-001	SD4	13-Aug-13	9:30	8.33	8.07	799	762	318	26	<5						<0.001		0.004	<0.01		0.005			
ES1410234-001	SD4	07-May-14	10:35	8.1	7.69	717	677	3190	13	<5											0.013			
ES1521694-001	SD4	11-May-15	13:05	8.2	7.86	299	286	176	7	<5						<0.001		<0.001	0.01		0.01			
ES1528398-001	SD4	13-Aug-15	10:55	8.4	8.01	403	389	255	8	5						<0.001		<0.001	0.01		0.01			
ES1617490-001	SD4	08-Aug-16	9:50	7.8	7.33	230	235	232	12	<5						<0.001		<0.001	0.02		0.012			
ES1624857-001	SD4	01-Nov-16	10:10	7.8	7.63	300	314	85	13	<5														
ES1104965-003	VOID	08-Mar-11	9:15		7.68		4220	23	<1	<5														
ES1109617-003	VOID	09-May-11	12:40		8.3		4550	6	58	<5														
ES1117295-007	VOID	10-Aug-11	12:15	8.4	8.3	5240	4050	10	5	<5	444	<1	<1	444	0.1		1140			720	0.005	0.054	0.11	
ES1203324-007	VOID	14-Feb-12	12:45	8.6	8.59	2280	1810	10	<1	<5	398	<1	46	352	0.03		278			420	0.005	0.004	0.06	
ES1219038-006	VOID	02-Aug-12	10:00	8.64	8.4	3490	4400	9	<1	<5														
ES1227200-004	VOID	15-Nov-12	10:30	8.46	8.44	5360	4720	30	<1	<5														
ES1303279007	VOID	12-Feb-13	12:40	8.68	8.58	5090	4480	5	2	<5														
ES1310164-003	VOID	02-May-13	9:00	8.78	8.54	4870	5350	6	1	<5														
ES1318099-007	VOID	13-Aug-13	8:00	8.48	8.51	5080	4810	22	2	<5						0.001		0.002	0.04		0.088			
ES1325115-003	VOID	18-Nov-13	10:45	8.8	8.5	5850	5370	6	3	<5	403	<1	43	360	0.02		1120	0.004				0.011	<0.05	
ES1402292-002	VOID	05-Feb-14	11:10	8.9	8.5	7270	6210	<5	52	<5														
ES1410234-006	VOID	07-May-14	9:30	8.7	8.51	6620	6140	26	<1	<5	629	<1	28	401	0.02		1210			933	0.002	0.007	<0.05	
ES1417254-004	VOID	05-Aug-14	10:55	8.7	8.57	6410	5930	<5	4	<5														
ES142449-002	VOID	06-Nov-14	9:20	8.8	8.66	6610	6330	6	3	<5											0.001			
ES1503593-002	VOID	12-Feb-15	825	9.1	8.66	5940	6100	7	3	<5														
ES1521694-008	VOID	11-May-15	13:50	8.8	8.44	5590	5270	10	2	<5	304	<1	24	280	0.31		1150			764	0.002			
ES1528398-005	VOID	13-Aug-15	9:05	8.8	8.46	5580	5190	9	<1	<5														
ES1536059-001	VOID	11-Nov-15	8:50	8.7	8.53	5850	5270	9	2	<5														
ES1602640-004	VOID	04-Feb-16	10:05	9.1	8.68	5580	5040	6	1	<5														
ES1609755-004	VOID	05-May-16	9:40	8.6	8.51	6790	5890	<5	2	<5					0.07			<0.001			<0.001			
ES1617490-005	VOID	08-Aug-16	11:45	8.4	8.39	5920	5580	<5	2	<5														
ES1624857-005	VOID	01-Nov-16	10:45	8.6	8.52	5390	4910	<5	3	<5														

Appendix 2

GROUNDWATER MONITORING DATA

Site ID	Piezometer / Water Bore	Date	Time	Depth to Ground - mbgl	Depth to Stand - mbtoc	Field Parameters: pH - Field	EC - Field - µs/cm	Temp - Field - °C
ANZECC guideline								
P1		24-Jan-08	1140	11.21	11.47			
		5-Mar-08	0835	11.17	11.43			
		7-Apr-08	1515	11.17	11.43			
		8-May-08	1550	11.16	11.42			
		3-Jun-08	Too Wet to Access					
		9-Jul-08	0905	11.16	11.42			
		11-Aug-08	0845	11.15	11.41			
		17-Nov-08	1655	11.19	11.45			
		19-Jan-09	1355	11.22	11.48			
		26-Feb-09	1645	11.00	11.30			
		17-Jun-09	1015	11.30	11.60			
		23-Jun-09	1000	12.57	12.83	7.1	3790	20.6
		9-Sep-09	1230	11.80	12.76			
		2-Dec-09	1205	11.87	12.83	7.32	4140	32.4
		16-Feb-10	1320	11.77	12.73			
		17-May-10	1230	11.77	12.73	6.89	6320	21.2
		31-Aug-10	1030	11.81	12.77	7.27	2136	22.1
		15-Nov-10	1150	11.63	12.59	6.81	2770	23.5
		9-Mar-11	1220	11.52	12.48	7.33	3340	24.6
		14-Jun-11	1220	11.40	12.36	7.2	3270	19.5
		20-Sep-11	1120	11.38	12.34	7.2	2960	22.6
		15-Dec-11	1050	11.49	12.45	7.04	3350	22.7
		2-Apr-12	1110	11.14	12.1	7.15	2960	24.6
		20-Jun-12	1110	11.14	12.1	7.19	3480	21.5
		12-Sep-12	1145	11.04	12	7.2	3560	22.1
		7-Dec-12	1015	11.14	12.1	7.2	3540	22
		18-Mar-13	1025	11.64	12.6	7.17	3590	21.6
		9-Jul-13	1020	11.39	12.35	7.12	3630	19.5
		6-Sep-13	1230	11.34	12.3	7.18	3600	22.3
		30-May-14	1245	11.59	12.55	7.3	3670	21.3
		3-Sep-14	1145	11.54	12.5	7.3	3720	20.4
		19-Nov-14	1035	11.71	12.67	7.3	3740	21.7
		25-Feb-15	1035	11.74	12.7	7.3	3720	21.7
		20-May-15	1030	11.84	12.8	6.9	3770	21.5
		1-Sep-15	1035	11.68	12.64	7.1	3810	20.3
		23-Feb-15	1040	12.14	13.1	7.2	4750	25.5
		10-May-16	1035	12.09	13.05	7.1	3890	21.2
		30-Aug-16	0:00	12.24	13.2	7.1	3990	22.5
		11-Nov-16	1030	12.03	12.99	7.1	3560	21.8
P2	GW968387	15-Jun-07		16.77	17.61			
		7-Aug-07	0850	16.77	17.61			
		19-Dec-07	1545	16.70	17.54			
		24-Jan-08	1155	16.69	17.53			
		5-Mar-08	0845	11.69	12.53			
		4-Apr-08	1450	16.61	17.45			
		8-May-08	1600	16.58	17.42			
		3-Jun-08	o wet to access					
		9-Jul-08	0916	16.58	17.42			
		11-Aug-08	0856	16.56	17.40			
		17-Nov-08	1703	16.50	17.34			
		19-Jan-09	1404	16.50	17.34			
		26-Feb-09	1630	16.25	17.10			
		17-Jun-09	0950	16.63	17.45			
		23-Jun-09	900	16.56	17.38	7.4	4650	21.6
		9-Sep-09	1215	16.49	17.31			
		2-Dec-09	1240	16.56	17.38	6.84	4520	31.8
		16-Feb-10	1300	16.45	17.27			
		17-May-10	1150	16.38	17.20	7	6420	20.1
		19-Jul-10	12:26	16.89	17.71			
		31-Aug-10	1015	16.33	17.15	7.06	4150	21.4
		15-Nov-10	1220	16.26	17.08	7.01	3580	22.6
		9-Mar-11	1150	16.35	17.17	7	3410	24.7
		14-Jun-11	1150	15.77	16.59	7.05	3400	19.6
		20-Sep-11	1150	15.63	16.45	7.05	3240	21.9
		15-Dec-11	1240	15.65	16.47	6.85	3610	22.3
		2-Apr-12	1150	15.38	16.20	7.1	3210	24.3
		20-Jun-12	1140	15.27	16.09	7.08	3710	21.3
		12-Sep-12	1145	14.58	15.40	7.15	3860	22
		7-Dec-12	1330	15.33	16.15	7.02	3890	21.7
		18-Mar-13	1200	14.9	15.72	6.98	3870	22.7
		9-Jul-13	0950	14.89	15.71	6.92	3910	19.7
		6-Sep-13	1050	14.78	15.60	7.03	3920	22
		30-May-14	1220	14.64	15.46	7.3	3950	21
		3-Sep-14	1345	14.48	15.30	6.8	4080	20.3
		19-Nov-14	1050	14.56	15.38	6.9	3090	21.4
		25-Feb-15	1100	14.58	15.40	6.9	3930	21.8
		20-May-15	1055	14.53	15.35	6.9	3990	21.4
		1-Sep-15	1100	14.41	15.23	7	4120	20.5
		23-Feb-16	1100	14.58	15.40	7	4060	22
		10-May-16	1100	14.50	15.32	7	4080	20.8
		30-Aug-16	1130	14.58	15.40	7	3920	21.4
		11-Nov-16	1055	14.50	15.32	7	3720	21.5
P3	GW968388	15-Jun-07		12.50	12.92			
		7-Aug-07	0945	12.72	13.14			
		19-Dec-07	1620	12.99	13.41			
		24-Jan-08	1235	13.08	13.50			
		5-Mar-08	0925	13.15	13.57			
		4-Apr-08	1430	13.20	13.62			
		8-May-08	1626	13.25	13.67			
		3-Jun-08	0942	13.29	13.71			
		9-Jul-08	0958	13.36	13.78			
		11-Aug-08	0940	13.41	13.83			
		17-Nov-08	1726	13.57	13.99			
		19-Jan-09	1308	13.65	14.07			
		26-Feb-09	1430	14.10	14.40			
		17-Jun-09	0845	14.29	14.71			
		23-Jun-09	1045	14.28	14.70	7.1	14200	23.3
		9-Sep-09	1340	14.46	14.90			
		2-Dec-09	1415	14.72	15.16	6.57	14040	25.4
		16-Feb-10	1045	14.33	14.77			
		17-May-10	1315	14.15	14.59	6.88	14400	19.9
		19-Jul-10	1204	14.37	14.81			
		31-Aug-10	1210	14.45	14.89	6.75	12580	23.3
		15-Nov-10	1110	14.52	14.96	6.52	10230	22.6
		8-Mar-11	1100	14.31	14.75	6.56	10350	26.4
		21-Jun-11	1030	14.15	14.59	6.6	10540	19.3
		21-Sep-11	950	14.47	14.91	6.8	9650	22.4
		30-Dec-11	1420	14.26	14.70			
		6-Jan-12	No Access					
		3-Apr-12	0920	14.02	14.46	7.2	8650	22.4
		22-Jun-12	1200	13.90	14.34	6.85	8750	20.5
		20-Sep-12	1500	14.46	14.90	6.68	11700	21.2
		7-Dec-12	1135	14.66	15.10	6.64	12150	22.1
		18-Mar-13	1250	14.84	15.28	6.75	12160	21.7
		9-Jul-13	0845	14.99	15.43	6.47	12460	18.9
		6-Sep-13	0950	15.06	15.50	6.49	12800	21.5
		30-May-14	1100	15.28	15.72	6.5	12990	20.6
		3-Sep-14	1310	15.36	15.80	6.5	13100	20.4
		19-Nov-14	1125	15.57	16.01	6.5	13470	21.3
		25-Feb-15	1130	15.56	16.00	6.4	13400	22.6
		20-May-15	1125	15.44	15.88	6.4	13340	21.4
		1-Sep-15	1310	15.35	15.79	6.6	13280	21.8
		23-Feb-16	1130	15.56	16.00	6.6	13800	22.7
		10-May-16	1130	15.61	16.05	6.7	13720	20.8
		30-Aug-16	1300	15.66	16.10	6.6	13100	21.5
		11-Nov-16	1120	15.50	15.94	6.6	12730	22
P7	GW968392	15-Jun-07		12.77	13.04			
		7-Aug-07	0905	12.75	13.02			
		20-Dec-07	1050	12.73	13.00			
		24-Jan-08	1345	12.72	12.99			
		5-Mar-08	0855	12.74	13.01			
		7-Apr-08	1520	12.70	12.97			
		8-May-08	1712	12.71	12.98			
		3-Jun-08	1006	12.72	12.99			
		9-Jul-08	1045	12.73	13.00			
		11-Aug-08	1013	12.72	12.99			
		17-Nov-08	1750	12.70	12.97			
		19-Jan-09	1343	13.70	13.97			
		26-Feb-09	1410	12.65	12.90			

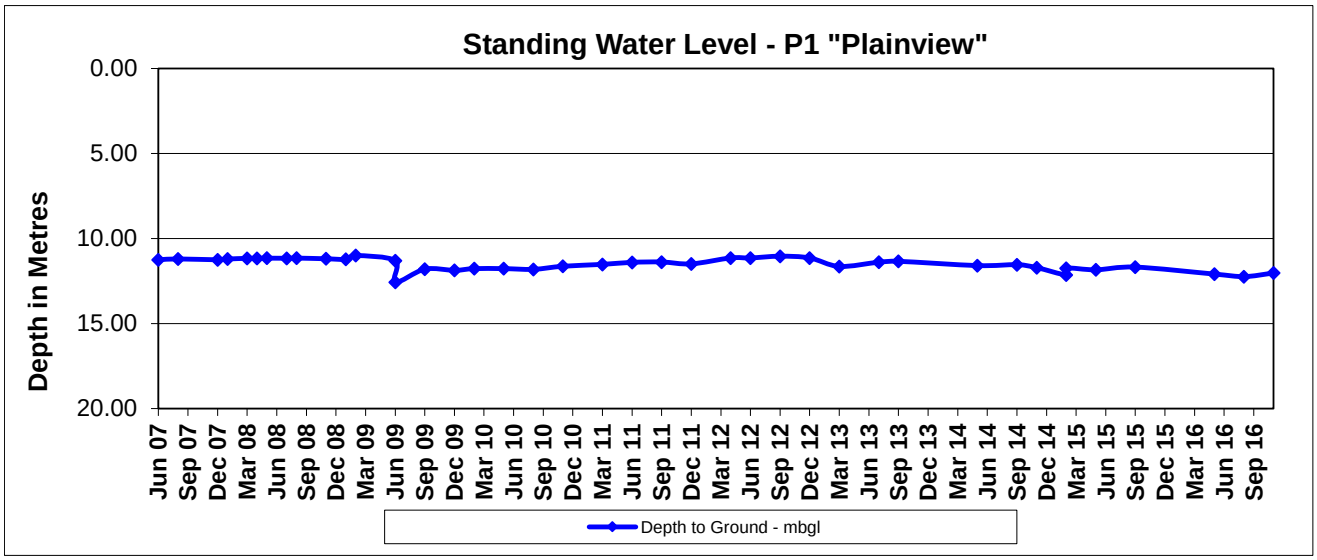
Total Metals

Site ID	Date	Aluminium (Al) - mg/L	Arsenic (As) - mg/L	Boron - mg/L	Barium (Ba) - mg/L	Beryllium (Be) - 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 - mg/L	Vanadium (V) - mg/L	Zinc (Zn) - mg/L	Mercury (Hg) - mg/L
ANZECC guideline		5	0.5				0.01	1	1	1		0.1		1			20	0.002
P1	23-Jun-09		0.007		0.04	<0.001	<0.0001	0.006	0.005	0.005	1.11	0.013	0.592	0.047		<0.01	0.274	<0.0001
P1	2-Dec-09	<0.01	0.008					<0.005		<0.001	0.31	<0.001	0.872	0.015			<0.005	<0.0001
P1	17-May-10	<0.01	0.019					<0.005		<0.001	<0.05	<0.001	0.918	0.027			0.006	<0.0001
P1	9-Mar-11	1	0.004					0.003		0.096	1.98	0.022	1.27	0.013			0.277	<0.0001
P1	20-Sep-11	0.52	0.006		0.164	<0.001	0.0006	0.002	0.003	0.028	1.15	0.023	1.16	0.011		0.01	0.435	<0.0001
P1	2-Apr-12	4.25	0.011		0.254	<0.001	0.0008	0.01	0.011	0.121	7.07	0.084	0.858	0.02		0.1	0.943	<0.0001
P1	12-Sep-12	0.4	0.001		0.178	<0.001	0.0003	0.001	<0.001	0.02	0.84	0.008	0.503	0.004		<0.01	0.252	<0.0001
P1	18-Mar-13	0.56	0.003		0.199	<0.001	0.0001	0.001	<0.001	0.052	1.77	0.012	0.504	0.005		0.02	0.307	<0.0001
P1	6-Sep-13	2.01	0.012		0.258	<0.001	0.0004	0.004	0.004	0.21	3.64	0.026	0.544	0.012		0.1	0.729	<0.0001
P1	3-Sep-14	0.44	0.01		0.283	<0.001	0.0001	0.004	0.007	0.062	2.17	0.014	0.54	0.013		0.04	0.347	<0.0001
P1	25-Feb-15	0.1	0.006		0.195	<0.001	<0.0001	<0.001	0.005	0.018	0.71	0.003	0.395	0.006		0.03	0.192	<0.0001
P1	1-Sep-15	0.09	0.005	0.12	0.185	<0.001	<0.0001	<0.001	0.002	0.007	0.33	<0.001	0.186	0.004	<0.01	0.03	0.15	<0.0001
P1	23-Feb-15	0.07	0.004	0.12	0.197	<0.001	<0.0001	<0.001	<0.001	0.01	0.11	<0.001	0.158	0.002	<0.01	0.03	0.074	<0.0001
P1	30-Aug-16	0.02	<0.001	0.17	0.448	<0.001	<0.0001	<0.001	<0.001	0.002	0.06	<0.001	0.614	0.004	<0.01	<0.01	0.044	<0.0001
P2	23-Jun-09		0.003		0.087	<0.001	<0.0001	0.032	0.012	0.024	1.96	0.006	0.414	0.154		0.07	0.064	<0.0001
P2	2-Dec-09	<0.01	0.01					<0.005		0.001	<0.05	<0.001	0.613	0.24			0.01	<0.0001
P2	17-May-10	<0.01	0.002					<0.005		0.008	<0.05	<0.001	0.178	0.015			0.086	<0.0001
P2	9-Mar-11	3.28	0.002					0.023		0.255	8.13	0.038	0.352	0.042			2.64	<0.0001
P2	20-Sep-11	0.24	0.003		0.075	<0.001	0.0003	0.003	0.004	0.114	0.77	0.006	0.324	0.013		0.02	0.422	<0.0001
P2	2-Apr-12	0.14	0.001		0.054	<0.001	<0.0001	<0.001	0.002	0.069	0.29	0.004	0.064	0.013		0.01	0.331	<0.0001
P2	12-Sep-12	0.02	0.001		0.048	<0.001	<0.0001	<0.001	0.006	0.094	0.1	0.002	0.171	0.008		0.01	0.365	<0.0001
P2	18-Mar-13	0.13	0.002		0.06	<0.001	0.0001	<0.001	0.005	0.281	0.64	0.005	0.194	0.012		0.01	0.646	<0.0001
P2	6-Sep-13	0.1	0.002		0.054	<0.001	<0.0001	<0.001	0.003	0.114	0.29	0.003	0.128	0.006		0.01	0.18	<0.0001
P2	3-Sep-14	0.66	0.003		0.075	<0.001	<0.0001	0.002	0.005	0.146	0.88	0.006	0.175	0.01		0.01	0.324	<0.0001
P2	25-Feb-15	0.04	0.002		0.063	<0.001	0.0001	<0.001	0.001	0.047	0.12	0.002	0.097	0.005		<0.01	0.316	<0.0001
P2	1-Sep-15	0.8	0.002	0.13	0.06	<0.001	0.0002	0.002	0.003	0.134	1.08	0.006	0.134	0.012	<0.01	<0.01	0.462	<0.0001
P2	23-Feb-16	5.54	0.003	0.13	0.127	<0.001	0.0005	0.011	0.008	0.169	8.04	0.043	0.558	0.019	<0.01	0.02	0.997	<0.0001
P2	30-Aug-16	0.76	0.002	0.13	0.08	<0.001	<0.0001	0.0001	0.005	0.027	1.12	0.01	0.357	0.008	<0.01	<0.01	0.363	<0.0001
P3	23-Jun-09		<0.001		0.167	<0.001	<0.0001	0.008	0.002	0.008	4.11	0.018	0.376	0.038		<0.01	0.207	<0.0001
P3	2-Dec-09	<0.01	0.002					<0.005		0.002	0.26	<0.001	0.475	0.011			0.026	<0.0001
P3	17-May-10	<0.01	0.002					<0.005		0.007	<0.05	<0.001	0.433	0.018			0.198	<0.0001
P3	8-Mar-11	0.26	0.001					0.001		0.016	0.42	<0.001	0.321	0.008			0.067	<0.0001
P3	21-Sep-11	0.41	0.002		0.081	<0.001	<0.0001	<0.001	0.008	0.018	0.82	0.002	0.459	0.009		<0.01	0.143	<0.0001
P3	3-Apr-12	0.06	0.002		0.081	<0.001	<0.0001	<0.001	0.016	0.015	0.16	0.001	0.385	0.008		<0.01	0.285	<0.0001
P3	20-Sep-12	1.13	0.002		0.092	<0.001	0.0003	0.002	0.012	0.052	2.29	0.007	0.464	0.012		<0.01	0.285	<0.0001
P3	18-Mar-13	0.03	<0.001		0.05	<0.001	<0.0001	<0.001	<0.001	<0.001	<0.05	<0.001	0.023	<0.001		<0.01	<0.005	<0.0001
P3	6-Sep-13	0.31	0.002		0.092	<0.001	0.0002	0.002	0.011	0.429	0.77	0.033	0.404	0.024		<0.01	0.406	<0.0001
P3	3-Sep-14	0.2	<0.010		0.103	<0.010	<0.0010	<0.010	0.013	0.118	0.66	0.017	0.378	0.016		<0.10	0.565	<0.0001
P3	25-Feb-15	0.03	0.001		0.083	<0.001	0.0004	<0.001	0.007	0.022	0.16	0.004	0.283	0.005		<0.01	0.139	<0.0001
P3	1-Sep-15	0.03	0.001	0.65	0.075	<0.001	<0.0001	<0.001	0.006	0.014	0.1	0.002	0.312	0.004	<0.01	<0.01	0.077	<0.0001
P3	23-Feb-16	0.14	0.002	0.61	0.079	<0.001	<0.0001	<0.001	0.005	0.023	0.3	0.002	0.299	0.003	<0.01	<0.01	0.099	<0.0001
P3	30-Aug-16	0.42	0.002	0.6	0.083	<0.001	<0.0001	<0.001	0.006	0.005	1.01	0.004	0.298	0.003	<0.01	<0.01	0.053	<0.0001

Site ID	Date	pH - Lab	EC - Lab - µs/cm	Major Cations: Calcium (Ca) - mg/L	Magnesium (Mg) - mg/L	Sodium (Na) - mg/L	Potassium (K) - mg/L	Total Cations - meq/L	Major Anions: Chloride (Cl) - mg/L	Sulfate (SO4) - mg/L	Hydroxide Alkalinity as CaCO3 - mg/L	Carbonate Alkalinity as CaCO3 - mg/L	Bicarbonate Alkalinity as CaCO3 - mg/L	Alkalinity - mg/L	Total Anions - meq/L	Ionic Balance	Ammonia as Nitrogen (N)	Nitrite as N - mg/L	Nitrate as N - mg/L	NOX as N - mg/L	Total Dissolved Solids	Comments
ANZECC guideline				1000						1000											4000	
P1	23-Jun-09		3610	45	160	585	8	41.1	725	39	<1	<1	1010	1010	41.4	0.4	0.53				2240	
P1	2-Dec-09	7.35	3700	58	195	537	6	42.5	781	39.1	<1	<1	962	962	42	0.48		<0.01	<0.01	<0.01		
P1	17-May-10	7.16	4150	104	226	541	4	47.5	982	81.9	<1	<1	758	758	44.6	3.16		<0.01	0.19			
P1	9-Mar-11	8.51	3860	94		443	20	41.8	866	68	<1	116	886	860	43	1.45		0.03	0.36	0.39		
P1	20-Sep-11	7.49	4200	114	236	416	7	43.4	802	76	<1	<1	835	835	40.9	2.95	1.19	0.29	0.29	0.58	2120	
P1	2-Apr-12	7.61	3860	131	260	434	9	47	872	47	<1	<1	904	904	43.6	3.74	4.35	0.2	<0.01	0.2	2370	
P1	12-Sep-12	7.62	4000	98	247	410	8	43.3	854	26	<1	<1	1050	1050	45.6	2.67	6.26	<0.01	0.07	0.07	2300	
P1	18-Mar-13	7.5	4020	123	230	412	8	43.2	725	78	<1	<1	853	853	39.1	4.93	5.29	<0.01	0.3	0.3	2130	
P1	6-Sep-13	7.6	4030	117	250	411	8	44.5	761	62	<1	<1	888	888	40.5	4.68	2.2				2140	
P1	3-Sep-14	7.43	3970	112	218	316	6	37.4	746	93	<1	<1	896	896	40.9	4.42	0.06	<0.01	0.61	0.61	2200	
P1	25-Feb-15	7.72	3950	145	257	383	6	45.2	827	100	<1	<1	845	845	42.3	3.31	0.22	0.02	0.2	0.22	2280	
P1	1-Sep-15	7.68	4110	150	242	382	6	44.2	675	84	<1	<1	941	941	39.6	5.45	0.07	<0.01	0.6	0.6	2380	
P1	23-Feb-15	7.75	3980	147	249	378	5	44.4	842	104	<1	<1	740	740	40.7	4.33	0.15	<0.01	1.66	1.66	2380	
P1	30-Aug-16	7.59	4180	161	278	394	10	48.3	851	9	<1	<1	966	966	43.5	5.23	32	<0.01	0.28	0.28	2170	
P2	23-Jun-09		4560	114	320	476	10	53	1030	410	<1	<1	973	973	57	3.62	0.02				3280	
P2	2-Dec-09	7.03	4090	145	298	395	9	49.2	855	401	<1	<1	852	852	49.5	0.3		<0.01	3.81	3.81		
P2	17-May-10	7.09	4250	173	281	457	7	51.8	832	444	<1	<1	807	807	48.8	2.93		0.02	5.09			
P2	9-Mar-11	8.59	3860	161	282	405	10	49.1	839	362	<1	199	842	832	47.8	1.3		0.02	4.41	4.44		From pump/bail
P2	20-Sep-11	7.45	4550	154	269	409	8	47.8	828	346	<1	<1	767	767	45.9	2.05	0.18	<0.01	6.94	6.94	2560	Pump/Bail
P2	2-Apr-12	7.56	3970	169	276	402	9	48.9	871	330	<1	<1	734	734	46.1	2.9	<0.01	0.02	5.66	5.68	2670	
P2	20-Jun-12																					Piezo-Ferndal
P2	12-Sep-12	7.5	4230	145	270	409	10	47.5	866	316	<1	<1	844	844	47.9	0.4	<0.01	<0.01	5.98	5.98	2630	
P2	18-Mar-13	7.38	4300	157	244	418	9	46.3	767	310	<1	<1	769	769	43.5	3.19	<0.01	6.02	6.02			
P2	6-Sep-13	7.49	4300	158	281	427	10	49.8	810	321	<1	<1	778	778	45.1	5	0.02				2370	
P2	3-Sep-14	7.08	4240	158	296	483	8	53.5	716	293	<1	<1	839	839	43.1	10.8	0.03	<0.01	6.59	6.59	2530	
P2	25-Feb-15	7.62	4210	175	280	394	8	49.1	822	334	<1	<1	796	796	46	3.22	0.04	0.04	6.58	6.62	2000	
P2	1-Sep-15	7.52	4380	183	260	395	9		687	315	<1	<1	856	856	43	5.37	0.08	<0.01	6.29	6.29	2620	
P2	23-Feb-16	7.64	4170	176	262	378	13	47.1	818	324	<1	<1	664	664	43.1	4.46	1.72	0.21	9.59	9.8	2650	
P2	30-Aug-16	7.22	4130	189	296	394	10	51.2	824	272	<1	<1	759	759	44.1	7.46	0.93	0.46	5.25	5.71	2150	
P3	23-Jun-09		6670	160	310	852	40	71.6	2120	90	<1	<1	859	859	78.8	4.82	2.05				4210	
P3	2-Dec-09	6.73	11900	219	521	1840	83	136	4360	549	<1	<1	637	637	147	3.95		0.01	0.16	0.17		
P3	17-May-10	6.77	12300	319	532	2000	59	148	4560	717	<1	<1	718	718	158	3.18		<0.01	1.09			
P3	8-Mar-11	6.6	12400	290	534	2040	87	72.7	4340	502	<1	<1	791	791	149	0.14		<0.01	0.17	0.17		
P3	21-Sep-11	7.14	14100	267	0.459	1960	76	138	4350	494	<1	<1	747	747	148	3.55	<0.10	<0.01	0.57	0.57		Pump to constant E.C
P3	30-Dec-11																					SWL taken during logger changeover
P3	3-Apr-12	7.39	11200	307	502	2010	79	146	3950	493	<1	<1	656	656	135	4.01	<0.10	0.04	1.53	1.57	7230	
P3	20-Sep-12	7.37	13600	287	503	1980	76	144	4610	608	<1	<1	726	726	157	4.47	<0.10	<0.01	0.57	0.57	8710	
P3	18-Mar-13	7.23	13900	293	483	2000	74	143	4020	460	<1	<1	732	732	138	2.01	0.01	<0.01	0.19	0.19	8150	
P3	6-Sep-13	7.18	14200	297	534	2110	86	153	3920	584	<1	<1	785	785	138	4.91	0.09				7920	
P3	3-Sep-14	6.88	14400	284	538	2020	82	148	4010	603	<1	<1	826	826	142	2.14	0.08	<0.01	0.06	0.06	9820	
P3	25-Feb-15	7.33	14300	430	560	2170	82	164	4430	637	<1	<1	785	785	154	3.18	0.06	<0.01	0.04	0.04	9750	
P3	1-Sep-15	7.19	14440	348	431	2010	79	142	3530	627	<1	<1	897	897	130	4.29	0.1	<0.01	0.03	0.03	8930	
P3	23-Feb-16	7.3	14500	372	540	2040	73	154	4540	636	<1	<1	691	691	155	0.49	0.11	<0.01	0.04	0.04	9890	
P3	30-Aug-16	6.96	14100	406	602	2280	72	171	4450	581	<1	<1	730	730	152	5.75	0.03	<0.01	0.05	0.05	9270	

		17-Jun-09	0925	11.13	11.40																																									
		23-Jun-09	1315	11.36	11.61	6.8	7590	22.7		<0.001		0.103	<0.001	0.0027	<0.001	<0.001	0.002	<0.05	<0.001	0.029	0.002		<0.01	<0.005	<0.0001		7140	171	413	826	23	79.1	2370	231	<1	<1	782	782	87.4	4.98	0.04				4170	
		9-Sep-09	1333	10.68	10.94																																									
		2-Dec-09	1610	11.24	11.50	6.85	7900	23.3	<0.01	<0.001		<0.005			0.002			<0.05	<0.001	0.024	0.002			0.006	<0.0001	7	6940	148	420	779	24	76.5	2190	290	<1	<1	654	654	80.9	2.83		<0.01	5.9	5.9		
		16-Feb-10	1145	9.89	10.15																																									
		17-May-10	1530	10.64	10.90	7.09	8500	20.2	<0.01	<0.001					<0.005		0.002	<0.05	<0.001	0.009	0.003			0.015	<0.0001	7	7180	218	456	876	18	87	2220	349	<1	<1	681	681	83.6	2		<0.01	6.29			
		31-Aug-10	1330	9.73	9.99	6.95	7700	22.5																																						
		15-Nov-10	1040	9.60	9.86	6.82	6190	23.1																																						
		8-Mar-11	1330	8.72	8.98	6.83	4760	26.5	2.34	<0.001					0.003		0.021	2.52	0.002	0.046	0.004			0.081	<0.0001	6.91	6330	172	365	769	24	72.7	1630	352	<1	<1	708	708	67.4	3.76		<0.01	4.31	4.31		
		21-Jun-11	1210	9.17	9.43	6.85	4810	21.2																																						
		21-Sep-11	1120	10.51	10.77	6.85	2380	24.2	3.25	0.002		0.107	<0.001	<0.0001	<0.001	0.005	0.046	5.24	0.009	0.423	0.024		0.02	0.256	<0.0001	7.34	3200	35	49	127	49		306	<1	<1	<1	974	974	28.1		224	<0.01	0.16	0.16		
		6-Jan-12	930	8.31	8.57	6.83	2810	22.5																																						
		3-Apr-12	1010	8.16	8.42	7.25	3820	24.7	0.52	<0.001		0.03	<0.001	<0.0001	0.001	<0.001	0.04	1.4	0.003	0.096	0.004		<0.01	0.236	<0.0001	7.36	4860	34	75	214	76	49.9	494	65	<1	<1	1640	1640	48.1	1.84	432	<0.01	0.22	0.22	3250	Standpipe repaired 20/4 - new "stick up" = 0.5m
		11-May-12	1245						2.97	0.002		0.138	<0.001	<0.0001	0.009	0.006	0.111	4.8	0.009	0.365	0.02		0.02	0.319	<0.0001	7.27	4750	51	92	247	64	49.2	548	7	<1	<1	1580	1580	47.2	2.07	374	<0.01	0.02	0.02	1390	Pre Purge
		11-May-12	1330						1.34	<0.001		0.078	<0.001	<0.0001	0.006	0.001	0.016	1.89	0.004	0.083	0.006		<0.01	0.062	<0.0001	7.32	4760	119	232	588	24	51.2	1020	235	<1	<1	696	696	47.6	3.68	28	0.08	3.03	3.11	2810	Post Purge
		22-Jun-12	1300	8.12	8.62	7.26	3690	20																																						
		20-Sep-12	1500	9.70	10.20	7.18	4310	21.9	1.06	0.001		0.065	<0.001	<0.0001	0.003	0.002	0.032	1.65	0.004	0.096	0.005		<0.01	0.128	<0.0001	7.67	5030	121	230	597	21	51.5	1100	327	<1	<1	648	648	50.8	0.66	10.9	0.07	0.12	0.19	2930	
		7-Dec-12	1255	10.47	10.97	7.27	4420	22.5																																						
		18-Mar-13	1345	10.39	10.89	7.4	4460	23.6	0.06	<0.001		0.046	<0.001	<0.0001	<0.001	<0.001	<0.001	<0.05	<0.001	0.005	<0.001		<0.01	0.03	<0.0001	7.73	5040	127	235	659	21	54.9	1120	298	<1	<1	604	604	49.9	4.77	0.07	<0.01	3.93	3.93	2950	
		9-Jul-13	925	10.44	10.94	7.34	4630	19.5																																						
		6-Sep-13	1030	10.60	11.10	7.46	4630	22.4	0.04	<0.001		0.062	<0.001	<0.0001	<0.001	<0.001	0.033	0.11	0.002	0.034	0.004		<0.01	0.14	<0.0001	7.83	5150	132	244	669	23	56.4	1110	315	<1	<1	659	659	51	4.94	0.06				2560	
		30-May-14	1120	11.38	11.88	7.6	4980	21.4																																						
		3-Sep-14	1220	11.50	12.00	7.2	4940	20.2	0.03	<0.001		0.072	<0.001	<0.0001	<0.001	<0.001	0.019	0.15	0.002	0.02	0.004		<0.01	0.143	<0.0001	7.34	5180	123	260	830	18	64.1	992	239	<1	<1	797	797	48.9	13.4	<0.01	<0.01	4.91	4.91	2780	
		19-Nov-14	1140	11.83	12.33	7.2	4910	21.7																																						
		25-Feb-15	1155	11.90	12.40	7.2	4870	24	0.06	<0.001		0.052	<0.001	0.0003	<0.001	<0.001	0.014	0.21	0.002	0.02	0.004		<0.01	0.12	<0.0001	7.7	5060	134	244	673	18	56.5	1100	264	<1	<1	794	794	52.4	3.76	0.07	<0.01	4.83	4.83	2520	
		20-May-15	1210	11.56	12.06	7.1	4750	21.9																																						
		1-Sep-15	1220	11.83	12.33	7.1	4470	21.4	0.11	<0.001	0.16	0.06	<0.001	<0.0001	<0.001	<0.001	0.005	0.21	<0.001	0.022	0.003	0.01	<0.01	0.062	<0.0001	7.64	5120	136	217	664	18	54	868	249	<1	<1	860	860	46.8	7.06	0.04	<0.01	4.33	4.33	2880	
		23-Feb-16	1155	12.30	12.80	7.2	4800	23.4	0.02	<0.001	0.16	0.047	<0.001	<0.0001	<0.001	<0.001	0.021	<0.05	<0.001	0.014	<0.001	<0.01	<0.01	0.048	<0.0001	7.83	4940	124	218	630	16	51.9	1050	260	<1	<1	686	686	48.7	3.16	0.04	<0.01	4.64	4.64	2970	
		10-May-16	1155	12.39	12.89	7.3	4810	21.1																																						
		30-Aug-16	1240	12.50	13.00	7.2	4670	21.7	0.03	<0.001	0.16	0.05	<0.001	0.0002	<0.001	<0.001	0.004	0.06	<0.001	0.012	0.001	<0.01	<0.01	0.027	<0.0001	7.41	4940	133	244	674	15	56.4	1100	219	<1	<1	729	729	50.2	5.86	<0.01	<0.01	4.7	4.7	2950	
		11-Nov-16	1215	12.26	12.76	7.1	4560	21.9																																						
P8	*GW968393*	15-Jun-07		15.63	15.63																																									
		7-Aug-07	0910	15.70	15.70																																									
		19-Dec-07	1630	21.25	21.25																																									
		24-Jan-08	1240	21.30	21.30																																									
		5-Mar-08	0900	19.25	19.25																																									
		7-Apr-08	1525	20.13	20.13																																									
		8-May-08	1710	20.49	20.49																																									
		3-Jun-08	1003	18.79	18.79																																									
		9-Jul-08	1043	19.12	19.12																																									
		11-Aug-08	1010	19.72	19.72																																									
		17-Nov-08	1747	16.74	16.74																																									
		2-Mar-09	1300	15.85	15.95																																									
		17-Jun-09	0920	16.90	16.90																																									
		23-Jun-09	1245	16.59	16.69	6.9	6460	21.8		<0.001		0.068	<0.001	0.0022	<0.001	<0.001	0.004	0.35	0.002	0.023	0.01		<0.01	0.046	<0.0001		6220	158	306	771	24	79.1	1930	245	<1	<1	710	710	73.6	4.54	<0.01				3600	
		9-Sep-09	1330	16.58	16.71																																									
		2-Dec-09	1555	17.67	17.80	6.96	6440	23.8	<0.01	<0.001					<0.005		0.014	<0.05	<0.001	0.004	0.022			0.063	<0.0001	7.05	6000	119	308	723	24	63.3	1830	238	<1	<1	601	601	68.7	4.08		<0.01	8.64	8.64		
		16-Feb-10	1140	16.94	17.07																																									
		17-May-10	1550	16.94	17.07	7.41	4380	20.6	<0.01	<0.001					<0.005		0.002	<0.05	<0.001	0.003	0.003			0.02	<0.0001	7.02	6000	185	320	793	18	70.5	1730	259	<1	<1	690	690	68.1	1.77		<0.01	8.99			
		31-Aug-10	1330	16.96	17.09	6.87	6220	22.9																																						
		15-Nov-10	1030	16.88	17.01	6.67	5400	23.5																																						
		8-Mar-11	1250	17.02	17.15	6.82	4790	26.1	0.18	<0.001					0.002		0.0034	1	0.004	0.053	0.004			0.171	<0.0001	6.98	6280	194	337	760	18	71.2	1660	50	<1	23	144	765	66.4	3.48		0.03	0.57	0.6		
		21-Jun-11	1150	16.79	16.92	6.8	4920	21.1																																						
		21-Sep-11	1100	16.91	17.04	6.75	5040	24.2	1.53	<0.001		0.084	<0.001	<0.0001	<0.001	0.005	0.012	3.64	0.002	0.062	0.008		<0.01	0.036	<0.0001	7.31	7180	198	330	786	23	71.8	1710	261	<1	<1	660	660	66.9	3.57	0.86	0.02	3.71	3.73		
		6-Jan-12	950	16.89	17.02	6.64	5590	23.8																																						
		3-Apr-12	1010	16.15	16.28	6.95	5140	24.6	6	0.002		0.156	<0.001	<0.0001	0.016	0.011	0.023	7.42	0.005	0.162	0.011		0.02	0.048	<0.0001	7.46	6520	196	334	710	21	68.7	1800	276	<1	<1	677	677	70	0.98	1.86	0.03	0.79	0.82	4180	
New stick up as of 20/4/12 = 0.8m		22-Jun-12	1315	2.86	3.66	7.29	6150	19.8																																						
		11-Jul-12		3.46	4.26																																									
		20-Sep-12	1500	4.79	5.59	7.04	725	21.7	7.12	0.01		0.198	<0.001	0.0003	0.013	0.018	0.069	12	0.021	2.54	0.028		0.02	0.191	<0.0001	7.55	803	42	29	49	9	7.48	123	50	<1	<1	151	151	7.53	0.33	4.12	0.01	0.12	0.13	426	
		7-Dec-12	1235	23.33	24.13	7.43	1311	23.2																																						
		18-Mar-13	1320	23.14	23.94	7.25	1005	23.4	0.82	0.006		0.12	<0.001	0.0012	0.003	0.023	0.112	3.58	0.017	1.01	0.022		<0.01	0.399	<0.0001	7.3	958	51	36	71	11	8.88	158	86	<1	<1	604	604	9	0.71	4.06	0.16	0.72	0.88	506	
		9-Jul-13	0905	23.13	23.93	7.05	1098	19.6																																						
		6-Sep-13	1010	23.10	23.90	6.92	1140	22.4	0.18	0.002		0.101	<0.001	0.0006	<0.001	0.01	0.093	0.49	0.006	0.815	0.017		<0.01	0.21	<0.0001	7.35	1020	49	36	78	12	9.11	165	75	<1	<1	154	154	9.29	1	3.57				511	
		30-May-14	1135	23.33	24.13	6.9	1017	21.8																																						
		3-Sep-14	1245	23.20	24.00	6.9	1030	20.4	0.37	0.003		0.099	<0.001	0.0004	0.004	0.01	0.128	1.83	0.014	1.01	0.028		<0.01	0.743	<0.0001	7.09	972	55	44	80	12	10.2	154	84	<1	<1	163	163	9.35	4.12	1.55	<0.01	0.96	0.96	514	
		19-Nov-14	1200	23.54	24.34	7.1	1010	21.9																																						
		25-Feb-15	1210	23.40	24.20	7.2	994	24.3	0.06	0.001		0.087	<0.001	0.0003	<0.001	0.003	0.014	0.15	<0.001	0.763	0.015		<0.01	0.34	<0.0001	7.5	1050	53	41	88	11	10.1	176	90	<1	<1	170	170	10.2	0.52	0.76	0.04	0.19	0.23	592	
		20-May-15	1150	23.64	24.44	7.1	1132	21.9																																						
		1-Sep-15	1245	23.52	24.32	7.1	1147	22	0.04	<0.001	<0.05	0.104	<0.001	<0.0001	<0.001	<0.001	0.004	1.51	<0.001	1.16	0.005	<0.01	<0.01	0.034	<0.0001	7.25	1190	69	47	94	11	11.7	162	76	<1	<1	235	235	10.8	3.7	5.12	<0.01	0.04	0.04	552	
		23-Feb-16	1220	23.50	24.30	7	1200	22.6	0.16	<0.001	<0.05	0.108	<0.001	<0.0001	<0.001	<0.001	0.007	1.68	0.001	1.13	0.005	<0.01	<0.01	0.049	<0.0001	7.44	1220	70	46	95	10	11.7	210	90	<1	<1	193	193	11.6	0.06	4.86	<0.01	0.07	0.07	613	
		10-May-16	1215	23.43	24.23	7	1218	21.3																																						
		30-Aug-16	1300	23.40	24.20	7	1230	21.7	0.02	<0.001	<0.05	0.119	<0.001	<0.0001	0.002	<0.001	0.014	1.27	0.002	1.21	0.005	<0.01	<0.01	0.02	<0.0001	6.97	1250	72	48	104	9	12.3	219	82	<1	<1	222	222	12.3	0.09	5.06	<0.01	0.07	0.07	633	
		11-Nov-16	1145	23.47	24.27	7	1225	22.3																																						
22497		21-Dec-09	1520	15.01	15.31	5.59	3600	25.4	<0.01	<0.001					<0.001		0.004	<0.05	<0.001	0.180	0.006			0.261	<0.0001	7.41	3600	12	155	770	54	48.2	1140	12	<1	<1	246	246	37.4	12.5		<0.01	0.05	0.05		
		16-Feb-10	950	14.89	15.19																																									
		17-May-10	1010	15.06	15.36	7.29	5400	19.3	<0.01	<0.001					<0.005		0.001	<0.05	<0.001	0.236	0.004			0.214	<0.0001	7.69	3460	69	201	350	14	35.6	1010	8.29	<1	<1	233	233	33.2	3.43		<0.01	0.09			
		31-Aug-10	920	15.17	15.47	7.79	3770	19.2																																						
		23-Nov-10	1410	15.16	15.46	7.29	2730	24.4																																						
		9-Mar-11	950	15.05	15.35	7.73	2210	23.1	0.2	<0.001					<0.001		0.147	9.89	0.016	0.24	0.001			0.946	<0.0001	8.21	2190	49	127	211	24	22.7	665	5	<1	<1	232	232	23.5	1.66		0.31	1.16	1.47		
		14-Jun-11	930	15.02	15.32	7.75	2880	19.4																																						
		20-Sep-11	940	15.18	15.48	7.8	2450	23.1	0.02	0.001		0.217	<0.001	<0.0001	<0.001	<0.001	0.017			0.22	0.002		0.178	6.89	<0.0001	7.79	3500	58	171	303	23	30.7	898	<1	<1	<1	251	251	30.4	0.63	16.4	0.07	0.07	0.14	1530	
		15-Dec-11	940	15.26	15.56	7.3	3150	21.7																																						
		2-Apr-12	945	14.52	14.82	7.3	2610	23.8	0.01	<0.001		0.206	<0.001	<0.0001	<0.001	<0.001	0.063	7.95	0.009	0.32	<0.001		<0.01	0.435	<0.0001	7.9	3190	65	176	321	30	32.5	973	3	<1	<1	276	276	33	0.87	19	0.3	0.19	0.49	1890	
		20-Jun-12	950	14.55	14.85	7.7	3420	20.2																																						Coocooboonah back-tyres on bore
		12-Sep-12	930	14.60	14.90	8.0	3150	21.7	0.15	<0.001		0.292	<0.001	0.0012	<0.001	<0.001	0.17	21.2	0.08	0.088	0.005		<0.01	2.8	<0.0001	7.85	3560	50	183	337	30	33	1030	<1	<1	<1	261	261	34.3	1.92	19.1	0.11	<0.01	0.11	1860	
		7-Dec-12	905	14.79	15.09	7.8	3200	21.9																																						
		18-Mar-13	900	14.88	15.18	7.7	3240	20.8	0.14	0.002		0.336	<0.001	0.0006	0.002	0.001	0.159	19.2	0.041	0.417	0.003		<0.01	1.62	<0.0001	7.79	3580	48	179	335	34	32.6	900	3	<1	<1	276	276	31	2.52	38.7	0.12	0.06	0.18	1770	
		9-Jul-13	1255	15.14	15.44	7.7	3430	19.6																																						
		6-Sep-13	1340	15.20	15.50	7.83	3560	22.5	0.16	0.001		0.547	<0.001	0.0004	0.002	<0.001	1.11	31	0.097	0.506	0.007		<0.01	1.96	<0.0001	7.84	3900	48	195	371	34	35.4	1010	<1	<1	<1	209	209	32.7	4.08	32.2				1910	
		5-Jun-14	945	15.54	15.84	7.8	3740	19.3																																						
		3-Sep-14	910	15.50	15.80	7.6	3810	20.8	0.52	0.002		0.91	<0.001	0.0014	0.004	0.002	0.461	66.9	0.148	1.04	0.03		0.02	7.73	<0.0001	7.67	3970	49	173	302	30	30.6	1040	2	<1	<1	158	158	32.5	3.09	22.9	0.03	0.1	0.13	2100	
		19-Nov-14	925	15.76	16.06	7.3	3840	21.6																																						
		25-Feb-15	915	15.90	16.20	7.4	3830	21.9	0.19	<0.001		0.648	<0.001	0.0008	0.001	<0.001	0.229	17.4	0.032	0.22	0.007		<0.01	1.15	<0.0001	7.84	3980	67	188	348	30	34.7	1150	<1	<1	<1	147	17	35.4	0.94	24.8	0.04	<0.01	0.02	2070	
		20-May-15	925	15.85	16.15	7.4	3880	20.3																																						
		1-Sep-15	930	15.93	16.23	7.3	3620	17.8	0.08	<0.001	<0.05	0.889	<0.001	<0.0001	<0.001	<0.001	0.007	7.74	0.002	0.221	0.002	<0.01	<0.01	0.154	<0.0001	7.74	3900	76	174	345	34	34	905	<1	<1	<1	130	130	28.1	9.44	19.9	<0.01	0.02	0.02	2440	
		23-Feb-16	925	16.00	16.30	7.4	3220	22.3	0.18	<0.001	<0.05	0.81	<0.001	0.0004	0.002	<0.001	0.146	30.8	0.1	0.647	0.002	<0.01	<0.01	3.37	<0.0001	7.87	3180	67	150	275	30	28.4	906	<1	<1	<1	132	132	28.2	0.4	16	0.06	<0.01	0.06	2080	
		10-May-16	920	15.98	16.28	7.4	3180	21.7																																						
		30-Aug-16	915	16.10	16.40	7.5	2910	21.1	0.1	<0.001	<0.05	0.922	<0.001	0.0002	<0.001	<0.001	0.069	23.5	0.032	0.409	0.002	<0.01	<0.01	1.58	<0.0001	7.67	3070	72	158	290	35	30.1	897	2	<1	<1	132	132	28	3.66	11.4	<0.01	0.02	0.02	1940	
		11-Nov-16	915	16.03	16.33	7.5	2940	21.2																																						
27356	*GW027356*	15-Jun-07																																												
		7-Aug-07	1005																																											
		19-Dec-07	1555																																											
		24-Jan-08	1220	14.30	14.61																																									
		5-Mar-08	1000	14.25	14.56																																									
		4-Apr-08	1447	14.11	14.42																																									
		8-May-08	1605	15.30	15.61																																									
		3-Jun-08	852	17.61	17.92																																									
		9-Jul-08	925	14.12	14.43																																									
		11-Aug-08	908	16.05	16.36																																									
		17-Nov-08	1710	13.92	14.23																																									
		19-Jan-09	1250	14.45	14.76																																									
		26-Feb-09	1400	14.50	14.80																																									
		9-Sep-09	12:55			7.47	4350	20.2		<0.001		0.182	<0.001	<0.0001	<0.001	0.003	0.035	0.47	<0.001	0.08	0.003		<0.01	0.031	<0.0001		4260	143	247	446	17	47.3	946	164	<1	<1	745	745	45	2.5	0.15				2910	
		2-Dec-09	1340			7.07	4620	26.2	<0.01	<0.001					<0.005		0.021	<0.05	<0.001	0.074	0.002			0.018	<0.0001	7.24	4160	77	245	433	18	73.3	1070	196	<1	<1	654	654	47.2	4.33		<0.01	1.57	1.57		Bore equipped, sample from windmill outlet
		16-Feb-10	1205	13.41	13.71																																									
		17-May-10	1600			8.26	5400	23.5	<0.01	0.002					<0.005		0.015	0.06	<0.001	0.056	0.002			0.013	<0.0001	7.78	4810	172	306	538	14	57.6	1280	268	<1	<1	680	680	55.2	2.1		<0.01	0.28			Bore covered by pump
		31-Aug-10	1100			7.8	4610	17.3																																						Bore covered by pump
		15-Nov-10	1320			7.65	4100	23.2																																						Bore covered by pump
		9-Mar-11	1350			7.35	4700	25.4	0.02	0.003					<0.001		0.021	1.34	0.002	0.142	0.006			0.1	<0.0001	7.54	5520	173	366	573	24	64.3	1840	198	<1	<1	636	636	68.7	3.34		<0.01	0.7	0.7		Bore covered by windmill
		14-Jun-11	1020			7.4	4141	15.3																																						Bore covered by windmill
		21-Sep-11	1150			7.55	3900	18.4	0.05	<0.001		0.368	<0.001	<0.0001	<0.001	0.002	0.049	1.09	0.001	0.036	0.003		<0.01	0.104	<0.0001	7.84	5650	170	330	474	19	56.8	1350	139	<1	<1	694	694	54.8	1.7	0.03	0.03	1.93	1.96		Bore covered by windmill
		15-Dec-11	1310			7.49	4360	23.2																																						
		3-Apr-12	1240			8.3	4150	25.9	0.28	0.003		0.528	<0.001	<0.0001	<0.001	0.004	0.079	2.2	0.003	0.114	0.004		<0.01	0.184	<0.0001	7.89	5550	89	406	567	25	63.2	1540	152	<1	<1	556	556	57.7	4.49	0.29	<0.01	0.07	0.07	3820	
		20-Jun-12	1210			8.12	4310	19.5																																						Bore covered by windmill
		12-Sep-12	1250																																											Windmill not operational
		7-Dec-12	1150																																											Windmill not operational
		18-Mar-13	1130																																											Windmill not operational
		9-Jul-13	1140																																											
		6-Sep-13																																												Windmill at mine site
		30-May-14	1155																																											Windmill at mine site
		19-Nov-14	1210																																											Windmill over bore
		1-Sep-15																																												Windmill over bore
		10-May-16																																												Windmill over bore
		11-Nov-16																																												Windmill over bore
44884		9-Sep-09	11:55			7.5	3050	20.2		0.007		0.624	<0.001	0.0005	<0.001	0.004	0.004	5.32	0.002	0.787	0.001		<0.01	0.223	<0.0001		2950	45	102	527	5	33.7	442	16.2	<1	<1	1040	1040	33.7	0.02	0.14				1770	No tape access - sampled from tank
		2-Dec-09	11.45		0.47	7.4	3700	25	<0.01	0.002					<0.005		<0.001	<0.05	<0.001	0.89	0.002			0.076	<0.0001	7.47	3340	30	149	504	5	35.8	655	25	<1	<1	933	933	37.6	2.51		<0.01	<0.01	<0.01		Sampled from windmill. Windmill blocking access
		16-Feb-10	1010	covered - couldn't dip																																										
		17-May-10	1135	covered - couldn't dip		Tank fed by bore empty, no sample avialable																																								
		31-Aug-10	945	covered - couldn't dip		8.5	2720	17																																						
		15-Nov-10	1130	covered - couldn't dip		Tank fed by windmill now rusted out, no sample available																																								
		9-Mar-11	1100	13.10	13.57	7.9	1385	24	1.04	0.005					0.003		0.226	14.5	0.165	1.05	0.008			3.63	<0.0001	8.76	1280	23	36	279	15	16.6	203	9	<1	109	552	547	16.8	0.72		<0.01	0.06	0.06		Windmill now gone
		14-Jun-11	1000	27.79	28.26	7.7	2080	18																																						
		20-Sep-11	1050	30.78	31.25	7.9	2460	17.3	<0.01	0.005		0.592	<0.001	0.0001	0.002	0.004	0.008	2.29	0.004	0.738	0.001		<0.01	0.795	<0.0001	8.01	3330	47	104	558	4	35.3	530	21	<1	<1	931	931	34	1.82	0.04	<0.01	0.04	0.04	1740	Very windy, with windmill pumping
		15-Nov-11	1030	14.51	14.98	8.05	2800	23.1																																						
		2-Apr-12	1040	14.83	15.30	8.25	1620	24	0.03	<0.001		0.277	<0.001	<0.0001	<0.001	<0.001	0.008	0.07	<0.001	0.011	<0.001		<0.01	0.534	<0.0001	8.23	1970	29	81	327	3	22.4	390	19	<1	<1	528	528	22	1.02	<0.01	<0.01	0.19	0.19	1050	
		20-Jun-12	1040	15.42	15.89	8.2	1160	18.4																																						Lillydale windmill
		12-Sep-12	1020	15.13	15.60	8.14	2590	18.1	<0.01	0.002		0.325	<0.001	0.0031	<0.001	<0.001	0.033	0.33	<0.001	0.066	0.006		<0.01	0.599	<0.0001	8.3	2770	29	74	549	5	31.6	420	16	<1	<1	1030	1030	32.8	1.93	<0.01	<0.01	0.1	0.1	1640	
		7-Dec-12	945	17.09	17.56	7.9	1975	22.3																																						

		18-Mar-13	950	15.42	15.89	7.9	2910	23.3	<0.01	0.004		0.396	<0.001	<0.0001	<0.001	<0.001	0.003	2.7	<0.001	0.122	<0.001		<0.01	0.834	<0.0001	8.1	3280	39	128	520	5	35.2	545	27	<1	<1	847	847	32.9	3.44	0.15	<0.01	<0.01	<0.01	1830	
		9-Jul-13	1200	15.06	15.53	7.89	1843	12.5
		6-Sep-13	1240	15.43	15.90	7.49	910	17.4	<0.01	0.002		0.287	<0.001	0.0017	<0.001	<0.001	0.017	0.95	0.029	0.033	0.001		<0.01	1.52	<0.0001	7.9	956	56	37	89	2	9.76	102	41	<1	<1	283	283	9.39	1.96	<0.01				514	
		30-May-14	1040	15.65	16.12	8	2610	20.5
		3-Sep-14	1120			8	2650	20.1	<0.01	<0.001		0.422	<0.001	0.0008	<0.001	<0.001	0.009	0.15	0.005	0.018	0.001		<0.01	1.27	<0.0001	8.1	3110	48	106	414	4	29.2	471	30	<1	<1	995	995	33.8	7.27	0.02	<0.01	0.02	0.02	1650	
		19-Nov-14	1015	Tap		7.9	2730	21.8
		25-Feb-15	1010	Tap		7.9	2820	24.7	<0.01	0.006		0.561	<0.001	0.0001	<0.001	0.004	0.005	3.5	<0.001	0.493	<0.001		<0.01	0.342	<0.0001	8.19	2970	52	98	528	4	33.7	437	21	<1	<1	992	992	32.6	1.69	0.1	<0.01	0.01	0.01	1420	
		20-May-15	1005	Tap		7.8	3090	17.2																																						windmill over bore
		1-Sep-15	1010	Tap		7.9	1349	12.9	0.01	0.007	<0.05	0.169	<0.001	0.0007	<0.001	0.005	0.041	7.45	0.005	0.267	0.001	<0.01	<0.01	6.91	<0.0001	8.17	1360	26	52	202	3	14.4	173	16	<1	<1	397	397	13.1	4.66	0.03	<0.01	1.09	1.09	654	
		23-Feb-16	1010			7.8	2570	22.5	0.08	0.002	0.09	0.443	<0.001	<0.0001	<0.001	<0.001	0.034	1.34	0.004	0.127	<0.001	<0.01	<0.01	0.104	<0.0001	8.26	2510	26	40	544	4	28.4	263	5	<1	<1	885	885	25.2	5.83	0.3	<0.01	0.02	0.02	1380	
		10-May-16	1010			7.6	3120	21.1																																						Pump over bore
		30-Aug-16	1015			7.5	3090	21.3	0.01	0.009	0.11	0.556	<0.001	0.0002	<0.001	0.008	0.016	4.34	0.002	0.577	0.003	<0.01	<0.01	0.217	<0.0001	7.61	3250	79	150	524	4	39.2	551	27	<1	<1	951	951	35.1	5.46	0.17	<0.01	<0.01	<0.01	1660	Pump over bore
		11-Nov-16	1000			7.4	3160	19.9																																						Pump over bore
6249		9-Sep-09	1500	10.10		7.75	2340	19.6		0.002		0.346	<0.001	0.0001	0.002	0.005	0.062	9.15	0.012	0.798	0.018		<0.01	1.01	<0.0001		2300	70	94	281	13	23.7	596	16.9	<1	<1	272	272	22.6	2.41	2.47				1620	
		2-Dec-09	1100	9.89	10.22	7.51	3480	23.7	<0.01	<0.001					<0.005		0.001	<0.05	<0.001	1.14	0.004			0.101	<0.0001	7.48	3370	67	135	361	12	30.5	980	11	<1	<1	289	289	33.6	4.98		<0.01	0.93	0.93		
		16-Feb-10	1000	9.87	10.20
		17-May-10	1025	9.96	10.29	7.13	5930	20.8	<0.01	<0.001					<0.005		<0.001	<0.05	<0.001	1.80	0.003			0.122	<0.0001	7.53	3890	106	198	480	4	42.5	1070	71.6	<1	<1	372	372	39.1	4.14		<0.01	1.31			
		31-Aug-10	820	9.91	10.24	7.86	3260	17.3
		23-Nov-10	1330	9.86	10.19	7.37	2430	24.5
		9-Mar-11	1040	10.02	10.35	7.6	2230	23.5	0.22	0.001					0.001		0.079	2.29	0.01	0.51	0.007			0.768	<0.0001	7.84	2420	69	125	283	8	26.3	700	44	<1	<1	284	284	26.3	0.12		0.26	2.36	2.63		
		14-Jun-11	950	9.62	9.95	7.6	2420	18.7
		20-Sep-11	1010	9.65	9.98	7.7	2520	22.3	0.06	0.003		0.324	<0.001	0.0001	0.002	<0.001	0.035	0.96	0.002	0.67	0.007		<0.01	0.264	<0.0001	7.86	3470	80	155	369	7	33	868	44	<1	<1	278	278	31	3.16	0.32	<0.01	10.9	10.9	1640	
		15-Dec-11	1010	9.69	10.02	7.31	3020	21.8
		2-Apr-12	1010	9.35	9.68	7.75	2350	22.9	0.02	<0.001		0.317	<0.001	<0.0001	<0.001	0.002	0.021	1.47	0.003	1.96	0.006		<0.01	0.387	<0.0001	7.78	2760	80	131	295	10	27.9	785	28	<1	<1	321	321	29.1	2.25	3.4	0.14	1.05	1.19	1700	
		20-Jun-12	1020	9.21	9.54	7.7	3100	20.2																																						TSR near tanks
		12-Sep-12	1000	9.11	9.44	7.6	3090	21.2	0.02	0.002		0.362	<0.001	<0.0001	<0.001	<0.001	0.01	5.14	0.005	2.48	0.003		<0.01	0.191	<0.0001	7.72	3490	89	179	388	9	36.3	956	19	<1	<1	413	413	35.6	0.92	3.92	0.14	0.02	0.16	2180	
		7-Dec-12	0930	9.19	9.52	7.7	3210	20.9
		18-Mar-13	930	9.24	9.57	7.5	3200	20.4	0.06	0.001		0.357	<0.001	0.0001	<0.001	<0.001	0.025	5.57	0.005	2.63	0.002		<0.01	0.198	<0.0001	7.78	3540	84	174	378	11	35.2	865	4	<1	<1	375	375	32	4.84	8.9	0.09	<0.01	0.09	1890	
		9-Jul-13	1225	9.33	9.66	7.57	3220	18.6
		6-Sep-13	1300	9.31	9.64	7.73	3090	21.8	0.09	<0.001		0.32	<0.001	<0.0001	<0.001	0.002	0.04	1.56	0.003	1.5	0.005		<0.01	0.158	<0.0001	7.95	3400	85	161	364	10	33.6	815	8	<1	<1	366	366	30.5	4.85	5.71				1680	
		30-May-14	1320	9.55	9.88	7.8	3120	19.5
		3-Sep-14	1100	9.50	9.83	7.5	3180	19.6	0.02	<0.001		0.357	<0.001	<0.0001	<0.001	0.003	0.01	1.13	0.001	1.29	0.006		<0.01	0.233	<0.0001	7.74	3300	84	138	290	10	28.4	810	5	<1	<1	385	385	30.6	3.77	0.73	<0.01	0.29	0.29	1820	
		19-Nov-14	950	9.62	9.95	7.5	3150	21.1
		25-Feb-15	945	9.67	10.00	7.6	3090	21.4	0.05	<0.001		0.277	<0.001	0.0001	<0.001	<0.001	0.036	2.26	0.003	1.2	0.004		<0.01	0.127	<0.0001	7.96	3220	106	152	323	10	32.1	853	3	<1	<1	342	342	31	1.82	0.56	0.03	0.1	0.13	1910	
		20-May-15	950	9.75	10.08	7.5	3040	20.1
		1-Sep-15	950	9.73	10.06	7.4	3070	19.4	0.04	<0.001	<0.05	0.28	<0.001	<0.0001	<0.001	<0.001	0.003	4.07	<0.001	1.48	0.002	<0.01	<0.01	0.036	<0.0001	7.87	3170	116	147	329	12	32.5	688	<1	<1	<1	372	372	26.8	9.54	1.09	<0.01	0.03	0.03	2000	
		23-Feb-16	950	9.97	10.30	7.5	3050	21.4	0.02	<0.001	<0.05	0.279	<0.001	<0.0001	<0.001	<0.001	0.017	9.11	<0.001	1.75	<0.001	<0.01	<0.01	0.042	<0.0001	7.9	3080	104	142	304	10	30.4	816	<1	<1	<1	284	284	28.7	2.82	4.34	0.19	<0.01	<0.01	1880	
		15-May-16	950	9.94	10.27	7.4	3070	20.2
		30-Aug-16	945	9.97	10.30	7.4	2920	21.1	0.03	<0.001	0.06	0.334	<0.001	<0.0001	<0.001	<0.001	0.008	6.54	0.001	1.94	0.002	<0.01	<0.01	0.194	<0.0001	7.59	2990	122	150	308	10	32.1	811	1	<1	<1	317	317	29.2	4.66	3.02	0.07	0.2	0.27	1980	
		11-Nov-16	940	9.79	10.12	7.5	2810	21.2
901460	*GW901460*	10-Dec-08	900	15.38	15.80	Pump over bore
		19-Jan-09	1414	15.53	15.95	Pump over bore
		2-Mar-09	1320	19.73	20.15	Pump over bore
		8-Apr-11	1410	15.18	15.60	Pump over bore
		14-Jun-11	1120	15.03	15.45	Pump over bore
		20-Sep-11	1230	14.97	15.39	Illili windmill over bore
		15-Dec-11	1130	15.03	15.45	Illili windmill over bore
		2-Apr-12	1230	14.87	15.29	Illili windmill over bore
		20-Jun-12	1240	14.74	15.16	Pump cap over bore																																								Illilli-broken windmill
		12-Sep-12	1205	14.63	15.05	Pump cap over bore
		7-Dec-12	1045	17.66	18.08	Pump cap over bore
		18-Mar-13	1045	14.56	14.98	Pump cap over bore
		9-Jul-13	1050	14.57	14.99	Pump cap over bore
		6-Sep-13	1115	14.50	14.92	Pump over bore
		5-Jun-14	1030	14.20	14.62	Pump over bore
		19-Nov-14	1225	14.41	14.83	Pump over bore
		20-May-15	1230	14.22	14.64	Pump over bore
		1-Sep-15	1120	14.16	14.58	Pump over bore
		10-May-16	1235	14.36	14.78	Pump over bore
		11-Nov-16	1240	14.13	14.55	Pump over bore
45061		17-May-10	1000	9.10	9.20	pump over bore no sample
		31-Aug-10	850	9.10	9.20	pump over bore no sample
		23-Nov-10	1345	9.05	9.15	pump over bore no sample
		9-Mar-11	920	9.06	9.16	pump over bore no sample
		14-Jun-11	910	8.95	9.05	pump over bore no sample
		20-Sep-11	910	8.86	8.96	Windmill over bore
		15-Dec-11	920	8.86	8.96	Windmill over bore
		2-Apr-12	915	8.67	8.77	Windmill over bore
		20-Jun-12	920	8.52	8.62	Windmill over bore																																								Coocooboonah windmill-front paddock
		12-Sep-12	900	8.39	8.49	Windmill over bore
		7-Dec-12	845	8.33	8.43	Windmill over bore
		18-Mar-13	840	8.34	8.44	Windmill over bore
		9-Jul-13	1315			dmill over bore - rusty casing collapsed no acc
		6-Sep-13	920	8.33	8.43	Windmill over bore - rusty casing broken
		5-Jun-14	840	8.47	8.57	Windmill over bore - rusty casing broken
		19-Nov-14	900	8.58	8.68	Windmill over bore
		25-Feb-15	845	8.65	8.75
		20-May-15	900	8.71	8.81
		1-Sep-15	900	8.75	8.85	Windmill over bore
		10-May-16	850	8.89	8.99	Windmill over bore
		11-Nov-16	845	8.75	8.85	Windmill over bore
Ivanhoe	*3709*	21-Jun-11	910	Covered by Pump		7.05	4420	18.5
		22-Sep-11	1100	Ivanhoe tank tap		6.76	4937	20.1
		3-Apr-12	1200	Ivanhoe tank tap		7.05	4340	25.5	0.57	0.011		0.314	<0.001	0.0003	0.002	<0.001	1.41	26	0.117	0.048	0.003		0.03	4.15	<0.0001	7.9	5520	128	232	848	18	62.8	1400	100	<1	<1	767	767	56.9	4.94	<0.01	0.02	6.12	6.14	3220	
		11-Jul-12	1115	Pump over bore		7.29	4480	17.8																																						Tap in front yard
		11-Oct-12	850	Ivanhoe tank tap		7.08	5570	19.2	0.01	0.001		0.294	<0.001	<0.0001	<0.001	<0.001	0.034	3.36	0.004	0.033	0.002		<0.01	1.93	<0.0001	7.76	6550	157	235	925	15	67.8	1710	142	<1	<1	849	849	68.2	0.28	0.02	0.05	0.47	0.52	3560	
		12-Dec-12	1125	Pump over bore		6.95	5470	24.7
		11-Apr-13	900			6.99	5560	21.4	<0.01	0.001		0.261	<0.001	0.0004	<0.001	<0.001	0.021	0.77	0.006	0.016	<0.001		<0.01	4.7	<0.0001	7.54	5960	142	225	700	19	56.5	1300	97	<1	<1	783	783	54.3	1.97	<0.01	<0.01	2.69	2.69	3440	
		11-Sep-13	830			7.03	5460	20.2	0.07	0.003		0.331	<0.001	0.0006	0.001	<0.001	0.104	4.52	0.03	0.03	0.002		<0.01	1.67	<0.0001	7.6	6200	147	217	888	14	64.2	1420	96	<1	<1	831	831	58.7	4.48	<0.01				3660	
		5-Jun-14	920			6.9	6100	15
		17-Sep-14	930			6.9	5990	20.1	0.02	0.002		0.256	<0.001	0.0002	<0.001	<0.001	0.022	1.1	0.003	0.02	0.001		<0.01	1.1	<0.0001	7.33	6360	154	240	825	16	63.7	1660	101	<1	<1	931	931	67.5	2.91	0.02	<0.01	0.62	0.62	3630	
		12-Dec-14	1215			7.2	6260	22.4
		5-Mar-15	1100			6.9	6220	22.9	<0.01	<0.001		0.312	<0.001	0.0001	<0.001	<0.001	0.014	1.92	<0.001	0.042	0.003		<0.01	0.828	<0.0001	7.21	6100	158	240	926	11	68.2	1560	102	<1	<1	898	898	64.1	3.1	0.03	0.07	0.38	0.45	3580	
		27-May-15	1040			6.7	5330	20.4
		16-Sep-15	930			7	5410	20.8	0.01	0.003	0.18	0.24	<0.001	<0.0001	0.003	<0.001	0.046	2.5	0.004	0.018	0.002	<0.01	<0.01	0.637	<0.0001	7.38	5890	146	238	807	11	62.2	1410	80	<1	<1	866	866	58.7	2.89	0.03	0.02	0.8	0.82	2330	
		23-Mar-16	940			7	6020	21.1	<0.01	0.003	0.17	0.282	<0.001	<0.0001	0.001	<0.001	0.065	1.69	0.003	0.025	0.002	<0.01	<0.01	0.314	<0.0001	7.4	6140	163	220	809	10	61.7	1540	96	<1	<1	938	938	64.2	2	0.03	<0.01	0.5	0.5	3680	
		12-May-16	1000	Pump over bore		7.3	5590	19
		30-Nov-16	930		Tap	6.9	5560	22.6																																						Pump running for 2 days to fill up tank.
Werona		9-Sep-09	1245			7.68	5150	19.3		<0.001		0.325	<0.001	<0.0001	0.001	<0.001	0.001	<0.05	<0.001	0.014	<0.001		<0.01	0.01	<0.0001		5210	152	257	572	10	53.9	1390	108	<1	<1	501	501	51.4	2.3	0.1				3530	No tape access - sampled from dam
		2-Dec-09	1405			8.03	5770	25.9	<0.01	<0.001					<0.005		0.01	<0.05	<0.001	0.00	<0.001			<0.005	<0.0001	8.16	5220	48	280	624	11	52.9	16580	120	<1	<1	354	354	56.1	2.98		0.07	1.83	1.9		Bore equipped, sampled from dam
		16-Feb-10	1235	16.73	17.36
		17-May-10	1255	bore covered by pump		7.8	5510	16.8	<0.01	<0.001					<0.005		0.001	<0.05	<0.001	0.01	<0.001			<0.005	<0.0001	7.74	5100	157	288	656	7	60.2	1520	141	<1	<1	497	497	55.7	3.94		0.02	1.31	1.33		
		31-Aug-10	1200	bore covered by pump		8.43	4410	19.9																																						Sampled from dam fed by bore
		15-Nov-10	1245	bore covered by pump		No water in dam fed by bore
		8-Mar-11	1020	bore covered by pump		7.76	4200	25	0.18	<0.001					<0.001		0.002	0.29	<0.001	0.01	0.001			0.006	<0.0001	7.96	5060	136	262	601	11	54.8	1380	117	<1	<1	514	514	51.5	3.08		0.02	1.06	1.08		Sample from dam
		14-Jun-11	1100	bore covered by pump		7.85	3870	17.5
		21-Sep-11	910	bore covered by pump		8.05	3200	19.7	0.08	<0.001		0.172	<0.001	<0.0001	<0.001	<0.001	0.002	0.07	<0.001	0.02	0.002		<0.01	0.018	<0.0001	8.03	4410	122	208	486	8	44.6	1070	92	<1	<1	512	512	42.3	2.55	0.03	0.02	1.09	1.11		From dam fed by bore-pump running
		6-Jan-12	1030	bore covered by pump		7.92	2745	23.8
		3-Apr-12	0840	bore covered by pump		7.55	3150	22.2	0.05	<0.001		0.251	<0.001	<0.0001	<0.001	<0.001	0.003	0.06	<0.001	0.01	0.001		<0.01	0.008	<0.0001	8.14	3840	94	201	483	8	42.4	1030	93	<1	<1	462	462	40.2	2.68	0.16	<0.01	0.04	0.04	2230	
		20-Jun-12	1230	bore covered by pump		8.13	3070	14.5																																						From dam fed by bore
		20-Sep-12	0950	bore covered by pump		7.68	3730	22	0.81	0.001		0.184	<0.001	0.0001	0.002	0.001	0.006	0.92	<0.001	0.076	0.002		<0.01	0.021	<0.0001	8.04	4290	71	199	461	10	40.2	1040	96	<1	<1	513	513	41.6	1.67	<0.01	<0.01	0.42	0.42	2260	
		7-Dec-12	1210	bore covered by pump		8.1	3410	26.8
		18-Mar-13	1215	bore covered by pump		8.2	3470	24.3	0.72	<0.001		0.147	<0.001	<0.0001	<0.001	<0.001	0.006	0.84	<0.001	0.022	0.002		<0.01	0.023	<0.0001	8.04	3900	78	194	476	10	40.8	935	88	<1	<1	439	439	37	4.92	0.04	<0.01	0.04	0.04	2250	
		9-Jul-13	1110	bore covered by pump
		6-Sep-13	1125	ımp cap over bore																																								pump off - genset removed
		5-Jun-14	1115	ımp cap over bore																																								pump off - genset removed
		19-Nov-14	1240	Pump over bore
		25-Feb-15		Pump over bore
		20-May-15		Pump over bore
		1-Sep-15		Pump over bore
		10-May-16		Pump over bore
		11-Nov-16		Pump over bore
44677		2-Dec-09	1320							Bore covered. Could not sample.
		16-Feb-10	1243	No Access
		17-May-10	1305	e covered by pump
		31/08/2010	1125	Bore covered
		15-Nov-10	1245	Bore covered																																								Bore covered with grass, dirt and calcium scale
		9-Mar-11	1410	Bore covered																																								Bore covered with grass, dirt and calcium scale
		14-Jun-11	1050	Bore covered																																								Bore covered with grass, dirt and calcium scale
		20-Sep-11	1250	Bore covered																																								Bore covered with grass, dirt and calcium scale
		15-Dec-11	1200	Bore covered		7.1	4080	24
		2-Apr-12	1300	Bore covered		7.2	3810	25.2	<0.01	<0.001		0.462	<0.001	<0.0001	<0.001	<0.001	0.004	<0.05	<0.001	<0.001	<0.001		<0.01	0.019	<0.0001	7.71	4790	202	253	531	6	54.2	1380	81	<1	<1	524	524	51.1	2.91	<0.01	<0.01	3.18	3.18	2980	
		20-Jun-12	1320	ered with scale and grass		7.1	4370	18.1																																						Werona-tap on tank fed by bore
		12-Sep-12	1230			7.1	4360	22.8	<0.01	<0.001		0.406	<0.001	<0.0001	<0.001	<0.001	0.002	<0.05	<0.001	<0.001	<0.001		<0.01	0.013	<0.0001	7.53	4880	99	244	504	6	47.1	1280	72	<1	<1	586	586	49.3	2.31	0.06	<0.01	3.01	3.01	2750	
		7-Dec-12	1115	Bore covered with grass and		7.1	4320	23.9
		18-Mar-13	1120	Bore covered with grass and		7.0	4340	22.7	<0.01	<0.001		0.44	<0.001	<0.0001	<0.001	<0.001	0.003	<0.05	0.002	<0.001	<0.001		<0.01	0.037	<0.0001	7.42	4910	188	236	523	5	51.7	1260	77	<1	<1	525	525	47.6	4.07	<0.01	<0.01	3.43	3.43	2770	
		9-Jul-13	1130	e covered with scale		8.3	4470	17.1
		6-Sep-13	1140			7.06	4420	23	<0.01	<0.001		0.466	<0.001	<0.0001	<0.001	<0.001	0.009	<0.05	<0.001	0.002	<0.001		<0.01	0.052	<0.0001	7.52	4920	180	237	518	5	51.2	1200	73	<1	<1	556	556	46.5	4.78	0.02				3040	
		5-Jun-14	1055			7	4650	16.8
		3-Sep-14	1430			7.3	4550	21.2	0.01	<0.001		0.461	<0.001	<0.0001	<0.001	<0.001	0.004	<0.05	<0.001	<0.001	<0.001		<0.01	0.063	<0.0001	7.52	4900	194	265	652	5	60	1040	70	<1	<1	590	590	42.6	17	0.01	<0.01	3.6	3.6	2900	
		19-Nov-14	1250	Bore covered with scale		7.3	4630	24.9
		25-Feb-15	1320			7.2	4620	26.2	0.02	<0.001		0.455	<0.001	<0.0001	<0.001	<0.001	0.004	<0.05	<0.001	0.002	0.001		<0.01	0.027	<0.0001	7.74	4870	192	243	501	5	51.5	1250	83	<1	<1	559	559	48.2	3.35	0.04	0.01	3.6	3.61	3110	
		20-May-15	1255			7.2	4640	25.3
		1-Sep-15	1150			7.4	4780	18.4	0.01	<0.001	0.13	0.439	<0.001	<0.0001	<0.001	<0.001	0.014	<0.05	0.002	0.004	0.012	<0.01	<0.01	0.567	<0.0001	7.81	5070	209	220	494	5	50.2	1010	73	<1	<1	618	618	42.4	8.42	0.07	<0.01	2.9	2.9	3130	
		23-Feb-16	1310			7.2	4750	25.5	<0.01	<0.001	0.12	0.434	<0.001	<0.0001	<0.001	<0.001	0.003	<0.05	<0.001	<0.001	<0.001	<0.01	<0.01	0.009	<0.0001	7.72	4970	193	233	483	4	49.9	1260	84	<1	<1	483	483	46.9	3.07	0.01	<0.01	3.9	3.9	3260	
		10-May-16	1310	Bore covered with scale		7.1	4820	25.8
		30-Aug-16	1320	Bore covered with scale		7.1	4660	19	<0.01	<0.001	0.13	0.458	<0.001	<0.0001	<0.001	<0.001	0.012	<0.05	0.002	0.007	0.004	<0.01	<0.01	0.296	<0.0001	7.46	4900	214	258	498	4	53.7	1290	73	<1	<1	516	516	48.2	5.36	<0.01	<0.01	3.15	3.15	3220	
		11-Nov-16	1310	Pump over bore		7	4590	23.5


Standing Water Level - P1 "Plainview"
Depth in Metres
0.00
5.00
10.00
15.00
20.00
Jun 07
Sep 07
Dec 07
Mar 08
Jun 08
Sep 08
Dec 08
Mar 09
Jun 09
Sep 09
Dec 09
Mar 10
Jun 10
Sep 10
Dec 10
Mar 11
Jun 11
Sep 11
Dec 11
Mar 12
Jun 12
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Dec 12
Mar 13
Jun 13
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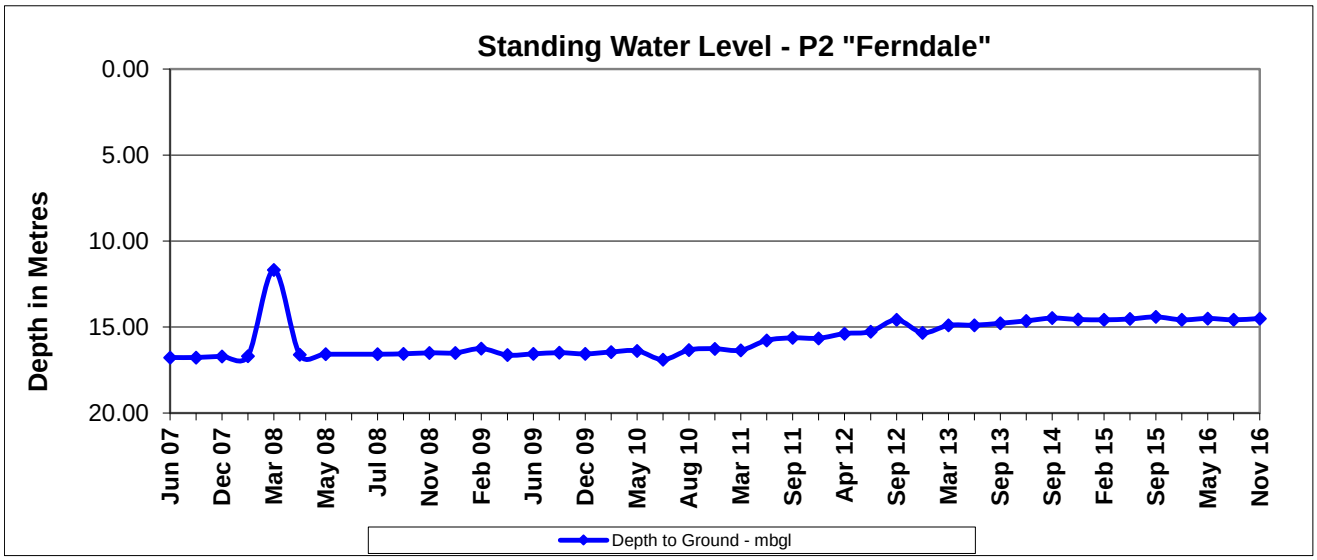
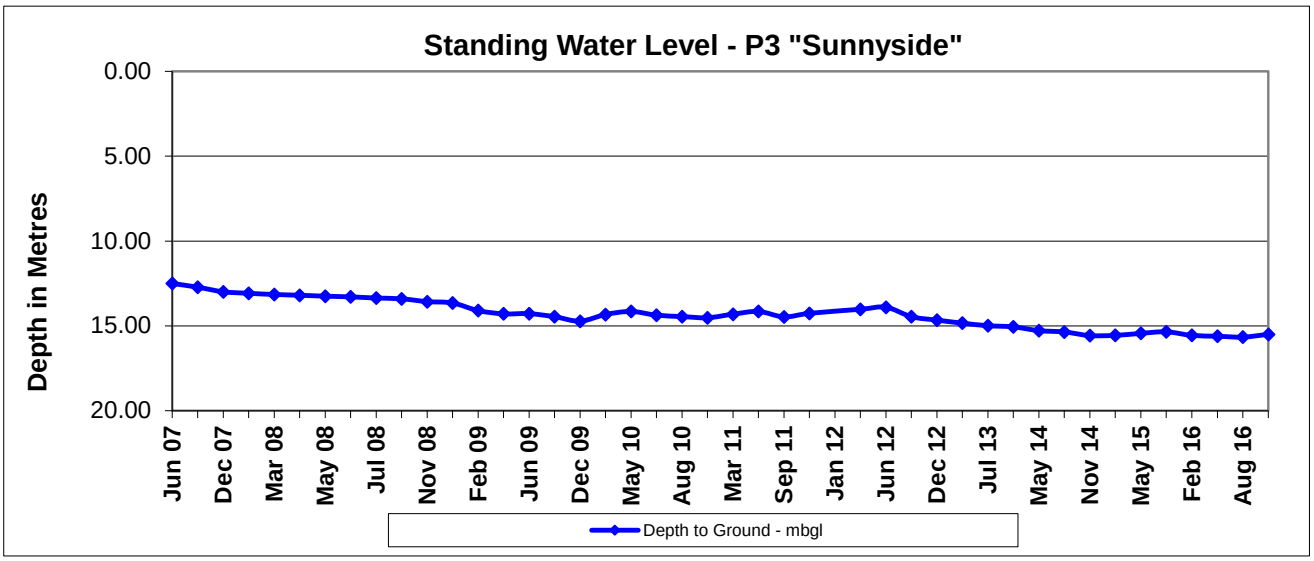
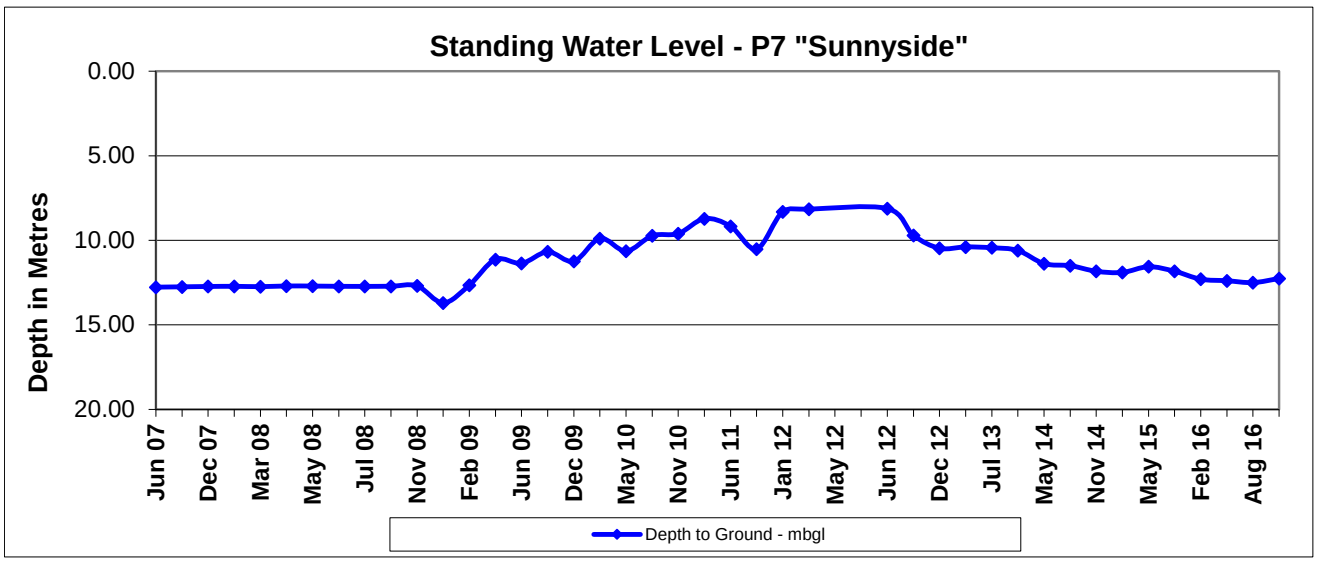
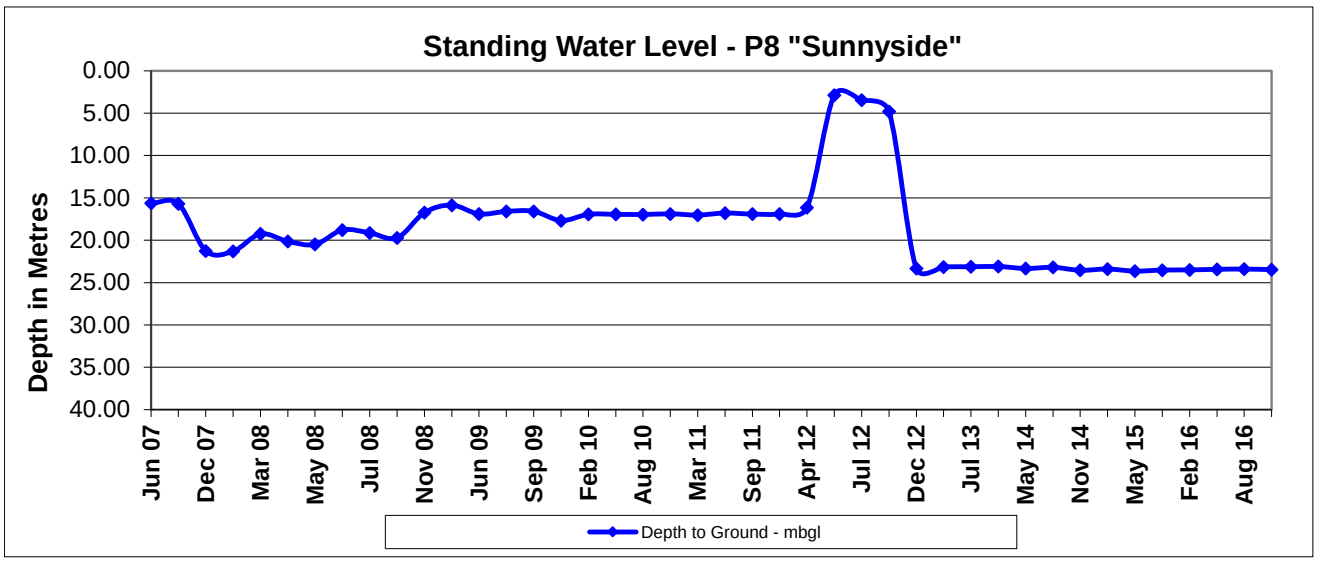
Sep 15
Dec 15
Mar 16
Jun 16
Sep 16
Depth to Ground - mbgl


Standing Water Level - P2 "Ferndale"
Depth in Metres
0.00
5.00
10.00
15.00
20.00
Jun 07
Dec 07
Mar 08
May 08
Jul 08
Nov 08
Feb 09
Jun 09
Dec 09
May 10
Aug 10
Mar 11
Sep 11
Apr 12
Sep 12
Mar 13
Sep 13
Sep 14
Feb 15
Sep 15
May 16
Nov 16
Depth to Ground - mbgl


Standing Water Level - P3 "Sunnyside"
Depth in Metres
0.00
5.00
10.00
15.00
20.00
Jun 07
Dec 07
Mar 08
May 08
Jul 08
Nov 08
Feb 09
Jun 09
Dec 09
May 10
Aug 10
Mar 11
Sep 11
Jan 12
Jun 12
Dec 12
Jul 13
May 14
Nov 14
May 15
Feb 16
Aug 16
Depth to Ground - mbgl


Standing Water Level - P7 "Sunnyside"
Depth in Metres
0.00
5.00
10.00
15.00
20.00
Jun 07
Dec 07
Mar 08
May 08
Jul 08
Nov 08
Feb 09
Jun 09
Dec 09
May 10
Nov 10
Jun 11
Jan 12
May 12
Jun 12
Dec 12
Jul 13
May 14
Nov 14
May 15
Feb 16
Aug 16
Depth to Ground - mbgl


Standing Water Level - P8 "Sunnyside"
Depth in Metres
0.00
5.00
10.00
15.00
20.00
25.00
30.00
35.00
40.00
Jun 07
Dec 07
Mar 08
May 08
Jul 08
Nov 08
Jun 09
Sep 09
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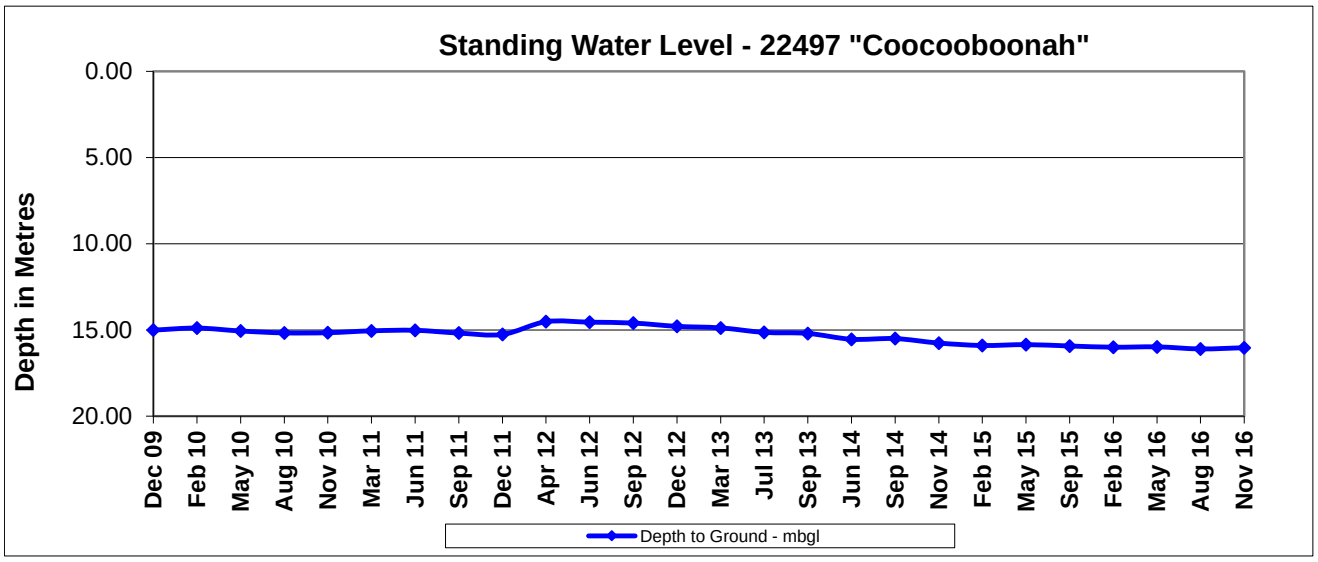
Jul 13
May 14
Nov 14
May 15
Feb 16
Aug 16
Depth to Ground - mbgl


Standing Water Level - 22497 "Coocooboonah"
Depth in Metres
0.00
5.00
10.00
15.00
20.00
Dec 09
Feb 10
May 10
Aug 10
Nov 10
Mar 11
Jun 11
Sep 11
Dec 11
Apr 12
Jun 12
Sep 12
Dec 12
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Jun 14
Sep 14
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Feb 15
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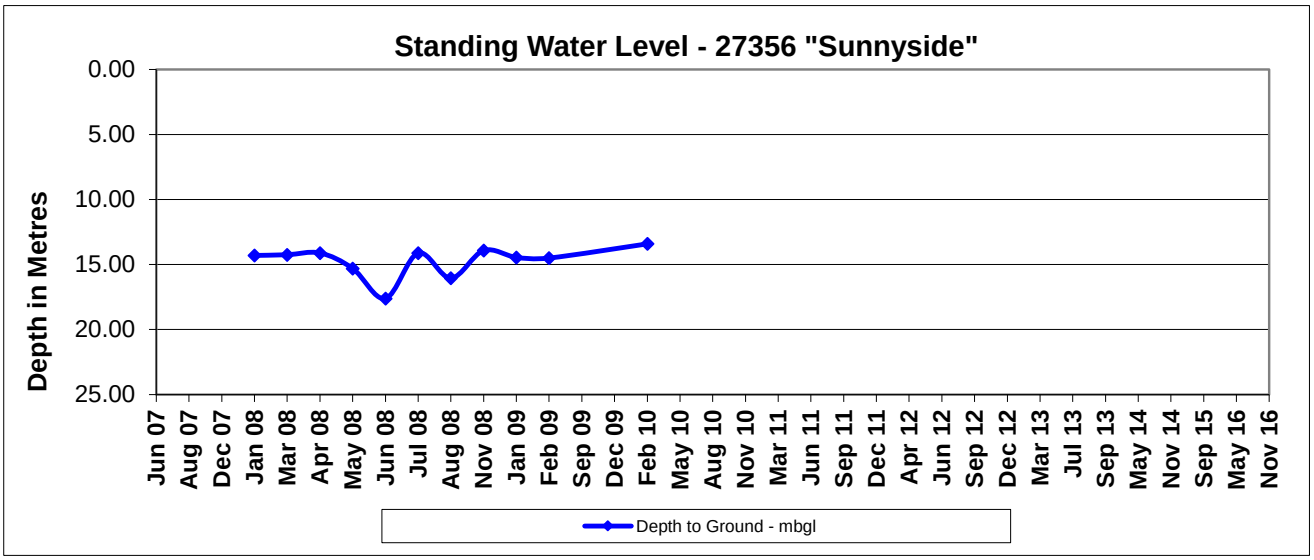
Sep 15
Feb 16
May 16
Aug 16
Nov 16
Depth to Ground - mbgl


Standing Water Level - 27356 "Sunnyside"
Depth in Metres
0.00
5.00
10.00
15.00
20.00
25.00
Jun 07
Aug 07
Dec 07
Jan 08
Mar 08
Apr 08
May 08
Jun 08
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Feb 09
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Feb 10
May 10
Aug 10
Nov 10
Mar 11
Jun 11
Sep 11
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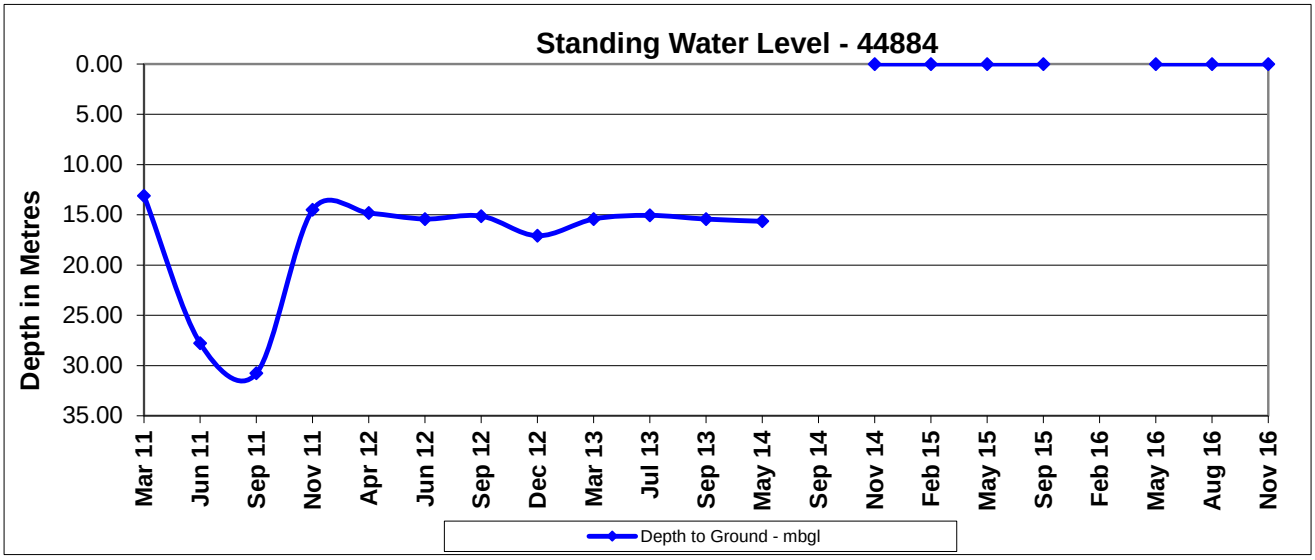
May 14
Nov 14
Sep 15
May 16
Nov 16
Depth to Ground - mbgl


Standing Water Level - 44884
Depth in Metres
0.00
5.00
10.00
15.00
20.00
25.00
30.00
35.00
Mar 11
Jun 11
Sep 11
Nov 11
Apr 12
Jun 12
Sep 12
Dec 12
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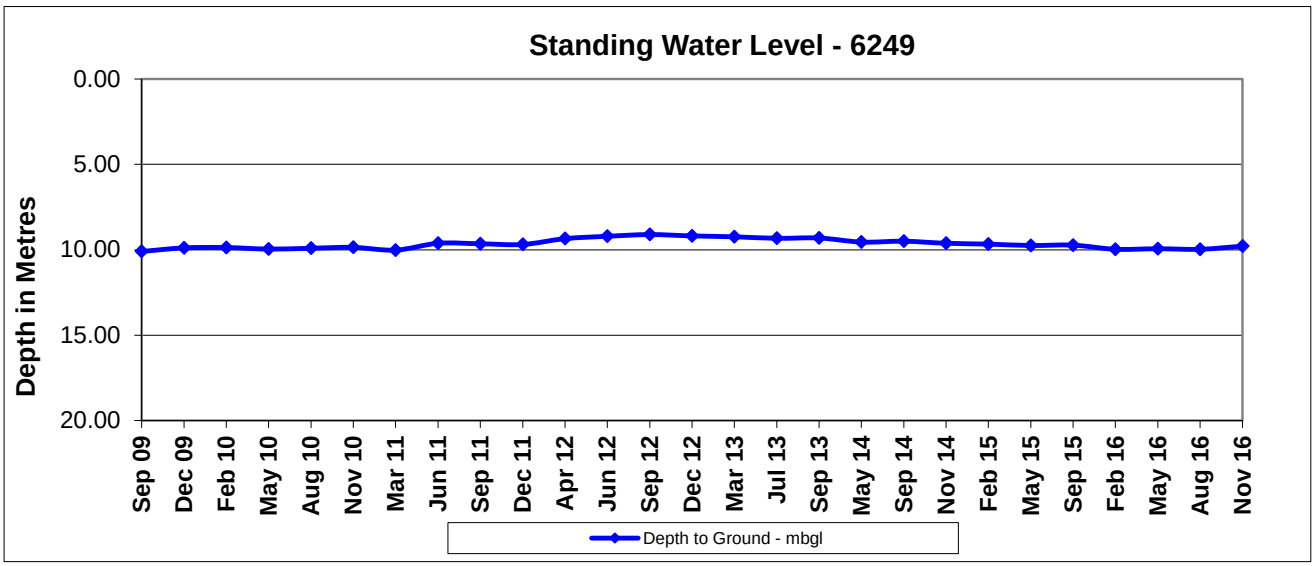
Sep 15
Feb 16
May 16
Aug 16
Nov 16
Depth to Ground - mbgl


Standing Water Level - 6249
Depth in Metres
0.00
5.00
10.00
15.00
20.00
Sep 09
Dec 09
Feb 10
May 10
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Mar 11
Jun 11
Sep 11
Dec 11
Apr 12
Jun 12
Sep 12
Dec 12
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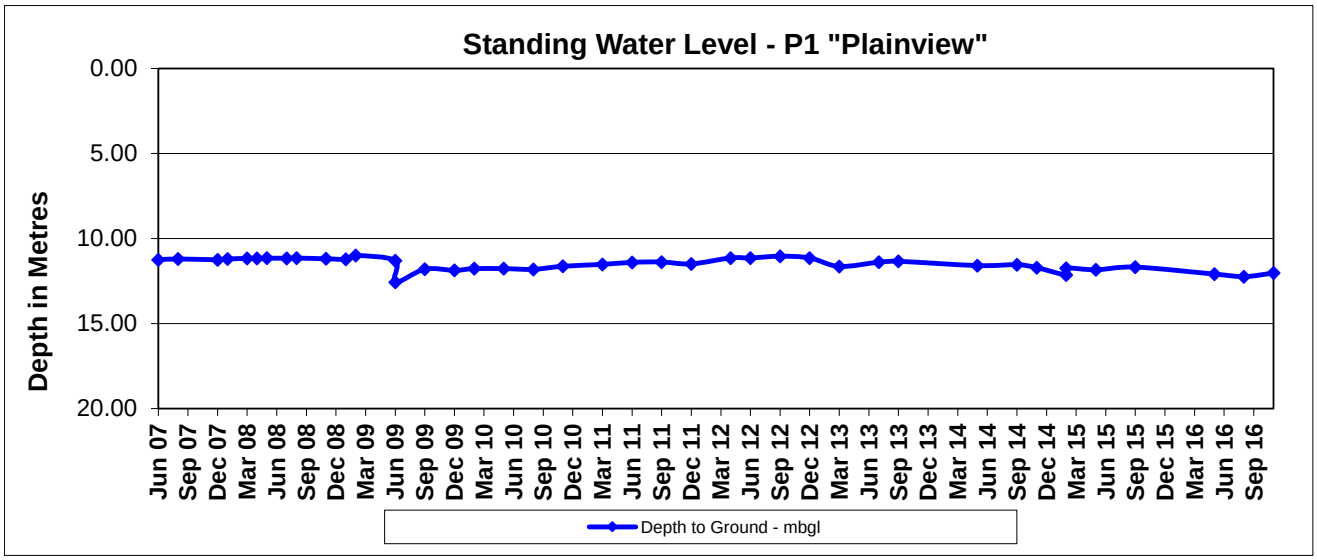
Sep 15
Feb 16
May 16
Aug 16
Nov 16
Depth to Ground - mbgl


Standing Water Level - P1 "Plainview"
Depth in Metres
0.00
5.00
10.00
15.00
20.00
Jun 07
Sep 07
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Mar 08
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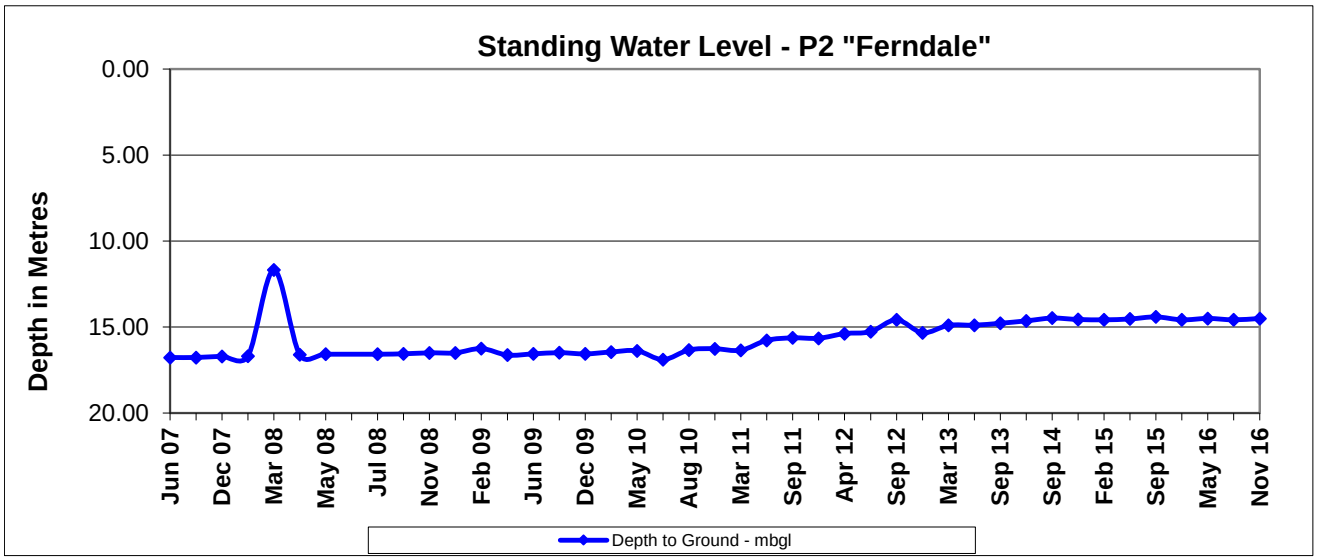
Jun 14
Sep 14
Dec 14
Mar 15
Jun 15
Sep 15
Dec 15
Mar 16
Jun 16
Sep 16
Depth to Ground - mbgl


Standing Water Level - P2 "Ferndale"
Depth in Metres
0.00
5.00
10.00
15.00
20.00
Jun 07
Dec 07
Mar 08
May 08
Jul 08
Nov 08
Feb 09
Jun 09
Dec 09
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Apr 12
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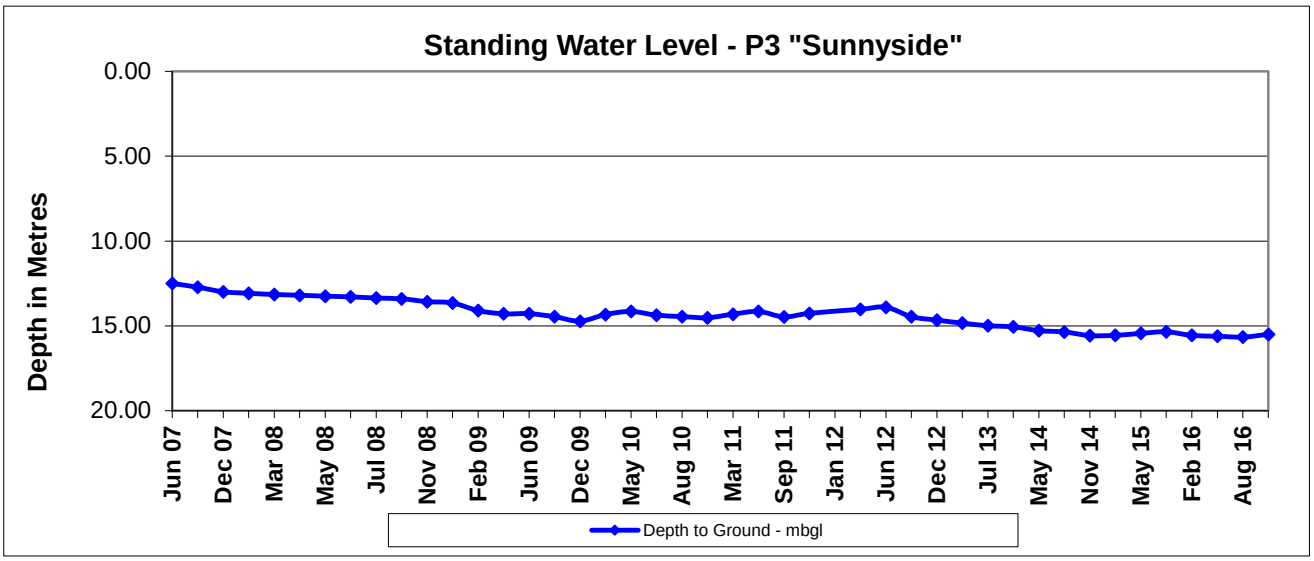
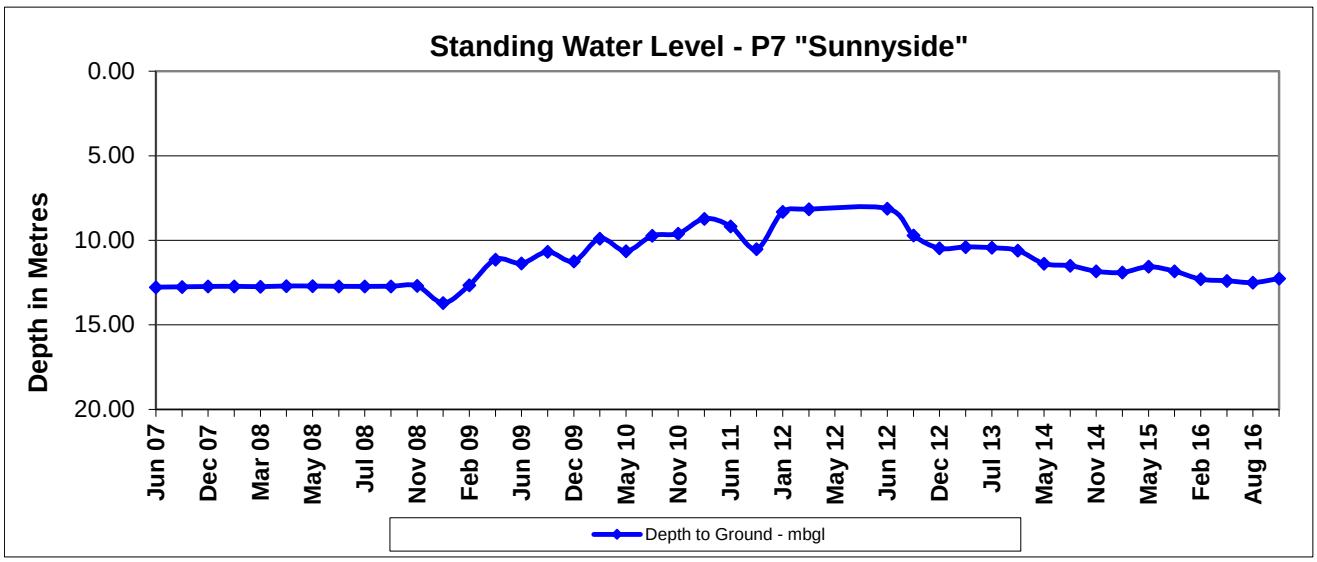
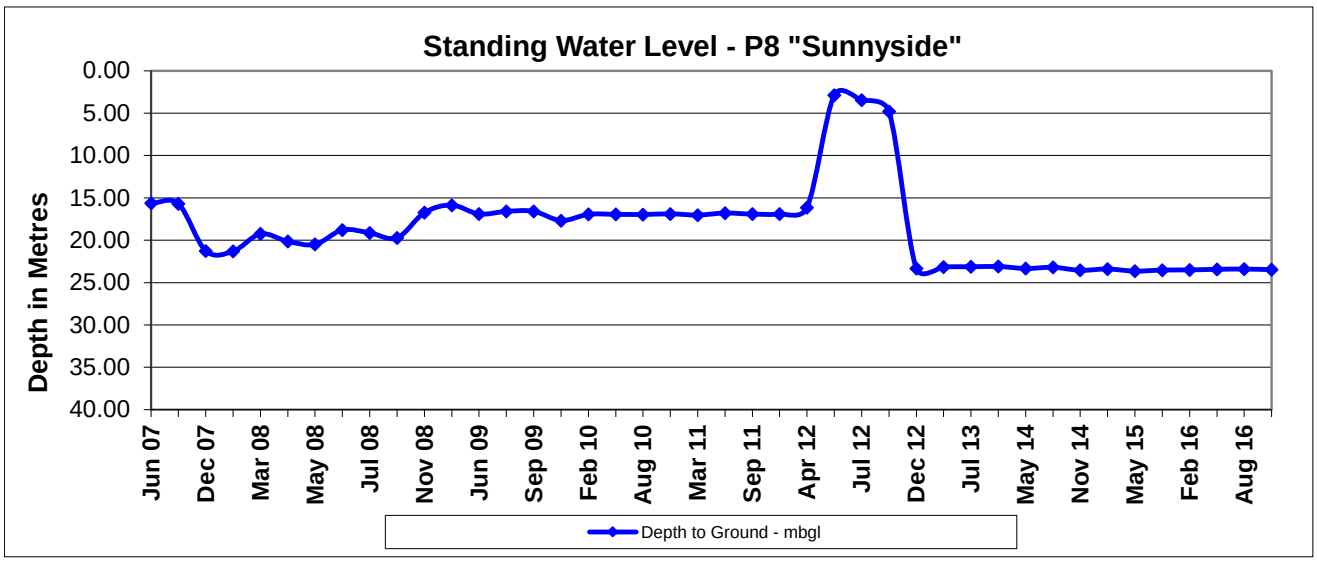
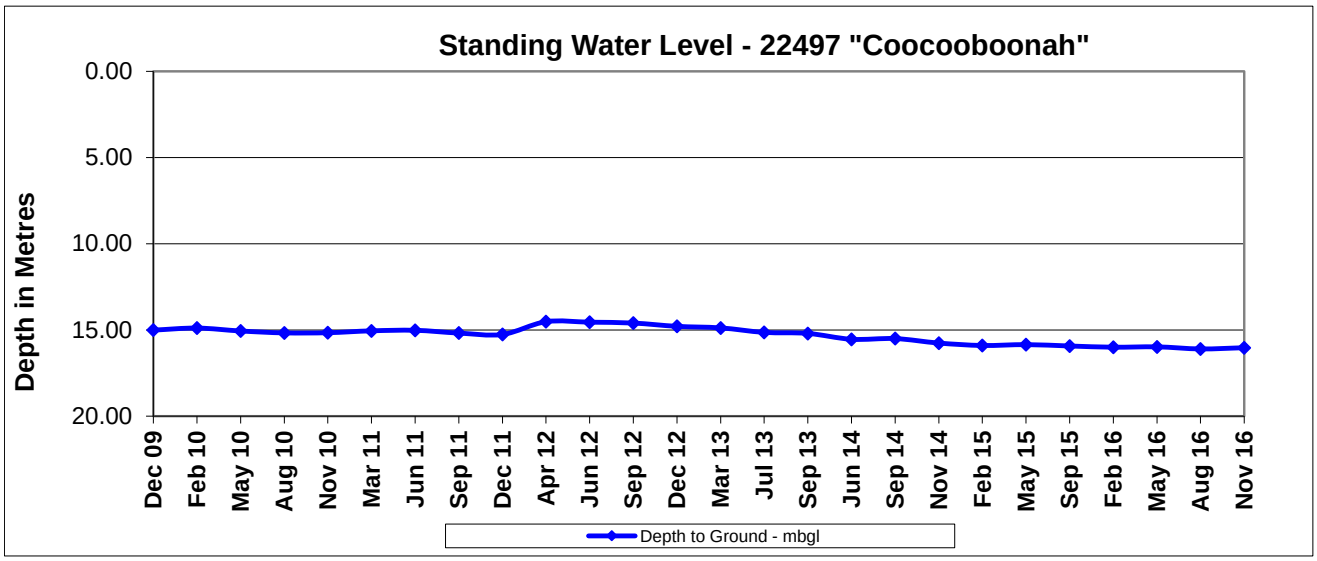
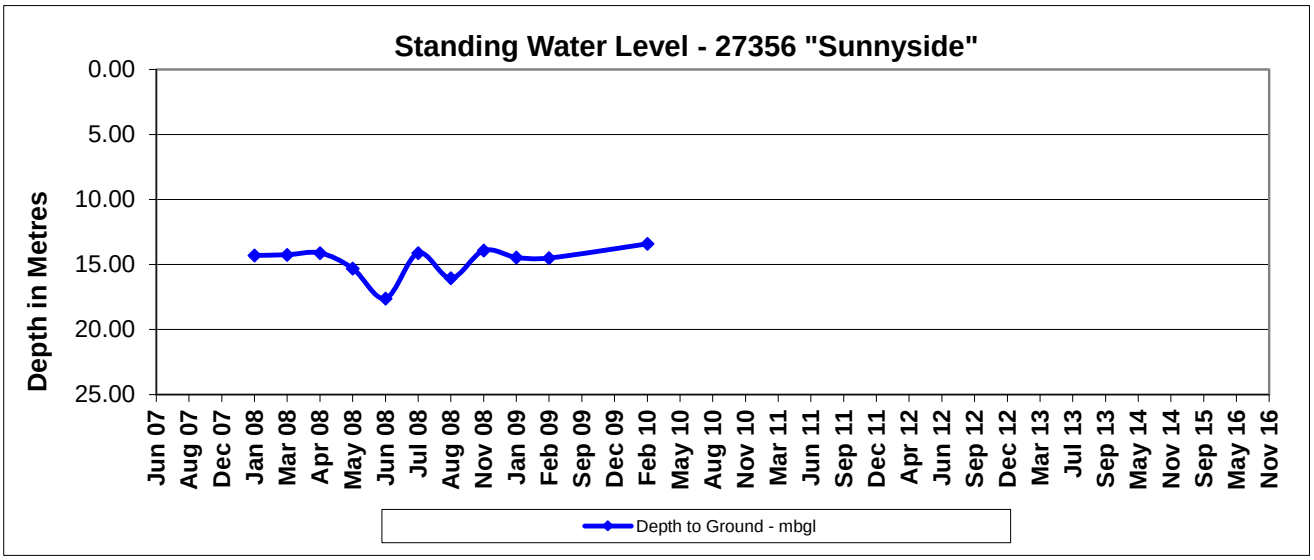
Sep 13
Sep 14
Feb 15
Sep 15
May 16
Nov 16
Depth to Ground - mbgl

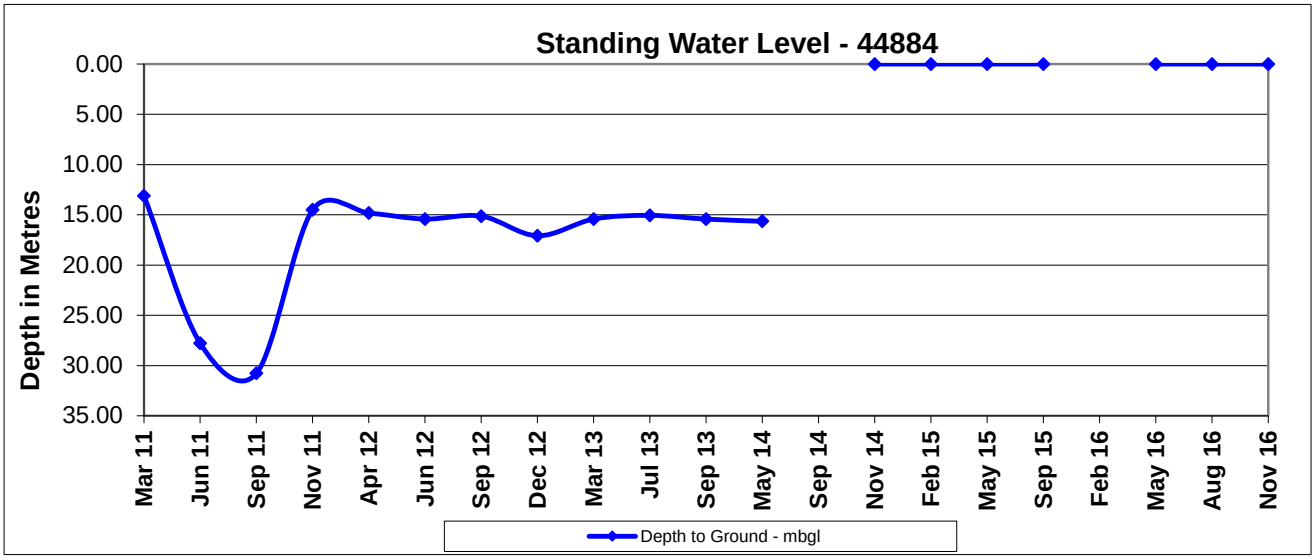

Standing Water Level - P3 "Sunnyside"
Depth in Metres
0.00
5.00
10.00
15.00
20.00
Jun 07
Dec 07
Mar 08
May 08
Jul 08
Nov 08
Feb 09
Jun 09
Dec 09
May 10
Aug 10
Mar 11
Sep 11
Jan 12
Jun 12
Dec 12
Jul 13
May 14
Nov 14
May 15
Feb 16
Aug 16
Depth to Ground - mbgl

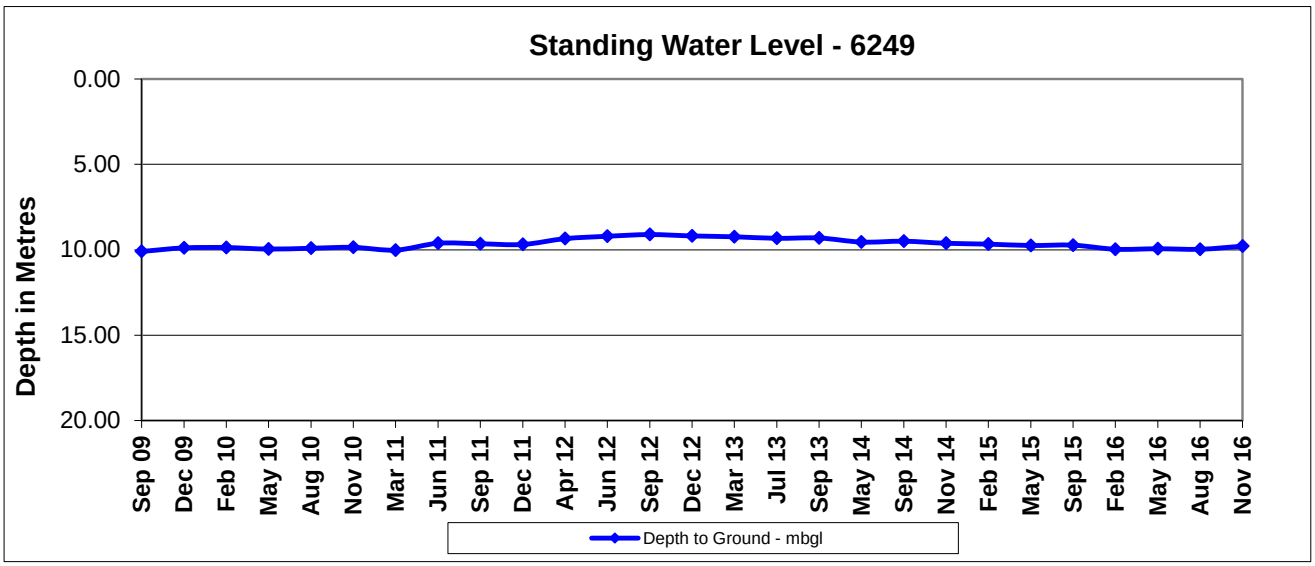

Standing Water Level - P7 "Sunnyside"
Depth in Metres
0.00
5.00
10.00
15.00
20.00
Jun 07
Dec 07
Mar 08
May 08
Jul 08
Nov 08
Feb 09
Jun 09
Dec 09
May 10
Nov 10
Jun 11
Jan 12
May 12
Jun 12
Dec 12
Jul 13
May 14
Nov 14
May 15
Feb 16
Aug 16
Depth to Ground - mbgl

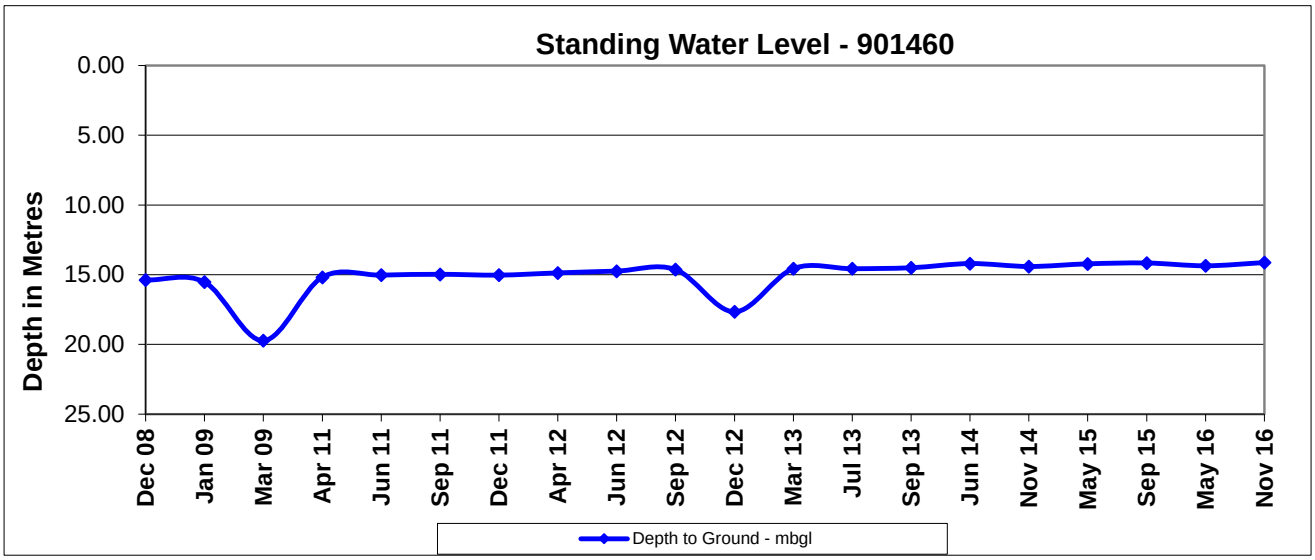

Standing Water Level - P8 "Sunnyside"
Depth in Metres
0.00
5.00
10.00
15.00
20.00
25.00
30.00
35.00
40.00
Jun 07
Dec 07
Mar 08
May 08
Jul 08
Nov 08
Jun 09
Sep 09
Feb 10
Aug 10
Mar 11
Sep 11
Apr 12
Jul 12
Dec 12
Jul 13
May 14
Nov 14
May 15
Feb 16
Aug 16
Depth to Ground - mbgl


Standing Water Level - 22497 "Coocooboonah"
Depth in Metres
0.00
5.00
10.00
15.00
20.00
Dec 09
Feb 10
May 10
Aug 10
Nov 10
Mar 11
Jun 11
Sep 11
Dec 11
Apr 12
Jun 12
Sep 12
Dec 12
Mar 13
Jul 13
Sep 13
Jun 14
Sep 14
Nov 14
Feb 15
May 15
Sep 15
Feb 16
May 16
Aug 16
Nov 16
Depth to Ground - mbgl


Standing Water Level - 27356 "Sunnyside"
Depth in Metres
0.00
5.00
10.00
15.00
20.00
25.00
Jun 07
Aug 07
Dec 07
Jan 08
Mar 08
Apr 08
May 08
Jun 08
Jul 08
Aug 08
Nov 08
Jan 09
Feb 09
Sep 09
Dec 09
Feb 10
May 10
Aug 10
Nov 10
Mar 11
Jun 11
Sep 11
Dec 11
Apr 12
Jun 12
Sep 12
Dec 12
Mar 13
Jul 13
Sep 13
May 14
Nov 14
Sep 15
May 16
Nov 16
Depth to Ground - mbgl


Standing Water Level - 44884
Depth in Metres
0.00
5.00
10.00
15.00
20.00
25.00
30.00
35.00
Mar 11
Jun 11
Sep 11
Nov 11
Apr 12
Jun 12
Sep 12
Dec 12
Mar 13
Jul 13
Sep 13
May 14
Sep 14
Nov 14
Feb 15
May 15
Sep 15
Feb 16
May 16
Aug 16
Nov 16
Depth to Ground - mbgl


Standing Water Level - 6249
Depth in Metres
0.00
5.00
10.00
15.00
20.00
Sep 09
Dec 09
Feb 10
May 10
Aug 10
Nov 10
Mar 11
Jun 11
Sep 11
Dec 11
Apr 12
Jun 12
Sep 12
Dec 12
Mar 13
Jul 13
Sep 13
May 14
Sep 14
Nov 14
Feb 15
May 15
Sep 15
Feb 16
May 16
Aug 16
Nov 16
Depth to Ground - mbgl


Standing Water Level - 901460
Depth in Metres
0.00
5.00
10.00
15.00
20.00
25.00
Dec 08
Jan 09
Mar 09
Apr 11
Jun 11
Sep 11
Dec 11
Apr 12
Jun 12
Sep 12
Dec 12
Mar 13
Jul 13
Sep 13
Jun 14
Nov 14
May 15
Sep 15
May 16
Nov 16
Depth to Ground - mbgl