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	06-11-2018
MOP end date	05-11-2025
Annual review start date	01-01-2018
Annual review end date	31-12-2018

I, Jacques du Toit, certify that this audit report is a true and accurate record of the compliance status of Sunnyside Coal Mine for the period January 1st 2018 until December 31th 2018, 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	**Jacques du Toit**
Title of authorised reporting officer	**General Manager - Open Cut Operations**
Signature of authorised reporting officer	
Date	09.05.2019

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1 STATEMENT OF COMPLIANCE

The compliance status of the Sunnyside Coal Mine as at 31st December 2018 is summarised in Table 1a. Non-compliances that occurred during the reporting period are listed in Table 1b, and non-compliances from previous reporting periods that still require management action.

Table 1a - Statement of Compliance

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

Table 1b - 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 EPL 12957	Schedule 3 Condition 3 L4.1	Operational noise not to exceed 35dB(A) L_{Aeq} 15minute, Noise limits at residence < 35dB(A) L_{Aeq} 15minute	Non-compliant	June 2018 attended noise monitoring had exceedances at two locations 37 & 38dB(A)	Section 6.4.3
EPL 12957	M2.1	Requirement to monitor concentration of pollutants discharged	Non-compliant	Deposited dust results for SD7 (Innisvale) November 2018 analysis not completed due to Laboratory crucible failure.	Section 6.1.3, 11.2
PA 06_0308 EPL 12957	Schedule 3 Condition 10 L5.1	Blast overpressure not to exceed 115dB for more than 5% of total number of blasts. Blast overpressure not to exceed 115dB for more than 5% of total number of blasts	Non-compliant	Airblast overpressure levels were exceeded on 11th of April and 14th May 2018	Section 6.3.2

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

Compliance status key for Table 1b

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 tenth 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 (consolidated). The AR follows the format required by the NSW Government Annual Review Guideline (October, 2015).

Covering the period from 1st January 2018 to 31st December 2018 (the reporting period), where relevant the AR provides information on historical aspects of the operation and longer term trends in environmental monitoring results.

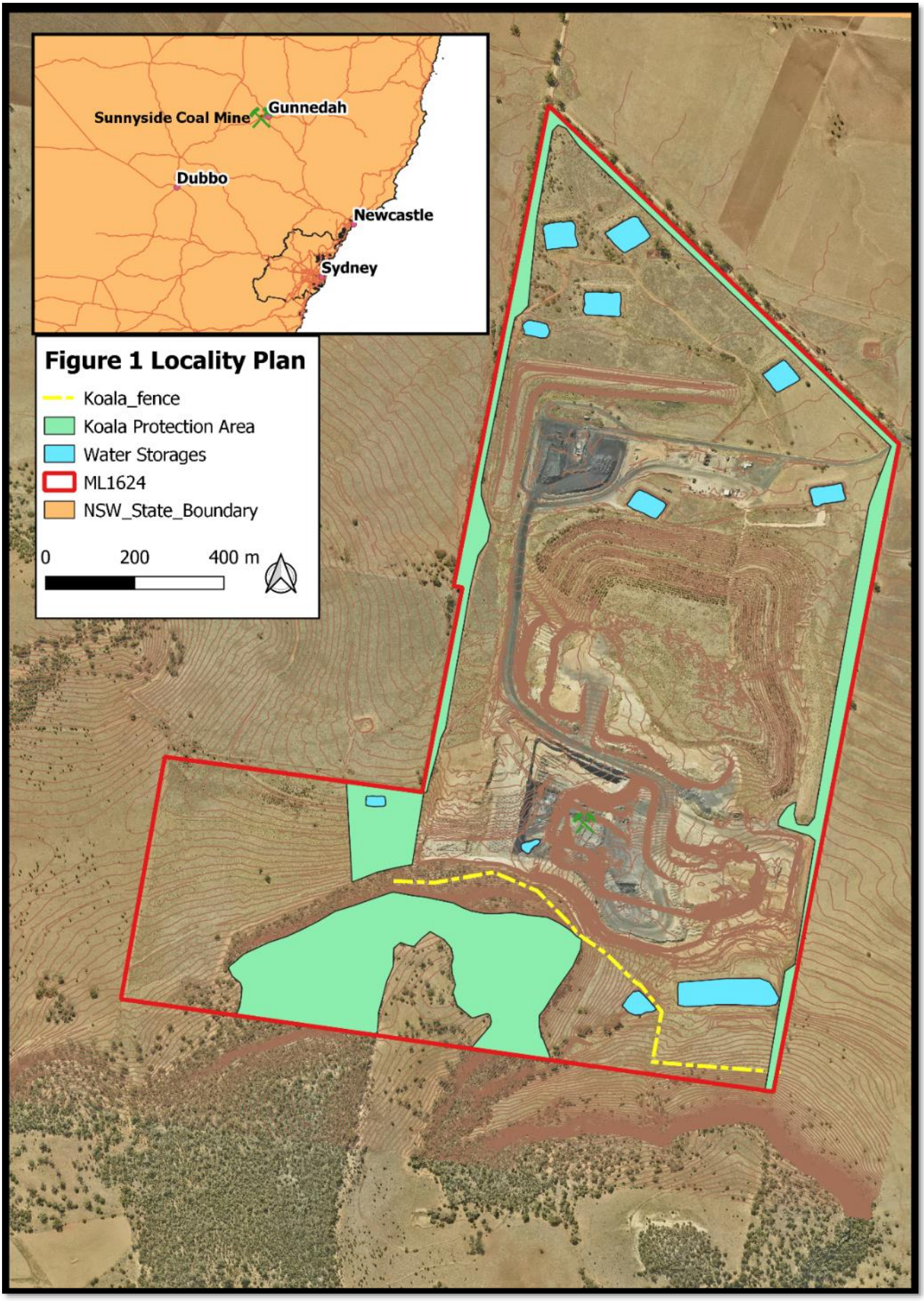
The Sunnyside Coal Mine is located within the Gunnedah Shire, approximately 15 km west of Gunnedah (Figure 1). The mine is owned by Namoi Mining Pty Ltd (NMPL) and operated by Whitehaven Coal Mining Pty Ltd. Both companies are wholly owned subsidiaries of Whitehaven Coal Limited (WCL).

Mining and coal transporting operations at SCM ceased in May 2013, with recommencement of mining activities on 12th September 2017.

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 Craig Sullivan, Operations Superintendent and Manager Mining Engineering - retains statutory responsibility for mining activities at the site. Contact: (02) 6741 9390
- Mr Jacques du Toit, Open Cut Operations - oversees Open Cut Operations for the Whitehaven Group. Contact: (02) 6741 9361.
- Mr Andrew Raal, Environmental Officer – oversees day to day environmental and rehabilitation performance across the site. Contact: (02) 6741 9361


Sunnyside Coal Mine
Gunnedah
Dubbo
Newcastle
Sydney
Figure 1 Locality Plan
Koala_fence
Koala Protection Area
Water Storages
ML1624
NSW_State_Boundary
0
200
400 m

3 APPROVALS

3.1 Tenements, Licences, and Approvals

Table 2.1 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 2.1 - Tenements, Licences and Approvals

Issuing / Responsible Authority	Type of Lease, Licence, Approval	Date of Issue	Expiry	Comments
Department of Planning and Environment (DP&E)	Project Approval (PA) 06_0308	24th September 2008	5th November 2020	PA modified December 2016 to update Annual Review period.
Environment Protection Authority (EPA)	Environment Protection Licence No. 12957	19th September 2017	N/A	Update to reflect recommencement of operations
Division of Resources and Geoscience (DRG)	ML 1624	5th November 2008	5th November 2029	
Division of Resources and Geoscience	Mining Operations Plan (MOP)	6th November 2018	5th November 2025	Granted after reporting period January 2019
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 reporting period included drilling, blasting and handling of waste rock/overburden material, coal mining, onsite crushing and transport of coal to Whitehaven

Gunnedah CHPP. Table 3.1 presents the Production Summary at the end of the reporting period.

Table 3.1 – 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]	673,188 m^3	2.291,716 m^3	1,500,000 m^3
ROM Coal/Ore	1 Mtpa [2]	0	515,702 t	500,000 t
Reject material	n/a	0	0	0
Saleable Product	n/a	0	364,366t	400,000 t

[1] Environmental Assessment

[2] PA 06_0308 Consolidated

4.2 Other Operations

4.2.1 Hours of Operations

Mining operations 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.

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.

No additional infrastructure other than alterations to unsealed roads for mining purposes.

4.2.3 Exploration Drilling

A number of infill diamond coring exploration holes were drilled within the pit or through the overburden dump. Holes sited on the overburden dump were backfilled, the others located within the pit operations have subsequently been mined through as part of mining operations.

4.3 Next Reporting Period

The mine production rates are planned for approximately 0.5Mt of ROM coal and approximately 1.5 million bank cubic metres (Mbcm) of overburden during the next reporting period.

Coal mining is scheduled to cease within the last quarter of 2019. Remaining stockpiled ROM coal will continue to be crushed and transported to Gunnedah CHPP which is likely to continue into first quarter 2020. Progressing rehabilitation to final landform will commence in 2019.

There is no planned vegetation clearing ahead of mining as disturbance footprint has reached maximum extent. Any ancillary vegetation clearing requirements or clearing as part of shaping to final landform will be conducted in accordance with the approved MOP.

5 ACTIONS REQUIRED FROM PREVIOUS ANNUAL REVIEW

Letter received form the Department of Planning and Environment NSW on the 7 May 2018 stated acceptance of 2017 annual report. No actions were required other than a request to include additional reporting as the mine had commenced production. Additional information requested is set out in Table 5.

Table 5 – Requests from previous AR

Dept. Planning and Environment requested reporting	Addressed in Document
Section 2 Introduction - please include the location of the koala habitat protection and enhancement areas in Figure 1.	Figure 1, p.8
Section 4 Operations Summary - please include records of the amount of coal transported from the site, as required by Schedule 3 condition 34 of the approval.	Table 4.1, p.10
Section 6.1 Air Quality - please include a summary of the PM10 monitoring data for the reporting period, and compare to the approval criteria, data from previous reporting periods and predictions in the Environmental Assessment (EA). This may be presented in graph form.	Section 6.1
Section 6.2 Biodiversity - please include a summary report of the ecological monitoring undertaken and SCM in December 2017.	Section 6.2
Section 6.3 Blasting - please include the total number of blasts undertaken during the reporting period.	Section 6.3
Section 6.4 Noise - please include a summary of the quarterly noise monitoring results.	Section 6.4
Section 6.7 Spontaneous Combustion – please provide further information on monitoring undertaken during the reporting period, including number of inspections and any remediation action undertaken	Section 6.7
Section 7 Water Management - please include the site water balance review, required to be undertaken annually as per the approved SCM Water Management Plan (October 2017). The site water balance reported in the Annual Review shall include all water inputs, outputs and storage at the completion of the reporting period.	Section 7
Section 9 Community - please include a table showing the date, subject, location and response actions for any complaint received during the reporting period, and a graph which compares the number and type of complaints received for the reporting period and the previous four reporting periods (i.e. five years in total).	Section 9

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 (consolidated) Schedule 3, Tables 7, 8 & 9, which are summarised below.

- Acceptable mean annual increase in deposited dust – 2 g/m2/month.
- Mean annual dust deposition (all sources) – 4 g/m2/month.
- Mean annual Total Suspended Particulate (TSP) matter (all sources) concentration – 90 μg/m3.
- Mean annual PM10 particulate level – 30 μg/m3.
- 24 hour average PM10 particulate level – 50 μg/m3.

Monitoring of deposited dust is undertaken on a continuous 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 implemented the following controls during the reporting period

- Training and discussion of dust during adverse weather conditions with equipment operators, including requirement to report any dust
- Reduced unsealed road haulage or cessation of operations during high rainfall events to maintain road surfaces in good condition
- Use of extra water cart as required during strong winds, and if any excessive dust is noticed
- Blasting restrictions during unfavourable metrological conditions
- Conducting inspections that align with our T.A.R.P process for adverse weather conditions and monitoring the whole operation, which includes, cessation of operations during extreme weather where dust can’t be controlled.

6.1.3 Dust Monitoring

Deposited Dust

Deposited dust monitoring data is given in Table 6.1.3a. Figure 2 gives the locations of the various deposited dust gauges maintained during the reporting period.

Table 6.1.3a Deposited Dust Monitoring Data Summary

				2018	2019
Site (Figure 2)	EPL ID no.	Property Name	Approval Criteria Annual mean – 4 g/m^2/month	Annual Mean Total Insoluble Solids (g/m^2/month)	Annual Mean Total Insoluble Solids (g/m^2/month)
SD1	1	Ferndale	4	0.9	3.7
SD3	2	Plainview	4	1.7	3.5
SD4		Lilydale	4	0.8	1.7
SD5	4	Ivanhoe	4	3.3	3.1
SD6	5	Illili	4	2.3	2.7
SD7	6	Innisvale	4	3.1	1.5
SD8		Woodlawn	4	0.9	1.1

Annual average limit for deposited dust was not exceeded at any location during the reporting period. It should be noted that in November 2018 analysis for SD7 was lost due to a laboratory crucible failure.

HVAS/PM10 Dust

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 (Figure 2).

Summary of PM_{10} results since 2009 are given in Table 6.1.3b. There was no annual mean values exceedance above criteria of 30 µg/m³, and results are also below the EA annual prediction of 22.1 µg/m³. There were two exceedances of the 24h limit of 50 µg/m³, the first on 21st November 2018 with a reading of 51.3 and on 27th December 2018 with a reading of 57 µg/m³. Values were marginally above the set standard of 50 µg/m³. Investigation into the elevated readings found that the sampler noted high red dust cover on the filter paper, similar

high readings were recorded by other operations in the region; this was also confirmed with communication with ALS laboratory who analyzed the samples. Cause of the elevated dust readings is subscribed to the state wide dust storms that occurred in November and December 2018.

Table 6.1.3b – PM10 Monitoring Summary

Year	Annual Guideline 30µg/m3	24 Max limit µg/m³	Annual Mean µg/m³	Number Exceedances 24h limit µg/m³	Max 24h µg/m³
2009	30	50	21.05	2	109.0
2010	30	50	9.27	0	33.0
2011	30	50	9.72	0	25.4
2012	30	50	13.30	0	49.3
2013	30	50	13.61	0	45.2
2014	30	50	12.75	0	30.3
2015	30	50	11.46	0	29.7
2016	30	50	10.17	0	31.3
2017	30	50	9.70	0	31.4
2018	30	50	19.75	2	57.0

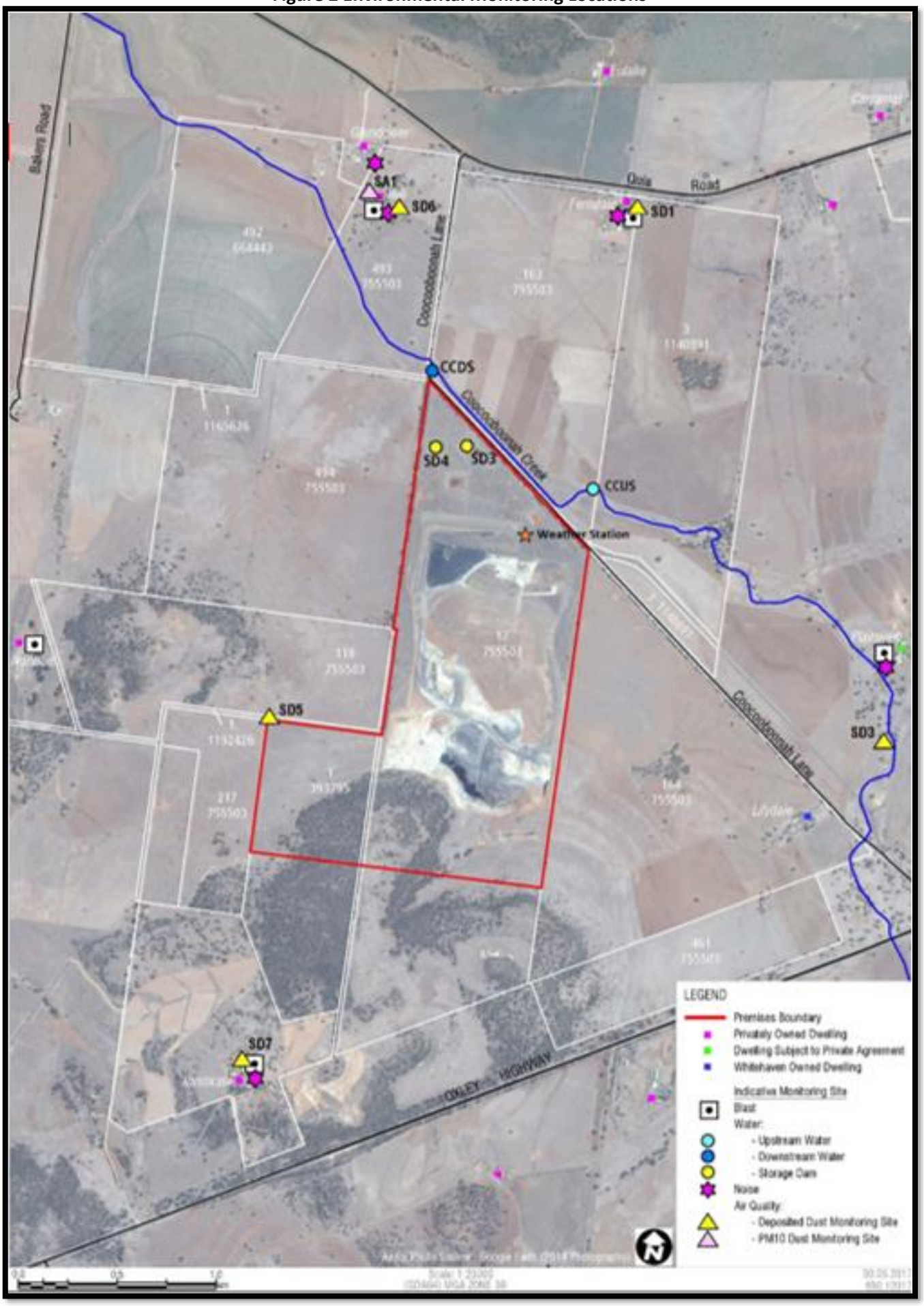
6.1.4 Key Environmental Performance/Management Issues

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.

6.2.3 Ecological Monitoring

Detailed ecological monitoring is undertaken annual by consultants at Sunnyside Mine. BioBanking Assessment Methodology (BBAM) is used to document progression to closure criteria. Monitoring transects and areas are given in Figure 3, which includes;

- Three rehabilitation transects,
- An analogue transect,
- Fauna survey locations,
- Transects where spot assessment techniques are utilised, and
- Night time spot lighting for koalas is undertaken.

Key result from the 2018 report are listed in Tables 6.2.3 a & b for analogue and rehabilitation sites. Monitoring will continue and additional transects added as the mine goes into closure and more areas are rehabilitated. Future monitoring reports will include comparison of previous monitoring to get an indication on progression towards completion criteria.

Figure 3 BBAM monitoring sites and vegetation communities

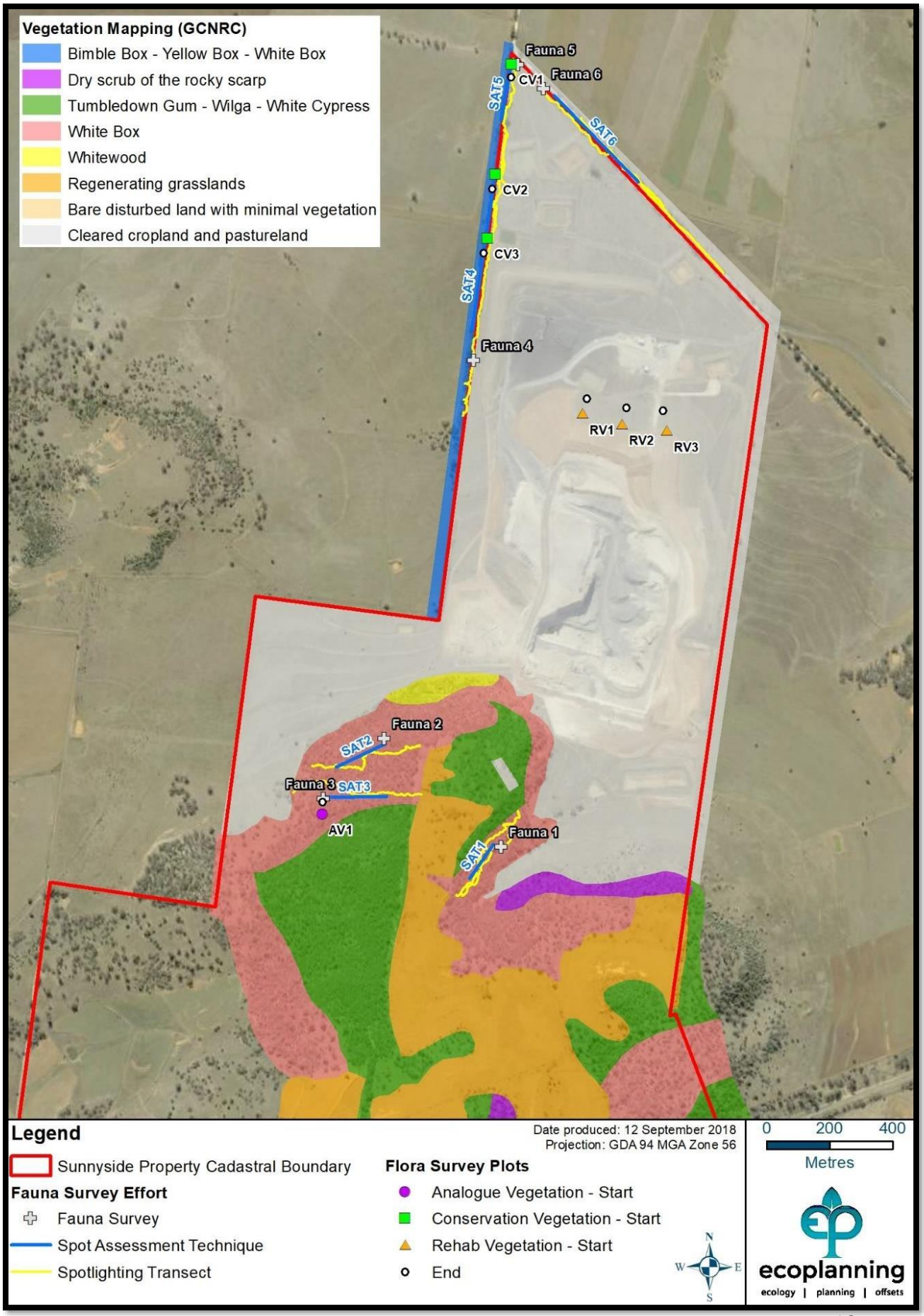


Table 6.2.3a – Benchmark and Analogue site biometric values representative of known Koala habitat at Sunnyside Coal Mine

Plot Name	NPS	NOS	NMS	NGCG	NGCS	NGCO	EPC	NTH	OR	FL
Benchmark*	23	6-25%	0-5%	33-45%	33-45%	3-5%	0-5	1	1	30
Analogue AV1	15	7%	5.5%	22%	38%	0%	0	0	1	27

* Based on DECCW (2008) Biobanking Vegetation Benchmarks Database for Namoi Catchment NA226 White Box grassy woodland of the Nandewar and Brigalow Belt South Bioregions. NPS – Native Plant Species Richness; NOS – Native Overstorey Cover; NMS - Native Midstorey Cover; NGCG – Native Groundcover Grasses; NGCS – Native Groundcover Shrubs; NGCO – Native Groundcover Other; EPC – Exotic Plant Cover; NTH – Number of Trees with Hollows; OR - Proportion of overstorey species occurring as regeneration; and FL – Total length of fallen logs.

Table 6.2.3b – Benchmark and Analogue site biometric Native Species Richness and Native Overstorey Cover compared to Rehabilitation Area sites at Sunnyside Coal Mine.

Plot Name	Native Plant Species (NPS)	Native Overstorey (NOS)
Benchmark*	**23**	**6-25%**
Analogue AV1	**15**	**7%**
RV1	15	0%
RV2	15	0.5%
RV3	12	0%
Mean	**14.0**	**0.2%**

* Based on DECCW (2008) Biobanking Vegetation Benchmarks Database for Namoi Catchment NA226 White Box grassy woodland of the Nandewar and Brigalow Belt South Bioregions

6.2.4 Weeds

Site Weed inspections are undertaken quarterly by consultants (Hunter Land Management), and annually during the detailed ecological monitoring (BBAM). Main weeds of concern are Prickly Pear and African Box Thorn. Due to dry conditions (reduced effectiveness of herbicides) and decreasing number of weeds no weed treatment was undertaken in 2018. A site wide program of weed spraying for Prickly Pear, African Box Thorn and Saffron Thistle will be undertaken in 2019.

6.2.5 Feral Animal Control

Two camera traps were established during the reporting period to monitor wildlife numbers and movement at Sunnyside during the reporting period. Results indicated a scarcity of Wild dogs, cats, pig, rabbit, hare and deer, with a low population of foxes, and high abundance or kangaroos.

No Feral animal control was undertaken in 2018 due to scarcity and sheep farming on southern boundary, which makes using baits and trapping problematic. A risk assessment for the use of firearms for direct control on the mine site was undertaken but a decision against their use was made.

6.2.6 Koala Management

During the reporting period 3 koalas were spotted onsite by mine personal, additionally 4 kolas were noted during the annual ecological survey. The koala fence was inspected each month during the environmental inspections, and remains in functional condition. Additional plantings of 1,900 tree tube stock were planted in June 2018 along the koala wildlife corridors. Tree species were majority koala palatable eucalyptus. As part of the annual ecological monitoring sound recorders were used for bat and koala identification to determine activity and numbers. Results will be reported in the 2019 Annual Review as the analysis of the data has not been completed at time of reporting. Camera traps were installed in November 2018, to monitor large macro fauna movements and numbers. Data will be downloaded quarterly.

6.2.7 Performance/Management Issues

Additional areas of koala habitat and ecological corridors were planted, and isolated from operations by fencing (Figure1).

Investigation into poor survival rate of planted tube stock on the south-eastern boundary from 2017 planting indicated that the 'root' cause was drought stress, and lack of acclimatization of the seedlings. To improve success rate of tube stock the following actions were taken;

- Seedlings were covered by cartons to give them greater protection from harsh climatic conditions
- Post planting watering was undertaken for every 2 weeks for 5 months to allow the plants to acclimatize and develop a more a more robust root system
- Camera traps have been setup to monitor numbers of herbivores on site. Information gathered can be used to determine if carrying capacity of the land is being exceeded. This also allows for culling permits to be obtained to reduce grazing pressure.

6.2.8 Proposed Improvements to Environmental Management

Improvements will include;

- Additional infill tube stock planting for plants lost due to adverse weather and animal predation
- Weed spraying of prickly pear and African boxthorn

6.3 Blasting

6.3.1 Criteria

Blasting criteria for the SCM are noted in PA 06_0308, and Condition L5 of EPL 12957, and included below:

The overpressure level from blasting operations must not:

- exceed 115dB (Lin Peak) for more than 5% of the total number of blasts over each reporting period; and
- exceed 120dB (Lin Peak) at any time, at any residence on privately-owned land.

Ground vibration peak particle velocity from the blasting operations must not:

- exceed 5mm/s for more than 5% of the total number of blasts during each reporting period; and
- exceed 10mm/s at any time, at any residence on privately-owned land.

6.3.2 Key Environmental Performance/Management Issues

There were in total 15 blast in the pit during the reporting period. Two blasts undertaken during the reporting period marginally exceeded the <115dB blast overpressure criteria for 5% of the total number of blasts. Specialist blasting consultants were used to assist in

investigating the cause of the high over pressure readings and to adjust the blast modelling accordingly. Investigation found that in a localised section of the mine the geology is highly fractured and jointed that allowed for the release of blast pressure. Geological structure has since been incorporated into the blast design to reduce over pressure values. Results for the reporting period are provided below in Table 66.3.2.

The exceedances were reported to Department of Planning and Environment, who issued an official warning letter for the exceedances.

Table 6.3.2 Blast Monitoring Results

BLASTS 2018					
Blast ID	**Date**	**Station**	**Vibration (5 mm/s)**	**Overpressure (115dB)**	**Time**
18_001	05-Jan-18	Ivanhoe	0.65	105.7	11:49:53 AM
18_001	05-Jan-18	Plainview	0.27	104.3	11:49:53 AM
18_001	05-Jan-18	Innisvale	0.5	103.3	11:49:53 AM
18_001	05-Jan-18	Illili	0.28	102.6	11:49:53 AM
18_001	05-Jan-18	Ferndale	0.26	101.3	11:49:53 AM
18_002	16-Mar-18	Ivanhoe	0.99	93.7	11:56:12 AM
18_002	16-Mar-18	Plainview	0.44	103.3	11:56:12 AM
18_002	16-Mar-18	Innisvale	0.27	97.7	11:56:12 AM
18_002	16-Mar-18	Illili	0.89	95.6	11:56:12 AM
18_002	16-Mar-18	Ferndale	0.65	98.7	11:56:12 AM
18_003	11-Apr-18	Ivanhoe	0.89	110.1	12:12:21 PM
18_003	11-Apr-18	Plainview	0.77	117.9	12:12:21 PM
18_003	11-Apr-18	Innisvale	0.62	111.9	12:12:21 PM
18_003	11-Apr-18	Illili	0.65	113	12:12:21 PM
18_003	11-Apr-18	Ferndale	0.76	115.9	12:12:21 PM
18_004	19-Apr-18	Ivanhoe	1.72	105.3	12:07:43 PM
18_004	19-Apr-18	Plainview	0.45	106.7	12:07:43 PM
18_004	19-Apr-18	Innisvale	0.55	106.8	12:07:43 PM
18_004	19-Apr-18	Illili	0.96	101.2	12:07:43 PM
18_004	19-Apr-18	Ferndale	0.81	100.7	12:07:43 PM
18_005	14-May-18	Ivanhoe	1.26	110.6	12:00:33 PM
18_005	14-May-18	Plainview	1.04	115.8	12:00:33 PM
18_005	14-May-18	Innisvale	1.02	107.2	12:00:33 PM
18_005	14-May-18	Illili	1.9	115.7	12:00:33 PM
18_005	14-May-18	Ferndale	1.9	117.7	12:00:33 PM
18_006	29-Jun-18	Ivanhoe	0.65	104.8	12:45:23
18_006	29-Jun-18	Plainview	0.21	110.3	12:45:23
18_006	29-Jun-18	Innisvale	0.24	106.2	12:45:23
18_006	29-Jun-18	Illili	0.59	108.4	12:45:23

BLASTS 2018					
Blast ID	**Date**	**Station**	**Vibration (5 mm/s)**	**Overpressure (115dB)**	**Time**
18_006	29-Jun-18	Ferndale	0.39	110.3	12:45:23
18_007	05-Jul-18	Ivanhoe	0.4	0.4	12:59:48
18_007	05-Jul-18	Plainview	0.19	101.3	12:45:23
18_007	05-Jul-18	Innisvale	0.25	106	12:45:23
18_007	05-Jul-18	Illili	0.32	100.3	12:45:23
18_007	05-Jul-18	Ferndale	0.24	100	12:45:23
18_008	12-Jul-18	Ivanhoe	0.19	98.5	11:58:32
18_008	12-Jul-18	Plainview	0.17	103.6	11:58:32
18_008	12-Jul-18	Innisvale	0.08	100.5	11:58:32
18_008	12-Jul-18	Illili	0.11	98.6	11:58:32
18_008	12-Jul-18	Ferndale	0.16	100.7	11:58:32
18_009	30-Jul-18	Ivanhoe	0.62	103.7	12:53:16
18_009	30-Jul-18	Plainview	0.99	107.7	12:53:16
18_009	30-Jul-18	Innisvale	0.28	109.5	12:53:16
18_009	30-Jul-18	Illili	0.61	104.9	12:53:16
18_009	30-Jul-18	Ferndale	0.64	104.4	12:53:16
18_010	30-Aug-18	Ivanhoe	0.31	108	12:49:15
18_010	30-Aug-18	Plainview	0.44	103	12:49:15
18_010	30-Aug-18	Innisvale	0.71	102.6	12:49:15
18_010	30-Aug-18	Illili	0.61	103.7	12:49:15
18_010	30-Aug-18	Ferndale	0.31	104.4	12:49:15
18_011	01-Sep-18	Ivanhoe	0.38	100.6	10:06:20
18_011	01-Sep-18	Plainview	0.21	109.6	10:06:20
18_011	01-Sep-18	Innisvale	0.16	97.9	10:06:20
18_011	01-Sep-18	Illili	0.21	103.6	10:06:20
18_011	01-Sep-18	Ferndale	0.25	101.4	10:06:20
18_012	11-Sep-18	Ivanhoe	0.8	104	15:04:27
18_012	11-Sep-18	Plainview	0.41	109	15:04:27
18_012	11-Sep-18	Innisvale	0.4	105.7	15:04:27
18_012	11-Sep-18	Illili	0.48	105	15:04:27
18_012	11-Sep-18	Ferndale	0.77	103.8	15:04:27
18_013	29-Oct-18	Ivanhoe	0.08	99.1	12:57:55
18_013	29-Oct-18	Plainview	0.04	101.2	12:57:55
18_013	29-Oct-18	Innisvale	0.05	101.4	12:57:55
18_013	29-Oct-18	Illili	0.02	99.2	12:57:55
18_013	29-Oct-18	Ferndale	0.04	99.5	12:57:55
18_014	14-Dec-18	Ivanhoe	1.03	100.6	15:04:07
18_014	14-Dec-18	Plainview	0.25	96	15:04:07
18_014	14-Dec-18	Innisvale	0.71	96.5	15:04:07
18_014	14-Dec-18	Illili	0.33	91.9	15:04:07

BLASTS 2018					
Blast ID	**Date**	**Station**	**Vibration (5 mm/s)**	**Overpressure (115dB)**	**Time**
18_014	14-Dec-18	Ferndale	0.24	102.3	15:04:07
18_015	21-Dec-18	Ivanhoe	0.78	103.8	10:16:52
18_015	21-Dec-18	Plainview	0.43	112.5	10:16:52
18_015	21-Dec-18	Innisvale	0.35	107.2	10:16:52
18_015	21-Dec-18	Illili	0.36	103.6	10:16:52
18_015	21-Dec-18	Ferndale	0.48	107.1	10:16:52

6.3.3 Proposed Improvements to Environmental Management

No improvements are proposed for the next reporting period.

6.4 Operational Noise

6.4.1 Criteria

Operational noise criteria for SCM are specified in PA 06_0308 and EPL 12957, as follows:

Location	***Day***	***Evening***
	$L_{Aeq\ (15\ min)}$	$L_{Aeq\ (15\ min)}$
All privately-owned land	*35*	*35*

6.4.2 Environmental Management Measures

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

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

- On-going site road maintenance using the mine-based grader; and
- Regular equipment maintenance.

6.4.3 Noise Monitoring Results

Attended monitoring was conducted quarterly by various consultants. Monitoring is repeated for each site over a 3 day period. A summary of the results for each quarter are presented in Table 6.4.3. with the maximum recorded value being listed.

Table 6.4.3 - Summary of quarterly noise monitoring results

2018 Noise Monitoring Summary Monitoring repeated over 3 days, only highest reading shown				
Quarter	**Station**	**Period**	**L_{Aeq} 15min**	**Exceedance**
Q1 Feb 2018	Ferndale	Day	IA	No
	Ferndale	Evening	IA	No
	Glendower	Day	IA	No
	Glendower	Evening	<20	No
	Illili	Day	<25	No
	Illili	Evening	IA	No
	Innsvale	Day	IA	No
	Innsvale	Evening	IA	No
	Plainview	Day	<25	No
	Plainview	Evening	IA	No
Q2 June 2018	Ferndale	Day	<30	No
	Ferndale	Evening	IA	No
	Glendower	Day	IA	No
	Glendower	Evening	37	Yes
	Illili	Day	38	Yes
	Illili	Evening	IA	No
	Innsvale	Day	IA	No
	Innsvale	Evening	IA	No
	Plainview	Day	IA	No
	Plainview	Evening	IA	No
Q3 Sept 2018	Ferndale	Day	IA	No
	Ferndale	Evening	IA	No
	Glendower	Day	28	No
	Glendower	Evening	IA	No
	Illili	Day	30	No
	Illili	Evening	IA	No
	Innsvale	Day	34	No
	Innsvale	Evening	IA	No
	Plainview	Day	31	No
	Plainview	Evening	IA	No
	Woodlawn	Day	35	No
	Woodlawn	Evening	IA	No
Q4 Dec 2018	Ferndale	Day	IA	No
	Ferndale	Evening	32	No
	Glendower	Day	31	No
	Glendower	Evening	IA	No
	Illili	Day	35	No

2018 Noise Monitoring Summary Monitoring repeated over 3 days, only highest reading shown				
Quarter	**Station**	**Period**	**L_{Aeq} 15min**	**Exceedance**
	Illili	Evening	IA	No
	Innsvale	Day	30	No
	Innsvale	Evening	IA	No
	Plainview	Day	IA	No
	Plainview	Evening	IA	No

6.4.4 Key Environmental Performance/Management Issues

In June 2018 noise levels exceeded criteria levels at two locations. Consultant report indicated that exceedances were likely due to adverse weather and inversion conditions. Repeated monitoring on the same day after temperatures had warmed slightly, noise levels were found to be below criteria limits. The exceedances were reported to Department of Planning and Environment, who issued an official warning letter for the exceedances.

Sound power testing of all onsite equipment was undertaken during the September, noise levels were within expected equipment noise limits.

6.4.5 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 6.5.2. 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 Consolidated.

6.5.2 Consultation

No soil stripping of previously undisturbed areas 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. Known heritage sites are listed in Table 6.5.2

Table 6.5.2 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		

6.5.3 Key Environmental Performance/Management Issues

The axe grinding grove that is located south of the mine pit is covered with conveyer belting for preservation, and is inspected quarterly, and the location is included in the blast exclusion zone plans. Quarterly inspections found no impact on the heritage site.

6.5.4 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 was evident during the care and maintenance phase of the site. The Spontaneous Combustion Management Plan was reviewed in relation to the recommencement of operations, and monitoring of the affected areas has been ongoing.

Monthly site environmental inspection of the operations are carried out which include monitoring for signs (visual & odour) of spontaneous combustion. No evidence of spontaneous combustion in the pit were found during the reporting period. A few hot spots were found during the year at the ROM stockpile where mine coal is stored and crushed prior to transport to the Gunnedah CHPP. The hot spots were opened up to cool the areas down and prevent the build-up of heat and potential ignition. As the coal had very low sulphur content water from the water cart is applied were applicable.

6.7.2 Key Environmental Performance/Management Issues

No incidence of inpit spontaneous combustion occurred and there was an overall reduction in the ROM stock pile compared to previous years.

6.7.3 Proposed Improvements to Environmental Management

No improvements are proposed within the next reporting period.

6.8 Bushfire Management

6.8.1 Environmental Management Measures

SCM is located within an area of cleared agricultural land.

Measures to deal with bushfires include the following;

- Hot work permit system to manage activities that could potentially cause fire.
- There are at all times at least one water cart on site that can be utilized for firefighting.
- A fully equipped firefighting trailer is kept onsite.
- Whitehaven Coal have engaged a firefighting contract company LRM Fire and Rescue on a retainer bases to assist in case of any fire breakout.
- Monthly inspection of site housekeeping and waste management to prevent build-up of waste and other fire risk issues.

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 6.9.

Table 6.9 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	Two exceedances.	Trending was down, but major impact from dust storms	Nil
Biodiversity	EIS prediction of no impact on known koala population.	No recorded impact on koala population. No koala deaths recorded onsite.	Nil	Additional tree planting in the koala corridors
Heritage	EIS prediction of potential blast	No recorded impact on site.	Nil	Heritage site inspected quarterly

	impact on a recorded site.			to ensure precautionary measures still in place.
Spontaneous Combustion	EIS prediction of no material spontaneous combustion	No inpit spontaneous combustion found during the year.	Nil	Ongoing implementation of Spontaneous Combustion Management Plan.
Noise	35dB	Two exceedances	Subsequent monitoring has had no non-conformances	Review of sound power testing, training workforce on noise requirements
Blasting	<115dB overpressure	Two blasts exceeded the criteria	Redesign of blast modelling to incorporate changed conditions	Specialist consultants appointed to identify cause and actions to be taken

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 dams within the disturbed area of the mine limits the opportunity for discharge of runoff from mine-disturbed area, i.e. after appropriate settling 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, 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, 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).

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.

Summary of water quality results are given in Table 7.1.2, locations are shown on Figure 2, and complete surface water quality monitoring results are provided in Appendix 1.

Table 7.1.2 Summary Surface Water Monitoring Results

Storage	No. Samples	Oil and Grease	Conductivity µS/cm	pH
SD4	0	-	-	-
Production Bore Dam	4	<5	4442	8.2
Void	4	<5	6270	8.3
SB4	1	<5	6340	8.43
SB3	1	<5	6410	8.51
SB2	1	<5	6770	8.33
Void	2	<5	6580	8.1

Quarterly monitoring results show that water quality within onsite storages was generally consistent with historical analysis. Due to dry conditions and high temperatures majority of water storages were dry during the year and only were able to be sampled intermittently.
All samples taken had no oil or grease present, conductivity remained consistent around 6,100 µS/cm, with pH being slightly alkaline (8.2) in line with historic water quality for the area.

There were no wet weather discharges during the reporting period.

7.1.3 Key Environmental Performance/Management Issues

No non-conformances or changes were made to surface water management program 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

SCM groundwater licence (WAL 29537) is for 120 units from the Gunnedah - Oxley Basin. Groundwater Sources used during the reporting period was approximately 14.4ML with additional 47ML rainfall capture (Table 7.1.5a).

Table 7.1.5a - Water Take

Extraction Point	Type	Monitoring	Extraction ML
Werona Bore	Bore hole	Flow meter	23.1ML
Bore in historic underground working	Bore hole	Flow Meter	1.95ML
Pit Void	Subsurface seepage into pit	Estimation based on modelling	18.25ML
Surface storage dams	Rainfall capture	Survey and estimation	47ML
		Total	**90.3ML**

Water storage on site at end of reporting year was limited to the in pit void dam and the bore dam which receives water from the Werona bore, year-end water balance is given in table 7.1.5b. Detailed water balance report was undertaken by an independent consultant (SLR) in August 2018, and is attached as an appendix.

Table 7.1.5b - Water Take

Water Storage	Start Reporting	End Reporting
Pit Void	6.2 ML	3.9 ML
Production bore dam	4.5 ML	4.35 ML

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 7.2.2. 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 7.2.2 - Groundwater Monitoring Points

Site ID (see Figure 2)	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

7.2.2.1 Groundwater levels

Groundwater levels have lowered slightly in sync with reduced rainfall recharge, reduction is more or less constant across the monitoring area (Figure 4.a & 4b).

Figure 4a - Monitoring piezometer water depth

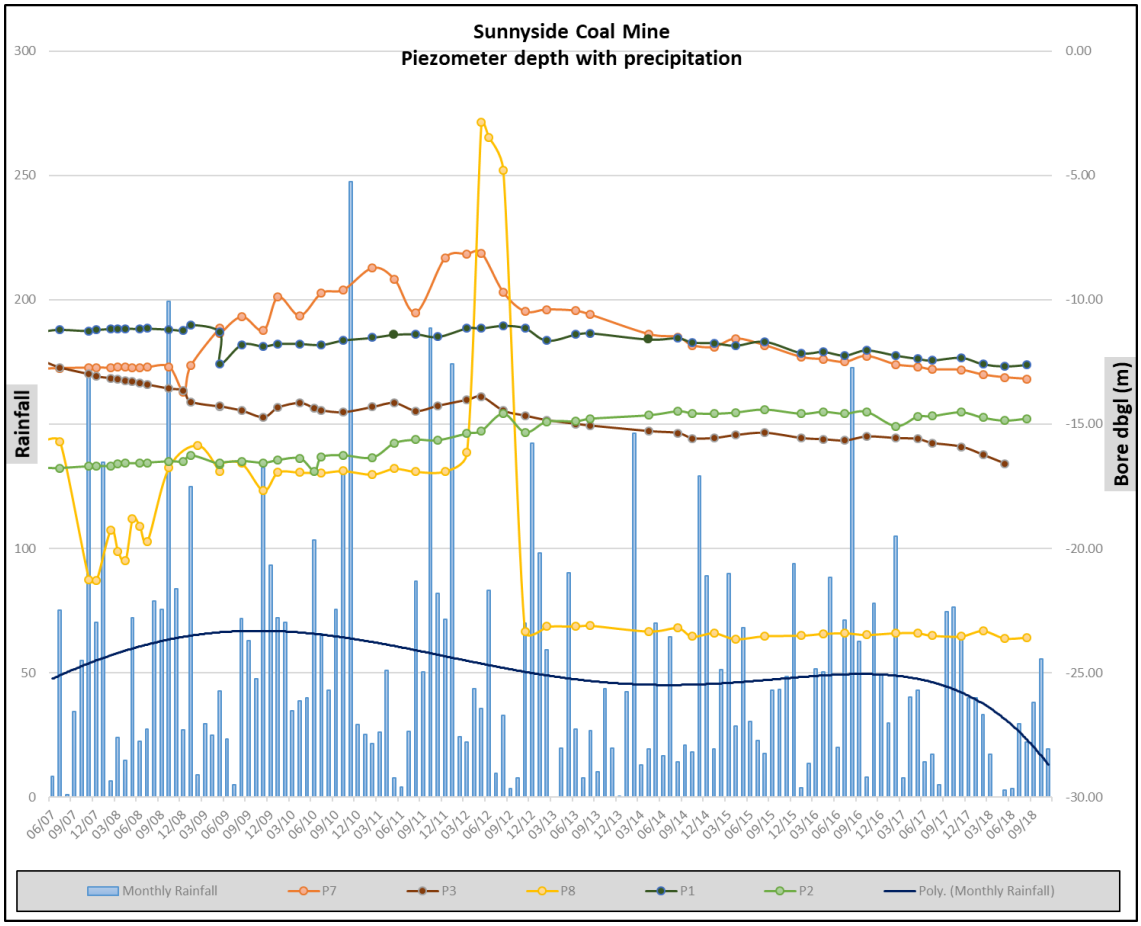
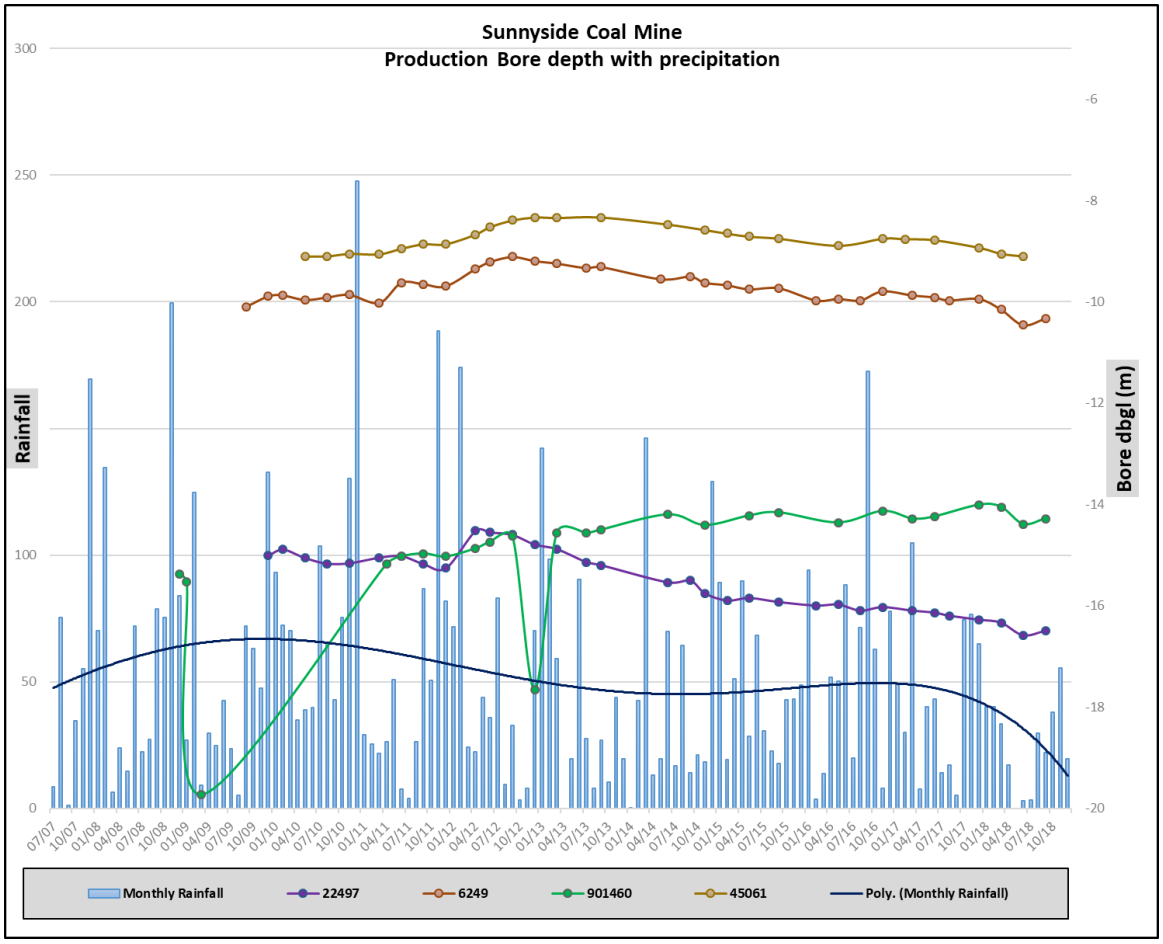


Figure 4b Production bore water depth



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). Groundwater has constant quality (very low metals, and pH between7.5-8) across the monitoring region except for sodium and associated conductivity which varies depending on local geology and groundwater source. Sodium levels fluctuate from 300mg/l (Ivanhoe bore) to 2,000mg/l (Piezometer P3). Piezometer P3 Total Dissolved Solids (TDS) levels (9,595 mg/L) were above the guidelines (4,000mg/L), but are within long-term values which range between (7,230mg/l to 9,890mg/l).

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 3.9ML of water was held in the pit from rainfall and groundwater seepage. This water is contained within the void itself, and within a separate void water dam within the pit.

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.

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.

7.2.4 Key Environmental Performance/Management Issues

Pumping from the Werona Production bore continued and due to dry conditions and shortage of water on site, water from the historic underground working was utilised from an access bore.

7.2.5 Proposed Improvements to Environmental Management

Water demand modelling and usage optimisation will be undertaken to deal with drought conditions.

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 8.1.1.

Table 8.1.1 Rehabilitation Status

Mine Area Type [1]	Previous Reporting Period	This Reporting Period (Actual)	Next Reporting Period (Forecast)
	2015/17(ha)	2016/18 (ha)	2018 (ha)
A. Total Mine Footprint	231.3	231.4	231.4
B. Total Active Disturbance	73.6	74.6	74.6
C. Land Being Prepared for Rehabilitation	0	0	18ha
D. Land Under Active Rehabilitation	31.2	31.2	31.2
E. Completed Rehabilitation	0	0	0

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

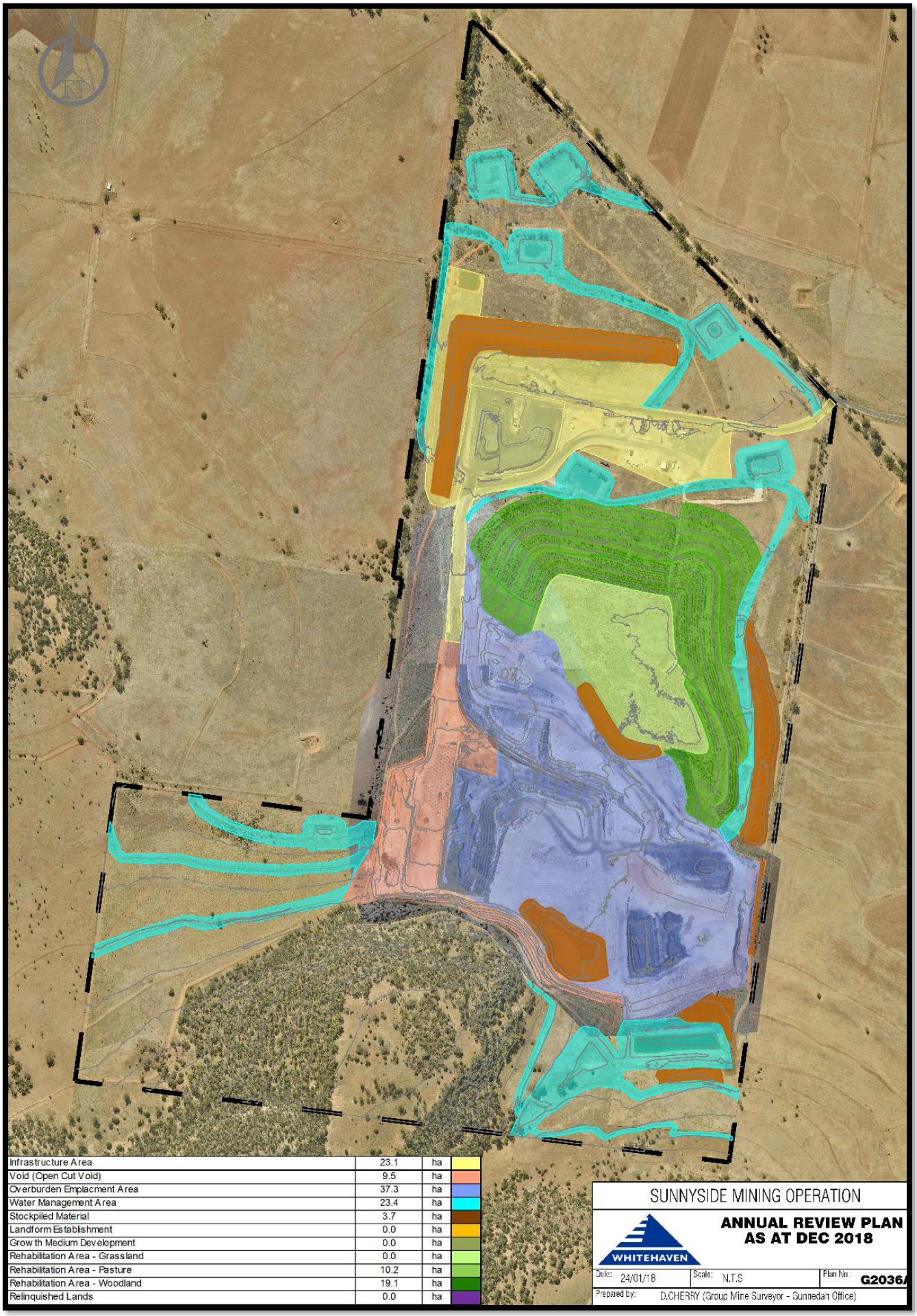
8.1.2 Post Rehabilitation Land Uses

The overall closure goal for the Sunnyside Coal Mine is to establish a stable and safe landform that is commensurate with the surrounding topography and which maximises the return to an appropriate agricultural land use comparable to the pre-mining land use, but is considerate of the fact that the landform is a backfilled mining area.

The post-mining landform will include approximately 30.5 hectares (ha) of land rehabilitated with woodland species to enhance biodiversity values of the area, with additional, ±17.6 ha of trees planted on areas undisturbed by mining activities along the eastern, northern and western boundaries of the property to enhance the wildlife corridors. Areas to be rehabilitated to pasture will be around 53ha.

Coal mining operations are scheduled to cease in the last quarter 2019, after which the closure MOP will be implemented.

Figure 5 Status of Mining and Rehabilitation



8.1.3 Rehabilitation Undertaken

There was no additional rehabilitation undertaken on site during the reporting period, other than additional tree planting (1,900) in the koala corridors and habitat zones.

8.1.4 Rehabilitation Monitoring

Monitoring consists of;

- Quarterly monitoring for weeds and feral animals by Hunter Land Management (HLM)
- Monthly site inspection by site environmental officer for weeds, feral animals, visual condition of planted tube stock and for signs of erosion.
- A detailed annual ecological assessment of rehabilitated areas and analogue sites by consultant ecologists.
- Two camera traps were installed in 2018 to monitor for feral animal abundance and wildlife movement.

8.1.5 Weeds Management

No weed management activities were undertaken during the reporting period other than monitoring. Budget has been allocated for Prickly Pear, Saffron Thistle, and African boxthorn treatment (spraying) in 2019.

8.1.6 Renovation or Removal of Buildings

No buildings or infrastructure were removed or dismantled during the reporting period.

8.1.7 Other Rehabilitation Undertaken

Additional area of subsoil (60-80m^3) was found in the south-western section of the pit and was subsequently sampled and found suitable for rehabilitation. Material was stockpiled separately for rehabilitation purposes.

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

There were no activities undertaken outside of the approved MOP. A closure MOP was developed including a redesign of the final landform for the void to make it free draining post closure.

8.1.10 Trials, Research Projects and Initiatives

No rehabilitation trials, research projects or other initiatives were undertaken during the reporting period. Redesign of final void landform to make it free draining.

8.1.11 Key Issues to Achieving Successful Rehabilitation

Two key issues to achieving successful rehabilitation are:-

- Design of final landform stability and drainage,
- Having good quality growth medium/topsoil, and
- Burial of all carbonaceous material at depth.

Final landform design is given in the recently (Jan 2019) approved Closure MOP. Gypsum and other soil ameliorants will be applied as required to ensure a good quality growth medium. Drilling for the identification of carbonaceous material in overburden stockpiles was undertaken. Results were published in the Closure MOP. Infill drilling or excavation of test pits during rehabilitation of the overburden dump will be undertaken to identify any potential carbonaceous material close to surface of the final landform.

8.2 Actions for Next Reporting Period

- Planned cessation of coal extraction activities in last quarter 2019, after which all earthworks will be focused on developing final landform.
- Infill planting of tree tube stock, and seeds in the koala habitat zone to replace dieback due to drought and animal predation.

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 was received during the reporting period. Complaint was from a neighbouring property regarding a 'metallic' taste in their rain water tank. Tank was checked for foreign matter and detailed water sample taken. No water quality issues were found and the water was determined safe to drink.

Last five years of complaints are listed in Table 9. Due to the low number of complaints graphing the data is not practical.

Table 9 - Rehabilitation Status

Community complaints			
Year	**Number of complaints**	**Aspect**	**Comment**
2018	1	Water	Metallic taste in rainwater tank
2017	None		
2016	1	Air quality	Odor and fumes from mine
2015	None		
2014	None		

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

Community contributions are managed regionally by Whitehaven Coal corporate office.

10 INDEPENDENT AUDIT

An Independent Environmental Audit (IEA) was undertaken by ERM in 2016.

Non-compliances with project approvals identified by the IEA were risk ranked by the auditor in accordance with the compliance status key for

Table 1b, and SCM subsequently developed an Audit Action Plan for these non-compliances.

Outstanding items from the 2016 Audit Action Plan, and how they are being addressed, are summarised in Table 10.

Table 10 2016 IEA Outstanding Action Table

Condition/Plan	IEA Proposed Action	IEA Action Plan Timing
Statement of Commitments		
9.12	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).	Details of works are included in the closure MOP. Trees (1,900) were planted in June 2018, with follow up watering. Infill planting will be done in 2019.
9.20	Activities described in the Rehabilitation and Landscape Management Plan were not undertaken in previous periods because of low feral species prevalence. Pig trapping is ongoing.	Ongoing feral animal control, two camera traps established to monitor animal numbers and movement.
11.1	Identify areas suitable for fencing to encourage natural regeneration in those boundary corridors as stated.	Koala habitat areas where tree planting took place were separated from operational activity by fencing.
14.3	No evidence of SMU segregation aside from topsoil emplacement.	Soil bunds were sampled for quality identification, subsoil found in pit was sampled for suitability for use in rehabilitation. Overburden dump was drilled to confirm type and location of material in dump.
14.4	Recommended that soil pH is recorded during soil management and emplacement.	Soil testing of material suitable for rehabilitation is undertaken prior to stripping and placement.
14.5	If mining is recommenced in future, recommendation for sediment fencing around bare stockpiles.	Sedimentation fencing was installed in 2018 at key areas. Maintenance of sedimentation fencing will be undertaken in 2019 as required.
14.6	Topsoil stockpiles exceed committed height.	Detailed closure rehabilitation methodology is included in the closure MOP. Topsoil will be remediated on placement.
14.8	Subsoil stockpile segregation should be improved.	Soil and subsoil sampling program undertaken as part of closure MOP to identify material quality and any remediation requirements.
17.5	Future tree planting should be done with a more random planting.	Incorporate into final revegetation works.

11 INCIDENTS AND NON-COMPLIANCES DURING THE REPORTING PERIOD

11.1 Reportable Incidents

Two blasting incidence where overpressure reading greater than 115dB were recorded on 11th April and 14th May 2018. Cause was unidentified geological structures that allowed for the escape of blast pressure. A warning letter was issued by the Department of Planning and Environment on the 10th June 2018 for non-compliance with Schedule 3 condition 10 of PA 06_0308. The blasting incidents are described in section 6.3.2.

Two noise exceedances at local residence were recorded in June 2018 as part of quarter 2 attended noise monitoring. A warning letter was issued by the Department of Planning and Environment on 30th August 2018 non-compliance with Schedule 3 condition 3 of PA 06_0308. Details of the exceedances are documented in section 6.4.4.

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.

- Condition M2.1 of EPL 12957 requires the sampling and analysis of deposited dust. Samples were collected for each month of the reporting period, as per the licence. One sample (SD7, Innisvale) part of the November 2018 monthly sample run was lost due to a laboratory crucible failure.

11.3 Regulatory Actions

A warning letter was issued by the Department of Planning and Environment on the 10th June 2018 for non-compliance with Schedule 3 condition 10 of PA 06_0308 for the blast non-compliances.

A warning letter was issued on 30 August 2018 for non-compliance with Schedule 3 condition 3 of PA 06_0308, for the noise non-compliances.

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;
- Review and revision of various Environmental Management Plans; and
- Continued community liaison and engagement with local stakeholders.

Appendix 1

SURFACE WATER MONITORING DATA

Sunnyside Surface Water Monitoring Data

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)
ES1117295-002	SB1	10-Aug-11	10:45	9.3	9.07	648	536	46	47	<5
ES1125734-002	SB1	22-Nov-11	10:15	10.1	9.22	592	486	208	73	<5
ES1203324-002	SB1	14-Feb-12	10:00	9.1	9.02	329	279	100	14	<5
ES1210728-003	SB1	01-May-12	10:00	8.7	9.82	422	364	136	21	<5
ES1303279002	SB1	12-Feb-13	11:10	8.79	8.23	310	296	86	4	<5
ES1318099-002	SB1	13-Aug-13	8:30	8.87	8.47	405	513	343	22	<5
ES1325115-001	SB1	18-Nov-13	10:20	9.7	8.88	399	390	46	13	<5
ES1410234-002	SB1	07-May-14	10:15	8.8	8.35	452	453	196	4	<5
ES1417254-001	SB1	05-Aug-14	11:10	8.6	8.53	609	644	40	20	<5
ES1521694-002	SB1	11-May-15	14:05	9	8.32	323	314	107	6	<5
ES1528398-002	SB1	13-Aug-15	9:25	9.2	8.58	508	497	24	7	5
ES1536059-004	SB1	11-Nov-15	9:10	9.5	8.64	366	391	194	8	<5
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
ES1117295-003	SB2	10-Aug-11	10:30	8.9	8.2	608	513	82	11	<5
ES1125734-003	SB2	22-Nov-11	10:00	10.2	9.24	486	389	64	5	<5
ES1203324-003	SB2	14-Feb-12	11:50	9.5	9.12	481	398	51	3	<5
ES1210728-004	SB2	01-May-12	9:40	8.2	8.92	682	562	356	9	<5
ES1219038-002	SB2	02-Aug-12	10:40	8.85	8.84	376	441	24	11	<5
ES1303279003	SB2	12-Feb-13	10:40	8.33	8.2	322	309	436	2	<5
ES1310164-001	SB2	02-May-13	9:30	8.62	7.92	402	396	61	3	<5
ES1318099-003	SB2	13-Aug-13	9:50	8.19	8.15	312	318	82	4	<5
ES1325115-002	SB2	18-Nov-13	11:15	9.2	8.31	410	420	27	8	<5
ES1402292-001	SB2	04-Feb-14	11:30	9.9	8.97	713	663	66	31	<5
ES1410234-003	SB2	07-May-14	11:30	8	8.45	492	474	59	3	<5
ES1417254-002	SB2	05-Aug-14	12:00	9.3	8.53	522	494	11	5	<5
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
ES1521694-004	SB2	11-May-15	12:45	8.7	8.27	283	278	40	3	<5
ES1528398-003	SB2	13-Aug-15	10:35	8.9	8.38	332	315	5	<1	<5
ES1536059-003	SB2	11-Nov-15	10:20	9.2	8.85	384	371	13	5	<5
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
ES1617490-003	SB2	08-Aug-16	9:25	7.9	8.27	386	390	40	4	<5
ES1624857-002	SB2	01-Nov-16	9:50	8.4	8.05	243	279	14	4	<5
ES17002106-002	SB2	30-Jan-17	9:50	8.5	8.29	273	285	47	6	<5
ES1711022-003	SB2	08-May-17	11:40	9.2	8.91	350	433	6	6	<5
ES1719717-001	SB2	08-Aug-17	9:50	9	8.46	383	380	61	6	<5
ES1728336-001	SB2	09-Nov-17	9:35	8.3	7.9	1690	1760	121	11	<5
ES1805512-001	SB2	20-Feb-18	9:20	8.5	8.33	7070	6770	26	4	<5

NAMOI MINING PTY LTD

Sunnyside Surface Water Monitoring Data

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)
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
ES1117295-004	SB3	10-Aug-11	10:10	8.8	8.35	2250	1800	82	12	<5
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
ES1203324-004	SB3	14-Feb-12	12:10	9.3	8.83	437	360	26	1	<5
ES1210728-005	SB3	01-May-12	9:00	8	8.44	498	417	42	2	<5
ES1219038-003	SB3	02-Aug-12	10:20	8.78	8.47	349	393	14	5	<5
ES1227200-002	SB3	15-Nov-12	9:45	9.18	8.89	1120	926	96	29	<5
ES1303279004	SB3	12-Feb-13	10:00	8.29	7.96	324	315	18	3	<5
ES1310164-002	SB3	02-May-13	9:50	8.25	8.09	394	403	144	4	<5
ES1318099-004	SB3	13-Aug-13	10:10	8.45	8.35	331	320	72	5	<5
ES1521694-005	SB3	11-May-15	12:25	7.5	7.6	353	343	26	7	<5
ES1834968-001	SB3	21-Nov-18	9:40	8.6	8.51	7750	6410	11	3	5
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
ES1125734-005	SB4	22-Nov-11	10:30	9.7	8.95	352	286	40	4	<5
ES1203324-005	SB4	14-Feb-12	11:30	9	8.74	335	276	13	2	<5
ES1210728-006	SB4	01-May-12	10:30	8.1	8.21	400	334	39	1	<5
ES1219038-004	SB4	02-Aug-12	11:10	8.89	8.79	298	339	8	3	<5
ES1227200-003	SB4	15-Nov-12	9:20	8.37	8.36	939	754	149	5	<5
ES1303279005	SB4	12-Feb-13	11:40	8.37	7.79	243	234	113	2	<5
ES1318099-005	SB4	13-Aug-13	9:00	7.99	8.07	347	340	110	9	<5
ES1410234-004	SB4	07-May-14	11:05	8.2	7.76	484	457	647	6	<5
ES1521694-006	SB4	11-May-15	13:30	8.6	7.95	209	204	32	4	<5
ES1624857-003	SB4	01-Nov-16	11:50	8.5	7.62	235	255	98	15	<5
ES1805512-003	SB4	20-Feb-18	9:30	8.7	8.43	6630	6340	43	12	<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
ES1117295-006	SB5	10-Aug-11	8:45	9.3	8.9	940	768	88	24	<5
ES1125734-006	SB5	22-Nov-11	9:30	9.5	8.65	636	504	352	43	<5
ES1203324-006	SB5	14-Feb-12	12:00	8.8	8.46	464	382	14	3	<5
ES1210728-007	SB5	01-May-12	9:20	8.3	8.74	543	452	34	3	<5
ES1219038-005	SB5	02-Aug-12	11:00	8.48	7.98	351	401	10	2	<5
ES1303279006	SB5	12-Feb-13	10:20	8.02	7.53	152	144	266	2	<5
ES1318099-006	SB5	13-Aug-13	10:30	7.55	7.63	160	158	471	10	<5
ES1410234-005	SB5	07-May-14	12:05	8.5	7.48	225	221	6750	56	<5
ES1417254-003	SB5	05-Aug-14	12:10	8.1	7.81	177	162	5500	54	8
ES1521694-007	SB5	11-May-15	12:00	8.2	7.66	104	102	202	2	25
ES1528398-004	SB5	13-Aug-15	10:15	8.4	7.61	130	138	2330	4	6
ES1536059-002	SB5	11-Nov-15	9:55	8.8	7.54	184	169	568	9	<5
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
ES1617490-004	SB5	08-Aug-16	10:45	7.8	7.66	150	142	91	4	<5
ES1624857-004	SB5	01-Nov-16	11:35	8	7.67	117	143	26	4	<5
ES1702106-003	SB5	30-Jan-17	10:10	8.2	7.46	81	156	492	2	<5
ES1711022-002	SB5	08-May-17	12:05	7.6	7.75	254	262	5950	8	<5
ES1719717-002	SB5	08-Aug-17	12:00	8.9	7.79	163	159	138	4	<5

Sunnyside Surface Water Monitoring Data

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)
ES1318099-002	SD1	13-Aug-13	8:30	8.87	8.47	405	513	343	22	<5
ES1325115-001	SD1	18-Nov-13	10:20	9.7	8.88	399	390	46	13	<5
ES1410234-002	SD1	07-May-14	10:15	8.8	8.35	453	452	196	4	<5
ES1417254-001	SD1	05-Aug-14	11:10	8.6	8.53	609	644	40	20	<5
ES1521694-002	SD1	11-May-15	14:05	9	8.32	323	314	107	6	<5
ES1528398-002	SD1	13-Aug-15	9:25	9.2	8.58	508	497	24	7	5
ES1536059-004	SD1	11-Nov-15	9:10	9.5	8.64	366	391	194	8	<5
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
ES1617490-002	SD1	08-Aug-16	11:15	8.3	7.97	265	258	65	6	<5
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
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
ES1203324-001	SD4	14-Feb-12	10:40	8.9	8.2	274	227	16	5	<5
ES1210728-002	SD4	01-May-12	11:00	8.1	7.9	330	276	26	2	<5
ES1219038-001	SD4	02-Aug-12	11:30	8.94	8.63	269	311	8	5	<5
ES1227200-001	SD4	15-Nov-12	9:10	8.22	8.24	582	546	66	6	<5
ES1303279001	SD4	12-Feb-13	12:00	9.14	8.49	458	429	248	9	<5
ES1318099-001	SD4	13-Aug-13	9:30	8.33	8.07	799	762	318	26	<5
ES1410234-001	SD4	07-May-14	10:35	8.1	7.69	717	677	3190	13	<5
ES1521694-001	SD4	11-May-15	13:05	8.2	7.86	299	286	176	7	<5
ES1528398-001	SD4	13-Aug-15	10:55	8.4	8.01	403	389	255	8	5
ES1617490-001	SD4	08-Aug-16	9:50	7.8	7.33	230	235	232	12	<5
ES1624857-001	SD4	01-Nov-16	10:10	7.8	7.63	300	314	85	13	<5
ES1702106-001	SD4	30-Jan-17	10:30	8.1	7.81	186	180	179	11	<5

Sunnyside Surface Water Monitoring Data

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)
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
ES1203324-007	VOID	14-Feb-12	12:45	8.6	8.59	2280	1810	10	<1	<5
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
ES1325115-003	VOID	18-Nov-13	10:45	8.8	8.5	5850	5370	6	3	<5
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
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
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
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
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
ES1702106-004	VOID	30-Jan-17	11:30	8.7	8.63	5380	5070	16	3	<5
ES1711022-001	VOID	08-May-17	10:45	8.9	8.5	5460	5580	6	2	<5
ES1719717-003	VOID	08-Aug-17	11:35	9.1	8.38	5620	5350	29	3	<5
ES1728336-002	VOID	09-Nov-17	9:10	8.4	8.53	5790	5620	8	2	<5
ES1805512-002	VOID	20-Feb-18	9:10	8.3	8.17	6730	6580	40	3	<5
ES1813357	VOID	09-May-18	10:00	7.9	8.07	4700	4470	<5	1	<5
ES1805512-002	VOID	20-Feb-18	9:10	8.3	8.17	6730	6580	40	3	<5
ES1813357-001	VOID	09-May-18	10:00	7.9	8.07	4700	4470	<5	1	<5
ES1826226-001	VOID	04-Sep-18	11:30	8.7	8.47	7450	6830	18	2	5
ES1834968-003	VOID	21-Nov-18	9:05	8.6	8.51	8800	7200	15	2	5
ES1805512-003	Bore Dam	20-Feb-18	9:30	8.7	8.43	6630	6340	43	12	<5
ES1813357-002	Bore Dam	09-May-18	10:20	7.9	8.07	4700	4470	6	1	<5
ES1826226-002	Bore Dam	04-Sep-18	11:50	8.1	8.07	3800	3550	25	4	5
ES1834968-002	Bore Dam	21-11-18	9:20	7.7	8.1	4070	3410	14	3	5

Appendix 2

GROUNDWATER MONITORING DATA

AR 2018

NAMOI MINING PTY LTD

Location	Date	Time	to Ground	to Stand -	pH - Field	Field - µs/	np - Field	nium (Al)	nic (As) -	boron - mg/	um (Ba) -	nium (Be) -	nium (Cd) -	nium (Cr) -	olt (Co) -	per (Cu) -	n (Fe) -	mg) (Pb) -	nese (Mn)	kel (Ni) -	nenium - m	dium (V) -	c (Zn) -	mury (Hg) -	pH - Lab	- Lab - µs/	um (Ca) -	sium (Mg)	um (Na) -	sium (K) -	Cations -	ride (Cl) -	te (SO4) -	kalinity as	kalinity as	kalinity as	kalinity - m	Anions -	nic Balanc	ia as Nitrat	te as N - n	ite as N - n	X as N - m	Dissolved	Comment
P1	15-06-07 0:00		11.25	11.51																																								
P1	07-08-07 0:00		11.2	11.46																																									
P1	19-12-07 0:00	08:35	11.25	11.51																																								
P1	24-01-08 0:00	15:35	11.205	11.465																																								
P1	05-03-08 0:00	11:40	11.165	11.425																																								
P1	07-04-08 0:00	08:35	11.165	11.425																																								
P1	08-05-08 0:00	15:15	11.155	11.415																																								
P1	03-06-08 0:00	15:15																																										Too Wet to Access
P1	09-07-08 0:00		11.16	11.42																																							
P1	11-08-08 0:00	09:05	11.15	11.41																																								
P1	17-11-08 0:00	08:45	11.19	11.45																																								
P1	19-01-09 0:00	16:55	11.22	11.48																																								
P1	26-02-09 0:00	13:55	11	11.3																																								
P1	17-06-09 0:00	16:45	11.3	11.6																																								
P1	23-06-09 0:00	10:15	12.57	12.83	7.1	3790	20.6		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		3610	46	160	585	8	41.1	725	39	1	1	1010	1010	41.4	0.4	0.53				2240.00	
P1	09-09-09 0:00	10:00	11.8	12.76																																								
P1	02-12-09 0:00	12:30	11.87	12.83	7.32	4140	32.4	0.01	0.008					0.005		0.001	0.31	0.001	0.872	0.015			0.005	0.0001	7.35	3700	59	195	537	6	42.5	781	39.1	1	1	962	962	42	0.48		0.01	0.01	0.01		
P1	16-02-10 0:00	12:05	11.77	12.73																																								
P1	17-05-10 0:00	13:20	11.77	12.73	6.89	6320	21.2	0.01	0.019					0.005		0.001	0.05	0.001	0.918	0.027			0.006	0.0001	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	31-08-10 0:00	12:30	11.81	12.77	7.27	2136	22.1																																						
P1	15-11-10 0:00	10:30	11.63	12.59	6.81	2770	23.5																																						
P1	09-03-11 0:00	11:50	11.52	12.48	7.33	3340	24.6	1	0.004					0.003		0.096	1.98	0.022	1.27	0.013			0.277	0.0001	8.51	3860	94		443	20	41.8	866	68	1	116	886	860	43	1.45		0.03	0.36	0.39		
P1	14-06-11 0:00	12:20	11.4	12.36	7.2	3270	19.5																																						
P1	20-09-11 0:00	12:20	11.38	12.34	7.2	2960	22.6	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	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	2120.00	
P1	15-12-11 0:00	11:20	11.49	12.45	7.04	3350	22.7																																						
P1	02-04-12 0:00	10:50	11.14	12.1	7.15	2960	24.6	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	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	2370.00	
P1	20-06-12 0:00	11:10	11.14	12.1	7.19	3480	21.5																																						
P1	12-09-12 0:00	11:10	11.04	12	7.2	3560	22.1	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	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	2300.00	
P1	07-12-12 0:00	11:45	11.14	12.1	7.2	3540	22																																						
P1	18-03-13 0:00	10:15	11.64	12.6	7.17	3590	21.6	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	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	2130.00	
P1	09-07-13 0:00	10:25	11.39	12.35	7.12	3630	19.5																																						
P1	06-09-13 0:00	10:20	11.34	12.3	7.18	3600	22.3	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	7.6	4030	117	250	411	8	44.5	761	62	1	1	888	888	40.5	4.68	2.2				2140.00	
P1	30-05-14 0:00	12:30	11.59	12.55	7.3	3670	21.3																																						
P1	03-09-14 0:00	12:45	11.54	12.5	7.3	3720	20.4	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	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	2200.00	
P1	19-11-14 0:00	11:45	11.71	12.67	7.3	3740	21.7																																						
P1	25-02-15 0:00	10:35	11.74	12.7	7.3	3720	21.7	0.1	0.006		0.195	0.001	0.0001	0.001	0.001	0.018	0.71	0.003	0.395	0.006		0.03	0.192	0.0001	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	2280.00	
P1	20-05-15 0:00	10:35	11.84	12.8	6.9	3770	21.5																																						
P1	01-09-15 0:00	10:30	11.68	12.64	7.1	3810	20.3	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	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	2380.00	
P1	23-02-15 0:00	10:35	12.14	13.1	7.2	4750	25.5	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	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	2380.00	
P1	10-05-16 0:00	10:40	12.09	13.05	7.1	3890	21.2																																						
P1	30-08-16 0:00	10:35	12.24	13.2	7.1	3990	22.5	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	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	2170.00	
P1	11-11-16 0:00	10:45	12.03	12.99	7.1	3560	21.8																																						
P1	01-03-17 0:00	10:30	12.24	13.2	7.1	3720	21.8	0.25	0.003	0.12	0.253	0.001	0.0001	0.001	0.001	0.016	1.39	0.002	0.013	0.003	0.01	0.03	0.177	0.0001	7.48	4050	118	244	367	8	42.1	754	94	1	1	853	853	40.3	2.27	2.74	0.05	0.37	0.42	2630.00	
P1	14-06-17 0:00	0.559027 77778	12.37	13.33	7.1	3580	21.4																																						
P1	31-08-17 0:00	0.451388 88889	12.44	13.4	7.2	3920	21.4	0.2	0.004	0.11	0.252	0.001	0.0003	0.001	0.004	0.075	0.84	0.009	0.216	0.005	0.01	0.04	0.269	0.0001	7.63	4040	148	240	362	10	42.9	778	89	1	1	920	920	42.2	0.83	0.32	0.03	1.81	1.84	2440.00	
P1	06-12-17 0:00	0.569444 44444	12.33	13.29	7.2	3910	21.3																																						
P1	21-03-18 0:00	12:20	12.59	13.55	7.2	4070	22.7	0.7	0.001	0.1	0.233	0.001	0.0001	0.001	0.001	0.01	1.58	0.004	0.267	0.003	0.01	0.02	0.236	0.0001	7.94	4060	121	240	360	7	41.6	843	111	1	1	959	959	45.2	4.17	2.15	0.01	0.24	0.24	2490.00	
P1	06-06-18 0:00	0.559027 77778	12.68	13.64	7.2	3830	20.6																																						
P1	19-09-18 0:00	0.451388 88889	12.62	13.58	7.1	3940	21.2	0.36	0.004	0.11	0.22	0.001	0.0001	0.001	0.003	0.018	0.69	0.004	0.214	0.004	0.01	0.03	0.203	0.0001	7.4	4000	128	232	349	5	40.8	902	101	1	1	794	794	43.4	3.11	1.12	0.01	0.45	0.45	2450.00	
P2	15-06-07 0:00	0.569444 44444	16.77	17.61																																								
P2	07-08-07 0:00		16.77	17.61																																								
P2	19-12-07 0:00	08:50	16.7	17.54																																							
P2	24-01-08 0:00	15:45	16.69	17.53																																							
P2	05-03-08 0:00	11:55	11.685	12.525																																							
P2	04-04-08 0:00	08:45	16.61	17.45																																							
P2	08-05-08 0:00	14:50	16.58	17.42																																							
P2	03-06-08 0:00	16:00																																										Too wet to access
P2	09-07-08 0:00		16.58	17.42																																							
P2	11-08-08 0:00	09:16	16.555	17.395																																							
P2	17-11-08 0:00	08:56	16.5	17.34																																							
P2	19-01-09 0:00	17:03	16.5	17.34																																							
P2	26-02-09 0:00	14:04	16.25	17.1																																							
P2	17-06-09 0:00	16:30	16.63	17.45																																							
P2	23-06-09 0:00	09:50	16.56	17.38	7.4	4650	21.6		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		4560	114	320	476	10	53	1030	410	1	1	973	973	57	3.62	0.02				3280.00	
P2	09-09-09 0:00	0.375	16.49	17.31																																								
P2	02-12-09 0:00	12:15	16.56	17.38	6.84	4520	31.8	0.01	0.01					0.005		0.001	0.05	0.001	0.613	0.24			0.01	0.0001	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	16-02-10 0:00	12:40	16.45	17.27																																								
P2	17-05-10 0:00	13:00	16.38	17.2	7	6420	20.1	0.01	0.002					0.005		0.008	0.05	0.001	0.178	0.015			0.086	0.0001	7.09	4250	173	281	457	7	51.8	832	444	1	1	807	807	48.8	2.93		0.02	5.09			
P2	19-07-10 0:00	11:50	16.89	17.71																																								
P2	31-08-10 0:00	0.518055 55556	16.33	17.15	7.06	4150	21.4																																						
P2	15-11-10 0:00	10:15	16.26	17.08	7.01	3580	22.6																																						
P2	09-03-11 0:00	12:20	16.35	17.17	7	3410	24.7	3.28	0.002					0.023		0.255	8.13	0.038	0.352	0.042			2.64	0.0001	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		
P2	14-06-11 0:00	11:50	15.77	16.59	7.05	3400	19.6																																						
P2	20-09-11 0:00	11:50	15.63	16.45	7.05	3240	21.9	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	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	2560.00	
P2	15-12-11 0:00	11:50	15.65	16.47	6.85	3610	22.3																																						
P2	02-04-12 0:00	12:40	15.38	16.2	7.1	3210	24.3	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	7.56	3970	169	276	402	9	48.9	871	330	1	1	734	734	46.1	2.9	0.01	0.01	5.66	5.68	2670.00	
P2	20-06-12 0:00	11:50	15.27	16.09	7.08	3710	21.3																																						
P2	12-09-12 0:00	11:40	14.58	15.4	7.15	3860	22	0.02	0.001		0.048	0.001	0.0001	0.001	0.001	0.006	0.094	0.1	0.002	0.171	0.008		0.01	0.365	0.0001	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	2630.00	
P2	07-12-12 0:00	11:45	15.33	16.15	7.02	3890	21.7																																						
P2	18-03-13 0:00	13:30	14.9	15.72	6.98	3870	22.7	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	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	09-07-13 0:00	12:00	14.89	15.71	6.92	3910	19.7																																						
P2	06-09-13 0:00	09:50	14.78	15.6	7.03	3920	22	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	7.49	4300	158	281	427	10	49.8	810	321	1	1	778	778	45.1	5	0.02				2370.00	
P2	30-05-14 0:00	10:50	14.64	15.46	7.3	3950	21																																						
P2	03-09-14 0:00	12:20	14.48	15.3	6.8	4080	20.3	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	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	2530.00	
P2	19-11-14 0:00	13:45	14.56	15.38	6.9	3090	21.4																																						
P2	25-02-15 0:00	10:50	14.58	15.4	6.9	3930	21.8	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	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	2000.00	
P2	20-05-15 0:00	11:00	14.53	15.35	6.9	3990	21.4																																						
P2	01-09-15 0:00	10:55	14.41	15.23	7	4120	20.5	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	7.52	4380	183	260	395	9			687	315	1	1	856	856	43	5.37	0.08	0.01	6.29	6.29	2620.00	
P2	23-02-16 0:00	11:00	14.58	15.4	7	4060	22	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	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	2650.00	
P2	10-05-16 0:00	11:00	14.5	15.32	7	4080	20.8																																						
P2	30-08-16 0:00	11:00	14.58	15.4	7	3920	21.4	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	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	2150.00	
P2	11-11-16 0:00	11:30	14.5	15.32	7	3720	21.5																																						
P2	01-03-17 0:00	10:55	15.08	15.9	7	3740	21.8	0.15	0.002	0.13	0.087	0.001	0.0001	0.001	0.002	0.01	0.27	0.001	0.237	0.003	0.01	0.01	0.272	0.0001	7.38	4000	139	244	347	13	42.4	711	282	1	1	701	701	39.9	3.05	0.02	0.37	6.28	6.65	2840.00	
P2	14-06-17 0:00	11:15	14.7	15.52	7.1	3330	20.9																																						
P2	31-08-17 0:00	11:15	14.68	15.5	7.1	3760	21.2	0.26	0.002	0.12	0.083	0.001	0.0002	0.001	0.005	0.03	0.53	0.018	0.327	0.007	0.01	0.01	0.299	0.0001	7.51	3890	177	270	330	10	45.4	718	255	1	1	799	799	41.5	4.46	0.48	0.64	4.36	5	1990.00	
P2	06-12-17 0:00	12:50	14.52	15.34	7.1	2830	21.3																																						
P2	21-03-18 0:00	12:50	14.74	15.56	7.1	3960	23.4	2.43	0.002	0.1	0.156	0.001	0.0001	0.005	0.004	0.009	4.03	0.007	1.19	0.01	0.01	0.01	0.076	0.0001	7.92	4040	142	233	339	22	41.6	789	200	1	1	964	964	45.7	4.71	18.5	0.01	0.18	0.18	2450.00	
P2	06-06-18 0:00	13:30	14.86	15.68	7.1	3920	20.5																																						
P2	19-09-18 0:00	12:40	14.78	15.6	7.1	4010	21.3	1.11									1.83								7.38	4110	153	239	351	12	42.9	873	290	1	1	739	739	45.4	2.89	5.1	0.23	3.33	3.56	2530.00	

AR 2018

NAMOI MINING PTY LTD

Location	Date	Time	to Ground	to Stand -	pH - Field	Field - µs	np - Field	nium (Al)	nic (As) -	boron - mg	um (Ba) -	nium (Be) -	ium (Cd) -	nium (Cr) -	alt (Co) -	nper (Cu) -	n (Fe) -	mg (Pb) -	nese (Mn)	kel (Ni) -	nenium - m	dium (V) -	c (Zn) -	mury (Hg) -	pH - Lab	- Lab - µs/	um (Ca) -	sium (Mg)	um (Na) -	sium (K) -	Cations -	ride (Cl) -	te (SO4) -	kalinity as	kalinity as	kalinity as	kalinity - m	Anions -	nic Balanc	ia as Nitro	te as N – n	te as N – n	X as N – m	Dissolved	Comment
P3	15-06-07 0:00	11:50	12.5	12.92																																								
P3	07-08-07 0:00		12.72	13.14																																								
P3	19-12-07 0:00	09:45	12.99	13.41																																							
P3	24-01-08 0:00	16:20	13.08	13.5																																							
P3	05-03-08 0:00	12:35	13.15	13.57																																							
P3	04-04-08 0:00	09:25	13.195	13.615																																							
P3	08-05-08 0:00	14:30	13.25	13.67																																							
P3	03-06-08 0:00	16:26	13.29	13.71																																							
P3	09-07-08 0:00	09:42	13.36	13.78																																							
P3	11-08-08 0:00	09:58	13.405	13.825																																							
P3	17-11-08 0:00	09:40	13.57	13.99																																							
P3	19-01-09 0:00	17:26	13.65	14.07																																							
P3	26-02-09 0:00	13:08	14.1	14.4																																							
P3	17-06-09 0:00	14:30	14.29	14.71																																							
P3	23-06-09 0:00	08:45	14.28	14.7	7.1	14200	23.3		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		6670	160	310	852	40	71.6	2120	90	1	1	859	859	78.8	4.82	2.05				4210.00	
P3	09-09-09 0:00	10:45	14.46	14.9																																								
P3	02-12-09 0:00	13:40	14.72	15.16	6.57	14040	25.4	0.01	0.002					0.005		0.002	0.26	0.001	0.475	0.011			0.026	0.0001	6.73	11900	219	521	1840	83	136	4360	549	1	1	637	637	147	3.95		0.01	0.16	0.17		
P3	16-02-10 0:00	14:15	14.33	14.77																																								
P3	17-05-10 0:00	10:45	14.15	14.59	6.88	14400	19.9	0.01	0.002					0.005		0.007	0.05	0.001	0.433	0.018			0.198	0.0001	6.77	12300	319	532	2000	59	148	4560	717	1	1	718	718	158	3.18		0.01	1.09			
P3	19-07-10 0:00	13:15	14.37	14.81																																								
P3	31-08-10 0:00	12:04	14.45	14.89	6.75	12580	23.3																																						
P3	15-11-10 0:00	12:10	14.52	14.96	6.52	10230	22.6																																						
P3	08-03-11 0:00	11:10	14.31	14.75	6.56	10350	26.4	0.26	0.001					0.001		0.016	0.42	0.001	0.321	0.008			0.067	0.0001	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	21-06-11 0:00	11:00	14.15	14.59	6.6	10540	19.3																																						
P3	21-09-11 0:00	10:30	14.47	14.91	6.8	9650	22.4	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	7.14	14100	267	0.459	1960	76	138	4350	494	1	1	747	747	148	3.55	0.1	0.01	0.57	0.57		
P3	30-12-11 0:00	95:50	14.26	14.7																																								
P3	06-01-12 0:00	14:20																																										No Access
P3	03-04-12 0:00		14.02	14.46	7.2	8650	22.4	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	7.39	11200	307	502	2010	79	146	3950	493	1	1	656	656	135	4.01	0.1	0.04	1.53	1.57	7230.00	
P3	22-06-12 0:00	09:20	13.9	14.34	6.85	8750	20.5																																						
P3	20-09-12 0:00	12:00	14.46	14.9	6.68	11700	21.2	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	7.37	13600	287	503	1980	76	144	4610	608	1	1	726	726	157	4.47	0.1	0.01	0.57	0.57	8710.00	
P3	07-12-12 0:00	15:00	14.66	15.1	6.64	12150	22.1																																						
P3	18-03-13 0:00	11:35	14.84	15.28	6.75	12160	21.7	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	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	8150.00	
P3	09-07-13 0:00	12:50	14.99	15.43	6.47	12460	18.9																																						
P3	06-09-13 0:00	08:45	15.06	15.5	6.49	12800	21.5	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	7.18	14200	297	534	2110	86	153	3920	584	1	1	785	785	138	4.91	0.09				7920.00	
P3	30-05-14 0:00	09:50	15.28	15.72	6.5	12990	20.6																																						
P3	03-09-14 0:00	11:00	15.36	15.8	6.5	13100	20.4	0.2	0.01		0.103	0.01	0.001	0.01	0.013	0.118	0.66	0.017	0.378	0.016		0.1	0.565	0.0001	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	9820.00	
P3	19-11-14 0:00	13:10	15.57	16.01	6.5	13470	21.3																																						
P3	25-02-15 0:00	11:25	15.56	16	6.4	13400	22.6	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	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	9750.00	
P3	20-05-15 0:00	11:30	15.44	15.88	6.4	13340	21.4																																						
P3	01-09-15 0:00	11:25	15.35	15.79	6.6	13280	21.8	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	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	8930.00	
P3	23-02-16 0:00	13:10	15.56	16	6.6	13800	22.7	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	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	9890.00	
P3	10-05-16 0:00	11:30	15.61	16.05	6.7	13720	20.8																																						
P3	30-08-16 0:00	11:30	15.66	16.1	6.6	13100	21.5	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	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	9270.00	
P3	11-11-16 0:00	13:00	15.5	15.94	6.6	12730	22																																						
P3	01-03-17 0:00	11:20	15.56	16	6.6	12400	22.6	0.08	0.001	0.7	0.082	0.001	0.0001	0.001	0.006	0.001	0.16	0.001	0.292	0.003	0.01	0.01	0.039	0.0001	6.6	14200	264	464	1940	94	138	3940	611	1	1	766	766	139	0.37	0.03	0.01	0.03	0.03	9480.00	
P3	14-06-17 0:00	11:45	15.6	16.04	6.6	12400	21																																						
P3	31-08-17 0:00	11:45	15.76	16.2	6.6	13000	21.3	0.02	0.001	0.67	0.077	0.001	0.0001	0.001	0.008	0.003	0.18	0.001	0.329	0.003	0.01	0.01	0.014	0.0001	7.14	13900	405	486	1980	74	148	3980	535	1	1	874	874	141	2.54	0.03	0.01	0.02	0.02	7100.00	
P3	06-12-17 0:00	11:35	15.91	16.35	6.5	13320	21.8																																						
P3	21-03-18 0:00	10:55	16.24	16.68	6.5	14190	22.5	0.27	0.002	0.54	0.07	0.001	0.0001	0.001	0.006	0.002	1.06	0.002	0.268	0.002	0.01	0.01	0.045	0.0001	7.51	14700	289	503	1900	89	141	4070	516	1	1	880	880	143	0.84	0.07	0.01	0.03	0.03	9470.00	
P3	06-06-18 0:00	12:10	16.59	17.03	6.5	13800	21																																						
P3	19-06-18 0:00	11:00	17.37	17.81	6.4	13490	22	0.24	0.003	0.69	0.078	0.001	0.0001	0.001	0.001	0.002	0.134	0.003	0.702	0.003	0.01	0.01	0.031	0.0002	7.08	12700	328	478	1940	72	142	4580	610	1	1	736	736	157	4.91	0.08	0.01	0.05	0.05	9720.00	
P7	15-06-07 0:00	12:40	12.77	13.04																																								
P7	07-08-07 0:00		12.75	13.02																																								
P7	20-12-07 0:00	09:05	12.73	13																																								
P7	24-01-08 0:00	10:50	12.72	12.99																																							
P7	05-03-08 0:00	13:45	12.74	13.01																																							
P7	07-04-08 0:00	08:55	12.7	12.97																																							
P7	08-05-08 0:00	15:20	12.705	12.975																																							
P7	03-06-08 0:00	17:12	12.72	12.99																																							
P7	09-07-08 0:00	10:06	12.725	12.995																																							
P7	11-08-08 0:00	10:45	12.715	12.985																																							
P7	17-11-08 0:00	10:13	12.695	12.965																																							
P7	19-01-09 0:00	17:50	13.7	13.97																																							
P7	26-02-09 0:00	13:43	12.65	12.9																																							
P7	17-06-09 0:00	14:10	11.13	11.4																																							
P7	23-06-09 0:00	09:25	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				4170.00	
P7	09-09-09 0:00	13:15	10.68	10.94																																								
P7	02-12-09 0:00	13:33	11.24	11.5	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		
P7	16-02-10 0:00	16:10	9.89	10.15																																								
P7	17-05-10 0:00	11:45	10.64	10.9	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			
P7	31-08-10 0:00	15:30	9.73	9.99	6.95	7700	22.5																																						
P7	15-11-10 0:00	13:30	9.6	9.86	6.82	6190	23.1																																						
P7	08-03-11 0:00	10:40	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		
P7	21-06-11 0:00	13:30	9.17	9.43	6.85	4810	21.2																																						
P7	21-09-11 0:00	12:10	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	36	50	127	49		306	1	1	1	1	974	974	28.1		224	0.01	0.16	0.16		
P7	06-01-12 0:00	11:20	8.31	8.57	6.83	2810	22.5																																						
P7	03-04-12 0:00	0.395833 33333	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	35	75	214	76	49.9	494	65	1	1	1640	1640	48.1	1.84	432	0.01	0.22	0.22	3250.00	
P7	11-05-12 0:00	10:10						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	52	92	247	64	49.2	548	7	1	1	1580	1580	47.2	2.07	374	0.01	0.02	0.02	1390.00	
P7	11-05-12 0:00	12:45						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	2810.00	
P7	22-06-12 0:00	13:30	8.12	8.62	7.26	3690	20																																						
P7	20-09-12 0:00	13:00	9.7	10.2	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	2930.00	
P7	07-12-12 0:00	15:00	10.47	10.97	7.27	4420	22.5																																						
P7	18-03-13 0:00	12:55	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	2950.00	
P7	09-07-13 0:00	13:45	10.44	10.94	7.34	4630	19.5																																						
P7	06-09-13 0:00	0.392361 11111	10.6	11.1	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				2560.00	
P7	30-05-14 0:00	10:30	11.38	11.88	7.6	4980	21.4																																						
P7	03-09-14 0:00	11:20	11.5	12	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	2780.00	
P7	19-11-14 0:00	12:20	11.83	12.33	7.2	4910	21.7																																						
P7	25-02-15 0:00	11:40	11.9	12.4	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	2520.00	
P7	20-05-15 0:00	11:55	11.56	12.06	7.1	4750	21.9																																						
P7	01-09-15 0:00	12:10	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	2880.00	
P7	23-02-16 0:00	12:20	12.3	12.8	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	2970.00	
P7	10-05-16 0:00	11:55	12.39	12.89	7.3	4810	21.1																																						
P7	30-08-16 0:00	11:55	12.5	13	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	2950.00	
P7	11-11-16 0:00	12:40	12.26	12.76	7.1	4560	21.9																																						
P7	01-03-17 0:00	12:15	12.6	13.1	7.1	4400	22.8	0.03	0.001	0.16	0.052	0.001	0.0001	0.001	0.001	0.001	0.05	0.001	0.031	0.001	0.01	0.01	0.02	0.0001	7.49	4870	101	207	628	21	49.9	932	220	1	1	740	740	45.6	4.47	0.02	0.01	5.18	5.18	2860.00	
P7	14-06-17 0:00	12:40	12.69	13.19	7.3	4510	21.6																																						
P7	31-08-17 0:00	12:35	12.8	13.3	7.3	4550	20.7	0.01	0.001	0.15	0.055	0.001	0.0001	0.001	0.001	0.002	0.18	0.001	0.025	0.001	0.01	0.01	0.027	0.0001	7.7	4790	93	168	487	14	40	943	191	1	1	831	831	47.2	8.22	0.04	0.01	4.88	4.88	2540.00	
P7	06-12-17 0:00	11:05	12.82	13.32	7.3	4630	21.8																																						
P7	21-03-18 0:00	11:20	13.01	13.51	7.2	5020	22.6	0.1	0.001	0.15	0.057	0.001	0.0001	0.001	0.001	0.001	0.18	0.001	0.01	0.001	0.01	0.01	0.016	0.0001	7.86	5030	105	211	633	19	50.6	1090	212	1	1	828	828	51.7	1.05	0.03	0.01	4.7	4.7	2970.00	
P7	06-06-18 0:00	12:35	13.12	13.62	7.2	4810	20.5																																						
P7	19-09-18 0:00	10:15	13.18	13.68	7	4940	21.9	0.08	0.001	0.18	0.056	0.001	0.0001	0.001	0.001	0.001	0.18	0.001	0.031	0.001	0.01	0.01	0.016	0.0001	7.49	4820	116	208	610	16	49.8	1150	198	1	1	712	712	50.8	0.93	0.05	0.01	4.85	4.85	3040.00	

AR 2018

NAMOI MINING PTY LTD

Location	Date	Time	to Ground	to Stand -	pH - Field	Field - µs/	mp - Field	nium (Al)	nic (As) -	boron - mg/	um (Ba) -	nium (Be) -	ium (Cd) -	nium (Cr) -	alt (Co) -	per (Cu) -	n (Fe) - mg/	d (Pb) - mg/	nese (Mn)	kel (Ni) - m	enium - mg/	dium (V) -	c (Zn) - mg/	ury (Hg) -	pH - Lab	- Lab - µs/	um (Ca) -	sium (Mg)	um (Na) -	sium (K) -	Cations - m	ride (Cl) -	te (SO4) -	kalinity as	kalinity as	kalinity as	kalinity - m	Anions - m	nic Balanc	ia as Nitro	te as N - mg	rate as N - m	X as N - mg	Dissolved	Comment
		0.545138																																										
P8	15-06-07 0:00	88889	15.63	15.63																																								
P8	07-08-07 0:00		15.7	15.7																																								
P8	19-12-07 0:00	09:10	21.25	21.25																																								
P8	24-01-08 0:00	16:30	21.3	21.3																																								
P8	05-03-08 0:00	12:40	19.25	19.25																																								
P8	07-04-08 0:00	09:00	20.13	20.13																																								
P8	08-05-08 0:00	15:25	20.49	20.49																																								
P8	03-06-08 0:00	17:10	18.79	18.79																																								
P8	09-07-08 0:00	10:03	19.12	19.12																																								
P8	11-08-08 0:00	10:43	19.72	19.72																																								
P8	17-11-08 0:00	10:10	16.74	16.74																																								
P8	02-03-09 0:00	17:47	15.85	15.95																																								
P8	17-06-09 0:00	13:00	16.9	16.9																																								
P8	23-06-09 0:00	09:20	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				3600.00	
P8	09-09-09 0:00	12:45	16.58	16.71																																								
P8	02-12-09 0:00	13:30	17.67	17.8	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		
P8	16-02-10 0:00	15:55	16.94	17.07																																								
P8	17-05-10 0:00	11:40	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			
P8	31-08-10 0:00	15:50	16.96	17.09	6.87	6220	22.9																																					
P8	15-11-10 0:00	13:30	16.88	17.01	6.67	5400	23.5																																					
P8	08-03-11 0:00	10:30	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		
P8	21-06-11 0:00	12:50	16.79	16.92	6.8	4920	21.1																																					
P8	21-09-11 0:00	11:50	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		
P8	06-01-12 0:00	11:00	16.89	17.02	6.64	5590	23.8																																					
P8	03-04-12 0:00	95:50	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	4180.00	
P8	22-06-12 0:00	10:10	2.86	3.66	7.29	6150	19.8																																					
P8	11-07-12 0:00	13:15	3.46	4.26																																								
P8	20-09-12 0:00		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	43	30	49	9	7.48	123	50	1	1	151	151	7.53	0.33	4.12	0.01	0.12	0.13	426.00	
P8	07-12-12 0:00	15:00	23.33	24.13	7.43	1311	23.2																																					
P8	18-03-13 0:00	12:35	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	52	37	71	11	8.88	158	86	1	1	604	604	9	0.71	4.06	0.16	0.72	0.88	506.00	
P8	09-07-13 0:00	13:20	23.13	23.93	7.05	1098	19.6																																					
P8	06-09-13 0:00	09:05	23.1	23.9	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	50	37	78	12	9.11	165	75	1	1	154	154	9.29	1	3.57				511.00	
P8	30-05-14 0:00	10:10	23.33	24.13	6.9	1017	21.8																																					
P8	03-09-14 0:00	11:35	23.2	24	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	56	45	80	12	10.2	154	84	1	1	163	163	9.35	4.12	1.55	0.01	0.96	0.96	514.00	
P8	19-11-14 0:00	12:45	23.54	24.34	7.1	1010	21.9																																					
P8	25-02-15 0:00	12:00	23.4	24.2	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	54	42	88	11	10.1	176	90	1	1	170	170	10.2	0.52	0.76	0.04	0.19	0.23	592.00	
P8	20-05-15 0:00	12:10	23.64	24.44	7.1	1132	21.9																																					
P8	01-09-15 0:00	11:50	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	48	94	11	11.7	162	76	1	1	235	235	10.8	3.7	5.12	0.01	0.04	0.04	552.00	
P8	23-02-16 0:00	12:45	23.5	24.3	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	47	95	10	11.7	210	90	1	1	193	193	11.6	0.06	4.86	0.01	0.07	0.07	613.00	
P8	10-05-16 0:00	12:20	23.43	24.23	7	1218	21.3																																					
P8	30-08-16 0:00	12:15	23.4	24.2	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	49	104	9	12.3	219	82	1	1	222	222	12.3	0.09	5.06	0.01	0.07	0.07	633.00	
P8	11-11-16 0:00	13:00	23.47	24.27	7	1225	22.3																																					
P8	01-03-17 0:00	11:45	23.4	24.2	6.9	1240	22.8	0.08	0.001	0.05	0.116	0.001	0.0001	0.001	0.001	0.002	1.71	0.001	1.24	0.004	0.01	0.01	0.021	0.0001	7.05	1320	61	50	100	12	11.7	228	90	1	1	213	213	12.6	3.41	4.66	0.01	0.09	0.09	741.00	
P8	14-06-17 0:00	12:15	23.4	24.2	6.9	1336	21.5																																					
P8	31-08-17 0:00	12:15	23.5	24.3	6.9	1290	20.7	0.02	0.001	0.05	0.121	0.001	0.0001	0.001	0.002	0.001	1.52	0.001	1.3	0.004		0.01	0.029	0.0001	7.27	1300	66	57	100	10	12.5	227	78	1	1	258	258	13.2	2.62	4.75	0.01	0.06	0.06	714.00	
P8	06-12-17 0:00	10:43	23.53	24.33	6.9	1313	21.7																																					
P8	21-03-18 0:00	11:45	23.31	24.11	6.9	1448	22.7	0.03	0.001	0.05	0.121	0.001	0.0001	0.001	0.001	0.001	0.32	0.001	1.31	0.002	0.01	0.01	0.011	0.0001	7.53	1430	70	57	107	10	13	254	115	1	1	280	280	15.2	7.6	5.36	0.01	0.22	0.22	830.00	
P8	06-06-18 0:00	12:55	23.61	24.41	6.8	1385	21.1																																					
P8	19-09-18 0:00	10:40	23.58	24.38	6.7	1415	22.3	0.19	0.001	0.05	0.136	0.001	0.0001	0.001	0.001	0.009	0.36	0.002	1.5	0.003	0.01	0.01	0.048	0.0001	7.11	14.3	74	60	110	10	13.6	273	91	1	1	258	258	14.8	4.1	5.86	0.01	0.15	0.15	834.00	
22479	21-12-09 0:00	13:30	15.01	15.31	5.59	3600	25.4	0.01	0.001					0.001		0.004	0.05	0.001	0.18	0.006			0.261	0.0001	7.41	3600	13	155	770	54	48.2	1140	12	1	1	246	246	37.4	12.5		0.01	0.05	0.05		
22479	16-02-10 0:00	15:20	14.89	15.19																																								
22479	17-05-10 0:00	09:50	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			
		0.388888																																									
22479	23-11-10 0:00	88889	15.16	15.46	7.29	2730	24.4																																					
22479	09-03-11 0:00	14:10	15.05	15.35	7.73	2210	23.1	0.2	0.001					0.001		0.147	9.89	0.016	0.238	0.001			0.946	0.0001	8.21	2190	50	127	211	24	22.7	665	5	1	1	232	232	23.5	1.66		0.31	1.16	1.47		
		0.409722																																									
22479	14-06-11 0:00	22222	15.02	15.32	7.75	2880	19.4																																					
		0.395833																																									
22479	20-09-11 0:00	33333	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	59	171	303	23	30.7	898	1	1	1	251	251	30.4	0.63	16.4	0.07	0.07	0.14	1530.00	
		0.402777																																									
22479	15-12-11 0:00	77778	15.26	15.56	7.28	3150	21.7																																					
		0.402777																																									
22479	02-04-12 0:00	77778	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	1890.00	
22479	20-06-12 0:00	0.40625	14.55	14.85	7.65	3420	20.2																																					
		0.409722																																									
22479	12-09-12 0:00	22222	14.6	14.9	8	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	51	183	337	30	33	1030	1	1	1	261	261	34.3	1.92	19.1	0.11	0.01	0.11	1860.00	
		0.395833																																									
22479	07-12-12 0:00	33333	14.79	15.09	7.79	3200	21.9																																					
		0.378472																																									
22479	18-03-13 0:00	22222	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	49	179	335	34	32.6	900	3	1	1	276	276	31	2.52	38.7	0.12	0.06	0.18	1770.00	
22479	09-07-13 0:00	0.375	15.14	15.44	7.72	3430	19.6																																					
22479	06-09-13 0:00	12:55	15.2	15.5	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	49	195	371	34	35.4	1010	1	1	1	209	209	32.7	4.08	32.2				1910.00	
22479	05-06-14 0:00	13:40	15.54	15.84	7.8	3740	19.3																																					
22479	03-09-14 0:00	0.40625	15.5	15.8	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	50	173	302	30	30.6	1040	2	1	1	158	158	32.5	3.09	22.9	0.03	0.1	0.13	2100.00	
		0.381944																																									
22479	19-11-14 0:00	44444	15.76	16.06	7.3	3840	21.6																																					
		0.392361																																									
22479	25-02-15 0:00	11111	15.9	16.2	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	2070.00	
		0.385416																																									
22479	20-05-15 0:00	66667	15.85	16.15	7.4	3880	20.3																																					
		0.392361																																									
22479	01-09-15 0:00	11111	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	2440.00	
		0.395833																																									
22479	23-02-16 0:00	33333	16	16.3	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	2080.00	
22479	10-05-16 0:00	9:25	15.98	16.28	7.4	3180	21.7																																					
22479	30-08-16 0:00	9:20	16.1	16.4	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	1940.00	
22479	11-11-16 0:00	9:15	16.03	16.33	7.5	2940	21.2																																					
22479	01-03-17 0:00	9:15	16.1	16.4	7.7	2680	21.6	0.03	0.001	0.05	0.57	0.001	0.0001	0.001	0.001	0.013	6.42	0.001	0.406	0.001	0.01	0.01	0.109	0.0001	7.85	2760	36	113	242	59	23.1	674	1	1	1	213	213	23.3	0.45	23.3	0.01	0.02	0.02	1430.00	
22479	14-06-17 0:00	9:30	16.14	16.44	7.7	2710	21																																					
22479	31-08-17 0:00	9:30	16.2	16.5	7.8	2750	18.9	0.01	0.001	0.05	0.515	0.001	0.0001	0.001	0.001	0.018	5.88	0.008	0.388	0.001	0.01	0.01	0.205	0.0001	7.985	2810	47	130	261	60	25.9	706	1	1	1	236	236	24.6	2.44	21.9	0.03	0.01	0.02	1560.00	
22479	06-12-17 0:00	9:30	16.28	16.58	7.8	2720	19.7																																					
22479	21-03-18 0:00	9:30	16.34	16.64	7.9	2920	21.9	0.03	0.001	0.05	0.426	0.001	0.0001	0.001	0.001	0.003	8.07	0.001	0.461	0.001	0.01	0.01	0.075	0.0001	8.12	3040	45	132	264	61	26.1	772	2	1	1	327	327	28.4	4.13	26.2	0.01	0.02	0.02	1790.00	
22479	06-06-18 0:00	9:25	16.59	16.89	7.8	3070	21.2																																					
22479	19-09-18 0:00	9:30	16.5	16.8	7.9	3090	21.1	0.07	0.001	0.05	0.391	0.001	0.0001	0.001	0.001	0.002	6.74	0.001	0.214	0.001	0.01	0.01	0.065	0.0001	7.85	3150	44	131	262	53	25.7	915	1	1	1	240	240	30.6	8.75	32.5	0.07	0.01	0.05	1650.00	

NAMOI MINING PTY LTD

Location	Date	Time	to Ground	to Stand -	pH - Field	Field - µs	hp - Field	hium (Al)	nic (As) -	boron - mg	um (Ba) -	rium (Be) -	ium (Cd) -	nium (Cr) -	alt (Co) -	per (Cu) -	n (Fe) - m	d (Pb) - m	nese (Mn)	kel (Ni) - n	enium - m	dium (V) -	c (Zn) - m	lury (Hg) -	pH - Lab	- Lab - µs/	um (Ca) -	sium (Mg	um (Na) -	sium (K) -	cations -	ride (Cl) -	te (SO4) -	kalinity as	kalinity as	kalinity as	kalinity - m	Anions -	nic Balanc	ia as Nitro	te as N -	rate as N -	X as N - m	Dissolved	Comment
27356	15-06-07 0:00	0.423611 11111																																									
27356	07-08-07 0:00																																										
27356	19-12-07 0:00	10:05																																									
27356	24-01-08 0:00	15:55	14.3	14.61																																								
27356	05-03-08 0:00	12:20	14.245	14.555																																								
27356	04-04-08 0:00	10:00	14.11	14.42																																								
27356	08-05-08 0:00	14:47	15.3	15.61																																								
27356	03-06-08 0:00	16:05	17.61	17.92																																								
27356	09-07-08 0:00	8:52	14.115	14.425																																								
27356	11-08-08 0:00	9:25	16.045	16.355																																								
27356	17-11-08 0:00	9:08	13.92	14.23																																								
27356	19-01-09 0:00	17:10	14.45	14.76																																								
27356	26-02-09 0:00	12:50	14.5	14.8																																								
27356	09-09-09 0:00	14:00			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				2910.00	
27356	02-12-09 0:00	0.538194 44444			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
27356	16-02-10 0:00	13:40	13.41	13.71																																								
27356	17-05-10 0:00	12:05			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 windmill
27356	31-08-10 0:00	16:00			7.8	4610	17.3																																					Sample from tank fed by bore, Bore covered by windmill
27356	15-11-10 0:00	11:00			7.65	4100	23.2																																					Bore covered by windmill
27356	09-03-11 0:00	13:20			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
27356	14-06-11 0:00	13:50			7.4	4141	15.3																																					Bore covered by windmill
27356	21-09-11 0:00	10:20			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		Water from tank on widmill outlet, Bore covered by windmill
27356	15-12-11 0:00	11:50			7.49	4360	23.2																																					
27356	03-04-12 0:00	13:10			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	3820.00	
27356	20-06-12 0:00	12:40			8.12	4310	19.5																																					Tank fed by windmill
27356	12-09-12 0:00	12:10																																										Bore covered by windmill, Windmill not operational
27356	07-12-12 0:00	12:50																																										Bore covered by windmill, Windmill not operational
27356	18-03-13 0:00	11:50																																										Bore covered by windmill, Windmill not operational
27356	09-07-13 0:00	11:30																																										Bore covered by windmill, Windmill not operational
27356	06-09-13 0:00	11:40																																										Bore covered by windmill, Windmill not operational
27356	30-05-14 0:00																																											Bore covered by windmill, Windmill not operational
27356	19-11-14 0:00	11:55																																										Bore covered by windmill, Windmill not operational

Location	Date	Time	to Ground	to Stand -	pH - Field	Field - µs	np - Field	nium (Al)	nic (As) -	boron - mg	um (Ba) -	ium (Be) -	ium (Cd) -	nium (Cr) -	alt (Co) -	per (Cu) -	n (Fe) - m	ad (Pb) - m	nese (Mn)	el (Ni) - m	enium - m	dium (V) -	c (Zn) - m	ury (Hg) -	pH - Lab	Lab - µs/	um (Ca) -	sium (Mg)	um (Na) -	sium (K) -	Cations -	ride (Cl) -	te (SO4) -	alinity as	alinity as	alinity as	alinity - m	Anions - m	nic Balanc	ia as Nitro	te as N - m	rate as N -	X as N - m	Dissolved	Comment
44884	09-09-09 0:00	12:10			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	46	102	527	5	33.7	442	16.2	1	1	1040	1040	33.7	0.02	0.14				1770.00	No tape access - sampled from tank
44884	02-12-09 0:00	0.496527 77778		0.47	7.4	3700	25	0.01	0.002					0.005		0.001	0.05	0.001	0.893	0.002			0.076	0.0001	7.47	3340	31	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
44884	16-02-10 0:00	11:45																																									
44884	17-05-10 0:00	10:10																																									Tank fed by bore empty, no sample aviable
44884	31-08-10 0:00	11:35			8.5	2720	17																																				
44884	15-11-10 0:00	0.40625																																									Tank fed by windmill now rusted out, no sample available
44884	09-03-11 0:00	11:30	13.1	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	24	37	279	15	16.6	203	9	1	109	552	547	16.8	0.72		0.01	0.06	0.06		Windmill now gone
44884	14-06-11 0:00	11:00	27.79	28.26	7.7	2080	18																																				
44884	20-09-11 0:00	10:00	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	48	104	558	4	35.3	530	21	1	1	931	931	34	1.82	0.04	0.01	0.04	0.04	1740.00	Very windy, with windmill pumping
44884	15-11-11 0:00	10:50	14.51	14.98	8.05	2800	23.1																																				
44884	02-04-12 0:00	10:30	14.83	15.3	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	30	81	327	3	22.4	390	19	1	1	528	528	22	1.02	0.01	0.01	0.19	0.19	1050.00	
44884	20-06-12 0:00	10:40	15.42	15.89	8.2	1160	18.4																																				Lillydale windmill
44884	12-09-12 0:00	10:40	15.13	15.6	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	30	74	549	5	31.6	420	16	1	1	1030	1030	32.8	1.93	0.01	0.01	0.1	0.1	1640.00	
44884	07-12-12 0:00	10:20	17.09	17.56	7.89	1975	22.3																																				
44884	18-03-13 0:00	0.40625	15.42	15.89	7.91	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	40	128	520	5	35.2	545	27	1	1	847	847	32.9	3.44	0.15	0.01	0.01	0.01	1830.00	
44884	09-07-13 0:00	0.409722 22222	15.06	15.53	7.89	1843	12.5																																				
44884	06-09-13 0:00	12:00	15.43	15.9	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	57	38	89	2	9.76	102	41	1	1	283	283	9.39	1.96	0.01				514.00	
44884	30-05-14 0:00	12:40	15.65	16.12	8	2610	20.5																																				
44884	03-09-14 0:00	10:40			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	49	106	414	4	29.2	471	30	1	1	995	995	33.8	7.27	0.02	0.01	0.02	0.02	1650.00	Pump over bore
44884	19-11-14 0:00	11:20			7.9	2730	21.8																																				Pump over bore
44884	25-02-15 0:00	10:15			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	53	98	528	4	33.7	437	21	1	1	992	992	32.6	1.69	0.1	0.01	0.01	0.01	1420.00	Pump over bore
44884	20-05-15 0:00	10:10			7.8	3090	17.2																																				Pump over bore
44884	01-09-15 0:00	10:05			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	27	53	202	3	14.4	173	16	1	1	397	397	13.1	4.66	0.03	0.01	1.09	1.09	654.00	Pump over bore
44884	23-02-16 0:00	10:10			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	27	41	544	4	28.4	263	5	1	1	885	885	25.2	5.83	0.3	0.01	0.02	0.02	1380.00	Pump over bore
44884	10-05-16 0:00	10:10			7.6	3120	21.1																																				Pump over bore
44884	30-08-16 0:00	10:10			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	1660.00	Pump over bore
44884	11-11-16 0:00	10:15			7.4	3160	19.9																																				Pump over bore
44884	28-02-17 0:00	10:00			7.6	2450	22.6	0.05	0.003	0.09	0.423	0.001	0.0002	0.001	0.007	0.025	2.05	0.001	0.17	0.002	0.01	0.01	0.098	0.0001	7.79	2840	38	82	484	5	29.8	391	17	1	1	935	935	30.1	0.48	0.29	0.01	0.02	0.02	1800.00	Pump over bore
44884	14-06-17 0:00	10:20			7.5	3040	19.9																																				Pump over bore
44884	31-08-17 0:00	10:25			7.6	2570	21.4	0.01	0.004	0.09	0.447	0.001	0.0006	0.001	0.02	0.005	4.58	0.003	0.279	0.006	0.01	0.01	0.27	0.0001	8.03	2670	46	68	560	10	32.2	334	9	1	1	1090	1090	31.4	1.28	0.3	0.01	0.01	0.01	1380.00	Pump over bore
44884	06-12-17 0:00	10:25			7.7	2410	22.8																																				Pump over bore
44884	21-03-18 0:00	10:30																																									Pump over bore
44884	06-06-18 0:00	10:15			7.7	2630	20.9																																				Pump over bore
44884	19-09-18 0:00	11:40			7.6	2820	21.4	0.01	0.004	0.1	0.472	0.001	0.0003	0.001	0.003	0.01	3.74	0.002	0.345	0.001	0.01	0.01	0.142	0.0001	7.72	2890	50	96	459	4	30.4	477	21	1	1	913	913	32.1	2.75	0.24	0.01	0.02	0.02	1680.00	Pump over bore

AR 2018

NAMOI MINING PTY LTD

Location	Date	Time	to Ground	to Stand -	pH - Field	Field - µs	hp - Field	nium (Al)	nic (As) -	boron - mg	um (Ba) -	ium (Be) -	ium (Cd) -	nium (Cr) -	alt (Co) -	pper (Cu) -	n (Fe) - m	ad (Pb) - m	nese (Mn)	kel (Ni) - m	enium - m	dium (V) -	c (Zn) - m	ury (Hg) -	pH - Lab	- Lab - µs/	um (Ca) -	sium (Mg)	um (Na) -	sium (K) -	Cations -	ride (Cl) -	te (SO4) -	kalinity as	kalinity as	kalinity as	kalinity - m	Anions - m	nic Balanc	ia as Nitro	te as N - m	te as N - m	X as N - m	Dissolved	Comment
6249	09-09-09 0:00	0.434027 77778	10.1		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	1	272	272	22.6	2.41	2.47				1620.00	
6249	02-12-09 0:00	15:00	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	1	289	289	33.6	4.98		0.01	0.93	0.93		
6249	16-02-10 0:00	11:00	9.87	10.2																																								
6249	17-05-10 0:00	10:00	9.96	10.29	7.13	5930	20.8	0.01	0.001					0.005		0.001	0.05	0.001	1.8	0.003			0.122	0.0001	7.53	3890	106	198	480	4	42.5	1070	71.6	1	1	1	372	372	39.1	4.14		0.01	1.31			
6249	31-08-10 0:00	10:25	9.91	10.24	7.86	3260	17.3																																						
6249	23-11-10 0:00	82:20	9.86	10.19	7.37	2430	24.5																																						
6249	09-03-11 0:00	13:30	10.02	10.35	7.6	2230	23.5	0.22	0.001					0.001		0.079	2.29	0.006	0.511	0.007			0.768	0.0001	7.84	2420	69	125	283	8	26.3	700	44	1	1	1	284	284	26.3	0.12		0.26	2.36	2.63		
6249	14-06-11 0:00	10:40	9.62	9.95	7.6	2420	18.7																																						
6249	20-09-11 0:00	95:50	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	0.666	0.007		0.01	0.264	0.0001	7.86	3470	80	155	369	7	33	868	44	1	1	1	278	278	31	3.16	0.32	0.01	10.9	10.9	1640.00	
6249	15-12-11 0:00	10:10	9.69	10.02	7.31	3020	21.8																																						
6249	02-04-12 0:00	10:10	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	1	321	321	29.1	2.25	3.4	0.14	1.05	1.19	1700.00	
6249	20-06-12 0:00	10:10	9.21	9.54	7.65	3100	20.2																																						TSR near tanks
6249	12-09-12 0:00	10:20	9.11	9.44	7.64	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	1	413	413	35.6	0.92	3.92	0.14	0.02	0.16	2180.00	
6249	07-12-12 0:00	10:00	9.19	9.52	7.68	3210	20.9																																						
6249	18-03-13 0:00	09:30	9.24	9.57	7.51	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	1	375	375	32	4.84	8.9	0.09	0.01	0.09	1890.00	
6249	09-07-13 0:00	93:30	9.33	9.66	7.57	3220	18.6																																						
6249	06-09-13 0:00	12:25	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	1	366	366	30.5	4.85	5.71				1680.00	
6249	30-05-14 0:00	13:00	9.55	9.88	7.8	3120	19.5																																						
6249	03-09-14 0:00	13:20	9.5	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	1	385	385	30.6	3.77	0.73	0.01	0.29	0.29	1820.00	
6249	19-11-14 0:00	11:00	9.62	9.95	7.5	3150	21.1																																						
6249	25-02-15 0:00	9:50	9.67	10	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	1	342	342	31	1.82	0.56	0.03	0.1	0.13	1910.00	
6249	20-05-15 0:00	9:45	9.75	10.08	7.5	3040	20.1																																						
6249	01-09-15 0:00	9:50	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	1	372	372	26.8	9.54	1.09	0.01	0.03	0.03	2000.00	
6249	23-02-16 0:00	9:50	9.97	10.3	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	1	284	284	28.7	2.82	4.34	0.19	0.01	0.01	1880.00	
6249	15-05-16 0:00	9:50	9.94	10.27	7.4	3070	20.2																																						
6249	30-08-16 0:00	9:50	9.97	10.3	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	1	317	317	29.2	4.66	3.02	0.07	0.2	0.27	1980.00	
6249	11-11-16 0:00	9:45	9.79	10.12	7.5	2810	21.2																																						
6249	01-03-17 0:00	9:40	9.87	10.2	7.5	2710	20.7	0.03	0.001	0.05	0.348	0.001	0.0001	0.001	0.001	0.001	9.68	0.001	2.39	0.001	0.01	0.01	0.039	0.0001	7.53	2940	84	126	285	13	27.3	698	1	1	1	1	310	310	28.9	2.65	6.99	0.01	0.07	0.07	2210.00	
6249	14-06-17 0:00	9:55	9.91	10.24	7.5	2730	19.9																																						
6249	31-08-17 0:00	10:00	9.97	10.3	7.5	2840	19.8	0.01	0.001	0.05	0.326	0.001	0.0001	0.001	0.001	0.004	13	0.001	2.05	0.002	0.01	0.01	0.146	0.0001	7.73	2840	91	112	233	10	24.1	696	1	1	1	1	335	335	26.3	4.31	2.69	0.02	0.02	0.04	1590.00	
6249	06-12-17 0:00	10:00	9.94	10.27	7.5	2720	20.1																																						
6249	21-03-18 0:00	10:00	10.15	10.48	7.5	2750	21	0.07	0.001	0.05	0.312	0.001	0.0001	0.001	0.001	0.005	9.68	0.001	1.65	0.002	0.01	0.01	0.054	0.0001	7.97	2800	83	115	268	11	25.5	735	1	1	1	1	307	307	26.9	2.52	2.46	0.02	0.01	0.02	1950.00	
6249	06-06-18 0:00	8:55	10.46	10.79	7.5	2790	20.8																																						
6249	19-09-18 0:00	10:00	10.33	10.66	7.7	2640	20.2	0.05	0.001	0.005	0.239	0.001	0.0001	0.001	0.001	0.002	1.82	0.001	0.85	0.002	0.01	0.01	0.032	0.0001	7.9	2720	90	113	261	9	25.4	795	1	1	1	1	236	236	27.1	3.36	0.14	0.01	0.1	0.1	1620.00	
901460	10-12-08 0:00	09:30	15.38	15.8																																									Pump over bore
901460	19-01-09 0:00	9:00	15.53	15.95																																									Pump over bore
901460	02-03-09 0:00	14:14	19.73	20.15																																									Pump over bore
901460	08-04-11 0:00	13:20	15.18	15.6																																									Pump over bore
901460	14-06-11 0:00	14:10	15.03	15.45																																									Pump over bore
901460	20-09-11 0:00	11:20	14.97	15.39																																									Illili windmill over bore
901460	15-12-11 0:00	12:30	15.03	15.45																																									Illili windmill over bore
901460	02-04-12 0:00	11:30	14.87	15.29																																									Illili windmill over bore
901460	20-06-12 0:00	12:30	14.74	15.16																																									Pump cap over bore
901460	12-09-12 0:00	12:40	14.63	15.05																																									Pump cap over bore
901460	07-12-12 0:00	12:05	17.66	18.08																																									Pump cap over bore
901460	18-03-13 0:00	10:45	14.56	14.98																																									Pump cap over bore
901460	09-07-13 0:00	10:45	14.57	14.99																																									Pump cap over bore
901460	06-09-13 0:00	10:50	14.5	14.92																																									Pump over bore
901460	05-06-14 0:00	11:15	14.2	14.62																																									Pump over bore
901460	19-11-14 0:00	10:30	14.41	14.83																																									Pump over bore
901460	20-05-15 0:00	12:25	14.22	14.64																																									Pump over bore
901460	01-09-15 0:00	12:30	14.16	14.58																																									Pump over bore
901460	10-05-16 0:00	11:20	14.36	14.78																																									Pump over bore
901460	11-11-16 0:00	12:35	14.13	14.55																																									Pump over bore
901460	01-03-17 0:00	12:40	14.28	14.7																																									Pump over bore
901460	14-06-17 0:00	13:00	14.24	14.66																																									Pump over bore
901460	06-12-17 0:00	13:00	14.01	14.43																																									Pump over bore
901460	21-03-18 0:00	13:10	14.05	14.47																																									Pump over bore
901460	06-06-18 0:00	13:40	14.39	14.81																																									Pump over bore
901460	19-09-18 0:00	12:55	14.28	14.7																																									Pump over bore

AR 2018

NAMOI MINING PTY LTD

Location	Date	Time	to Ground	to Stand -	pH - Field	Field - µs/	p - Field	ium (Al) -	nic (As) -	boron - mg/	um (Ba) -	ium (Be) -	ium (Cd) -	bium (Cr) -	alt (Co) -	per (Cu) -	n (Fe) - mg/	d (Pb) - mg/	anese (Mn)	el (Ni) - mg/	nenium - mg/	ium (V) -	c (Zn) - mg/	cury (Hg) -	pH - Lab -	Lab - µs/c	um (Ca) -	sium (Mg)	um (Na) -	ssium (K) -	Cations -	ride (Cl) -	te (SO4) -	alinity as	alinity as	alinity as	alinity - m	Anions -	nic Balance	ia as Nitrate	te as N - mg/	te as N - mg/	X as N - mg/	Dissolved	Comment
Production_No 5 Bore	19-01-09 0:00	11:20		48.45																																								
Production_No 5 Bore	26-02-09 0:00	13:35		49.37																																								
Production_No 5 Bore	09-09-09 0:00	16:30			8.5	2810	19.2		0.001		0.097	0.001	0.0001	0.001	0.001	0.002	0.46	0.001	0.096	0.002		0.01	0.024	0.0001		2720	44	108	386	20	28.4	570	104	1	54	403	457	27.4	1.78	0.01				1580.00	Sampled from dam
Production_No 5 Bore	02-12-09 0:00	13:20																																									Bore covered by pump. Insufficient water to sample
Production_No 5 Bore	16-02-10 0:00	15:37	47.11	47.63																																								
Production_No 5 Bore	17-05-10 0:00	11:30			8.29	388	18.7	0.04	0.001					0.001		0.002	0.05	0.001	0.001	0.001			0.005	0.0001	8.9	349	17	12	32	7	3.31	23.9	4.39	1	13	117	130	3.36	0.82		0.01	0.02			could not dip
Production_No 5 Bore	31-08-10 0:00	15:20			9.86	238	22.1																																					Sample from dam fed by bore, bore covered
Production_No 5 Bore	15-11-10 0:00	13:24	46.42	46.94	8.67	210	24.1																																					Water from dam fed by bore
Production_No 5 Bore	08-03-11 0:00	10:20			8.54	1020	27.5	0.88	0.002					0.001		0.003	0.67	0.001	0.001	0.068			0.005	0.0001	8.84	792	24	30	114	18	8.99	161	50	1	23	144	167	8.93	0.32		0.01	0.01	0.01		Water from dam fed by bore, pump over bore
Production_No 5 Bore	21-06-11 0:00	11:40																																									pump over bore, dam empty
Production_No 5 Bore	21-09-11 0:00	11:30																																									Just mud from 42m, pump still in bore but dam now in production area
Production_No 5 Bore	06-01-12 0:00	10:40																																									Dry
Production_No 5 Bore		10:10																																									Under production area
Werona Production	09-09-09 0:00				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				3530.00	
Werona Production	02-12-09 0:00	12:45			8.03	5770	25.9	0.01	0.001					0.005		0.01	0.05	0.001	0.001	0.001			0.005	0.0001	8.16	5220	49	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
Werona Production	16-02-10 0:00	14:05	16.73	17.36																																								
Werona Production	17-05-10 0:00	12:35			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		bore covered by pump
Werona Production	31-08-10 0:00	12:55			8.43	4410	19.9																																					Sampled from dam fed by bore, bore covered by pump
Werona Production	15-11-10 0:00	12:00																																										No water in dam fed by bore, bore covered by pump
Werona Production	08-03-11 0:00	12:45			7.76	4200	25	0.18	0.001					0.001		0.002	0.29	0.001	0.013	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
Werona Production	14-06-11 0:00	10:20			7.85	3870	17.5																																					bore covered by pump
Werona Production	21-09-11 0:00	11:00			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	0.023	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
Werona Production	06-01-12 0:00	9:10			7.92	2745	23.8																																					bore covered by pump
Werona Production	03-04-12 0:00	10:30			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	0.011	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	2230.00	bore covered by pump
Werona Production	20-06-12 0:00	08:40			8.13	3070	14.5																																					From dam fed by bore, bore covered by pump
Werona Production	20-09-12 0:00	12:30			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	2260.00	bore covered by pump
Werona Production	07-12-12 0:00	09:50			8.08	3410	26.8																																					bore covered by pump
Werona Production	18-03-13 0:00	12:10			8.16	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	2250.00	bore covered by pump
Werona Production	09-07-13 0:00	12:15																																									Pump cap over bore
Werona Production	06-09-13 0:00	11:10																																									Pump cap over bore - pump off - genset removed
Werona Production	05-06-14 0:00	11:25																																									Pump cap over bore - pump off - genset removed
Werona Production	19-11-14 0:00	11:15																																									Pump over bore
Werona Production	25-02-15 0:00	12:40																																									Pump over bore
Werona Production	20-05-15 0:00																																										Pump over bore
Werona Production	01-09-15 0:00																																										Pump over bore
Werona Production	10-05-16 0:00																																										Pump over bore
Werona Production	11-11-16 0:00																																										Pump over bore
Werona Production	01-03-17 0:00																																										
Werona Production	14-06-17 0:00																																										Pump over bore
Werona Production	06-12-17 0:00				7.9	5380	25.2																																				Pump over bore
Werona Production	21-03-18 0:00				8.4	4960	25.8	1.75	0.001		0.224	0.001	0.0001	0.003	0.001	0.002	2.37	0.001	0.061	0.002		0.01	0.012	0.0001	8.02	4930	120	223	527	10	47.5	1260	134	1	1	558	558	49.5	2.02	0.05	0.04	1.08	1.12	3110.00	Pump over bore, Dam grab sample
Werona Production	06-06-18 0:00	12:30			8.5	4250	15.9																																				Pump over bore, Dam grab sample
Werona Production	19-09-18 0:00	11:10			7.9	3650	22.1	0.53	0.001		0.214	0.001	0.0001	0.001	0.001	0.001	0.51	0.001	0.02	0.001		0.01	0.005	0.0001	7.92	3740	91	155	405	8	35.1	951	72	1	1	565	565	39.6	6.02	0.02	0.01	0.84	0.84	2240.00	Pump over bore, Dam grab sample

Location	Date	Time	to Ground	to Stand	pH - Field	Field - µs	hp - Field	nium (Al)	nic (As)	- boron	- mg	um (Ba)	- ium (Be)	- ium (Cd)	- ium (Cr)	- alt (Co)	- pper (Cu)	- n (Fe)	- mg	d (Pb)	- nese (Mn)	kel (Ni)	- nenium	- stium (V)	- c (Zn)	- mury (Hg)	-	pH - Lab	- Lab	- µs/	um (Ca)	- ssium (Mg)	um (Na)	- ssium (K)	- Cations	- ride (Cl)	- te (SO4)	- kalinity as	kalinity as	kalinity as	kalinity - m	Anions	- nnic Balance	ia as Nitrate	te as N	- rite as N	- rX as N	- m	dissolved	Comment
44677	02-12-09	0:00	0:25																																														Bore covered. Could not sample.
44677	16-02-10	0:00	13:20																																															No Access
44677	17-05-10	0:00	12:43																																														Bore covered by pump
44677	31-08-10	0:00	13:05																																														Bore covered
44677	15-11-10	0:00	11:25																																														Bore covered with grass, dirt and calcium scale
44677	09-03-11	0:00	12:45																																														Bore covered with grass, dirt and calcium scale
44677	14-06-11	0:00	14:10																																														Bore covered with grass, dirt and calcium scale
44677	20-09-11	0:00	10:50																																														Bore covered with grass, dirt and calcium scale
44677	15-12-11	0:00	12:50			7.06	4080	24																																									Bore covered
44677	02-04-12	0:00	12:00			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	2980.00	Bore covered
44677	20-06-12	0:00	13:00			7.06	4370	18.1																																									Werona-tap on tank fed by bore,, Bore covered with scale and grass
44677	12-09-12	0:00	13:20			7.11	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	2750.00	
44677	07-12-12	0:00	12:30			7.12	4320	23.9																																									Bore covered with grass and scale
44677	18-03-13	0:00	11:15			7.02	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	2770.00	Bore covered with grass and scale
44677	09-07-13	0:00	11:20			8.26	4470	17.1																																								Bore covered with scale
44677	06-09-13	0:00	11:30			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				3040.00	
44677	05-06-14	0:00	11:40			7	4650	16.8																																								
44677	03-09-14	0:00	10:55			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	2900.00	
44677	19-11-14	0:00	14:30			7.3	4630	24.9																																								Bore covered with scale
44677	25-02-15	0:00	12:50			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	3110.00	
44677	20-05-15	0:00	13:20			7.2	4640	25.3																																								
44677	01-09-15	0:00	12:55			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	3130.00	
44677	23-02-16	0:00	11:50			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	3260.00	
44677	10-05-16	0:00	13:10			7.1	4820	25.8																																								Bore covered with scale
44677	30-08-16	0:00	13:10			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	3220.00	Bore covered with scale
44677	11-11-16	0:00	13:20			7	4590	23.5																																								Pump over bore
44677	01-03-17	0:00	13:10			7	4690	25.2	0.03	0.001	0.14	0.448	0.001	0.0001	0.001	0.001	0.01	0.1	0.003	0.013	0.007	0.01	0.01	0.42	0.0001	7.37	5010	175	232	488	6	49.2	1100	79	1	1	548	548	43.6	6.02	0.11	0.01	3.66	3.66	3620.00	Pump over bore
44677	14-06-17	0:00	13:25			7.1	4720	22.6																																								Pump over bore
44677	31-08-17	0:00	13:30			7.2	4750	19.6	0.01	0.001	0.12	0.451	0.001	0.0001	0.001	0.001	0.004	0.05	0.001	0.005	0.001	0.01	0.01	0.072	0.0001	7.65	4960	195	230	489	10	49.9	1130	70	1	1	605	605	45.4	4.73	0.01	0.01	3.28	3.28	2980.00	Pump over bore
44677	06-12-17	0:00	13:30			7.4	4610	27.1																																								Pump over bore
44677	21-03-18	0:00	13:30			7.3	4940	25.9	0.02	0.001	0.11	0.429	0.001	0.0001	0.001	0.001	0.003	0.06	0.001	0.008	0.001	0.01	0.01	0.071	0.0001	7.95	4980	184	237	494	5	50.3	1210	98	1	1	601	601	48.2	2.15	0.04	0.01	3.14	3.14	3320.00	Pump over bore
44677	06-06-18	0:00	14:15			7.6	4760	19.3																																								Pump over bore
44677	19-09-18	0:00	13:25			7.1	4740	22	0.03	0.001	0.12	0.415	0.001	0.0001	0.001	0.001	0.009	0.1	0.004	0.004	0.001	0.01	0.01	0.168	0.0001	7.33	4920	171	223	463	4	47.1	1370	72	1	1	512	512	50.4	3.33	0.02	0.01	2.72	2.72	3020.00	Pump over bore
P4	15-06-07	0:00	12:45	60.48	60.9																																											
P4	07-08-07	0:00		60.53	60.95																																										
P4	19-12-07	0:00	09:25	60.57	60.99																																										
P4	24-01-08	0:00	16:45	60.98	61.4																																										
P4	05-03-08	0:00	12:55	60.57	60.99																																										
P4	07-04-08	0:00	09:10	60.555	60.975																																										
P4	08-05-08	0:00	15:40	60.53	60.95																																										
P4	03-06-08	0:00	17:00	60.98	61.4																																										
P4	09-07-08	0:00	09:58	60.98	61.4																																										
P4	11-08-08	0:00	10:38	60.57	60.99																																										
P4	17-11-08	0:00	10:00	61.23	61.65																																										
P4	19-01-09	0:00	17:35	65.03	65.45																																										
P4	26-02-09	0:00	13:18	66.37	66.67																																										
P4	17-06-09	0:00	15:05	67.74	68.16																																										
P4	23-06-09	0:00	09:10	67.73	68.15	7.3	3960	20.9		0.006		0.519	0.001	0.0008	0.001	0.009	0.034	1.07	0.1	0.157	0.077		0.01	0.434	0.0001		4300	45	141	622	55	42.2	901	110	1	1	950	950	46.7	5	0.74				2270.00	
P4	09-09-09	0:00	12:30	67.44	67.88																																										
P4	21-12-09	0:00	13:17	68.16	68.6	6.58	4850	24.2	0.01	0.001					0.005		0.004	0.05	0.001	0.16	0.017			0.161	0.0001	7.14	4920	8	163	782	54	49.2	1220	14.6	1	1	906	906	52.7	3.49		0.01	0.15	0.15		
P4	16-02-10	0:00	15:45	67.99	68.43																																										
P4	17-05-10	0:00	11:15	67.69	68.13	7.4	4840	22.9	0.01	0.001					0.005		0.016	0.05	0.001	0.101	0.02			0.442	0.0001	7.25	3820	97	130	605	38	42.8	816	65.3	1	1	852	852	41.4	1.68		0.01	0.52			
P4	31-08-10	0:00	15:10	67.31	67.75	7.33	3720	23.6																																								
P4	15-11-10	0:00	12:45	67.06	67.5	6.92	2850	24.2																																								
P4	09-03-11	0:00	10:10	67	67.44	7.15	3790	24.9	1.57	0.002					0.004		0.511	4.1	0.136	0.223	0.019			1.35	0.0001	8.64	3550	95	139	537	51	40.8	764	95	1	178	943	962	42.8	2.33		0.01	0.67	0.67		
P4	21-06-11	0:00	13:20	67.07	67.51	7.2	4190	21.4																																								

Location	Date	Time	to Ground	to Stand -	pH - Field	Field - µs	no - Field	nium (Al)	nic (As) -	boron - mg	um (Ba) -	ium (Be) -	ium (Cd) -	nium (Cr) -	alt (Co) -	per (Cu) -	on (Fe) -	ead (Pb) -	nese (Mn)	kel (Ni) -	menium - m	dium (V) -	c (Zn) -	mury (Hg) -	pH - Lab	- Lab - µs/	ium (Ca) -	sium (Mg)	um (Na) -	sium (K) -	Cations -	ride (Cl) -	te (SO4) -	kalinity as	kalinity as	kalinity as	alinity - m	Anions -	nic Balanc	ia as Nitro	ate as N -	rate as N -	X as N - m	Dissolved	Comment
P5	15-06-07 0:00	10:20	40.25	40.75																																							
P5	07-08-07 0:00		39.69	40.19																																								
P5	19-12-07 0:00	9:15	40.42	40.92																																							
P5	24-01-08 0:00	16:35	40.4	40.9																																							
P5	05-03-08 0:00	12:50	40.49	40.99																																							
P5	07-04-08 0:00	9:05	40.505	41.005																																							
P5	08-05-08 0:00	15:30	40.52	41.02																																							
P5	03-06-08 0:00	16:44	40.52	41.02																																							
P5	09-07-08 0:00	9:53	40.585	41.085																																							
P5	11-08-08 0:00	10:34	40.515	41.015																																							
P5	17-11-08 0:00	9:55	40.9	41.4																																							
P5	19-01-09 0:00	17:31	41.5	42																																							
P5	27-02-09 0:00	13:14	41.5	42																																							
P5	17-06-09 0:00	15:00	47.11	47.61																																							
P5	23-06-09 0:00	9:00	47.16	47.62	7.5	4480	24.1		0.001		1.65	0.001	0.0004	0.026	0.006	0.024	13.2	0.028	0.277	0.095		0.02	0.075	0.0001		4200	25	59	854	27	43.8	1080	10	1	1	893	893	48.2	4.89	1.67				2240.00	LOR raised for Turbidimetric Sulfate
P5	09-09-09 0:00	11:40	48.77	49.28																																								
P5	02-12-09 0:00	13:15	49.96	50.47	7.69	4440	25.4	0.01	0.001					0.005		0.002	0.2	0.001	0.052	0.016			0.049	0.0001	7.53	4400	13	45	870	23	42.7	985	1.62	1	1	907	907	46	3.76		0.01	0.04	0.04		
P5	16-02-10 0:00	15:10	51.12	51.63																																								
P5	17-05-10 0:00	10:55	52.5	53.01	7.38	6520	20.8	0.01	0.001					0.005		0.001	0.05	0.001	0.06	0.004			0.005	0.0001	7.49	4270	33	41	979	16	47.9	928	1.73	1	1	894	894	44.1	4.13		0.01	0.05			NO LONGER EXISTS
P6	15-06-07 0:00	14:20	16.7	17.2																																								
P6	07-08-07 0:00		17.79	18.29																																								
P6	19-12-07 0:00	10:00	17.79	18.29																																							
P6	24-01-08 0:00	16:05	17.81	18.31																																							
P6	05-03-08 0:00	12:25	17.825	18.325																																							
P6	04-04-08 0:00	9:50	17.75	18.25																																							
P6	08-05-08 0:00	14:45	17.755	18.255																																							
P6	03-06-08 0:00	16:18	17.76	18.26																																							
P6	09-07-08 0:00	9:13	17.775	18.275																																							
P6	11-08-08 0:00	9:48	17.775	18.275																																							
P6	17-11-08 0:00	9:28	17.775	18.275																																							
P6	19-01-09 0:00	17:19	17.83	18.33																																							
P6	02-03-09 0:00	12:56	17.79	18.29																																							
P6	17-06-09 0:00	12:30																																										Destroyed by mining
45098	15-06-07 0:00		10.42	10.76																																								
45098	07-08-07 0:00		10.58	10.92																																								
45098	19-12-07 0:00	9:35	10.69	11.03																																							
45098	24-01-08 0:00	16:15	10.76	11.1																																							
45098	05-03-08 0:00	12:30	10.82	11.16																																							
45098	04-04-08 0:00	9:20	10.87	11.21																																							
45098	08-05-08 0:00	14:40	10.89	11.23																																							
45098	03-06-08 0:00	16:22	10.91	11.25																																							
45098	09-07-08 0:00	9:19	10.96	11.3																																							
45098	11-08-08 0:00	9:52	11	11.34																																							
45098	17-11-08 0:00	9:33	11.19	11.53																																							
45098	19-01-09 0:00	17:23	11.49	11.83																																							
45098	26-02-09 0:00	13:00																																										No access
45098	17-06-09 0:00	13:30																																										No access
45098	23-06-09 0:00	8:30	12.12	12.52	6.9	7090	22.5		0.001		0.07	0.001	0.0014	0.001	0.004	0.012	4.37	0.003	0.406	0.004		0.01	0.573	0.0001		6660	149	345	807	42	72	2100	201	1	1	808	808	79.6	4.99	0.03				3950.00	
45098	09-09-09 0:00	12:05	12.36	12.78																																								
45098	02-12-09 0:00	13:10	12.62	13.04	7.1	7120	23.5	0.01	0.001					0.005		0.014	0.05	0.001	0.365	0.013			0.406	0.0001	7.21	6100	49	340	756	45	64.5	1920	170	1	1	675	675	71.2	5.01		0.02	0.1	0.12		
45098	16-02-10 0:00	14:40	12.17	12.59																																								
45098	17-05-10 0:00	10:50	11.93	12.35	7.39	6930	19.8	0.01	0.001					0.005		0.002	0.05	0.001	0.257	0.003			0.23	0.0001	7.08	6180	170	358	814	34	74.3	1880	190	1	1	748	748	71.9	1.6		0.03	0.19			no longer exists