

Lamberts North Ash Placement Water Quality Monitoring

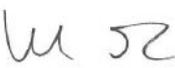
**Annual Water Quality Monitoring Report
2017/2018**

EnergyAustralia NSW

Date - November 2018

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www.erm.com

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EXECUTIVE SUMMARY

Environmental Resources Management Pty Ltd (ERM) was engaged by EnergyAustralia NSW Pty Limited (EnergyAustralia) to prepare a Water Quality Monitoring Annual Report (WQMAR) for the Lamberts North Ash Repository at the Mount Piper Power Station facility located at 350 Boulder Road, Portland, New South Wales (the Site) over the period of 1 September 2017 to 31 August 2018. Refer to *Figure 1* showing the location of the site.

The Lamberts North Ash Repository is authorised under project approval 09_0186 granted under the Environmental Planning and Assessment Act 1979 (NSW) on 16 February 2012 (Project Approval). The conditions of the Project Approval relevantly operate to require:

- implementation of Lamberts North Ash Placement Project Operation Environmental Management Plan dated May 2013 (OEMP) which includes a Groundwater Management Plan and a Surface Water Management Plan; and
- the carrying out of groundwater and surface water monitoring programs as specified in the OEMP.

Results from the monitoring program are reported to key stakeholders that include WaterNSW, NSW Environment Protection Authority (EPA) and NSW Department of Planning and Environment.

Based on the review of the surface water and groundwater quality data at the Lamberts North Ash Repository for the 2017/18 reporting period, the following conclusions are made:

- The water quality trigger values set out in the OEMP have been adopted as environmental goals for the monitored analytes (Environmental Goals);
- Some exceedances of the Environmental Goals were recorded during the reporting period with respect to surface water and groundwater;
- In surface water, sporadic exceedances of Environmental Goals were identified at LMP01, NC01 and WX22, however, these exceedances are not considered to be related directly to the Lamberts North Ash Repository;
- Groundwater from multiple bores, including bore D9 which is towards Neubecks Creek, reported elevated concentrations of various constituents that were above the Environmental Goals. Although there is the potential that activities at the Lamberts North Ash Repository may have contributed to these Environmental Goal exceedances in groundwater, these concentrations (particularly chloride) are unlikely to be predominately related to the Lamberts North Ash Repository given that no brine conditioned ash has been placed in the Lamberts North Ash Repository; and

- It is noted that the reported groundwater levels have generally remained below the maximum predicted groundwater level (912.0 mAHD) from CDM Smith (2013) and below the base of the ash placement (917 m AHD).

1. INTRODUCTION

Environmental Resources Management Pty Ltd (ERM) was engaged by EnergyAustralia NSW Pty Limited (EnergyAustralia) to prepare a Water Quality Monitoring Annual Report (WQMAR) for the Lamberts North Ash Repository at the Mount Piper Power Station facility located at 350 Boulder Road, Portland, New South Wales (the Site) over the period of 1 September 2017 to 31 August 2018. Refer to *Figure 1* showing the location of the site.

Results from the monitoring program are reported to key stakeholders that include WaterNSW, NSW Environment Protection Authority (EPA) and NSW Department of Planning and Environment.

This Lamberts North Ash Repository WQMAR has been prepared in accordance with Conditions E15 and E16 of project approval 09_0186 granted under the *Environmental Planning and Assessment Act 1979 (NSW)* on 16 February 2012 (**Project Approval**).

This report should be read in conjunction with the Statement of Limitations presented in *Annex A*.

1.1 PROJECT BACKGROUND

EnergyAustralia owns and operates the Lamberts North Ash Placement area.

The Lamberts North Ash Repository is located adjacent to and to the east of the Mt Piper Brine in Ash Co-Placement Project Area. The Lamberts North Ash Repository is located approximately 18 kilometres north-west of the City of Lithgow and is situated approximately 900 m to the east of the Mt Piper Power Station. Refer to *Figure 2* for a plan showing the site setting.

In 2010, a Preliminary Environmental Assessment (PEA) was prepared in support of the Concept Application (CA) for the future development of four (4) proposed placement sites including Lamberts North, Lamberts South, Neubecks Creek and Ivanhoe No. 4 (SKM, 2009). The Lamberts North and Lamberts South sites were noted as being historical coal workings including both underground and open-cut coal mining, with Centennial Coal undertaking coal mining and washery operations at the Lamberts North site prior to 2012 (CDM Smith, 2012).

To facilitate a consent to increase the power station's power generation capacity, and therefore an increase in the associated ash generation, development of the new ash placement facilities in Lamberts North was first proposed in 2009 to ensure the ongoing operation of the Mt Piper Power Station beyond 2015 (SKM, 2009).

The Lamberts North site is approximately 53 ha and is located adjacent to and to the east of the Mt Piper Brine in Ash Co-Placement Area.

The Project Approval granted on 16 February 2012 authorised the "construction and operation of new ash placement areas at the Lamberts South and Lamberts North sites to cater for the ash generated from the existing Mt Piper Power Station and the proposed Mt Piper Power Station Extension" subject to conditions.

Ash emplacement has occurred under the Project Approval at the Lamberts North Ash Repository but not yet at the Lamberts South Ash Repository. No brine conditioned ash has been emplaced in Lamberts North Ash Repository to date.

The conditions of the Project Approval relevantly operate to require:

- implementation of Lamberts North Ash Placement Project Operation Environmental Management Plan dated May 2013 (**OEMP**) which contains detailed environmental management framework, practices and procedures to be adopted as part of operations at the Lamberts North ash repository. This includes a Groundwater Management Plan and a Surface Water Management Plan; and
- the carrying out of groundwater and surface water monitoring programs as specified in the OEMP.

1.2

SCOPE OF WORKS

The following works have been implemented as part of this project, and were based on the Scope of Works provided by EnergyAustralia and augmented further based on our understanding of the project requirements:

- Review of monitoring data (dissolved oxygen, turbidity, sulphate, salinity, boron, manganese, iron, chloride, total phosphorus and total nitrogen) at the existing surface water quality monitoring sites (weekly data for 3 sites);
- Assessment and reporting on the year of monitoring of groundwater quality and depth of the water table at all monitoring sites (undertaken on a monthly frequency for 12 groundwater monitoring sites);
- Assessment and reporting on the year of monitoring at the Mt Piper surface water discharge/monitoring point (LMP01) and in Neubecks Creek at NC01 and WX22;
- Comparison of data with the predictions in the OEMP;
- Assessment of trends in groundwater and surface water quality and groundwater levels (comparison between years); and

- Preparation of this factual report on results of the surface and groundwater water quality monitoring required under the Project Approval, including:
 - Interpretations and discussion of results;
 - A list of occasions in the twelve month reporting period when the Environmental Goals have not been achieved; and
 - Update on the contingency measures being implemented in accordance with the OEMP.

1.3

DOCUMENTATION REVIEWED

A review of information provided in the reports listed below has been undertaken as part of this Annual Water Quality Monitoring Report and that information has been relied upon:

- Aurecon, November 2017. *Lamberts North Water Conditioned Fly Ash Placement Water Quality Monitoring, Annual Update Report 2016/17, Revision 3, 21 November 2017;*
- CDM Smith, May 2013. *Lamberts North Ash Placement Project Operation Environmental Management Plan;*
- Project Approval; Sinclair Knight Merz, September 2009. *Mt Piper Power Station Ash Placement Project, Project Description and Preliminary Environmental Assessment;*
- Local climate data from Lithgow (Coerwull) Weather Station No: 063226 obtained from the Bureau of Meteorology (*Annex C*);
- Gauging data for groundwater bores supplied by EnergyAustralia for the reporting period (*Annex F*);
- Ecolab/Nalco Quality Assurance/Quality Control Program (*Annex I*); and
- Laboratory data supplied by EnergyAustralia for the reporting period (*Annex I*).

PROJECT APPROVAL

The operation of the Lamberts North Ash Repository must comply with the statutory requirements outlined in *Table 1* below.

Table 1 *Summary of Approvals - Lamberts North Ash Repository*

Approval/Lease/Licence	Issue Date	Expiry Date	Details/Comments
Project Approval 09_0186	16 February 2012	-	Granted by the delegate of the Minister for Planning and Infrastructure under, Section 75J of the EP&A Act.

The groundwater and surface water monitoring programs are required under conditions E15 and E16, of the Project Approval. Refer the *Annex B* for a copy of the Project Approval. The OEMP sets out the surface water and groundwater monitoring requirements.

No changes to the Project Approval with respect to the surface water or groundwater monitoring programs were noted during the 2017/18 reporting period.

OPERATIONS SUMMARY

All ash placement operations for Mt Piper Power Station, including the Lamberts North Ash Repository, are undertaken by the contracted specialist in ash placement. Refer to *Figure 3* for a site layout plan of the ash repository area. Lend Lease Infrastructure (LLI) is the current service provided for EA NSW in all aspects of ash and dust management.

A summary of operations at the Lamberts North Ash Repository area for the 2017/18 reporting period is presented in *Table 2*.

Table 2 *Lamberts North Ash Repository – Operations Summary*

Activity	Previous Reporting Period 2016/17	This Reporting Period 2017/18	Next reporting period 2018/19 ¹
Ash delivered to site (T)	302,926	555,354	500,000
Volume of water co-placed (ML)	NA	89.90	90.00
Total ash produced at Mt Piper (T)	830,937	840,498	800,000
Total ash footprint (ha) ²	19.8	19.8	19.8
Area of repository capped (ha)	0	0	0

1. Figures are based on average of previous year's data as advised by EnergyAustralia NSW.
2. The total ash footprint refers to the land area covered by ash in the Mt Piper Ash Repository, which is made up of Mt Piper Brine in Ash, MPA1 (fresh ash placement) and Lamberts North

3.1

ASH PLACEMENT AND GEOMETRY

The Lamberts North Ash Repository is built to the south of an embankment of compacted mine spoil which was constructed in the northern end of Huon Gully to retain ash from Mt Piper Power Station facility. The Lamberts North Ash Repository has approval for the placement of brine-conditioned or water-conditioned fly-ash and furnace bottom ash from Mt Piper Power Station. However, EnergyAustralia have advised that only water-conditioned fly ash and furnace bottom ash has been handled and placed within Lamberts North since operations commenced. EnergyAustralia have also indicated that the water used to condition the ash is sourced from the cooling towers at the Mount Piper Power Station. The conditioning of the ash occurs at the Mt Piper Power Station facility, where the conditioned ash is then transferred via trucks to Lamberts North for disposal (as per CDM Smith, 2013).

The OEMP states that brine conditioned ash is to be placed only above an RL of 946 m AHD, in accordance with the groundwater modelling completed (CDM Smith 2013). However, as noted above, no brine conditioned ash has been emplaced within the Lamberts North Ash Repository to date.

Under the OEMP the ash at Lamberts North is to be placed in 0.5 m to 1 m lifts, in pads with materials that have been moisture-conditioned with water placed into the lower layers to an elevation specified in the approved design drawings.

The sequence of ash placement was initially in the most northerly part of the site, continuing towards the eastern and southern parts of Lamberts North.

The ash deposited at Lamberts North is to be treated to achieve an average compaction of 95%, relative to its maximum standard compaction, through the controlled combination of water addition and mechanical compaction with the use of rollers and rubber-tyred vehicles. The ash is to be deposited in layers and stepped to produce an overall batter slope of an approximate measurement of 1(V):4(H), with benches added to every 10 m in change of the height vertically (as per CDM Smith, 2013). Aurecon (2017) noted that once the repository reaches an elevation of 937 m AHD it is to be joined with the adjacent Mt Piper ash repository water conditioned ash area to the east. Once the Lamberts North ash repository has met its maximum RL level of 960 m AHD it is to be capped (CDM Smith 2013).

It is understood that water conditioned ash continued to be deposited across Lamberts North during the September 2017 to August 2018 reporting period, refer to *Figure 8* for a plan showing the areas where fresh water conditioned ash was placed. Based on information supplied by EnergyAustralia NSW, a total of 555,354 tonnes of ash was placed in the ash repository, with a total of 89.90 ML of water used for ash conditioning.

The ash repository elevations were reported to be approximately 930 m AHD by Aurecon (2017) during the 2016/17 reporting period. The elevation of the top of the ash repository area as at 21 June 2018 was approximately 940 m AHD (CEH Survey 2018), representing an increase in elevation of approximately 10 m. With this increase in elevation, the Lamberts North Ash Repository is now contiguous with the separately approved Mt Piper water conditioned ash repository to the west. Refer to *Annex D* for a copy of the most-recent ash repository survey plan for the 2017/18 reporting period.

4 ENVIRONMENTAL SETTING

Details of the environmental site setting are presented in the following sections to provide some context to the surface water and groundwater assessments presented in *Sections 5 and 6*.

4.1 CLIMATE

The climate data was sourced from the Bureau of Meteorology (BoM) (2018) Lithgow (Coerwull) Weather Station No: 063226, located approximately 16 km south-east from the Mt Piper Power Station. This is the closest operational weather station to the site for the 2017/18 reporting period. A summary of the climate data is presented in *Table 3* below and a copy of the data is presented in *Annex C*.

Table 3 *Local Climate Data for 2017/18 Reporting Period¹ (BoM 2018)*

Month	Rainfall Total (mm)	Min. Temperature (°C)	Max. Temperature (°C)
September 2017	5.2	-5.7	28.4
October 2017	66.4	-0.6	26.6
November 2017	32.2	1.6	27.1
December 2017	90.2	6.2	33.0
January 2018	59.4	5.9	36.9
February 2018	88.0	6.5	35.0
March 2018	39.3	-0.2	31.3
April 2018	13.4	-0.1	29.0
May 2018	13.5	-3.3	21.8
June 2018	33.2	-6.6	14.7
July 2018	8.0	-9.31	17.6
August 2018	35.8	-6.6	17.1
TOTAL/MIN/MAX	484.6	-9.31	36.9

The results show the total rainfall for the reporting period was 484.6 mm. This is lower than the average annual rainfall between 2012 and 2017 which was reported by Aurecon (2017) to be 756.5 mm/year.

A comparison of the average monthly rainfall for the current reporting period of 40.38 mm/month with the long-term average of 72 mm/month reported by Aurecon (2017), also shows a reduction.

¹ Reporting period 01 September 2017 to 31 August 2018.

4.2

GEOLOGY

The Lamberts North Ash Repository is adjacent to the Mt Piper Ash Repository and is located in the western area of the Sydney geological basin, in the Illawarra Coal Measure. The coal measures are in the order of 40 m thick, underlain by the Shoalhaven Group comprising sandstone and siltstone (SKM 2010). The underlying geology from surface to depth is summarised below (from SKM 2010):

- Lisdale Seam (1-1.5 m) - Interbedded high ash coal and shale;
- Blackmans Flat Conglomerate (up to 20 m) - coarse sandstone and conglomerate;
- Lithgow Seam (2-3 m);
- Marrangaroo Conglomerate (about 20 m) - massive sandstone and conglomerate, with some boulders;
- Shoalhaven Group (>20 m) - marine sandstone, siltstone and mudstone, sulphide-bearing and acid-generating in places.

4.3

HYDROGEOLOGY

The un-mined coal measures are considered to act as semi-confined aquifers given their low yields and hydraulic conductivity values (e.g. SKM, 2010).

Groundwater elevation contours indicate a component of groundwater flow to the south and south-east from the Lamberts North Ash Repository. Additionally, the groundwater elevation contours indicate a component of groundwater flow to the east and north-east, towards Neubecks Creek. Groundwater elevations in the vicinity of D20, D11 and D10 to the north, west and south-west of the repository respectively in the order of 911 m AHD, declining to below 909 mAHD to the south and south-east of the repository (e.g. D19 and D18) and to approximately 904 m AHD in the vicinity of Neubecks Creek at D8 (based on January 2018 data). The groundwater flow directions have remained relatively consistent throughout the monitoring period based on groundwater contour plans prepared for each season. Groundwater contour plans are presented in *Figures 5a to 5d*.

Historically groundwater seepage from beneath the Mt Piper Ash Repository would have been collected in the Groundwater Collection Basin located to the east of the Mt Piper Ash Repository (SKM, 2010). In 2012, this basin was filled in with mine workings as part of the construction of the adjacent Lamberts North ash repository. Aurecon (2017) noted that prior to the placement of ash in the Groundwater Collection Basin, the bottom of the basin was covered with mine spoil to a maximum level of RL 917 mAHD (4 m above the maximum estimated groundwater level), with ash placed above this RL.

The Lamberts North Ash Placement Area is within the Upper Coxs River Catchment. The main drainage in this area is Neubecks Creek which drains from the area west and north of Mt Piper Power Station towards the east and south-east. Mount Piper Power Station and associated ash storage areas are within the catchment of Neubecks and Wangol Creek, tributaries of the Coxs River. Neubecks Creek is located approximately 445 m from the north-eastern edge of the ash storage area. Neubecks Creek joins Wangol Creek (also known as Neubecks Creek in this area) which runs the length of the north-eastern edge of the ash storage area. Wangol Creek joins Coxs River approximately 3.16 km east of the Site.

Coxs River makes up part of the Warragamba water catchment, Sydney's largest of five drinking water catchments (WaterNSW, 2018). Historically, Coxs River flow has been affected by three major factors: the construction of the Lyell Dam; regional climatic variations; and land clearing in the upper and central parts of the river (Young et al. 2000). As a result of clearing the land for pastures, Coxs River supports cattle and sheep grazing as its largest single land use.

5 ENVIRONMENTAL GOALS

5.1 SURFACE WATER ENVIRONMENTAL GOALS

In order to assess for potential effects on surface water quality in receiving surface waters adjacent to the Lamberts North Ash Repository, Surface Water Environmental Goals have been set out in the OEMP. The Surface Water Environmental Goals apply to the following surface water monitoring sites: the Final Holding Pond Weir (LMP01); Upstream Neubecks Creek (NC01); and Neubecks Creek (WX22), as shown on *Figure 4*.

The Surface Water Environmental Goals take into consideration local baseline surface water conditions in Neubecks Creek prior to the commencement of ash placement in the Stage I area (eastern side) of the Mt Piper Ash Repository (referred to as pre-placement). Baseline conditions were specifically established based on the 90th percentiles of the water quality dataset from monitoring site WX22 in Neubecks Creek.

Aurecon (2017) also presented a set of additional baseline values for copper and nickel which were developed based on the dataset from October 2012 to August 2013 at WX22, to capture potential changes which have occurred to the surface water environment since the operation of the Mt Piper Brine in Ash project, but prior to the commencement of operation of the Lamberts North.

The Surface Water Environmental Goals adopted for this assessment² are as per the OEMP and are presented in *Table 1* in *Annex E*.

Consistent with the surface water contingency plan in the OEMP, when concentrations in surface water samples exceed the Neubecks Creek pre-placement 90th percentile concentrations, an investigation of the cause shall be conducted. This is assessed by comparison of the 50th percentiles for the various water quality indicators at each of the surface water monitoring sites for the monitoring period with the pre-placement 90th percentile concentrations.

5.2 GROUNDWATER ENVIRONMENTAL GOALS

In order to assess for potential effects on groundwater which may potentially discharge to nearby surface waters adjacent to the ash repository site, Groundwater Environmental Goals have been set out in the OEMP.

² The drinking water guidelines referenced in ANZECC (2000), NHMRC (1996) have since been superseded by the *Australian Drinking Water Guidelines 6, 2011* (revised October 2017, NHMRC 2011) and consideration should be given to revising the Environmental Goals accordingly.

The Groundwater Environmental Goals are generally based on the ANZECC water quality guidelines, which are applicable to receiving waters rather than directly to groundwater. The Groundwater Environmental Goals have therefore been applied to the groundwater monitoring sites located cross-gradient/south of the Lamberts North ash repository, up-gradient/adjacent the Lamberts North ash repository (down-gradient of the Mt Piper ash repository), down-gradient/adjacent to the Lamberts North ash repository and adjacent to Neubecks Creek with the objective of identifying where impacts above the Groundwater Environmental Goals exist.

Similar to the surface water approach, the Groundwater Environmental Goals also consider local baseline groundwater conditions in the former Groundwater Collection Basin (GCB), also known as the Huon Gully mine void, prior to the backfilling of this basin in 2012 as part of the construction of the Lamberts North ash repository. Baseline conditions (in pre-2000) were specifically established based on the 90th percentiles of the water quality dataset from monitoring undertaken at this location, as presented in the OEMP.

Aurecon (2017) also presented a set of additional baseline values for copper, iron and manganese which were developed based on the dataset from October 2012 to August 2013 at MPGM4/D9, to capture potential changes that had occurred in the underlying aquifer since the operation of the Mt Piper Brine in Ash project, but prior to the commencement of operation of the Lamberts North ash repository.

The Groundwater Environmental Goals are presented in *Table 1* in *Annex F*.

Consistent with the groundwater contingency plan in the OEMP, when concentrations in groundwater samples exceed the Groundwater Collection Basin pre-placement 90th percentile concentrations, an investigation of the cause shall be conducted. This is assessed by comparison of the 50th percentiles for the various water quality indicators at each of the surface water monitoring sites for the monitoring period with the pre-placement 90th percentile concentrations.

5.3

OPERATIONAL ENVIRONMENTAL MONITORING PLAN (OEMP)

The OEMP outlines the framework to manage environmental aspects associated with the operation of the Project. With respect to the management of surface water and groundwater at the site, the plan outlines the following sub-plans:

- Section 6.4 (of OEMP): Groundwater Management and Monitoring Plan (GMMP), to address Conditions D3 (b), E15 and E17 of the Project Approval; and
- Section 6.5 (of OEMP): Soil and Surface Water Management Plan to address Conditions D3 (c) and E16 of the Project Approval.

The groundwater modelling prepared by CDM Smith (2012) outlined the following predictions with respect to the groundwater model:

- Ash placement was considered highly unlikely to adversely affect the two aquifers underlying the ash repository, with the project design modified to prevent any groundwater contamination from occurring including provision of a sufficient separation distance between maximum groundwater level and the ash placement (CDM Smith, 2013);
- Groundwater modelling demonstrated that the water present in Huon Drain is largely groundwater from the intersection of Huon Void with the water table (CDM Smith, 2013);
- The maximum groundwater level in the southern end of the ash repository was identified as 912.5 m AHD, 2.5 m above the nominal or normal RL 910 m AHD (CDM Smith, 2012);
- The model suggested that groundwater levels across the site were at maximum levels during monitoring due to wet weather patterns. Accordingly the model suggests that groundwater will not rise any further than predicted and will therefore remain at least 4 m below the base of the ash repository under a 1 in 100 year Average Recurrence Interval (ARI) event and steady state normal conditions (CDM Smith, 2012);
- The model indicated that no impact on normal groundwater and surface water quality parameters is expected (CDM Smith, 2012); and
- Preliminary predictions of sulphate and TDS levels indicated that there were also unlikely to be impacts associated with compounds such as boron, manganese, nickel, zinc, molybdenum, copper, arsenic and barium (CDM Smith, 2012).

6 SURFACE WATER ASSESSMENT

6.1 OBJECTIVE

The objective of the surface water monitoring program is to monitor the impacts of ash placement activities occurring under the Project Approval on Neubecks Creek and Lamberts Gully having regard to the Surface Water Environmental Goals. The condition of the surface water down-stream of the ash repository is also compared to surface water quality conditions up-stream of the ash repository to assess for any potential changes in water quality.

6.2 SURFACE WATER MONITORING LOCATIONS AND FREQUENCY

A summary of the surface water monitoring site locations is presented in *Table 4* below and shown on *Figure 4*.

Table 4 *Surface Water Monitoring Site Network and Frequency*

Site ID	Location Description	Monitoring Frequency
LMP01	Final Holding Pond Weir - Licence discharge/monitoring point is located north-west of the Mt Piper Ash Repository. This monitoring site is located in an upstream position relative to the Lamberts North Ash Placement Area.	Weekly ¹
NC01	Located in Neubecks Creek. This monitoring site is located upstream to the Lamberts North Ash Placement Area and to the north of the Mt Piper Ash Repository and is an aquatic life background site.	Weekly ¹ /Monthly ²
WX22	Located in Neubecks Creek at a stream gauge to the east/ down-stream of the Mt Piper and Lamberts North Ash Repositories and monitoring site LDP01. This monitoring site is also situated down-stream of monitoring bore D8.	Weekly ¹ /Monthly ²

1. Selected field parameters monitored on a weekly basis (see *Section 6.4* below)
2. Monitoring undertaken by analytical laboratory Nalco Water – Ecolab

6.3 SURFACE WATER MONITORING METHODOLOGY

Surface water quality monitoring was undertaken by Nalco Water – Ecolab (Nalco) on behalf of EnergyAustralia. Information on Nalco’s general monitoring methodology, supplied by EnergyAustralia, indicates that sampling was performed by trained personnel in accordance with (Nalco) internal procedures and relevant parts of Australian Standard AS5667 *Water-quality Sampling*, for which the laboratory holds NATA accreditation.

Nalco documentation states that pre-labelled sample containers were used and the containers are prepared to ensure that samples were preserved in accordance with Australian Standard 5667.1:1998 and Standard Methods for the Examination of Water and Wastewater, 22nd Edition (APHA).

Eskies and freezer packs were used by Nalco to maintain the integrity of the samples during transport from the sampling sites to the laboratory. Conductivity, pH and temperature were measured in the field using a calibrated instrument, with all other parameters measured by a NATA Accredited Laboratory (Nalco, undated). A summary of the surface water sample analytical schedule is presented *Section 6.4*.

6.4 SURFACE WATER QUALITY DATASET

Samples were obtained by Nalco for either field or laboratory analysis in accordance with the following monitoring and analysis schedule:

- pH - weekly laboratory measurement (LMP01 only) and monthly field measurement;
- Electrical Conductivity (EC) - monthly field measurement (WX22 and NC01), weekly lab measurement at LMP01, until April 2018, followed by monthly field measurements;
- Dissolved Oxygen (DO) - monthly field measurement;
- Total Dissolved Solids (TDS) - monthly laboratory analysis;
- Temperature (°C) - monthly field measurement at WX22 only (and one occasion in May 2018 at NC01);
- Redox - field measurement on one occasion at LMP01 and NC01 in May 2018;
- Total Suspended Solids (TSS) - weekly laboratory analysis (LMP01 only);
- Major anions including chloride, fluoride and alkalinity - monthly laboratory analysis;
- Sulphate (as SO₄) - weekly laboratory analysis (LMP01 only) and monthly laboratory analysis (WX22 and NC01);
- Major cations including calcium, potassium, magnesium, sodium - monthly laboratory analysis;
- Nutrients including nitrate, nitrite and nitrogen and on occasion ammonia - monthly laboratory analysis; and
- Metals (including Al, Sb, As, Ba, Be, B, Cd, Cr (total), Cu, Fe, Pb, Mn, Hg, Mo, Ni, Se, Ag, V and Zn) - monthly laboratory analysis.

The trace metals in surface water samples were unfiltered, except for iron and manganese. Since January, 2013, concentrations of aluminium, copper and zinc concentrations in filtered water collected at all surface water monitoring points (LMP01, NC01 and WX22) were also analysed.

Data Quality Assurance and Quality Control (QA/QC) checks for compliance are performed by EnergyAustralia prior to the publishing of the surface water data on a monthly basis online.

Nalco have indicated that various checks as part of internal and external QA/QC programs are implemented. Please refer to *Annex I* for a copy of the laboratory QA/QC program outline.

Evidence of the collection of field QC samples (i.e. rinsate, trip blanks or trip spikes) during the field based programs was not provided. Further, results of laboratory QC measures including laboratory duplicate, triplicate, internal RPDs, method blanks or spike data were not presented in the laboratory reports reviewed.

No other specific QA/QC information was presented in the laboratory reports reviewed.

Copies of the laboratory data are presented in *Annex I*.

6.5

SURFACE WATER RESULTS

A summary of the surface water analytical results obtained for the 2017/18 reporting period against the Surface Water Environmental Goals is presented in *Table 5* below. Tabulated results along with summary statistics for each monitoring point (minimum, maximum, 50th percentile and 90th percentile) are presented in *Annex E* and shown on *Figure 6a*.

Table 5 Surface Water Monitoring Results - 2017/18

Analyte/Location	Surface Water Concentration Range				
	Neubecks Creek (WX22)	Final Holding Pond Weir (LMP01)	Lamberts North Upstream Background (NC01)	Neubecks Creek at WX22 Pre-placement 90 th Percentile ^a	Surface Water Environmental Goal
pH (field)	6.6 - 7.5	6.6 - 8.1	6.5 - 6.9	6.7-7.8	6.5 - 8.0^k
pH (laboratory)	NA	7.2 - 8.2	NA	6.7-7.8	6.5 - 8.0^k
Conductivity (µS/cm)	374 - 2,360	250 - 472	243 - 443	894	2,200^c
TDS and Major Ions (mg/L)					
TDS	255-1,790	158 - 370	130 - 264	580	1,500^d
Sulphate (as SO ₄)	75.3 - 1,130	31 - 124	13.9 - 97	332	1,000^e
Chloride	14.6 - 164	5 - 16.7	4.3 - 16.7	22	350 ^f
Fluoride	0.06 - 0.844	0.07 - 0.29	0.09 - 0.22	0.338	1.5 ^g
Trace Metals (ug/L)					
Arsenic	<1	<1 - 2	<1 - 2	<1	24 ^b
Barium	15 - 49	15 - 36	16 - 56	29	700 ^g
Beryllium	NA	<1	<1	<1	100 ⁱ
Boron	70 - 290	<50 - 230	<50 - 160	90	370 ^b
Cadmium	<0.1	<0.1 - 0.1	<0.1	<1	0.85 ^h
Chromium (total)	<1-9	<1 - 17	<1	<1	2^h
Copper	<1 - 1	2 - 19	<1 - 4	<1	3.5^h / 5^m
Iron ^l	64 - 199	16 - 233	59 - 2,960	281	300^f
Iron	206 - 714	59 - 1,260	774 - 3,740	281	300^f
Mercury	<0.04	<0.04 - <0.1	<0.04 - 0.09	-	0.06 ^b
Manganese ^l	132 - 2,230	31 - 238	24 - 1,660	720	1,900^b
Molybdenum	<1 - 2	1 - 5	<1 - 2	<1	10 ⁱ
Nickel	6 - 136	2 - 10	2 - 6	5	17^b / 15^m
Lead	<1	<1 - 4	<1 - 1	<1	5 ^b
Selenium	<0.2	0.3 - 0.6	<0.2 - 0.2	<1	5 ^b
Silver	<1	<1	<1	-	0.05^b
Zinc	<5 - 93	6 - 50	<5 - 12	116	116 ^j

Notes:

NA Not Available

All metals concentrations presented are from unfiltered samples, as per the OEMP

Shaded cell indicates value is equal to or exceeds the adopted criterion (Environmental Goal)

Bold indicates result is 1 - <10 times the adopted criterion

Bold and italicised indicates result is >10 times the adopted criterion

^a Values adopted from OEMP

^b ANZECC 2000 for Freshwater Slightly-Moderately disturbed aquatic ecosystems (Boron 90th, Pb 90th, Ni 80th, Se 90th, Ag 90th)

^c ANZECC 2000 - Conductivity range for lowland rivers in slightly disturbed ecosystems in south-east Australia is 125-2200 uS/cm

^d 1,500 mg/L based on a conversion factor of 0.68 and an EC of 2200 uS/cm lowland river conductivity for slightly disturbed ecosystems

^e ANZECC (2000) Livestock

^f ANZECC (2000) Irrigation for moderately tolerant crops

^g ANZECC (2000) Drinking water guidelines

^h Concentrations of cadmium, chromium and copper modified due to changes in water hardness Cd from 0.001 to 0.00085 mg/L; Cr from 0.001 to 0.002 mg/L and Cu from 0.0025 to 0.0035 mg/L

ⁱ ANZECC (2000) Irrigation LTV

^j Local guideline based on 90th percentile pre-brine placement

^k ANZECC (2000) pH values presented are for groundwater systems and based on aesthetic considerations such as corrosion and fouling of pumping, irrigation and stock watering systems) for primary industries

^l Concentrations of iron and manganese are filtered

^m Lamberts North pre-placement 90th percentile baseline data from October 2012 to August, 2013 and Neubecks Creek at WX22 as presented in Aurecon (2017).

6.5.1

Up-Stream - Licence Monitoring Point

The surface water field and analytical results obtained from surface water sample point LMP01 (also known as LDP01) for the 2017/18 reporting period are discussed below. The monitoring point is the V-notch adjacent to the Final Holding Pond Weir. The Final Holding Pond Weir holds stormwater collected from the Mt. Piper Power Station, as well as water from the catchment above Mt Piper including the Ivanhoe Coal Mine. The Final Holding Pond Weir is a pollution control structure which is generally open at all times to allow for natural flow to Neubecks Creek. However, EnergyAustralia does have the ability to shut the structure to stop flows if required. This monitoring location is located upstream of the Lamberts North (and Mt Piper) Ash Repository..

Field Parameters

Field parameters monitored at LMP01 for the 2017/18 monitoring period are summarised below:

- Surface water pH values (field) at LMP01 ranged between 6.6 to 8.1 standard pH units, with laboratory measured values reported between 7.2 and 8.2 standard pH units. The higher values were marginally above the ANZECC (2000) trigger value range upper limit of 8.0 standard pH units. It is noted that the exceedances of trigger values for pH data obtained from laboratory analysis are potentially inaccurate due to this parameter's sensitivity to changes in temperature (among other factors) which can occur in the time between sample collection and laboratory analysis. Field-based pH measurements are often considered to have a greater reliability and accuracy;
- Field electrical conductivity (EC) values ranged between 250 $\mu\text{S}/\text{cm}$ and 472 $\mu\text{S}/\text{cm}$ and were generally consistent with laboratory determined values ranging between 160 $\mu\text{S}/\text{cm}$ and 480 $\mu\text{S}/\text{cm}$. The reported EC values were generally consistent³ with Total Dissolved Solids (TDS) concentrations (measured monthly), which ranged from 158 mg/L to 370 mg/L. Field/laboratory EC and TDS values were all below the Surface Water Environmental Goals of 2,200 $\mu\text{S}/\text{cm}$ and 1,500 mg/L, respectively;
- Dissolved oxygen (DO) levels measured in the field ranged between 4.1 mg/L and 13 mg/L and generally decreased over the monitoring period. There are no Surface Water Environmental Goals for DO;
- Total suspended solids (TSS) were measured weekly and were generally variable with higher concentrations noted between January and March 2018. TSS ranged from 2 mg/L to 85 mg/L. There are no Surface Water Environmental Goals for TSS; and

³ Based on approximate EC to TDS conversion factor of 0.65

- Turbidity generally ranged from 7.5 to 33.8 NTU, with a spike in turbidity noted in December 2017 at 125 NTU, over 100 NTU higher than the previous or subsequent sampling events. There are no Surface Water Environmental Goals for turbidity.

Anions

Concentrations of anions including sulphate, chloride and fluoride were generally stable at LMP01 throughout the 2017/18 reporting period. All reported analyte concentrations were below the Surface Water Environmental Goals, as specified in *Section 5.1* above.

Concentrations of nitrate, nitrite, Total Kjeldahl Nitrogen (TKN), ammonia, and total nitrogen were tested for and detected (except for nitrite and ammonia) in the surface water samples collected from the LMP01; however, no Surface Water Environmental Goals apply for these parameters for comparison as this location is considered to represent upstream/background water quality conditions.

Metals

Throughout the reporting period, various metals were identified at concentrations above the Surface Water Environmental Goals. A summary of the results reported above the Surface Water Environmental Goals during the 2017/18 reporting period is presented below:

- Concentrations of chromium were generally reported at up to 2 µg/L throughout the period of reporting, with an anomalous detection of 17 µg/L during February 2018. The results exceeded the Surface Water Environmental Goal of 5 µg/L in February 2018 only. This result is not influenced by the ash repository and is considered to be representative of background water quality;
- Copper concentrations ranged between 2 µg/L and 19 µg/L, consistently exceeding the pre-placement level of 1 µg/L during the reporting period, with a peak concentration of 19 µg/L noted in December 2017. Copper concentrations exceeded the Surface Water Environmental Goal of 3.5 µg/L in September 2017 to February 2018 and June 2018. These results are not influenced by the ash repository and are considered to be representative of background water quality. Copper concentrations also exceeded the revised baseline value of 5 µg/L (pre-placement 90th Percentile baseline for October 2012 to August 2013 at Neubecks Creel at WX22) in October 2017 to February 2018 and June 2018 to August 2018;
- Concentrations of iron (filtered) ranged between 16 µg/L and 233 µg/L and were below the Surface Water Environmental Goal of 300 µg/L. Iron (unfiltered) concentrations ranging between 59 µg/L and 1,260 µg/L exceeded the Surface Water Environmental Goal in five out of twelve months of the monitoring period. No results for unfiltered samples were available

from April 2018 to August 2018. These results are not influenced by the ash repository and are considered to be representative of background water quality;

- Silver concentrations were reported below the limit of reporting (of <1 µg/L) for the entire monitoring period; however, the limit of reporting exceeded the Surface Water Environmental Goal ~~local guideline~~ of 0.05 µg/L. No pre-placement trigger levels are available for silver; and
- Concentrations of mercury were generally reported below the limit of report (of <0.04 µg/L). In May 2018 mercury exceeded the Surface Water Environmental Goal of 0.06 µg/L with a value of <0.1 µg/L. These results are not influenced by the ash repository and are considered to be representative of background water quality.

Concentrations of aluminium, cobalt, strontium and vanadium were intermittently tested for and detected at concentrations above the limits of reporting in the surface water samples collected from LMP01; however, no Surface Water Environmental Goals apply to these parameters.

Final Holding Pond Weir (LMP01) results were below the adopted Surface Water Environmental Goals, with the exception of chromium (up to 17 µg/L) and iron (unfiltered) (up to 1,260 µg/L), which intermittently exceeded these levels, and copper (up to 19 µg/L) which consistently exceeded the Surface Water Environmental Goal. The detections are considered to be related to the background water quality in the area given this site location is up-stream of both the Mt Piper and Lamberts North ash repositories and is not considered to be impacted by the Lamberts North Ash Repository.

6.5.2 *Up-Stream - Neubecks Creek*

The surface water field and analytical results obtained from sample point NC01 located in Neubecks Creek, for the 2017/18 reporting period are discussed below and presented in *Annex E*. This monitoring location is located up-stream of the Lamberts North Ash Repository.

Field Parameters

Field parameters in surface water monitored at NC01 are summarised below:

- pH (field) ranged from 6.5 to 6.9, with all pH results within the Environmental Goal pH range of 6.5 – 8.0 standard pH units;
- Field electrical conductivity (EC) values ranged between 243 µS/cm to 443 µS/cm and were generally consistent with laboratory determined TDS values ranging between 130 mg/L and 264 mg/L. EC and TDS were all below the Surface Water Environmental Goals of 2,200 µS/cm and 1,500 mg/L, respectively.

- DO (field) ranged from 1 mg/L to 13 mg/L throughout the monitoring period. No Surface Water Environmental Goals apply to DO; and
- Turbidity ranged from 2.7 NTU to 51.4 NTU across the monitoring period and was generally variable. No Surface Water Environmental Goals apply to turbidity.

Major and Minor Ions

Major and minor ion concentrations in surface water from NC01 were below the relevant Surface Water Environmental Goals.

Calcium, chloride and magnesium had generally consistent concentrations throughout the reporting period, with sulphate concentrations generally more variable ranging between 13.9 and 97 mg/L.

Nitrate, nitrogen and total Kjeldahl nitrogen (TKN) were detected in the surface water sampled collected from NC01; however, no Surface Water Environmental Goals apply to these parameters.

Metals

Throughout the monitoring period elevated concentrations of various metals were identified at concentrations above Surface Water Environmental Goals (the ANZECC (2000) or baseline concentration). A summary of the results reported above the Surface Water Environmental Goals during 2017/18 reporting period is presented below:

- Concentrations of iron (filtered) ranged between 59 µg/L and 2,960 µg/L, with higher values exceeding the Surface Water Environmental Goal of 300 µg/L. Unfiltered iron results were not available from April 2018 to August 2018; however, the values that were available also exceeded the Surface Water Environmental Goal, and ranged from 774 µg/L to 3,740 µg/L.
- Silver concentrations were reported below the limit of report (of <1 µg/L) for the entire reporting period, noting that the limit of reporting exceeded the Surface Water Environmental Goal of 0.05 µg/L. No pre-placement trigger levels are available for silver.
- Concentrations of mercury were generally below the limit of reporting of 0.04 µg/L. In March and May of 2018 concentrations of mercury were 0.09 µg/L and <0.1 µg/L, respectively, above the Surface Water Environmental Goal of <0.06 µg/L.

Concentrations of aluminium, vanadium and strontium were tested for. Of these, only aluminium was measured at concentrations above the limits of reporting in the surface water samples collected from the NC01; however, no Surface Water Environmental Goals apply to these parameters for comparison.

6.5.3

Down-Stream – Neubecks Creek

The surface water field and analytical results obtained from sample point WX22, located in Neubecks Creek, for the 2017/18 reporting period are discussed below and presented in *Annex E*. This monitoring location is located down-stream of both the Mt Piper and the Lamberts North ash repositories.

Field Parameters

Field parameters monitored at WX22 are summarised below:

- pH (field) ranged from 6.6 to 7.5, with all pH results within the Surface Water Environmental Goal pH range of 6.5 – 8.0 standard pH units;
- Field electrical conductivity (EC) values ranged between 374 $\mu\text{S}/\text{cm}$ and 2,360 $\mu\text{S}/\text{cm}$ and were generally consistent with laboratory determined TDS values ranging between 255 mg/L and 1790 mg/L⁴. In February 2018, EC and TDS values exceeded the Surface Water Environmental Goals of 2,200 $\mu\text{S}/\text{cm}$ and 1,500 mg/L, respectively;
- DO (field) concentrations ranged from 7.1 mg/L to 16 mg/L throughout the monitoring period. No Surface Water Environmental Goals apply to DO;
- Turbidity ranged from 1 NTU to 14.7 NTU across the monitoring period and was generally variable. No Surface Water Environmental Goals apply to turbidity; and
- Water temperatures recorded in the field ranged from 1.9 °C to 18.7 °C with the higher temperatures recorded coinciding with the warmer months of the year. No Surface Water Environmental Goals apply to temperature.

Major and Minor Ions

Concentrations of the major and minor ions analysed were below the Surface Water Environmental Goals at WX22 with the exception of sulphate. Sulphate concentrations generally ranged from 75.3 mg/L to 312 mg/L with peaks identified in January 2018 (983 mg/L) and February 2018 (1,130 mg/L), the latter of which exceeded the Surface Water Environmental Goal of 1,000 mg/L.

Peaks in calcium, magnesium and sodium concentrations were noted in January and February 2018 when concentrations reached 152 mg/L, 133 mg/L, and 213 mg/L respectively, at least 100 mg/L higher than concentrations in previous or subsequent sampling events. Peaks were also noted in potassium concentrations in January and February 2018 when concentrations reached 12.8 mg/L, at least 7 mg/L higher than previous or subsequent sampling events.

⁴ Based on approximate EC to TDS conversion factor of 0.65.

Nitrate, Total Kjeldahl Nitrogen (TKN) and total nitrogen were detected at concentrations above the limits of reporting in the surface water samples collected from WX22; however, no Surface Water Environmental Goals apply to these parameters.

Metals

Throughout the reporting period elevated concentrations of various metals in surface water from WX22 were identified at concentrations above the adopted Surface Water Environmental Goals (the ANZECC (2000) or baseline concentration). A summary of the results reported above the Surface Water Environmental Goals during the 2017/18 reporting period is presented below:

- Chromium concentrations up to 9 µg/L were reported in surface water at WX22, exceeding the Surface Water Environmental Goal of 5 µg/L in March 2018 (9 µg/L) only. This result is considered unlikely to be a result of impacts of the ash repository;
- Iron concentrations ranged from 206 µg/L to 714 µg/L and exceeded the Surface Water Environmental Goal of 300 µg/L in five out of twelve months, in October 2017, and from December 2017 to March 2018. No unfiltered results were available from April 2018 to August 2018, but filtered iron concentrations in June 2018 were equal to the Surface Water Environmental Goal. The exceedances are considered unlikely to be a result of impacts of the ash repository;
- Manganese concentrations were generally reported at up to 582 µg/L, with a spike in concentration above the Surface Water Environmental Goal of 1,900 µg/L identified in February 2018 (at 2,140 µg/L) only. No unfiltered results were available from April 2018 to June 2018; however, it is noted that the filtered results were below the Surface Water Environmental Goal. The exceedance was considered unlikely to be a result of impacts of the ash repository;
- Nickel concentrations generally ranged from 6 µg/L to 31 µg/L, with peaks noted in January and February 2018 of 115 µg/L and 136 µg/L respectively. Nickel concentrations exceeded the Surface Water Environmental Goal of 17 µg/L in seven of the twelve months in September 2017 and from December 2017 to May 2018. Nickel concentrations also exceeded the baseline value (pre-placement 90th Percentile baseline for October 2012 to August 2013 at Neubecks Creek at WX22) during the peaks identified in January and February 2018; and
- Silver concentrations were all reported below the laboratory limit of reporting of <1 µg/L, with the limit of reporting exceeding the Surface Water Environmental Goal of 0.05 µg/L. No pre-placement data are available for silver.

Concentrations of aluminium, strontium and vanadium were tested for and, except for vanadium, were present at concentrations above the limits of reporting in the surface water samples collected from the WX22; however, no Surface Water Environmental Goals apply to these.

6.6

DISCUSSION

An overall discussion of the surface water results in each of these areas is provided below.

Neubecks Creek results at WX22 were generally below the Surface Water Environmental Goals (ANZECC (2000) or baseline conditions), with the exception of EC (up to 2,360 $\mu\text{S}/\text{cm}$), TDS (up to 1,790 mg/L), sulphate (up to 1,130 mg/L), chromium (up to 9 $\mu\text{g}/\text{L}$), manganese (up to 2,140 $\mu\text{g}/\text{L}$), iron (up to 714 $\mu\text{g}/\text{L}$) and nickel (up to 136 $\mu\text{g}/\text{L}$), which intermittently exceeded the Surface Water Environmental Goals during the 2017/18 reporting period.

The elevated concentrations of chromium and iron during the 2017/18 reporting period are considered to be related to the background water quality in the area, based on the background surface water results (from LMP01 and NC01). The elevated concentrations of manganese and nickel are also in part considered to be associated with background conditions, with detectable concentrations identified at LMP01 and NC01. It is noted that the exceedances for manganese were intermittent during the 2017/18 monitoring period, with concentrations of manganese declining to below the adopted ANZECC (2000) trigger value in May 2018 and therefore not suggestive of long term increases in manganese concentrations at WX22. Similarly nickel concentrations also declined below the Surface Water Environmental Goal for the last three monitoring events for the reporting period.

Higher concentrations of EC, TDS and sulphate were reported in the same samples as peak concentrations of barium, boron, iron, manganese and nickel during January and February 2018 in WX22, a relationship evident to date only during the 2017/18 reporting period. These concentrations may be associated with effects of seasonality, with rainfall reported as being highest in December 2017, just prior to these events (refer to *Section 4.1*) and with low rainfall amounts relative to the “average” year.

6.6.1

Contingency Plan Assessment

A summary of the surface water analytical results (50th percentile) for the 2017/18 reporting period compared with the Pre-placement 90th Percentile in Neubecks Creek at sampling locations LMP01 (upstream), NC01 (upstream) and WX22 (downstream) is presented in *Table 6* below and shown on *Figure 6b*. A requirement of the OEMP, this assessment serves to provide an early indication of changes in surface water quality as part of contingency planning.

Table 6

Surface Water Concentrations (50th Percentile) - 2017/18 Reporting Period

Analyte/Location	Surface Water Concentrations (50% percentile)			Neubecks Creek at WX22 Pre-placement 90th Percentile ^a
	WX22	NC01	LMP01	
pH	7.0	6.7	7.9	6.7-7.8
Conductivity (µS/cm)	604	307	345	894
TDS (mg/L)	452	202	221	580
Sulphate (as SO ₄) (mg/L)	198	53	60	332
Chloride (mg/L)	39	10	11	22
Fluoride (mg/L)	0.097	0.145	0.178	0.338
Arsenic (µg/L)	0.5	0.5	0.5	<1
Barium (µg/L)	21	30	25	29
Beryllium (µg/L)	NA	0.5	0.5	<1
Boron (µg/L)	120	140	100	90
Cadmium (µg/L)	0.05	0.05	0.05	<1
Chromium (total) (µg/L)	0.5	0.5	9.5	<1
Copper (µg/L)	1	3	5	<1
Iron (µg/L) ^b	415	1305	385	281
Iron (µg/L) ^c	109	258	45	281
Mercury (µg/L)	0.02	0.02	0.02	-
Manganese (µg/L) ^b	582	478	191	720
Manganese (µg/L) ^c	390	206	52	720
Molybdenum (µg/L)	1.5	1	3	<1
Nickel (µg/L)	21	3	4	5
Lead (µg/L)	<1	1	2.5	<1
Silver (µg/L)	<1	<1	<1	-
Selenium (µg/L)	<0.1	<0.1	0.4	<1
Zinc (µg/L)	11	12	18	116

Notes

^a Neubecks Creek at WX22 Pre-placement 90th Percentile values for analytes (OEMP)

^b Unfiltered concentration value used for iron and manganese.

^c Filtered concentration value used for iron and manganese.

All metals concentrations presented are from unfiltered samples unless otherwise noted

Shaded cell indicates value is equal to or exceeds the adopted criterion (Neubecks Creek at WX22 Pre-placement 90th Percentile)

Bold indicates result is 1 - <10 times the adopted criterion

Bold and italicised indicates result is >10 times the adopted criterion

The 50th percentile concentrations (for the 2017/18 period) of boron, chromium, copper, iron (unfiltered), molybdenum and lead at up-stream monitoring location LMP01 were above the 90th percentile pre-placement levels. At up-stream monitoring location NC01 the 50th percentile concentrations for boron, copper, iron (unfiltered), molybdenum and lead were identified above the 90th percentile levels. Down-stream of the ash repository at WX22, the 50th percentile concentrations for chloride, boron, copper, iron, molybdenum and nickel were identified above the 90th percentile pre-placement levels.

The elevated concentrations (50th percentile for the 2017/18 period) of boron, copper, iron and molybdenum identified at WX22 were reported at levels comparable to the up-stream site suggesting these exceedances are potentially due to up-stream/background conditions, as noted in *Section 6.6*.

Concentrations of nickel were found to be higher in downstream site WX22 (21 µg/L) relative to the up-stream locations LMP01 (4 µg/L) and NC01 (3 µg/L).

Chloride concentrations (50th percentile) were found to be at least 3 times higher in down-stream monitoring location WX22 compared the background chloride 50th percentile results at LMP01 and NC01. However, these concentrations are unlikely to be related to the Lamberts North Ash Repository given that no brine conditioned ash has been emplaced in the Lamberts North Ash Repository.

The comparison of 50th percentile chloride and nickel results indicate a potential change in the surface water quality down-stream of the ash repository. This is the “early warning trigger” but is considered unrelated to the Lamberts North Ash Repository.

6.6.2

Trend Analysis

A review of concentration trends in surface water with respect to key indicators including TDS, sulphate, chloride and nickel is presented below. These indicators were selected based on their exceedances of Surface Water Environmental Goals and/or the potential increase in concentration observed down-stream of the ash repository. Graphs generated and reviewed as part of the trend analysis are presented in *Annex G*.

Chloride

Chloride concentrations were consistently below the Surface Water Environmental Goal of 350 mg/L throughout the monitoring period 2010-2018. Chloride concentrations in some samples at WX22 during the 2017/18 monitoring period appear to be generally comparable with previous years, with spikes in concentrations recorded at this location in February 2018 (164 mg/L) and February 2014 (130 mg/L). Chloride concentrations at LMP01 have remained relatively stable and low since 2010. At location NC01, chloride concentrations have followed a similar low, stable reading as at location LMP01.

TDS

TDS contents in surface water at LMP01 and NC01 have remained relatively stable since 2010, consistently below the Surface Water Environmental Goal of 1,500 mg/L). Down-stream of the ash repository, the TDS levels at WX22 were generally stable between 2010 and 2012, with sporadic increases in TDS levels above the pre-placement levels observed after this time. Peak concentrations above the Surface Water Environmental Goal were identified in February 2014 and February 2018. These correlate with the maximum chloride concentrations.

Sulphate

Sulphate concentrations at LMP01 and NC01 have remained relatively stable since 2010, consistently below the Surface Water Environmental Goals of 1,000 mg/L. The sulphate concentrations at WX22, down-stream of the ash repository, were generally stable between 2010 and 2012, with large fluctuations in sulphate concentrations evident after this time. Post 2012, the sulphate concentrations at WX22 were above the Surface Water Environmental Goal on one occasion only during the current reporting period (February 2018).

Nickel

Nickel concentrations at LMP01 and NC01 have been generally stable since 2012, with one exceedance at LMP01 above the adopted Surface Water Environmental Goal of 17 µg/L. Concentrations of 115 and 136 µg/L were reported in surface water samples from WX22 in January and February 2018, at a similar magnitude to a peak of 150 µg/L reported in February 2014. These peaks are potentially associated with low stream flows. Nickel concentrations in surface water from WX22 exceeded the pre-placement trigger level in all 12 months of the monitoring period.

7.1 OBJECTIVE

The objective of the groundwater monitoring program is to monitor the impacts of ash placement activities occurring under the Project Approval on local groundwater quality and hydrology having regard to Groundwater Environmental Goals.

7.2 GROUNDWATER MONITORING LOCATIONS AND FREQUENCY

A summary of the groundwater monitoring site locations is presented in *Table 7* below and shown on *Figure 4*.

Table 7 Groundwater Monitoring Network and Frequency

Bore ID	Location Description	Screened Material ¹	Monitoring Frequency	Required under OEMP
MPGM4/D1	North eastern boundary of ash repository	Mudstone, sandstone and coal	Monthly ²	Yes
MPGM4/D8	Down-gradient of ash repository, adjacent to Neubecks Creek	Alluvial deposits	Monthly ²	Yes
MPGM4/D9	Down-gradient of ash repository, adjacent to Neubecks Creek	Alluvial deposits	Monthly ²	Yes
MPGM4/D10	Inside of Mt Piper ash repository	Fill beneath the ash	Monthly ²	Yes
MPGM4/D11	Inside of Mt Piper ash repository	Fill beneath the ash	Monthly ²	Yes
MPGM4/D15	Centennial coal area south of Lamberts North ash repository	Sandstone and/or shale	Monthly ²	Yes
MPGM4/D16	Centennial coal area south of Lamberts North ash repository	Sandstone and/or shale	Monthly ²	Yes
MPGM4/D17	Centennial coal area south of Lamberts North ash repository	Sandstone and/or shale	Monthly ²	Yes
MPGM4/D18	Centennial coal area south of Lamberts North ash repository	Sandstone and/or shale	Monthly ²	Yes
MPGM4/D19	down-gradient of ash repository	Fill beneath the ash	Monthly ²	Yes
MPGM4/D20	down-gradient of ash repository	Screened in mine spoil	Monthly ²	No
MPGM4/D23	Inside of Mt Piper ash repository	Sandstone	Monthly ²	No

¹ ERM 2018a

² Monitoring undertaken by analytical laboratory Nalco

Groundwater quality monitoring was undertaken by Nalco Water – Ecolab (Nalco) on behalf of EnergyAustralia. Information on Nalco’s general monitoring methodology, supplied by EnergyAustralia, indicates that sampling was performed by trained personnel in accordance with Nalco internal procedures and relevant parts of Australian Standard AS5667 *Water-quality Sampling*, for which the laboratory holds NATA accreditation.

EnergyAustralia have advised that sample collection methodologies were consistent with those presented in previous monitoring reports. Groundwater bores were bailed and sampled after allowing time for the water level in the bore to re-establish (Aurecon, 2017). Prior to bailing, the depth to the water level was measured from the top of the bore pipe (Aurecon 2017).

Nalco documentation states that pre-labelled sample containers were used and the containers are prepared to ensure that samples were preserved in accordance with Australian Standard 5667.1:1998 and Standard Methods for the Examination of Water and Wastewater, 22nd Edition (APHA).

Eskies and freezer packs were used by Nalco to maintain the integrity of the samples during transport from the sampling sites to the laboratory. Conductivity, pH and temperature were measured in the field using a calibrated instrument, with all other parameters were measured by a NATA Accredited Laboratory (Nalco, undated).

A summary of the surface water sample analytical schedule is presented in *Section 7.4* below.

EnergyAustralia engaged Nalco Water – Ecolab (Nalco) to collect groundwater samples from the twelve groundwater monitoring bores throughout the reporting period. Samples were obtained for field and laboratory analysis in accordance with the following monitoring and analysis schedule:

- pH - monthly field measurement;
- Electrical Conductivity (EC) - monthly field measurement;
- Total Dissolved Solids (TDS) - monthly laboratory analysis;
- Major and minor anions including chloride, fluoride and alkalinity – monthly laboratory analysis;
- Sulphate (as SO₄) – monthly laboratory analysis;

- Major cations including calcium, potassium, magnesium, sodium – monthly laboratory analysis; and
- Metals (including Al, As, Ba, B, Cd, Cr (total), Cu, Fe, Pb, Mn, Hg, Mo, Ni, Se, Ag, V and Zn) – monthly laboratory analysis.

The trace metals in groundwater samples were measured on unfiltered samples, except for iron, manganese and vanadium.

Data Quality Assurance and Quality Control (QA/QC) checks are performed by EnergyAustralia prior to the publishing of the groundwater data on a monthly basis online.

Nalco have indicated that various checks as part of internal and external QA/QC programs are implemented. Please refer to *Annex I* for a copy of the laboratory QA/QC program outline.

Evidence of the collection of field QC samples (i.e. rinsate, trip blanks or trip spikes) during the field based programs was not provided. Further, results of laboratory QC measures including laboratory duplicate, triplicate, internal RPDs, method blanks or spike data were not presented in the laboratory reports reviewed.

No other specific QA/QC information was presented in the laboratory reports reviewed.

Copies of the laboratory data are presented in *Annex I*.

7.5 GROUNDWATER RESULTS

7.5.1 Groundwater Levels and Inferred Flow Direction

Water levels in the twelve groundwater monitoring bores were relatively stable across the monitoring period. Some exceptions were D18, where water levels fluctuated between 907.19 and 912.49 mAHD during the monitoring period. Additionally, groundwater levels at D11 showed a steady decline from June 2018, reaching a minimum of 908.79 mAHD in August 2018. It is noted that the reported groundwater levels have generally remained below the maximum predicted groundwater level (912.0 mAHD) from CDM Smith (2013) and below the base of the ash placement (917 m AHD).

As discussed in *Section 4.3*, groundwater elevation contours indicate a component of groundwater flow to the south and south-east from the Lamberts North Ash Repository. Additionally, the groundwater elevation contours indicate a component of groundwater flow to the east and north-east, towards Neubecks Creek. Groundwater elevations in the vicinity of D20, D11 and D10 to the north, west and south-west of the repository respectively in the order of 911 m AHD, declining to below 909 mAHD to the south and south-east of the repository (e.g. D19 and D18) and to approximately 904 m AHD in the vicinity

of Neubecks Creek at D8 (based on January 2018 data). The groundwater flow directions have remained relatively consistent throughout the monitoring period based on groundwater contour plans prepared for each season. Groundwater contour plans are presented in *Figures 5a to 5d*.

Standing water levels and groundwater elevations calculated for each bore are shown in *Table 2* in *Annex F*.

7.5.2 *Groundwater Analytical Results Summary*

A summary of the groundwater analytical results obtained for the 2017/18 reporting period is presented in *Table 8* below. The results are also presented on *Figure 7a*.

Table 8 Summary of Groundwater Concentrations - 2017/18 Reporting Period

Analyte/Location	Groundwater Concentration Range				Groundwater Collection Basin Pre-Ash Placement 90 th Percentile ^a	Groundwater Environmental Goal ^{a,b,c,e}
	South/ Cross-Gradient ¹	Up-gradient /Adjacent to Mt Piper ²	At boundary of Lamberts North Ash Repository ³	Down- gradient/Adjacent to Neubecks Creek ⁴		
pH	5.31 - 6.89	5.51 - 6.22	5.36 - 6.08	5.18 - 6.00	-	6.5 - 8.0 ^a
Conductivity (µS/cm)	730 - 4,700	3,430 - 11,230	2,350 - 6,930	204 - 4,630	1,576	2,600 ^a
TDS (mg/L)	392 - 3,790	2,360 - 9,760	1,700 - 5,920	181 - 3,710	1,306	1,500 ^a
Sulphate (as SO ₄) (mg/L)	45.6 - 2,380	1,580 - 5,640	1,060 - 4,050	70.8 - 2,250	824	1,000 ^a
Chloride (mg/L)	11.7 - 311	191 - 1,060	115 - 693	3.4 - 425	31.5	350 ^a
Arsenic (µg/L)	<1 - 9	<1 - 11	<1 - 21	<1 - 3	1	24 ^b
Silver (µg/L)	<1	<1	<1	<1	<1	0.05 ^b
Barium (µg/L)	11 - 570	14 - 30	11 - 78	23 - 71	37	700 ^f
Beryllium (µg/L)	NA	NA	NA	NA	1	100 ^a
Boron (µg/L)	<50 - 480	300 - 5,320	950 - 3,370	<50 - 960	244	370 ^b /550 ^g
Cadmium (µg/L)	<0.1 - 0.5	<0.1 - 9.7	<0.1 - 2.6	<0.1 - 0.3	2	2 ^{d,e}
Chromium (total) (µg/L)	<1 - 501	<1 - 101	<1 - 96	<1 - 2	1	5 ^d
Copper (µg/L)	<1 - 351	<1 - 4	<1 - 23	<1 - 5	1	5 ^a /7.25 ^g
Fluoride (mg/L)	0.021 - 0.498	0.07 - 0.935	<0.1 - 0.270	0.015 - 3.02	0.435	1.5 ^d
Iron (µg/L)	6 - 32,400	1,340 - 113,000	42 - 65,400	39 - 32,500	664	664 ^e / 15,900 ^g
Mercury (µg/L)	<0.04 - 0.06	<0.04 - 0.1	<0.04 - 0.06	<0.04 - 0.05	<0.1	0.06 ^c
Manganese (µg/L)	4 - 3,990	2,100 - 21,000	302 - 27,900	36 - 16,800	5,704	5,704 ^e / 8,570
Molybdenum (µg/L)	<1 - 16	<1 - 4	<1 - 8	<1 - 5	1	10 ^a
Nickel (µg/L)	1 - 895	339 - 1,340	174 - 1,330	18 - 665	550.9	550.9 ^e
Lead (µg/L)	<1 - 19	<1 - 7	<1 - 94	<1 - 4	1	5 ^f
Selenium (µg/L)	0.3 - 0.7	<0.2 - 4.3	<0.2 - 5	<0.2 - 0.3	2	5 ^c
Zinc (µg/L)	6 - 1,290	115 - 1,420	79 - 1,960	35 - 234	908	908 ^e

Notes:

1. Monitoring bores south and cross-gradient of ash repository: MPGM4/D15, MPGM4/D16, MPGM4/D17 and MPGM4/D18
2. Monitoring bores adjacent to the Mt Piper ash repository and up-gradient of the site MPGM4/D10 and MPGM4/D11 targeting the southern coal mine groundwater inflows to the area between the southern brine placement and bore D10.
3. Monitoring bores at boundary of the ash repository MPGM4/D1 and MPGM4/D19.
4. Monitoring bores adjacent to Neubecks Creek MPGM4/D8 (north of Neubecks Creek) and MPGM4/D9 (south of Neubecks Creek).

Shaded and bold cells indicate values are equal to or exceed the Environmental Goals.

a Criteria from OEMP.

b OEMP Criteria - ANZECC (2000) 95% Level of species protection for freshwater aquatic ecosystems.

c OEMP Criteria - ANZECC (2000) 99% Level of species protection for freshwater aquatic ecosystems.

d OEMP Criteria - NHMRC (2011) Australian Drinking Water Guidelines.

e OEMP Criteria - adopted from Groundwater Collection Basin Pre-Ash Placement 90th Percentile.

f OEMP Criteria - NHMRC (2008) Guidelines for Managing Risks in Recreational Waters.

g Lamberts North pre-placement 90th Percentile baseline data from October 2012 to August, 2013 and Neubecks Creek at WX22 (Aurecon, 2017).

7.5.3

Groundwater Quality South/Cross-Gradient of Lamberts North Ash Repository

Data obtained from bores D15, D16, D17 and D18 located to the south of the Lamberts North Ash Repository, in a cross-hydraulic gradient position are outlined below. The criteria pertinent to this assessment are the Groundwater Environmental Goals.

Field Parameters

Field parameters monitored are summarised below:

- pH (field) ranged from 5.31 to 6.89, with the pH (field) levels in groundwater from D15 tending towards acidic conditions, ranging between in 5.31 to 5.55 throughout the reporting period. The pH levels remained generally stable in all bores in this area, however, were generally consistently lower than the Groundwater Environmental Goal range of 6.5 – 8.0 standard pH units.
- EC (field) values ranged between 730 $\mu\text{S}/\text{cm}$ and 4,700 $\mu\text{S}/\text{cm}$, remaining generally stable throughout the monitoring period. EC values in groundwater from D15 and D17 exceeded the Groundwater Environmental Goal of 2,600 $\mu\text{S}/\text{cm}$, with values up to 4,168 $\mu\text{S}/\text{cm}$ and 3,516 $\mu\text{S}/\text{cm}$, respectively. EC values in groundwater from D16 and D18 were below the Groundwater Environmental Goal.
- TDS contents in groundwater from each of D15, D16 and D17 were relatively consistent, ranging between 686 mg/L and 3,790 mg/L, of which, D15 and D17 consistently exceeded the Groundwater Environmental Goal of 1,500 mg/L. The TDS of groundwater from D16 and D18 did not exceed the Groundwater Environmental Goal during the reporting period.

Major and Minor Ions

Throughout the reporting period major and minor ions were identified at concentrations above the Groundwater Environmental Goals.

A summary of the results reported above the Groundwater Environmental Goals during the 2017/18 reporting period is presented below:

- Sulphate concentrations up to 2,380 mg/L and 1,680 mg/L, respectively were reported in groundwater from D15 and D17 throughout the reporting period, consistently exceeding the Groundwater Environmental Goal of 1,000 mg/L;
- Concentrations of fluoride in groundwater ranged between 0.021 mg/L and 3.3 mg/L. Elevated fluoride concentrations were identified in groundwater from D18 (up to 3.3 mg/L) and D19 (up to 3.0 mg/L), exceeding the Groundwater Environmental Goal of 1.5 mg/L during the July 2018 monitoring event. Concentrations declined to below the Groundwater Environmental Goal during the August 2018 monitoring event.

Concentrations of calcium, magnesium, sodium and potassium were detected at concentrations above the laboratory limits of reporting; however, no Groundwater Environmental Goals apply to these analytes. It is noted that the concentrations of the major cations were generally higher in groundwater from D15 and D17.

Metals

Throughout the reporting period various metals were identified at concentrations above the Groundwater Environmental Goals.

A summary of the results reported above the Groundwater Environmental Goals during the 2017/18 reporting period is presented below:

- Boron concentrations reported in groundwater from D15 were between <50 µg/L and 480 µg/L and were above the Groundwater Environmental Goal (370 µg/L ANZECC (2000)/Local Guideline) in October 2017 only;
- Chromium concentrations ranged between <1 µg/L and 501 µg/L in groundwater from D15, D16 and D17, and exceeded the Groundwater Environmental Goal of 5 µg/L. It is noted that the peak concentration of chromium at 501 µg/L was reported in October 2017 in groundwater from D15, with all other chromium concentrations generally below 215 µg/L. Significantly lower chromium concentrations (<20 µg/L) were reported in groundwater from D16, D17 and D18;
- Concentrations of copper ranged between <1 µg/L and 351 µg/L in groundwater from D15, D16 and D17, and exceeded the Groundwater Environmental Goal of 5 µg/L for the general duration of monitoring in groundwater from D15, and in May 2018 in groundwater from D16 and D17. The highest concentration of copper that exceeded the Groundwater Environmental Goal is noted in February 2018 in groundwater from D15, with other copper concentrations in groundwater from D15 generally below 31 µg/L;
- Iron concentrations (up to 32,400 µg/L) consistently exceeded the Groundwater Environmental Goal of 664 µg/L throughout the period of monitoring in groundwater from D15, D16 and D17. Concentrations of iron were generally higher in groundwater from D17 and D15 than from D16. The maximum concentration of 32,400 µg/L was reported in groundwater from D17;
- Lead concentrations up to 19 µg/L were reported in groundwater from D15 only, and exceeded the Groundwater Environmental Goal of 5 µg/L throughout the majority of the reporting period. Lead concentrations were below laboratory detection limits in groundwater from D16 and D17, with only minor detections of 1 µg/L reported in groundwater from D18;

- Nickel concentrations up to 895 µg/L were reported in groundwater from D15, consistently exceeding the Groundwater Environmental Goal of 550.9 µg/L, with the exception of the September 2017 result (522 µg/L which was below the adopted criterion);
- Molybdenum concentrations ranged from <1 µg/L to 16 µg/L, exceeding the Groundwater Environmental Goal of 1 µg/L in groundwater from D15 and D18 during the October 2017 monitoring event only;
- Silver concentrations were consistently below the laboratory reporting limit of 1 µg/L. This detection level was above the Groundwater Environmental Goal of 0.5 µg/L; and
- Zinc concentrations in groundwater from D15 were consistently above the Groundwater Environmental Goal of 908 µg/L, and ranged between 994 µg/L and 1290 µg/L.

Vanadium and aluminium were also analysed for in the groundwater samples collected from D15, D16, D17 and D18; however, no Groundwater Environmental Goals apply to these analytes. Concentrations of aluminium were higher in groundwater from D15 compared to concentrations in groundwater from D16, D17 and D18, with a generally decreasing trend noted over the monitoring period in groundwater from D16. Concentrations of vanadium were below the limit of reporting of 10 µg/L.

The above exceedances of the Groundwater Environmental Goals are considered unlikely to be a result of impacts of the Lamberts North Ash Repository as these bores are located to the south, predominantly cross-gradient, of the Lamberts North Ash Repository. It is noted that the Lamberts South area (where these bores are all located) has been reported as being significantly disturbed by historical mining activities (CDM Smith 2013). Therefore, a component of the concentrations in groundwater from these bores may relate to background conditions.

7.5.4 *Groundwater Quality Up-gradient/Adjacent to Lamberts North Ash Repository*

Data obtained from groundwater water monitoring bores D10, D11 and D23 located adjacent and up-gradient of the Lamberts North Ash Repository are outlined below. These bores are located adjacent to and down-gradient of the Mt Piper Ash Repository, between the Mt Piper and Lamberts North ash repositories. The criteria pertinent to this assessment are the Groundwater Environmental Goals.

Field Parameters

Field parameters monitored are summarised below:

- pH (field) ranged from 5.51 to 6.22, indicating slightly acidic conditions throughout the reporting period. The pH levels remained generally stable, however were consistently lower than the Groundwater Environmental Goal range of 6.5 – 8.0 standard pH units;
- EC (field) levels ranged between 3,430 $\mu\text{S}/\text{cm}$ and 11,230 $\mu\text{S}/\text{cm}$, remaining generally stable throughout the monitoring period at each location. The EC results exceeded the Groundwater Environmental Goal of 2,600 $\mu\text{S}/\text{cm}$ consistently throughout the reporting period in groundwater from these bores; and
- Laboratory determined TDS concentrations ranged between 2,360 mg/L and 9,760 mg/L, with these levels exceeding the Groundwater Environmental Goal of 2,000 mg/L in groundwater from these bores for all monitoring events.

Major and Minor Ions

Throughout the reporting period major and minor ions were identified at concentrations above the Groundwater Environmental Goals.

A summary of the results reported above the Groundwater Environmental Goals during the 2017/18 reporting period is presented below:

- Sulphate concentrations (up to 5,640 mg/L) in groundwater from each of these monitoring bores exceeded the Groundwater Environmental Goal for sulphate of 1000 mg/L;
- Chloride concentration up to 1,060 mg/L were reported in groundwater from D10 and D11. These concentrations exceeded the Groundwater Environmental Goal of 350 mg/L.; however, chloride concentrations in groundwater from D23 (≤ 322 mg/L) were below the Groundwater Environmental Goal; and
- Fluoride concentrations up to 3.18 mg/L were reported in groundwater from D23 during the July and August 2018 monitoring events, and exceeded the Groundwater Environmental Goal of 1.5 mg/L. It is noted that these results were higher than prior monitoring events and may be anomalous.

Calcium, magnesium, sodium and potassium were detected in groundwater from these bores at concentrations above the laboratory limits of reporting; however, no Groundwater Environmental Goals apply to these analytes. Calcium, magnesium, sodium, and potassium concentrations were higher in groundwater from D10 and D11 when compared to concentrations in groundwater from D23 and were relatively stable over the monitoring period.

Metals

Throughout the reporting period concentrations of various metals exceeded the Groundwater Environmental Goals. A summary of the results reported above the Groundwater Environmental Goals during the 2017/18 reporting period is presented below.

- Concentrations of boron in groundwater from bores D10, D11 and D23 (up to 5,320 µg/L) exceeded the Environmental Goal of 370 µg/L for the entire reporting period, with the exception of February 2018 at bore D23 only;
- Concentrations of iron (up to 113,000 µg/L) and nickel (up to 1,340 µg/L) in groundwater from these bores exceeded the Environmental Goals (of 370 µg/L, 664 µg/L and 550.9 µg/L, respectively) through the entire reporting period. A generally increasing trend was noted in iron concentrations in all monitoring bores throughout the reporting period;
- Concentrations of cadmium were reported at up to 9.7 µg/L in groundwater from bore D10, exceeding the Groundwater Environmental Goal of 2 µg/L. Manganese was also reported as exceeding the Groundwater Environmental Goal of 5,704 µg/L during the monitoring period in groundwater from bore D10 (up to 9,270 µg/L);
- Chromium concentrations exceeded the Groundwater Environmental Goal of 5 µg/L in groundwater from D23 throughout most of the reporting period (except between November 2017 and January 2018). A variable but overall decreasing trend in chromium concentrations was noted in groundwater from D23 over the monitoring period;
- Lead concentrations up to 7 µg/L in groundwater from bore D11 exceeded the Groundwater Environmental Goal of 5 µg/L from November 2017 to February 2018 and May 2018 to August 2018. Lead concentrations of up to 10 µg/L in groundwater from bore D23 consistently exceeded the Groundwater Environmental Goal;
- Concentrations of nickel in groundwater from bore D10 (up to 1,340 µg/L) and from bore D11 (up to 1,100 µg/L) consistently exceeded the Groundwater Environmental Goal of 550.9 µg/L throughout the period of reporting. On one occasion (August 2018), the concentration of nickel in groundwater from D23 (559 µg/L) exceeded the Groundwater Environmental Goal;
- Zinc concentrations exceeded the Groundwater Environmental Goal of 908 µg/L in groundwater from bore D10 consistently throughout the reporting period, and on one occasion in groundwater from bore D23 (August 2018); and
- All silver concentrations were below the laboratory limit of reporting of 1 µg/L, with this detection level above the Groundwater Environmental Goal of 0.5 µg/L.

Aluminium and vanadium were also analysed throughout the reporting period; however, no Groundwater Environmental Goals apply to these analytes. Aluminium concentrations peaked at a concentration of 1,540 µg/L in groundwater from bore D23. Vanadium concentrations were below the laboratory detection limits of 10 µg/L.

The exceedances listed above of the Groundwater Environmental Goals are considered unlikely to be a result of impacts of the Lamberts North Ash Repository as these bores are located to the west, up-gradient of the Lamberts North Ash Repository, and down-gradient of the Mt Piper Ash Repository.

7.5.5 *Groundwater Quality at Boundary of Lamberts North Ash Repository*

Data obtained from groundwater bores D1, D19 and D20 located at the boundaries, and down gradient of the Lamberts North Ash Repository, are summarised below. The criteria pertinent to this assessment are the Groundwater Environmental Goals.

Field Parameters

Field parameters monitored are summarised below:

- pH (field) values ranged from 5.36 to 6.08, indicating slightly acidic conditions in groundwater from D1, D19 and D20 throughout the reporting period. The pH levels remained generally stable, however were consistently lower than the Groundwater Environmental Goal range of 6.5 – 8.0 standard pH units;
- EC (field) values ranged between 2,350 µS/cm and 6,930 µS/cm, and remained generally stable throughout the monitoring period. However, the EC results typically exceeded the Groundwater Environmental Goal of 2,600 µS/cm throughout the reporting period at these locations. A decline in concentrations followed by an increasing trend (from January 2018 to August 2018) in EC concentrations was noted in groundwater from D20 over the monitoring period and a generally decreasing trend in concentrations was noted in groundwater from D1; and
- Laboratory determined TDS concentrations ranged between 1,700 mg/L and 5,920 mg/L, with almost all reported TDS contents exceeding the Environmental Goal of 2,000 mg/L in groundwater from these bores.

Major and Minor Ions

Throughout the reporting period concentrations of major and minor ions in groundwater from these bores exceeded the Groundwater Environmental Goals.

A summary of the results reported above the Groundwater Environmental Goals during the 2017/18 reporting period is presented below:

- Concentrations of sulphate (up to 4,050 mg/L) were consistently above the Groundwater Environmental Goal of 1,000 mg/L in groundwater from these bores;
- Chloride concentrations were reported at up to 693 mg/L in groundwater from D1 and 651 mg/L in groundwater from D19, exceeding the Groundwater Environmental Goal of 350 mg/L intermittently in groundwater from D1 and consistently in groundwater from D19; and
- Generally decreasing sulphate and chloride concentration trends were noted in groundwater from D1 over the monitoring period.

Calcium, magnesium, sodium and potassium were reported at concentrations above the laboratory limits of reporting; however, no Groundwater Environmental Goals apply to these analytes. Sodium, potassium and alkalinity concentrations were higher in groundwater from D19 when compared to the other bores. Concentrations of other major cations were relatively stable in groundwater from these bores during the monitoring period.

Metals

Throughout the reporting period various metals were identified at concentrations above the Groundwater Environmental Goals. A summary of the results reported above the Groundwater Environmental Goals during the 2017/18 reporting period is presented below:

- Concentrations of boron (up to 3,370 µg/L), iron (up to 65,400 µg/L), manganese (up to 27,900 µg/L) and nickel (up to 1,330 µg/L) in groundwater from each of these bores exceeded the Groundwater Environmental Goals (of 370 µg/L, 664 µg/L, 5,704 µg/L and 550.9 µg/L, respectively) through the entire reporting period. A generally increasing trend was noted in boron and nickel concentrations in groundwater from D20 throughout the reporting period, and a generally decreasing trend was noted in nickel concentrations in groundwater from D1 throughout the reporting period;
- Cadmium concentrations exceeded the Groundwater Environmental Goal of 2 µg/L in groundwater from D20 almost consistently throughout the reporting period, with a variable but increasing trend noted in cadmium concentrations from this bore over the monitoring period;
- Concentrations of chromium (up to 96 µg/L), copper (up to 23 µg/L) and lead (up to 94 µg/L) in groundwater from D19 and D20 exceeded the Groundwater Environmental Goals (of 5 µg/L for each metal analyte) intermittently through the reporting period. A generally increasing trend was noted in chromium concentrations in groundwater from D19 throughout the reporting period. Chromium, copper and lead concentrations were consistently reported below the Groundwater Environmental Goals in groundwater from D1;

- Mercury was reported in groundwater from D20 in June 2018 at 0.06 µg/L, a concentration equal to the Groundwater Environmental Goal;
- One zinc concentration (1,960 µg/L) was reported above the Groundwater Environmental Goal of 908 µg/L in groundwater from D19 during the August 2018 monitoring event only; and
- All silver concentrations were below the laboratory limit of reporting of 1 µg/L, with this detection level above the Groundwater Environmental Goal of 0.5 µg/L.

Aluminium and vanadium were also tested throughout the reporting period; however, no Groundwater Environmental Goals apply to these analytes. Aluminium concentrations peaked at 3,270 µg/L in groundwater from D20 in February 2018 and have since declined. The vanadium concentrations in groundwater from these bores were below the laboratory limit of reporting.

Although these bores are located down gradient of the Lamberts North Ash Repository, given the concentrations of chloride in groundwater from these bores and the concentrations of these analytes in groundwater from bores located upgradient, the above exceedances of the Groundwater Environmental Goals are considered unlikely to be primarily a result of impacts from the Lamberts North Ash Repository.

7.5.6 *Groundwater Quality Adjacent to Neubecks Creek*

Data obtained from groundwater bores D8 and D9 located adjacent to Neubecks Creek are summarised below. The criteria pertinent to this assessment are the Groundwater Environmental Goals.

Field Parameters

Field parameters monitored are summarised below:

- pH (field) ranged from 5.18 to 5.90, indicating slightly acidic conditions throughout the reporting period. The pH levels remained generally stable, however were consistently lower than the Groundwater Environmental Goal range of 6.5 – 8.0 standard pH units;
- EC (field) values ranged between 204 µS/cm and 4,630 µS/cm, remaining generally stable throughout the monitoring period. The EC values in groundwater from D9 exceeded the Groundwater Environmental Goal of 2,600 µS/cm almost consistently throughout the reporting period. A generally increasing trend in EC concentrations from November 2017 was noted in groundwater from both bores; and
- Laboratory determined TDS concentrations ranged between 181 mg/L and 3,710 mg/L, with these concentrations exceeding the Groundwater Environmental Goal of 2,000 mg/L in groundwater from bore D9 only.

Major and Minor Ions

Throughout the reporting period elevated concentrations of major and minor ions were identified at concentrations above the Groundwater Environmental Goals.

A summary of the results reported above the Groundwater Environmental Goals during the 2017/18 reporting period is presented below:

- Exceedance of the Groundwater Environmental Goal was noted for sulphate only, in groundwater from D9 (up to 2,250 mg/L), while sulphate concentrations in groundwater from D8 were below the Groundwater Environmental Goal. A generally increasing sulphate concentration trend was noted in groundwater from D9 over the monitoring period; and
- Occasional elevated concentrations of chloride (425 mg/L in August 2018 only) and fluoride (3.02 mg/L in July 2018 only) were reported above the Groundwater Environmental Goals of 350 mg/L and 1.5 mg/L respectively in groundwater from monitoring bore D9 only.

Concentrations of calcium, magnesium, sodium and potassium were detected at concentrations above the laboratory limits of reporting; however, no Groundwater Environmental Goals apply to these analytes. Calcium, magnesium, sodium, potassium and alkalinity concentrations were higher in groundwater from D9 (south side of Neubecks Creek) when compared to those in groundwater from D8 and were noted to be generally increasing over the monitoring period while calcium, magnesium, sodium and potassium concentrations in groundwater from bore D8 were relatively stable over the monitoring period.

Metals

Throughout the reporting period various metals were identified at concentrations above the adopted Groundwater Environmental Goals (ANZECC (2000) or baseline conditions). A summary of the results reported above the Groundwater Environmental Goals during the 2017/18 reporting period is presented below:

- Concentrations of boron (up to 960 µg/L) and manganese (up to 32,500 µg/L) in groundwater from bore D9 exceeded the Groundwater Environmental Goals (of 370 µg/L and 5,740 µg/L, respectively) through the entire reporting period. Over this period, generally increasing concentration trends were noted for boron and manganese in this bore during the reporting period and since 2012 (trends discussed further in *Section 7.6.2* below). Boron and manganese concentrations did not exceed the Groundwater Environmental Goals in groundwater from D8.

- Copper concentrations at up to 5 µg/L were reported in groundwater from bore D8. The monitoring result for May 2018 in groundwater from this bore (5 µg/L) was equal to the Groundwater Environmental Goal. During the monitoring period the other reported copper concentrations in groundwater from bores D8 and D9 were below the adopted Groundwater Environmental Goal;
- Iron (filtered) concentrations exceeded the Groundwater Environmental Goal of 664 µg/L in groundwater from D9 almost consistently throughout the reporting period and in groundwater from D8 in May and June 2018. A variable but increasing trend in iron concentrations was noted in groundwater from D9 over the monitoring period;
- Manganese concentrations up to 16,800 µg/L were reported in groundwater from D9. These consistently exceeded the Groundwater Environmental Goal of 5,704 µg/L throughout the entire monitoring period. Manganese concentrations in groundwater from bore D8 were below the Groundwater Environmental Goal;
- Nickel concentrations above the Groundwater Environmental Goal of 550.9 mg/L were reported for the July and August 2018 monitoring events in groundwater from D9 only, with concentrations from prior monitoring events, and all nickel concentrations in groundwater from D8, being below the Groundwater Environmental Goal; and
- All silver concentrations were below the laboratory limit of reporting of 1 µg/L, with this reporting limit being above the Groundwater Environmental Goal of 0.5 µg/L.

Aluminium and vanadium were also analysed throughout the reporting period; however, no Groundwater Environmental Goals apply to these analytes. Aluminium concentrations peaked at a concentration of 1,030 µg/L in groundwater from bore D8 in October 2017 declining after this time. Vanadium concentrations were below the laboratory limit of reporting.

7.6

DISCUSSION

A discussion of the groundwater results in each of these areas is outlined below.

Bores South/Cross Gradient of the Lamberts North Ash Repository

Metals including boron, chromium, copper, iron, lead, nickel, molybdenum and zinc, acidic pH levels and elevated EC, TDS, sulphate and fluoride were identified in groundwater from bores D15, D16, D17 and D18 at concentrations above the Groundwater Environmental Goals. These exceedances are considered unlikely to be a result of impacts of the Lamberts North Ash Repository as these bores are located cross-gradient/south of the Lamberts North Ash Repository and are located in the Lamberts South area, which has

been significantly disturbed by historical mining activities (CDM Smith, 2013). This area is currently being separately investigated as part of a broader investigation of surface water and groundwater conditions in the vicinity of the Mt Piper Power Station ash repositories.

Bores Up gradient/Adjacent to Lamberts North Ash Repository

As noted above, elevated EC and TDS levels as well as concentrations of anions including chloride, sulphate, and metals including boron, cadmium, chromium, lead, nickel, manganese, iron and zinc were identified at concentrations at or above the Groundwater Environmental Goals in groundwater from bores up-gradient of the Lamberts North Ash Repository. These bores are located directly down-gradient of the eastern extent of the Mt Piper Ash Repository. Low pH levels (more acidic than the Environmental Goal) were also evident in groundwater from this area. The detections of chromium, lead and zinc are considered likely to be related to the background groundwater quality in the area, based on the positioning of bores with respect to the Lamberts North ash repository and the similarity in concentrations to those identified in groundwater to the south of the ash repository (i.e. at monitoring bores D15 - D18).

The reported TDS and EC levels and concentrations of sulphate, chloride, boron, iron, manganese and nickel in groundwater from bores in this area exceeded the Groundwater Environmental Goals. Overall the highest concentrations of these constituents were noted in groundwater from bores D10 and D11 which are located immediately down gradient of the Mount Piper Ash Repository. The elevated concentrations of these constituents in these bores is currently being investigated separately as part of a broader investigation into surface water and groundwater conditions in the vicinity of the Mt Piper Power Station ash repositories.

Bores Down-gradient/Adjacent to the Ash Repository

Concentrations of boron, iron, manganese and nickel (at D1, D19 and D20), cadmium (at D20 only) and chromium, copper and lead (at D19 and D20) consistently exceeded the Groundwater Environmental Goals in groundwater from bores along the down-gradient boundary of the Lamberts North Ash Repository. These detections are considered to be related to the groundwater conditions that were present up gradient of the Lamberts North Ash Repository (i.e. bores D10 and D11) and to be largely unrelated to the Lamberts North Ash Repository.

The occasional and sporadic exceedances of the Groundwater Environmental Goals for mercury and zinc do not indicate trends.

Bores Adjacent to Neubecks Creek

At times during the monitoring period, EC and TDS values, sulphate, chloride, fluoride, boron, copper, iron and manganese concentrations, and low pH values

in groundwater exceeded the Groundwater Environmental Goals. Of these, low pH levels and elevated iron and manganese concentrations are considered to be associated with background concentrations. Elevated fluoride concentrations (at D8 and D9) and copper (at D8) were sporadic and do not demonstrate clear trends.

The elevated EC and TDS, sulphate, and boron concentrations that exceeded the Groundwater Environmental Goals were identified in groundwater from D9 (south side of Neubecks Creek) rather than in groundwater from D8, to the north of Neubecks Creek. Elevated nickel and chloride levels were identified in groundwater from D9 over the last two monitoring events and may indicate an emerging increasing trend and is considered to be unrelated to groundwater quality from the Lamberts North Ash Repository. These exceedances are currently being separately investigated as part of the broader investigation into groundwater and surface water conditions in the vicinity of the Mt Piper Power Station ash repositories.

There was no clear evidence of trends in water quality at D8.

7.6.1 *Early Warning Assessment*

A summary of the groundwater analytical results (50th percentile) for the 2017/18 reporting period compared with the adopted Groundwater Trigger Value Environmental Goal (Groundwater Collection Basin Pre-Ash Placement 90th Percentile) is presented in *Table 9* below. The results are also presented on *Figures 7b* and *7c*.

A requirement of the OEMP, this assessment serves to provide an early indication of changes in groundwater quality.

Table 9 Early Warning Assessment of Groundwater Concentrations (50th Percentile) - 2017/18 Reporting Period

Analyte/Location	Groundwater Concentration (mg/L) - 50th percentile (2017 - 2018)											Groundwater Collection Basin Pre-Ash Placement 90th Percentile (mg/L) ^a	
	South/Cross Gradient				Up-gradient/ Adjacent to Ash Repository			Adjacent to Repository			Down-gradient		
	D15	D16	D17	D18	D10	D11	D23	D1	D19	D20	D8		D9
pH	5.40	6.49	6.07	6.65	5.55	6.16	5.72	5.90	5.86	6.04	5.36	5.90	-
Conductivity (µS/cm)	4,110	1,265	3,450	800	10,625	9,880	3,885	5,540	6,135	3,910	502	3,175	1,576
TDS (mg/L)	3,170	828	2,810	492	8,430	9,025	3,140	4,930	4,975	3,440	370	2,380	1,306
Sulphate (as SO ₄) (mg/L)	2,020	405	1,690	69	5,210	4,845	1,880	2,530	3,040	2,310	11	1,640	824
Chloride (mg/L)	226	34	218	15	907	949	237	607	486	121	17	165	31.5
Fluoride (mg/L)	0.035	0.227	0.074	0.475	0.511	0.097	0.143	0.070	0.080	0.180	0.020	0.068	0.435
Arsenic (µg/L)	6	<1	2	2	<1	8	1	8	8	4	<1	1	1
Barium (µg/L)	15	14	18	479	16	17	17	32	19	61	36	33	37
Beryllium (µg/L)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1
Boron (µg/L)	295	75	175	75	4,200	2,895	435	1,940	2,560	1,390	120	880	244
Cadmium (µg/L)	0.4	<0.1	<0.1	0.2	6.9	<0.1	0.3	<1	0.2	2.2	<0.1	0.2	2
Chromium (total) (µg/L)	26	6	15	<1	<1	3	15	2	23	30	<1	<1	1
Copper (µg/L)	6	10	2	2	2	<1	2	<1	3	12	1	<1	1
Iron (µg/L)	17,800	1,580	24,900	11	4,010	82,600	14,900	38,850	26,900	1,200	287	18,850	664
Mercury (µg/L)	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.1
Manganese (µg/L)	2,300	33	3,430	139	8,365	18,100	2,355	18,100	12,850	25,800	626	13,650	5,704
Molybdenum (µg/L)	2	<1	<1	4	1	1	3	<1	3	3	<1	2	1
Nickel (µg/L)	669	6	124	8	995	950	396	1,140	938	575	63	348	550.9
Lead (µg/L)	6	<1	<1	<1	5	<1	2	<1	7	8	<1	1	1
Selenium (µg/L)	0.4	<0.02	<0.2	0.3	3.7	0.2	0.3	0.2	1.4	0.4	<0.2	0.25	2
Silver (µg/L)	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<0.2	<1	<1
Zinc (µg/L)	1,220	10	98	49	1,040	138	513	120	456	283	85	130	908

Notes:

Ash repository refers to Lamberts North Ash Repository

^a Groundwater Collection Basin Pre-Ash Placement 90th Percentile from OEMP

Shaded cells indicate value is equal to or exceeds the trigger level

Bold indicates result exceeds or is equal to the Pre-Ash Placement 90th Percentile level by 1 to > 10 times.

Bold and Italicised indicates result exceeds the Pre-Ash Placement 90th Percentile level by > 10 times.

NA - not analysed.

To the south and cross-hydraulic gradient of the ash repository, the 50th percentile levels of EC and TDS and concentrations of sulphate, chloride, arsenic, boron, chromium (total), copper, iron, molybdenum, nickel, lead and zinc from the 2017/18 reporting period exceeded the pre-placement trigger levels. Based on the location of these bores relative to the Lamberts North Ash Repository, and on the analytes that exceeded the 50th percentile levels, the concentrations of these analytes in groundwater are not considered to be related to the Lamberts North Ash Repository. Groundwater conditions in this area form part of the broader surface water and groundwater investigation being undertaken in the vicinity of the Mt Piper ash repositories.

Up gradient monitoring bores located adjacent to the Lamberts North Ash Repository show a clear change in the groundwater quality relative to the groundwater monitoring bores located to the south/cross gradient of the ash repository. These monitoring bores are located down gradient of the Mt Piper Ash Repository, between the Mt Piper and the Lamberts North ash repositories. In groundwater from bores in this area, increases are evident in the 50th percentile concentrations for EC, TDS, sulphate, chloride, boron, arsenic (minor change evident), cadmium, chromium (to a degree), iron, manganese, molybdenum (minor change evident), and nickel relative to the up-gradient/background bores. These increased concentrations suggest a change in groundwater quality within groundwater bores monitoring the Mt Piper Ash Repository. Increased concentrations of cadmium, fluoride, lead, selenium and zinc were also evident in groundwater from bore D10 in this area. Based on the location of these bores up gradient of the Lamberts North Ash Repository, and on the analytes that exceeded the 50th percentile levels, the concentrations of these analytes in groundwater are not considered to be related to the Lamberts North Ash Repository. Groundwater conditions in this area form part of the broader surface water and groundwater investigation being undertaken in the vicinity of the Mt Piper ash repositories.

Adjacent to the Lamberts North Ash Repository 50th percentile concentrations for EC, TDS, sulphate, chloride, boron, arsenic (minor change evident), barium, boron, cadmium, chromium, copper, iron, lead, manganese, molybdenum and nickel that exceeded the 90th percentile pre-placement levels were identified in groundwater from D1 and D20 to the north of the ash repository and in groundwater from D19 to the east of the ash repository. Based on the analytes that exceeded the 50th percentile levels and their presence in groundwater from bores up gradient of the Lamberts North Ash Repository, the concentrations of these analytes in groundwater from bores D1 and D19 are not considered to be related primarily to the Lamberts North Ash Repository. Groundwater conditions in this area form part of the broader surface water and groundwater investigation being undertaken in the vicinity of the Mt Piper ash repositories.

50th percentile results for the 2017/18 reporting period for boron, sulphate, iron, manganese, and chloride concentrations, and TDS and EC values in groundwater from bore D9 (and in some cases from bore D8) exceeded the 90th percentile pre-placement levels. Elevated concentrations of iron are considered

to be associated with background groundwater quality. The elevated manganese is also considered to be associated with background concentrations with the identified 50th percentile concentrations consistent with data from background monitoring bores D4 and D5 in the region (ERM, 2018). As in other areas where groundwater concentrations exceeded the trigger levels and are not considered to be related to background concentrations, the concentrations of these analytes in groundwater are not considered to be related primarily to the Lamberts North Ash Repository. Groundwater conditions in this area form part of the broader surface water and groundwater investigation being undertaken in the vicinity of the Mt Piper ash repositories.

7.6.2 *Trend Analysis*

A review of concentration trends with respect to key indicators including EC, TDS, sulphate, chloride, boron, iron, nickel and manganese is presented below. These indicators were selected based on their exceedances above the adopted Groundwater Environmental Goals. Graphs were generated for selected bores from the areas south/cross gradient of the ash repository (D15), adjacent to Mt Piper and up-gradient of Lamberts North Ash Repository (D11), the boundary of the Lamberts North Ash Repository (D20) and south of Neubecks Creek (D9). These graphs are presented in *Annex H*.

Electrical Conductivity

EC levels in groundwater from D11, to the east and up gradient of the Lamberts North Ash Repository, have been increasing since at least September 2015 and were above the Groundwater Environmental Goal during the monitoring period. To the south of the Lamberts North Ash Repository, EC in groundwater from D15 has varied over time and remains above the Environmental Goal. It is noted that in September 2017, EC values in groundwater from D15 reached a maximum, and have since marginally dropped, remaining relatively consistent although above the Groundwater Environmental Goal.

To the north of the Lamberts North Ash Repository, EC values in groundwater from bore D20 had remained relatively constant since February 2016; however, a gradual increase was noted from April 2017 throughout the current monitoring period. The EC values in groundwater from bore D20 were above the Groundwater Environmental Goal. Further to the north, in groundwater from bore D9, EC values were lower; however, they were also just above the Groundwater Environmental Goal. An increasing trend in EC in groundwater from D9 was noted from November 2017.

TDS

A generally increasing trend in TDS concentrations were noted in groundwater from bore D11 since September 2013, especially between 2013 and 2016. TDS concentrations have generally been more variable in groundwater from D11

since March 2016. TDS concentrations in groundwater from D15, D20 and D9 have been relatively consistent, with concentrations in D9 peaking during August 2018. During the monitoring period, TDS concentrations in groundwater from D15, D11, D20 and D9 were above the Environmental Goal.

Sulphate

In December 2017, an increase in sulphate concentrations was noted in groundwater from D11; however, concentrations have since remained relatively consistent. Increasing sulphate concentration trends were also identified in groundwater from bore D15 to the south of the repository, and in bore D9, north of the repository. Sulphate concentrations in groundwater from bore D20, located between the ash repository and bore D9, prior to July 2018 were generally consistent; however, a decreasing trend in sulphate concentrations was noted during this monitoring period. During the monitoring period, sulphate concentrations in groundwater from bores D11, D15, D20 and D9 were above the Groundwater Environmental Goal.

Chloride

Generally increasing chloride trends, particularly from at the end of October 2013, were noted in groundwater from D11, located up gradient of the Lamberts North Ash Repository.

To the south, chloride concentrations in groundwater from bore D15 have varied from at least May 2017 to August 2018. The concentrations have, however, remained below the Groundwater Environmental Goal for chloride.

To the north of the repository, chloride concentrations in groundwater from bore D20 have remained generally stable, with a slight decline during this monitoring period. The chloride concentrations exceeded the Groundwater Environmental Goal.

In groundwater from bore D9, chloride concentrations were generally stable from November 2013 to May 2018. However, the concentration then increased in June 2018 to the highest value recorded since January 2010. Since then chloride concentrations in D9 continued to increase, exceeding the Groundwater Environmental Goal of 350 mg/L in August 2018 (at 425 mg/L).

Boron

Boron concentrations in groundwater from bore D20 have increased since January 2018. In July 2018 the boron concentration was the highest since February 2016 (earliest available data). A significant increase in boron concentrations was noted in D11 as well in November 2013.

Boron concentrations have generally been lower in groundwater from D9; however, they have increased since December 2016 and remain above the Environmental Goal.

To the south of the Lamberts North Ash Repository, boron concentrations in groundwater from bore D15 have varied but, since June 2017, the boron concentration increased above the pre-placement trigger value.

Iron

Increases in iron concentrations in groundwater from bore D11 were noted from November 2013 but concentrations have varied over time. Iron concentrations in groundwater from both D9 to the north and D15 to the south were also variable, and with generally increasing trends. The maximum iron concentrations were noted in groundwater from D9 in July 2018 and in groundwater from D15 in June 2016. Iron concentrations in groundwater from D20, between D11 and D9, have been steadily increasing and exceed the Environmental Goal.

Manganese

Manganese concentrations in groundwater from D11, D15, D20 and D9 have generally increased over time and exceed the Groundwater Environmental Goal. The rate of increase declined from approximately July 2014 in groundwater from D9 and from January 2015 in groundwater from D11. Manganese concentrations have since been highly variable in groundwater from D9 and D11, and in groundwater from bore D20 have continued to increase since February 2016.

Manganese concentrations in groundwater from D15 are increasing yet remain under the Groundwater Environmental Goal.

Nickel

Nickel concentrations have generally increased over time in groundwater from bores D11 and D20. In groundwater from bore D20 in January 2018 the concentration of nickel exceeded the Groundwater Environmental Goal. Nickel concentrations have since remained above the Groundwater Environmental Goal in groundwater from D20.

Nickel concentrations in groundwater from bore D9 had been generally stable since October 2013; however, in the July and August 2018 monitoring events the nickel concentration in groundwater from bore D9 exceeded the Groundwater Environmental Goal.

To the south of the Lamberts North Ash Repository, nickel concentrations in groundwater from bore D15 have increased and remain above the Groundwater Environmental Goal.

CONCLUSIONS

Based on the review of the surface water and groundwater quality data at the Lamberts North Ash Repository for the 2017/18 reporting period, the following conclusions are made:

- Exceedances of the adopted Environmental Goals (as set out in the OEMP (CDM Smith, 2013)) were recorded during the reporting period with respect to surface water and groundwater;
- In surface water samples collected at locations described in the OEMP, sporadic exceedances of the Surface Water Environmental Goals (as set out in the OEMP (CDM Smith, 2013)) were identified at LMP01, NC01 and WX22. Although there is the potential that activities at Lamberts North Ash Repository may have contributed to these exceedances in surface water, these concentrations are unlikely to be predominately related to the Lamberts North Ash Repository;
- In groundwater, concentrations of some compounds in groundwater from multiple bores, including bore D9 located towards Neubecks Creek, were reported in exceedance of the Groundwater Environmental Goals (as set out in the OEMP (CDM Smith, 2013)). Although there is the potential that activities at the Lamberts North Ash Repository may have contributed to these exceedances in groundwater, these concentrations (particularly chloride) are unlikely to be predominately related to the Lamberts North Ash Repository; and
- It is noted that the reported groundwater levels have generally remained below the maximum predicted groundwater level (912.0 mAHD) from CDM Smith (2013) and below the base of the ash placement (917 m AHD).

While the exceedances of the Environmental Goals noted in this report are considered to be predominately unrelated to the Lamberts North Ash Repository, a broader investigation of surface water and groundwater conditions in the vicinity of the Mt Piper Power Station ash repositories is currently being completed in line with the contingency measures identified in the OEMP.

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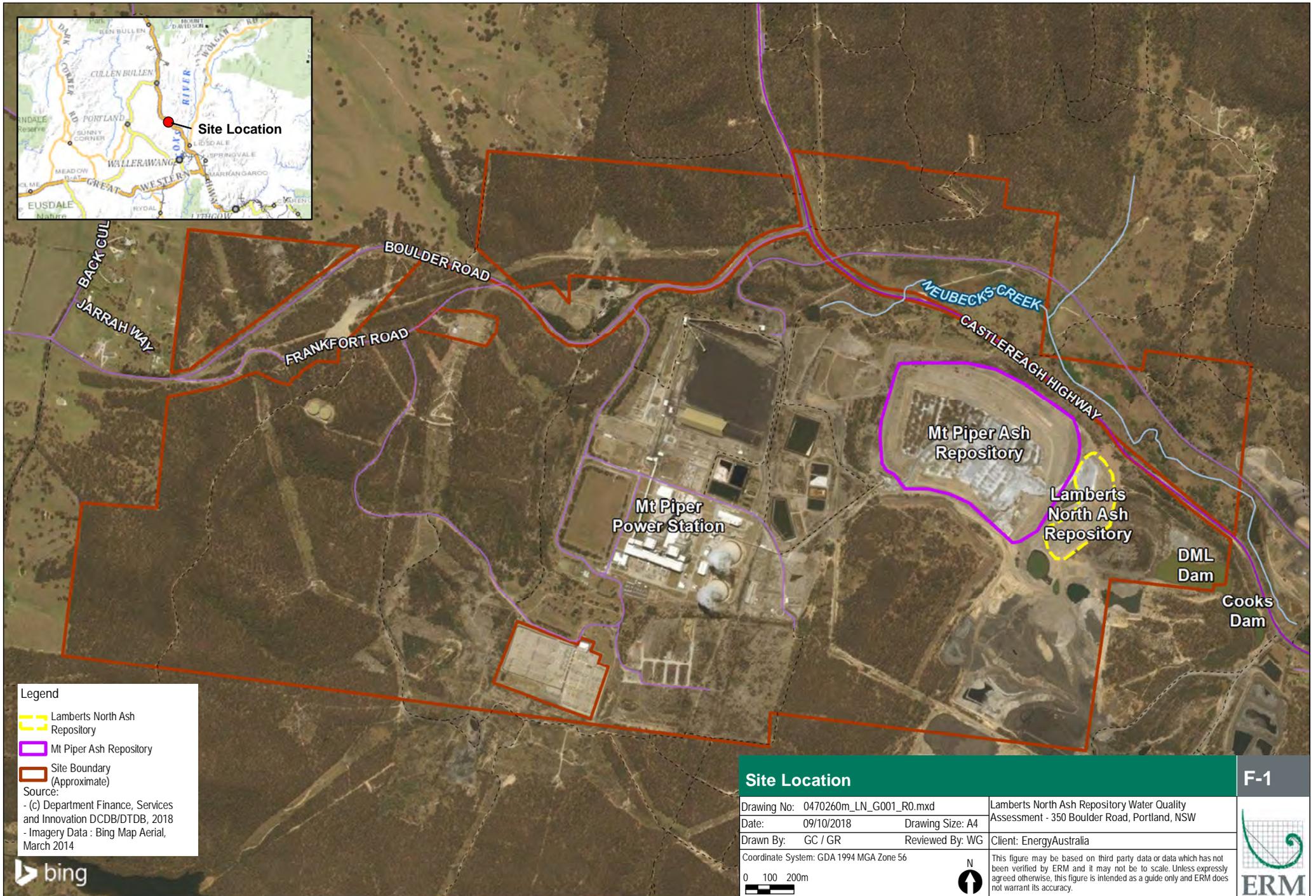
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Figures

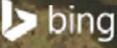


Legend

- Lamberts North Ash Repository
- Mt Piper Ash Repository
- Site Boundary (Approximate)

Source:

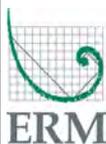
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- Imagery Data : Bing Map Aerial, March 2014

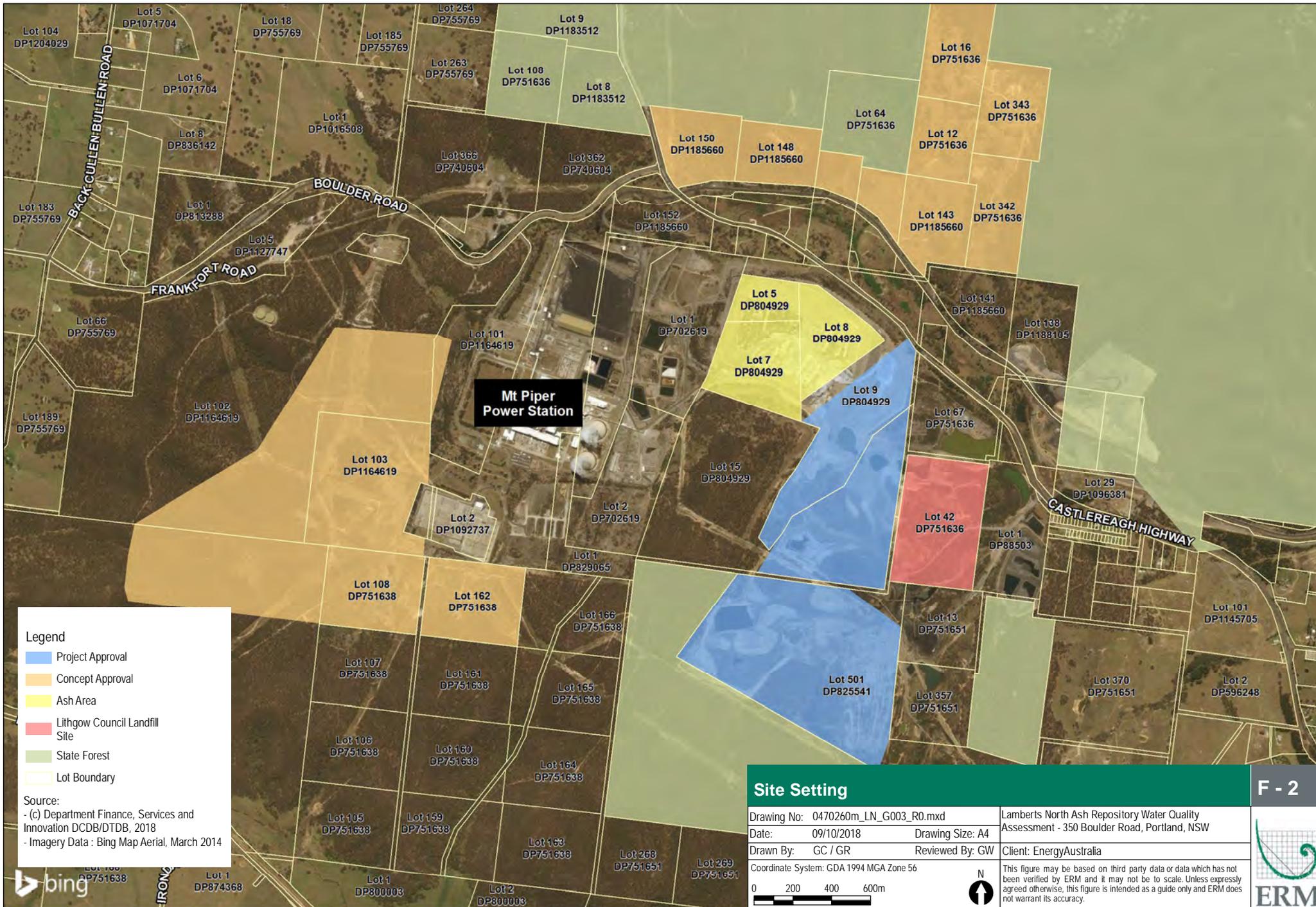


Site Location

F-1

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Date: 09/10/2018	Drawing Size: A4
Drawn By: GC / GR	Reviewed By: WG
Client: EnergyAustralia	
Coordinate System: GDA 1994 MGA Zone 56	
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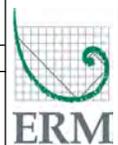


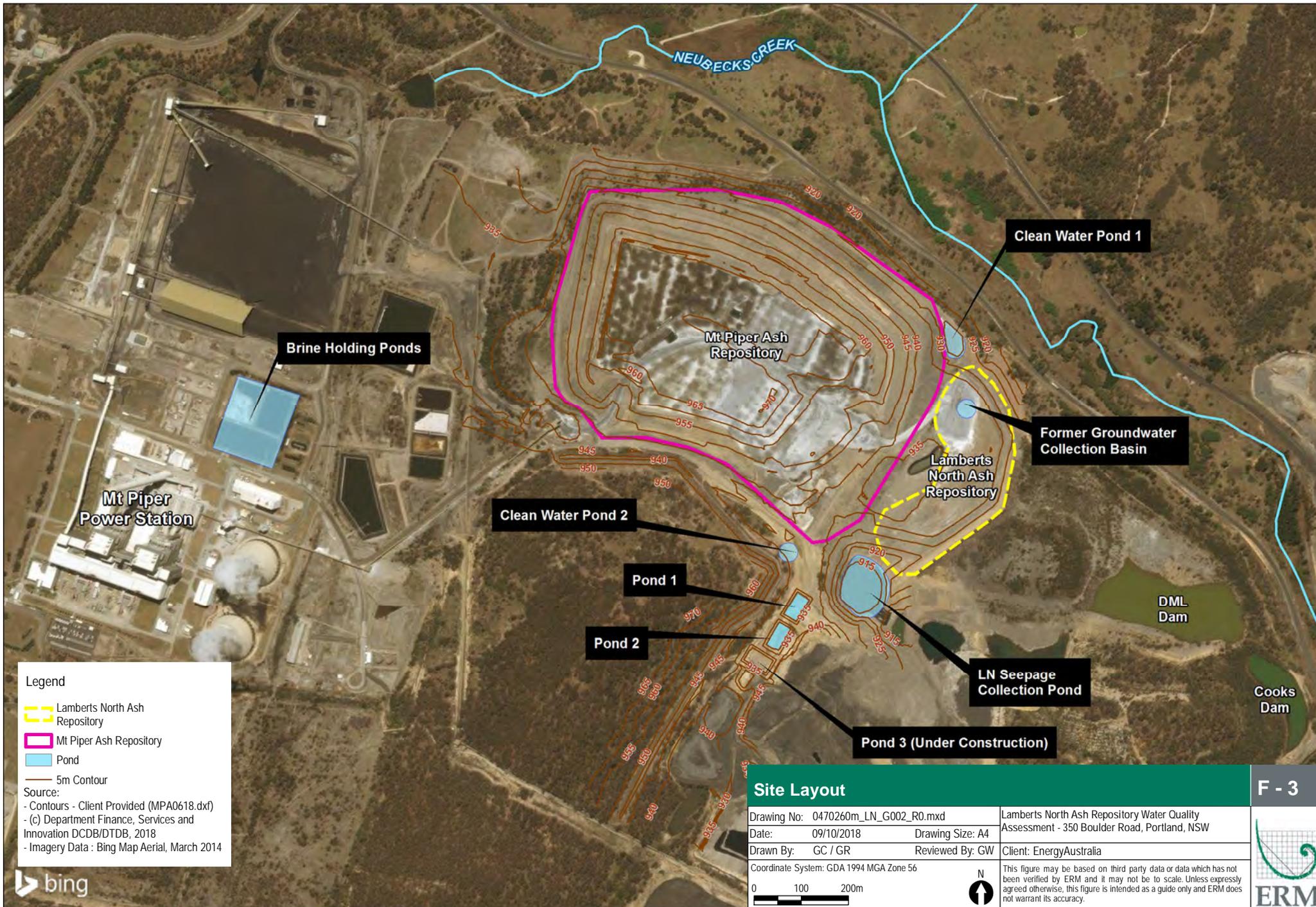
- Legend**
- Project Approval
 - Concept Approval
 - Ash Area
 - Lithgow Council Landfill Site
 - State Forest
 - Lot Boundary

Source:
 - (c) Department Finance, Services and Innovation DCDB/DTDB, 2018
 - Imagery Data : Bing Map Aerial, March 2014

Site Setting F - 2

Drawing No: 0470260m_LN_G003_R0.mxd	Lamberts North Ash Repository Water Quality Assessment - 350 Boulder Road, Portland, NSW
Date: 09/10/2018	Drawing Size: A4
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Client: EnergyAustralia	
Coordinate System: GDA 1994 MGA Zone 56	
<p>This figure may be based on third party data or data which has not been verified by ERM and it may not be to scale. Unless expressly agreed otherwise, this figure is intended as a guide only and ERM does not warrant its accuracy.</p>	





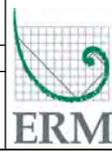
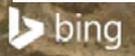
Legend

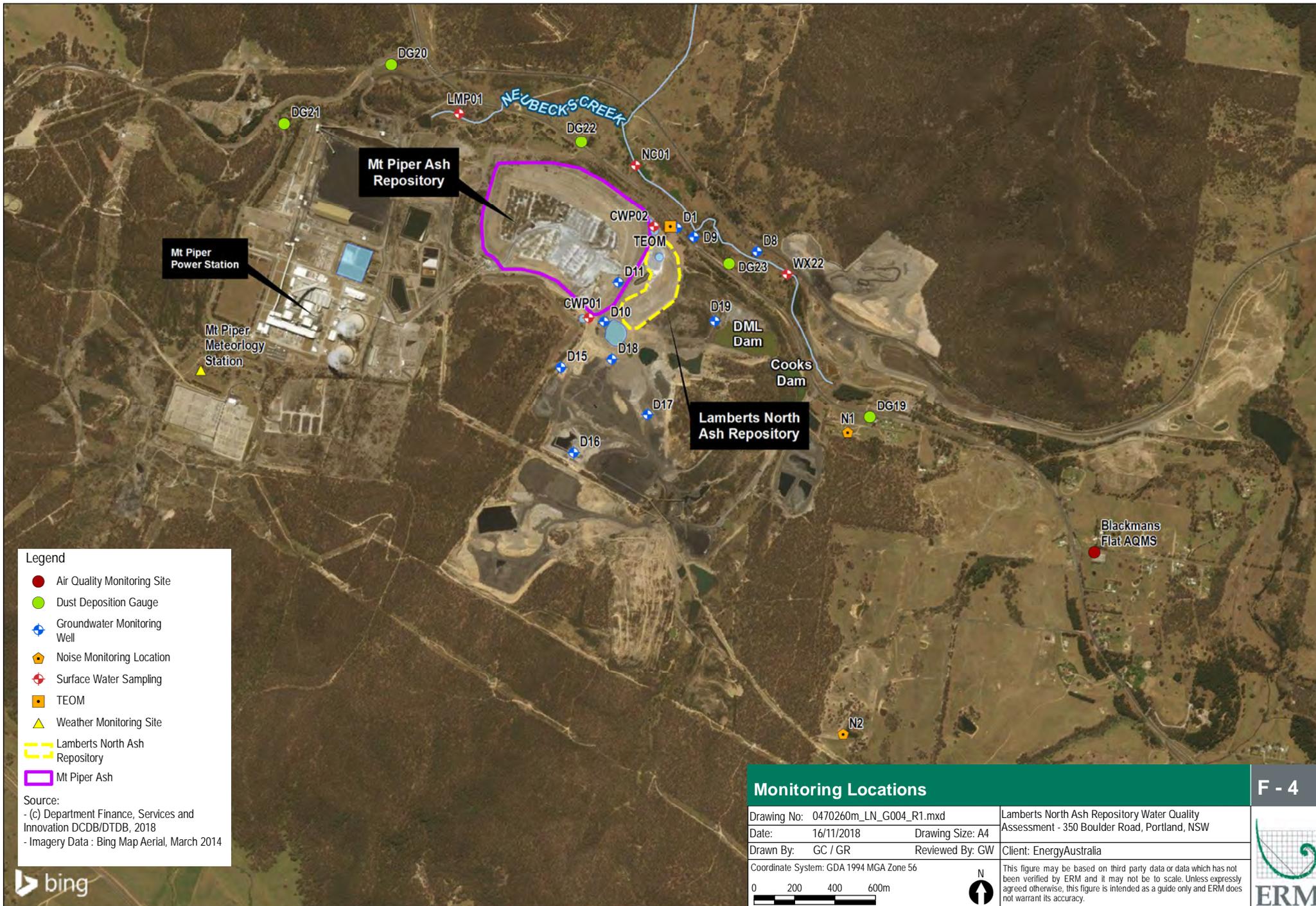
- Lamberts North Ash Repository
- Mt Piper Ash Repository
- Pond
- 5m Contour

Source:

- Contours - Client Provided (MPA0618.dxf)
- (c) Department Finance, Services and Innovation DCDB/DTDB, 2018
- Imagery Data : Bing Map Aerial, March 2014

Site Layout		F - 3
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Client: EnergyAustralia		
Coordinate System: GDA 1994 MGA Zone 56		
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Legend

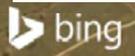
- Air Quality Monitoring Site
- Dust Deposition Gauge
- ⊕ Groundwater Monitoring Well
- Noise Monitoring Location
- ⊕ Surface Water Sampling
- TEOM
- ▲ Weather Monitoring Site
- Lamberts North Ash Repository
- Mt Piper Ash

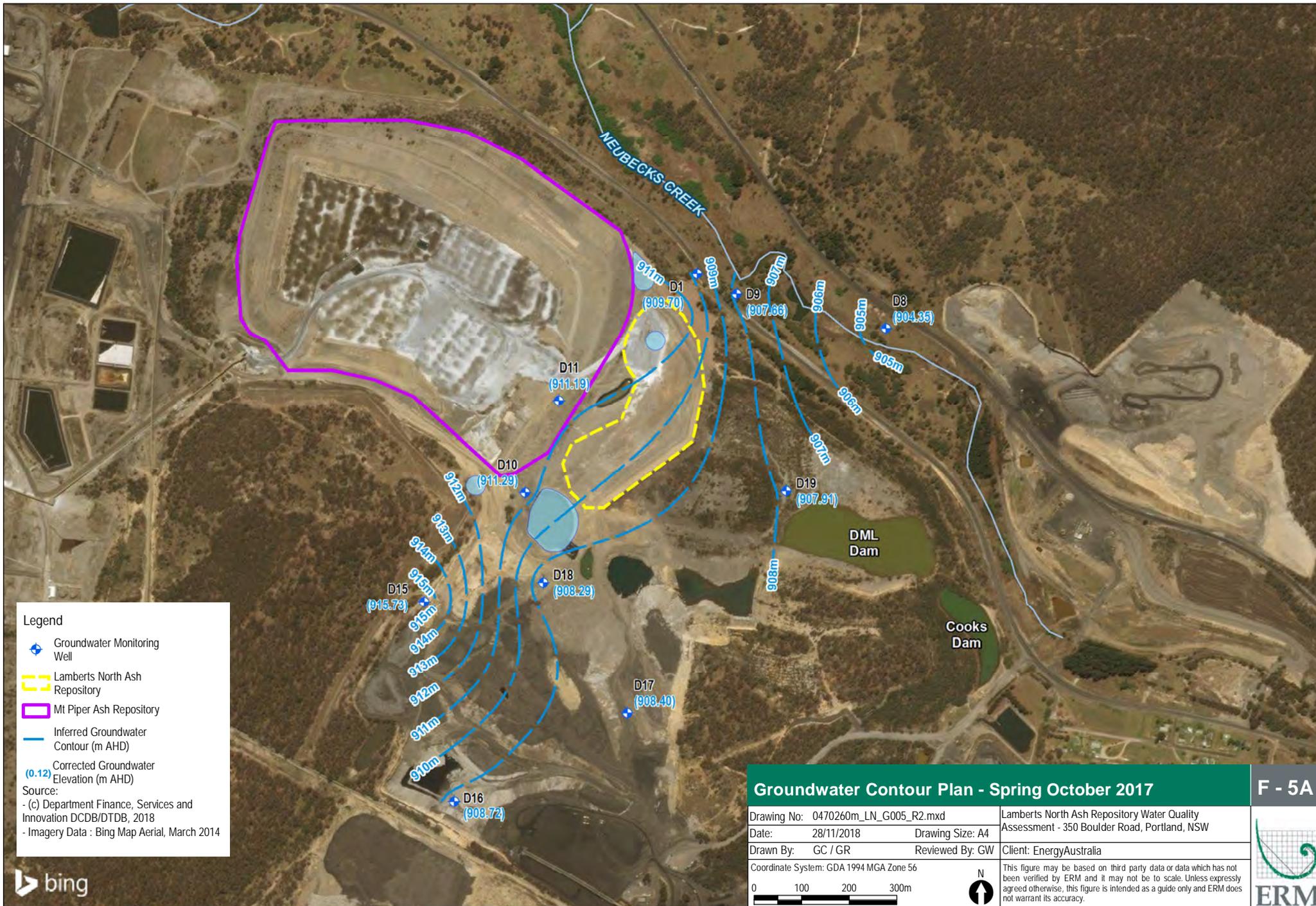
Source:

- (c) Department Finance, Services and Innovation DCDB/DTDB, 2018
- Imagery Data : Bing Map Aerial, March 2014

Monitoring Locations F - 4

Drawing No: 0470260m_LN_G004_R1.mxd	Lamberts North Ash Repository Water Quality Assessment - 350 Boulder Road, Portland, NSW	
Date: 16/11/2018	Drawing Size: A4	
Drawn By: GC / GR	Reviewed By: GW	
Client: EnergyAustralia		
Coordinate System: GDA 1994 MGA Zone 56		This figure may be based on third party data or data which has not been verified by ERM and it may not be to scale. Unless expressly agreed otherwise, this figure is intended as a guide only and ERM does not warrant its accuracy.





Legend

- Groundwater Monitoring Well
- Lamberts North Ash Repository
- Mt Piper Ash Repository
- Inferred Groundwater Contour (m AHD)
- Corrected Groundwater Elevation (m AHD)

Source:
 - (c) Department Finance, Services and Innovation DCDB/DTDB, 2018
 - Imagery Data : Bing Map Aerial, March 2014

Groundwater Contour Plan - Spring October 2017

F - 5A

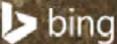
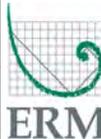
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Date: 28/11/2018	Drawing Size: A4
Drawn By: GC / GR	Reviewed By: GW

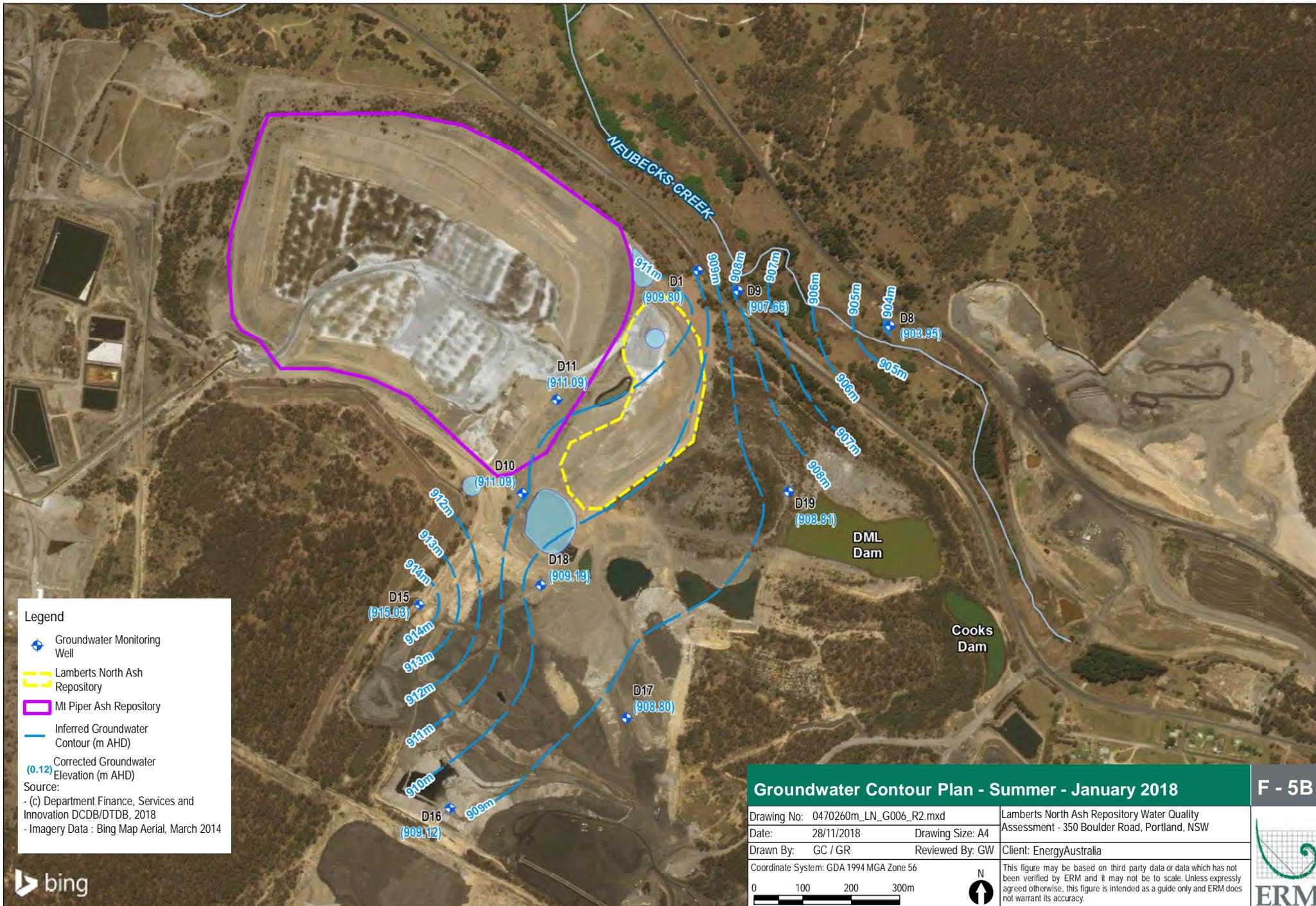
Client: EnergyAustralia

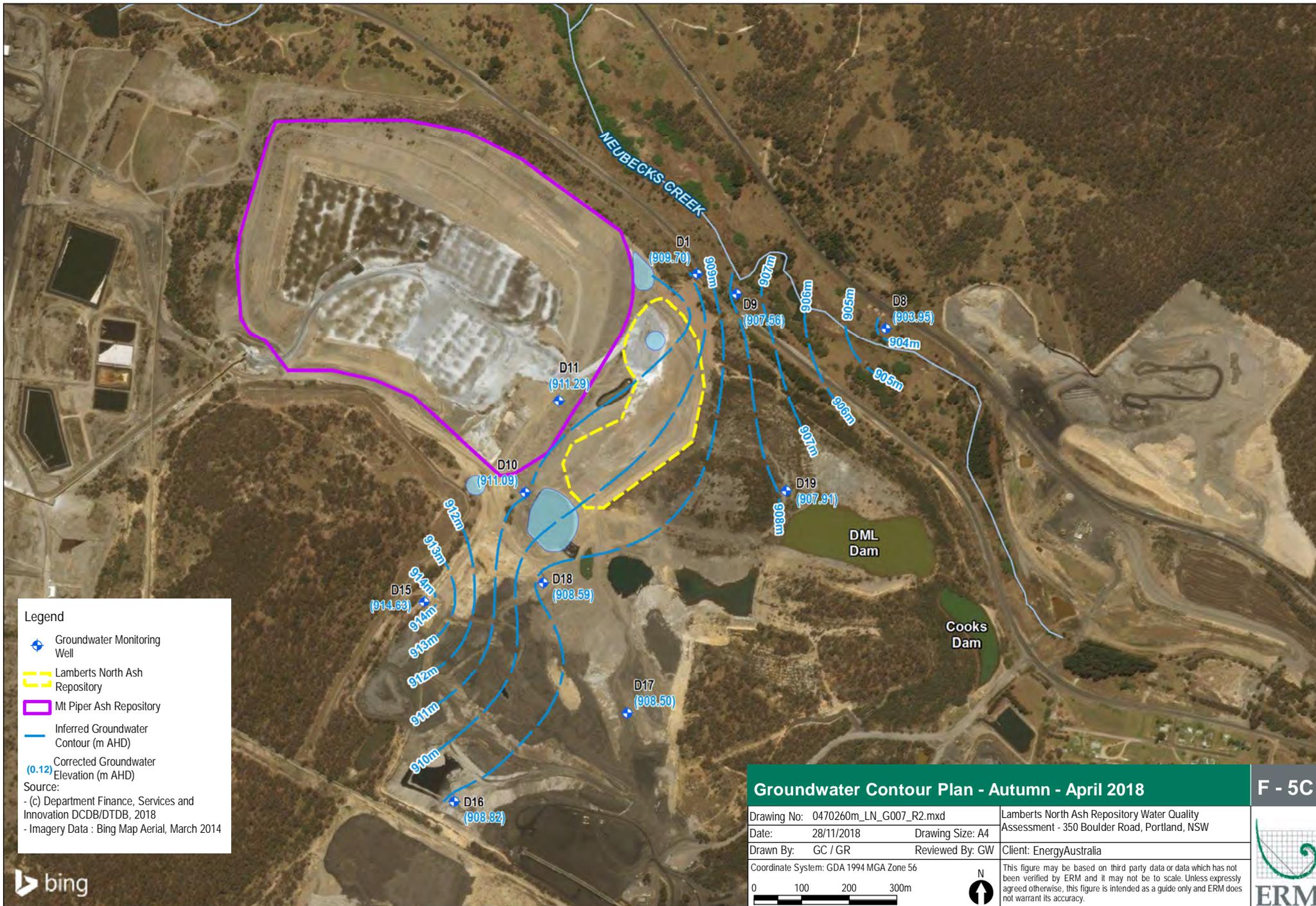
Coordinate System: GDA 1994 MGA Zone 56



This figure may be based on third party data or data which has not been verified by ERM and it may not be to scale. Unless expressly agreed otherwise, this figure is intended as a guide only and ERM does not warrant its accuracy.







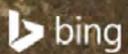
Legend

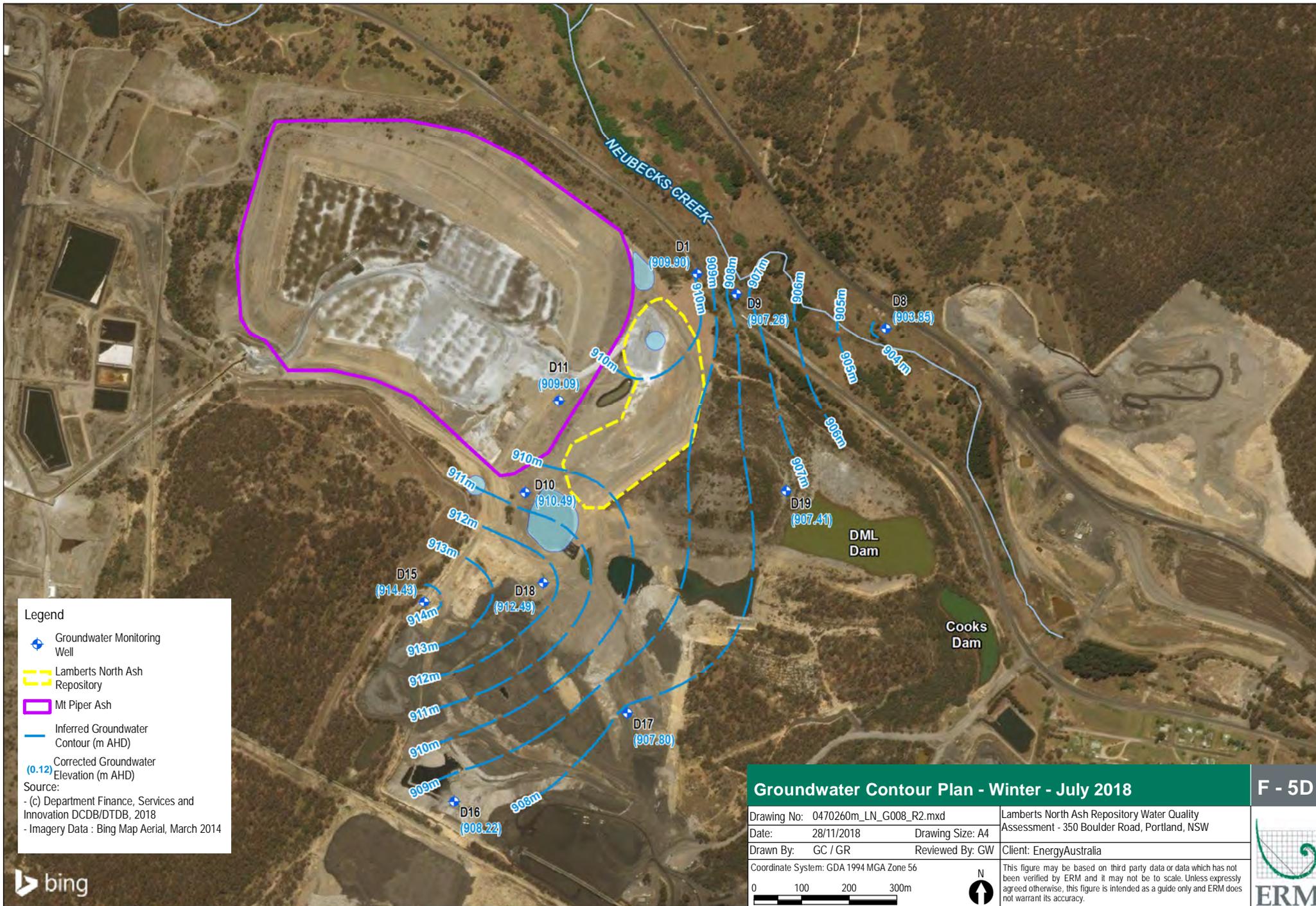
- Groundwater Monitoring Well
- Lamberts North Ash Repository
- Mt Piper Ash Repository
- Inferred Groundwater Contour (m AHD)
- Corrected Groundwater Elevation (m AHD)

Source:
 - (c) Department Finance, Services and Innovation DCDB/DTDB, 2018
 - Imagery Data : Bing Map Aerial, March 2014

Groundwater Contour Plan - Autumn - April 2018 **F - 5C**

Drawing No: 0470260m_LN_G007_R2.mxd	Lamberts North Ash Repository Water Quality Assessment - 350 Boulder Road, Portland, NSW
Date: 28/11/2018	Drawing Size: A4
Drawn By: GC / GR	Reviewed By: GW
Client: EnergyAustralia	
Coordinate System: GDA 1994 MGA Zone 56	This figure may be based on third party data or data which has not been verified by ERM and it may not be to scale. Unless expressly agreed otherwise, this figure is intended as a guide only and ERM does not warrant its accuracy.





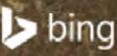
Legend

- Groundwater Monitoring Well
- Lamberts North Ash Repository
- Mt Piper Ash
- Inferred Groundwater Contour (m AHD)
- Corrected Groundwater Elevation (m AHD) (0.12)

Source:
 - (c) Department Finance, Services and Innovation DCDB/DTDB, 2018
 - Imagery Data : Bing Map Aerial, March 2014

Groundwater Contour Plan - Winter - July 2018 **F - 5D**

Drawing No: 0470260m_LN_G008_R2.mxd	Lamberts North Ash Repository Water Quality Assessment - 350 Boulder Road, Portland, NSW
Date: 28/11/2018	Drawing Size: A4
Drawn By: GC / GR	Reviewed By: GW
Client: EnergyAustralia	
Coordinate System: GDA 1994 MGA Zone 56	
0 100 200 300m	
<p>This figure may be based on third party data or data which has not been verified by ERM and it may not be to scale. Unless expressly agreed otherwise, this figure is intended as a guide only and ERM does not warrant its accuracy.</p>	



LMP01	Chloride	Boron	Chromium	Copper	Molybdenum	Nickel	Date Range
50th Percentile	10.5	100	9.5	5	3	4	Sep 2017 - Aug 2018
90th Percentile	14.7	182	15.5	9	4	8.8	
Minimum	5.07	50	2	2	1	2	
Maximum	16.7	230	17	19	4	10	

NC01	Chloride	Boron	Chromium	Copper	Molybdenum	Nickel	Date Range
50th Percentile	10	140	<1	3	1	3	Sep 2017 - Aug 2018
90th Percentile	13.8	156	<1	3.7	1.8	6	
Minimum	4.28	120	<1	2	1	2	
Maximum	16.7	160	<1	4	2	6	

WX22	Chloride	Boron	Chromium	Copper	Molybdenum	Nickel	Date Range
50th Percentile	39.2	120	<1	1	1.5	<1	Sep 2017 - Aug 2018
90th Percentile	121.43	236	6.5	0.85	1.9	106.6	
Minimum	14.6	70	<1	1	1	6	
Maximum	164	290	9	1	2	136	

Adopted Assessment Criteria					
Chloride (mg/L)	Boron (ug/L)	Chromium (ug/L)	Copper (ug/L)	Molybdenum (ug/L)	Nickel (ug/L)
350 ⁽¹⁾	370 ⁽¹⁾	2 ⁽¹⁾	3.5 ⁽¹⁾	10 ⁽¹⁾	17 ⁽¹⁾

1 = ANZECC (2000) or Local Guidelines - Surface Water

350 Highlighted cells indicate value is equal to or above the adopted assessment criteria.

Where concentration data have been reported below the laboratory limit of reporting (LOR) half the LOR were used to calculate the average and 90th percentile values.

Surface Water - Min, max, 50th and 90th percentile (chloride, boron, chromium, copper, molybdenum and nickel)

F - 6A

Drawing No: 0470260m_LN_G009_R4.mxd	Lamberts North Ash Repository Water Quality Assessment - 350 Boulder Road, Portland, NSW	
Date: 28/11/2018	Drawing Size: A4	Client: EnergyAustralia
Drawn By: GR	Reviewed By: GW	

Coordinate System: GDA 1994 MGA Zone 56



This figure may be based on third party data or data which has not been verified by ERM and it may not be to scale. Unless expressly agreed otherwise, this figure is intended as a guide only and ERM does not warrant its accuracy.



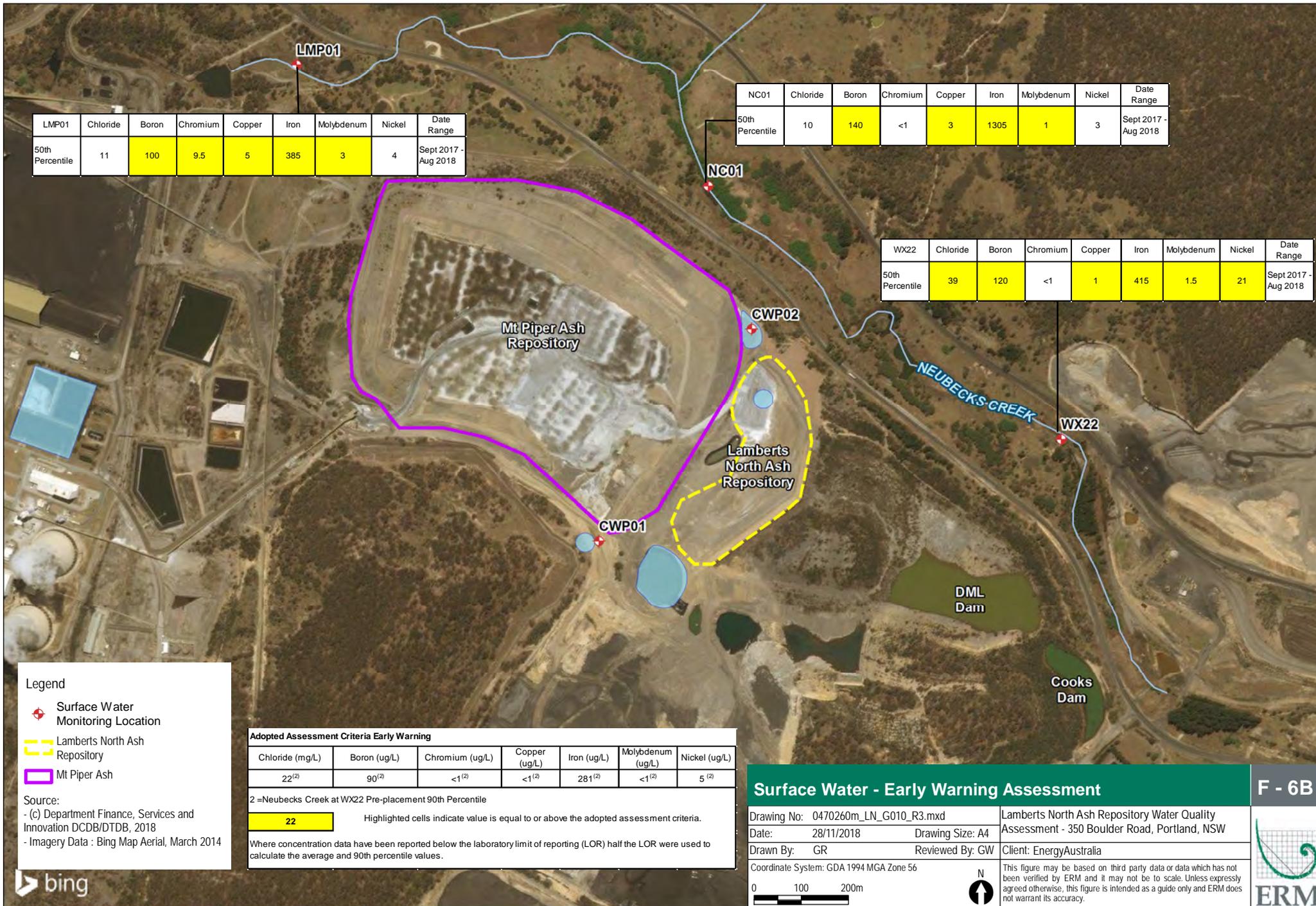
Legend

- Surface Water Monitoring Location
- Lamberts North Ash Repository
- Mt Piper Ash

Source:

- (c) Department Finance, Services and Innovation DCDB/DTDB, 2018
- Imagery Data : Bing Map Aerial, March 2014





LMP01	Chloride	Boron	Chromium	Copper	Iron	Molybdenum	Nickel	Date Range
50th Percentile	11	100	9.5	5	385	3	4	Sept 2017 - Aug 2018

NC01	Chloride	Boron	Chromium	Copper	Iron	Molybdenum	Nickel	Date Range
50th Percentile	10	140	<1	3	1305	1	3	Sept 2017 - Aug 2018

WX22	Chloride	Boron	Chromium	Copper	Iron	Molybdenum	Nickel	Date Range
50th Percentile	39	120	<1	1	415	1.5	21	Sept 2017 - Aug 2018

Adopted Assessment Criteria Early Warning						
Chloride (mg/L)	Boron (ug/L)	Chromium (ug/L)	Copper (ug/L)	Iron (ug/L)	Molybdenum (ug/L)	Nickel (ug/L)
22 ⁽²⁾	90 ⁽²⁾	<1 ⁽²⁾	<1 ⁽²⁾	281 ⁽²⁾	<1 ⁽²⁾	5 ⁽²⁾

2 = Neubecks Creek at WX22 Pre-placement 90th Percentile

Highlighted cells indicate value is equal to or above the adopted assessment criteria.

Where concentration data have been reported below the laboratory limit of reporting (LOR) half the LOR were used to calculate the average and 90th percentile values.

Surface Water - Early Warning Assessment

F - 6B

Drawing No: 0470260m_LN_G010_R3.mxd

Lamberts North Ash Repository Water Quality Assessment - 350 Boulder Road, Portland, NSW

Date: 28/11/2018

Drawing Size: A4

Drawn By: GR

Reviewed By: GW

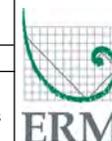
Client: EnergyAustralia

Coordinate System: GDA 1994 MGA Zone 56

0 100 200m



This figure may be based on third party data or data which has not been verified by ERM and it may not be to scale. Unless expressly agreed otherwise, this figure is intended as a guide only and ERM does not warrant its accuracy.



Legend

Surface Water Monitoring Location

Lamberts North Ash Repository

Mt Piper Ash

Source:

- (c) Department Finance, Services and Innovation DCDB/DTDB, 2018

- Imagery Data : Bing Map Aerial, March 2014



D1	EC	TDS	Sulphate	Chloride	Fluoride
50th Percentile	5540	4930	2530	607	0.07
90th Percentile	5792	5107	2678	677	0.116
Minimum	4500	2990	1990	431	0.028
Maximum	5990	5170	2750	693	0.14

D8	EC	TDS	Sulphate	Chloride	Fluoride
50th Percentile	502	370	216	16.9	0.02
90th Percentile	1010	737	403	63.1	0.035
Minimum	204	181	70.8	3.4	0.015
Maximum	1280	952	506	80.4	0.042

D11	EC	TDS	Sulphate	Chloride	Fluoride
50th Percentile	9880	9025	4845	949	0.097
90th Percentile	10150	9329	5195	1015	0.190
Minimum	9790	5670	4230	788	0.07
Maximum	10150	9410	5600	1060	0.25

D9	EC	TDS	Sulphate	Chloride	Fluoride
50th Percentile	3220	2425	1680	170	0.068
90th Percentile	4274	3611	1959	334	1.564
Minimum	2670	2140	1270	140	0.05
Maximum	4630	3710	2250	425	3.02

D10	EC	TDS	Sulphate	Chloride	Fluoride
50th Percentile	10625	8430	5210	907	0.511
90th Percentile	11121	9265	5631	983	0.729
Minimum	7560	6310	3610	601	0.399
Maximum	11230	9760	5640	1000	0.935

D19	EC	TDS	Sulphate	Chloride	Fluoride
50th Percentile	6135	4975	3040	486	0.08
90th Percentile	6786	5389	3339	529	0.152
Minimum	2350	1700	1060	137	0.023
Maximum	6930	5920	4050	651	0.153

D15	EC	TDS	Sulphate	Chloride	Fluoride
50th Percentile	4110	3170	2060	233	0.006
90th Percentile	4478	3670	2209	265	0.150
Minimum	3980	2580	1880	201	0.021
Maximum	4700	3790	2380	311	0.025

D16	EC	TDS	Sulphate	Chloride	Fluoride
50th Percentile	1265	828	405	34.3	0.227
90th Percentile	1390	1046	509	47.25	0.2544
Minimum	1080	686	289	22.3	0.203
Maximum	1430	1110	519	51.3	0.266

D18	EC	TDS	Sulphate	Chloride	Fluoride
50th Percentile	800	492	69.2	14.9	0.475
90th Percentile	844	519	84.52	16.3	0.492
Minimum	730	392	45.6	11.7	0.432
Maximum	850	526	86.5	16.7	0.498

D17	EC	TDS	Sulphate	Chloride	Fluoride
50th Percentile	3450	2810	1690	218	0.074
90th Percentile	3660	3016	1762	233	0.092
Minimum	3360	2150	1580	215	0.053
Maximum	3720	3160	1780	236	0.093

Mt Piper Ash Repository

Lamberts North Ash Repository

DML Dam

NEUBECKS CREEK

Legend

- Groundwater Monitoring Location
- Lamberts North Ash Repository
- Mt Piper Ash

Source:
 - (c) Department Finance, Services and Innovation DCDB/DTDB, 2018
 - Imagery Data : Bing Map Aerial, March 2014

Adopted Assessment Criteria

EC (µS/cm)	TDS (mg/L)	Sulphate (mg/L)	Chloride (mg/L)	Fluoride (mg/L)
2600 ⁽¹⁾	2000 ⁽¹⁾	1000 ⁽¹⁾	350 ⁽¹⁾	1.5 ⁽¹⁾

(1) ANZECC (2000) or Local Guidelines - Groundwater

2000 Highlighted cells indicate value is equal to or above the adopted assessment criteria.

Where concentration data have been reported below the laboratory limit of reporting (LOR) half the LOR were used to calculate the average and 90th percentile values.

Groundwater– Min, max, 50th and 90th percentile (pH, EC, TDS, chloride, sulphate and fluoride)

Drawing No: 0470260m_LN_G012_R4.mxd	Lamberts North Ash Repository Water Quality Assessment - 350 Boulder Road, Portland, NSW
Date: 16/11/2018	Client: EnergyAustralia
Drawn By: GC / GR	Reviewed By: GW
Coordinate System: GDA 1994 MGA Zone 56	This figure may be based on third party data or data which has not been verified by ERM and it may not be to scale. Unless expressly agreed otherwise, this figure is intended as a guide only and ERM does not warrant its accuracy.

0 100 200m

ERM

F - 7A



Adopted Assessment Criteria													
Criteria (ug/L)	As	Ba	B	Cd	Cr	Cu	Fe	Mn	Mo	Ni	Pb	Se	Zn
Local Guideline	24	700	370	2	5	5	664	5704	10	550.9	5	5	908

D1	As	Ba	B	Cd	Cr	Cu	Fe	Mn	Mo	Ni	Pb	Se	Zn
50th Percentile	8	31.5	1,940	<0.1	1	<1	38,850	18,100	1	1,140	<1	0.2	120
90th Percentile	9.2	36.1	2159	<0.1	1	<1	52,150	20,100	1	1,249	<1	0.2	143
Minimum	4	24	1600	<0.1	<1	<1	19,200	13,000	<1	781	<1	<0.2	79
Maximum	11	37	2260	<0.1	2	<1	65,400	21,200	1.0	1,330	<1	0.2	152

D11	As	Ba	B	Cd	Cr	Cu	Fe	Mn	Mo	Ni	Pb	Se	Zn
50th Percentile	8	16.5	2,895	<0.1	3	3	82,600	18,100	1	950	<1	0.2	138
90th Percentile	11	20.3	3252	<0.1	4	3.0	108,700	20,880	2	1,082	<1	0.20	170
Minimum	6	15	2190	<0.1	2.0	<1	29,300	16,000	1.0	898	<1	<0.02	115
Maximum	11	23	3290	<0.1	4	3.0	113,000	21,000	2.0	1,100	<1	0.2	178

D15	As	Ba	B	Cd	Cr	Cu	Fe	Mn	Mo	Ni	Pb	Se	Zn
50th Percentile	5	16	295	0.4	40.5	6	17,800	2,335	2	700	6	0.45	1245
90th Percentile	8.9	18.9	328	0.5	211	29.6	20,360	2,528	10	808	8	0.69	1269
Minimum	3	13	270	0.4	1.0	2.0	11,500	2,070	0.5	522	3	0.4	994
Maximum	20	34	480	0.5	501	351.0	20,400	2,800	16.0	895	19	1.4	1290

D10	As	Ba	B	Cd	Cr	Cu	Fe	Mn	Mo	Ni	Pb	Se	Zn
50th Percentile	<1	16	4,200	6.9	3.5	2	4,010	8,365	1	995	5	3.7	1040
90th Percentile	2	18.2	4921	8.71	6	2.0	8,231	9,153	1	1,178	5.2	4.21	1204
Minimum	<1	14	2340	3.8	<1	1.0	1,340	6,840	<1	697	3	1.3	880
Maximum	2	20	5320	9.7	6	2.0	14,000	9,270	1.0	1,340	7	4.3	1420

D16	As	Ba	B	Cd	Cr	Cu	Fe	Mn	Mo	Ni	Pb	Se	Zn
50th Percentile	<1	13.5	75	<0.1	6	10	1,580	33	<1	6	<1	<0.02	10
90th Percentile	<1	16.5	106	<0.1	16	16.4	1,740	37	2	11	<1	<0.02	13
Minimum	<1	11	50	<0.1	2.0	2.0	1,290	4	<1	1	<1	<0.02	6
Maximum	<1	17	160	<0.1	20	18.0	1,770	38	2.0	11	<1	<0.02	14

D9	As	Ba	B	Cd	Cr	Cu	Fe	Mn	Mo	Ni	Pb	Se	Zn
50th Percentile	1	34	880	0.2	<1	2	18,850	13,650	2.5	362	1	0.25	131
90th Percentile	2.6	43.9	940	0.28	<1	2.0	30,010	15,370	5	634.9	3.4	0.29	170
Minimum	<1	30	610	<0.1	<1	<1	6,340	9,000	<1	300	<1	<0.2	100
Maximum	3	45	960	0.3	<1	2.0	32,500	16,800	5.0	665	4	0.3	234

D8	As	Ba	B	Cd	Cr	Cu	Fe	Mn	Mo	Ni	Pb	Se	Zn
50th Percentile	<1	36	120	<0.1	<1	1	286.5	626	<1	63	<1	<0.2	85
90th Percentile	<1	50.3	164	<0.1	<1	4.2	920.5	2,024	<1	112	<1	<0.2	133
Minimum	<1	23	50	<0.1	<1	<1	39	36	<1	18	<1	<0.2	35
Maximum	<1	71	200	<0.1	2	5.0	1,600	2,330	<1	142	<1	<0.2	158

D19	As	Ba	B	Cd	Cr	Cu	Fe	Mn	Mo	Ni	Pb	Se	Zn
50th Percentile	7.5	18.5	2,560	0.2	23	3	26,900	12,850	2.5	938	7	1.4	456
90th Percentile	16	52.4	3321	0.6	38	19.8	31,690	14,820	4	1,009	5	4.84	604
Minimum	2	11	950	<0.1	<1	<1	42	302	<1	174	<1	<0.2	360
Maximum	21	74	3370	0.6	44	23	34,800	14,900	4.0	1,100	94	5.0	618

D18	As	Ba	B	Cd	Cr	Cu	Fe	Mn	Mo	Ni	Pb	Se	Zn
50th Percentile	1.5	479	75	0.2	1	2	11	139	4	8	1	0.3	49
90th Percentile	2	533	109	0.26	1	2.0	28	203	9	9	1	0.4	61
Minimum	<1	433	60	0.1	<1	<1	6	108	3.0	5	<1	<0.02	35
Maximum	2	570	140	0.3	1	2.0	33	228	10.0	9	1	0.4	62

D17	As	Ba	B	Cd	Cr	Cu	Fe	Mn	Mo	Ni	Pb	Se	Zn
50th Percentile	2	18	175	<0.1	14.5	2	24,900	3,430	<1	124	<1	<0.02	98
90th Percentile	3.4	22.6	247	<0.1	16	2.8	30,640	3,792	1	137	<1	<0.02	112
Minimum	2	17	80	<0.1	1.0	1.0	4,230	3,060	<1	102	<1	<0.02	88
Maximum	4	25	300	<0.1	16	3.0	32,400	3,990	1.0	141	<1	<0.02	120

Legend

- Groundwater Monitoring Location
- Lamberts North Ash Repository
- Mt Piper Ash Repository

Groundwater - Min, max, 50th and 90th percentile (Metals)

F - 7B

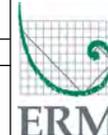
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 Date: 28/11/2018 Drawing Size: A4
 Drawn By: GC / GR Reviewed By: GW

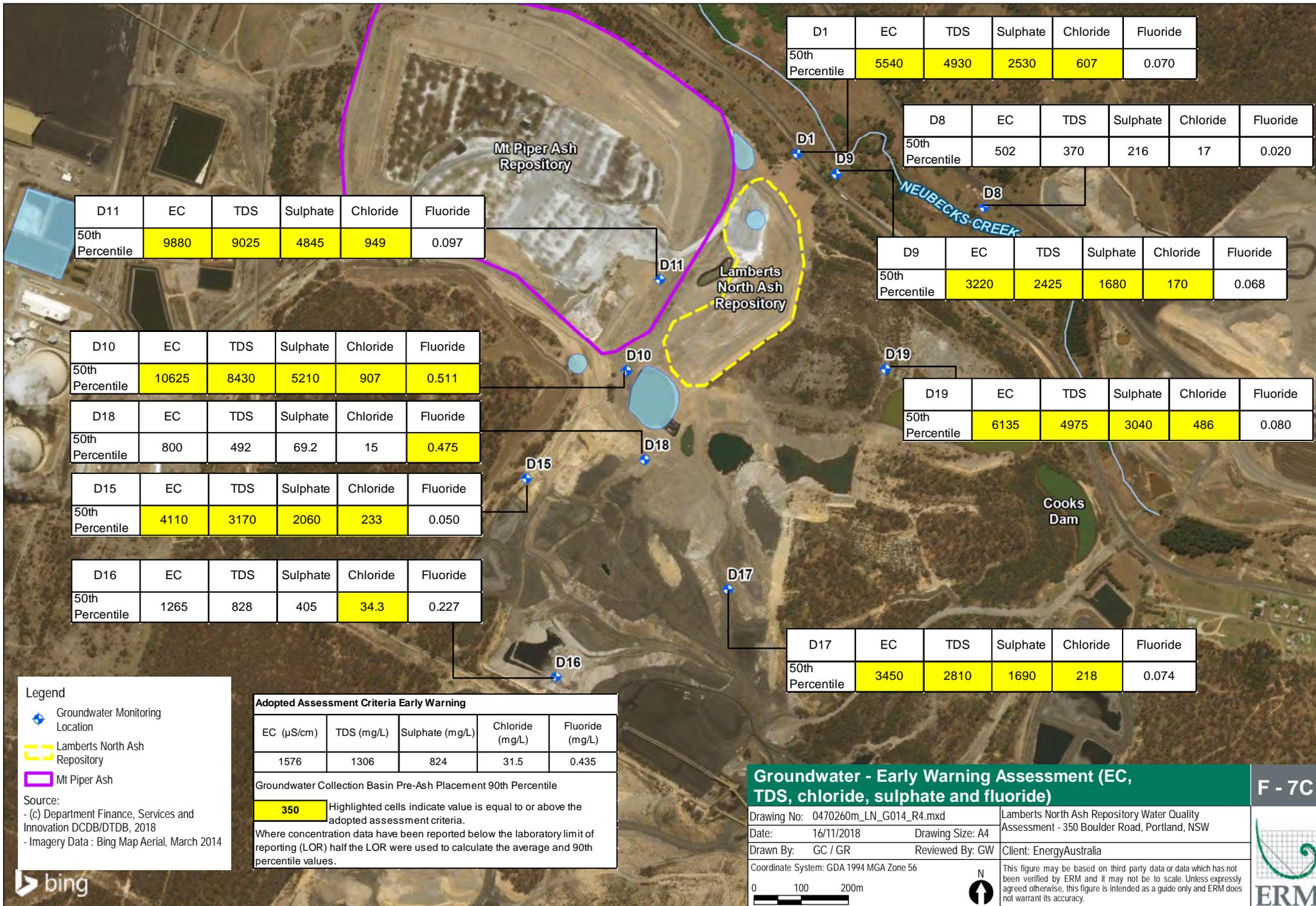
Lamberts North Ash Repository Water Quality Assessment - 350 Boulder Road, Portland, NSW
 Client: EnergyAustralia

Coordinate System: GDA 1994 MGA Zone 56



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D11	EC	TDS	Sulphate	Chloride	Fluoride
50th Percentile	9880	9025	4845	949	0.097

D10	EC	TDS	Sulphate	Chloride	Fluoride
50th Percentile	10625	8430	5210	907	0.511

D18	EC	TDS	Sulphate	Chloride	Fluoride
50th Percentile	800	492	69.2	15	0.475

D15	EC	TDS	Sulphate	Chloride	Fluoride
50th Percentile	4110	3170	2060	233	0.050

D16	EC	TDS	Sulphate	Chloride	Fluoride
50th Percentile	1265	828	405	34.3	0.227

D1	EC	TDS	Sulphate	Chloride	Fluoride
50th Percentile	5540	4930	2530	607	0.070

D8	EC	TDS	Sulphate	Chloride	Fluoride
50th Percentile	502	370	216	17	0.020

D9	EC	TDS	Sulphate	Chloride	Fluoride
50th Percentile	3220	2425	1680	170	0.068

D19	EC	TDS	Sulphate	Chloride	Fluoride
50th Percentile	6135	4975	3040	486	0.080

D17	EC	TDS	Sulphate	Chloride	Fluoride
50th Percentile	3450	2810	1690	218	0.074

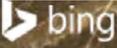
Legend

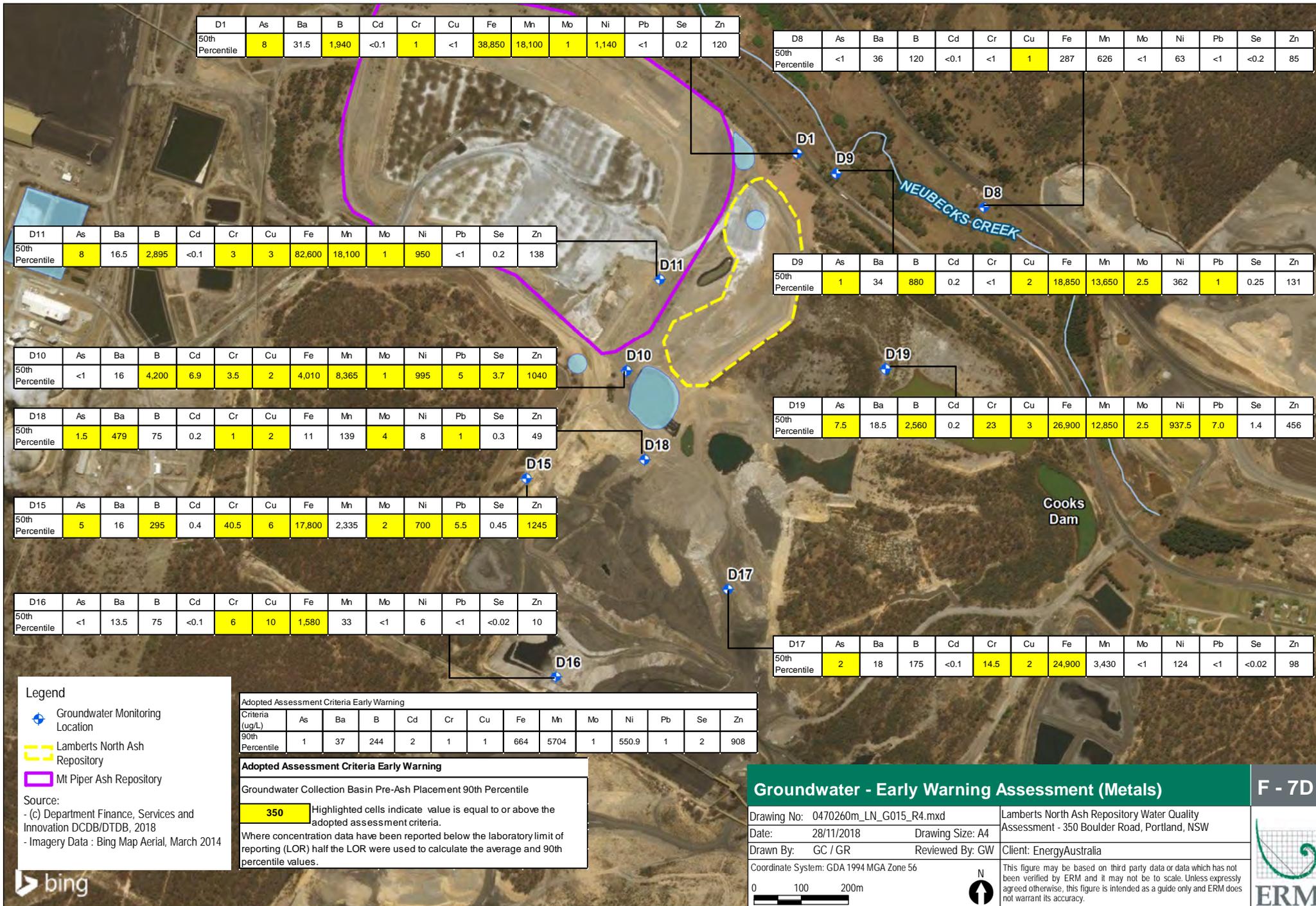
- Groundwater Monitoring Location
- Lamberts North Ash Repository
- Mt Piper Ash

Source:
 - (c) Department Finance, Services and Innovation DCDB/DTDB, 2018
 - Imagery Data : Bing Map Aerial, March 2014

Adopted Assessment Criteria Early Warning				
EC (µS/cm)	TDS (mg/L)	Sulphate (mg/L)	Chloride (mg/L)	Fluoride (mg/L)
1576	1306	824	31.5	0.435
350	Highlighted cells indicate value is equal to or above the adopted assessment criteria.			
Groundwater Collection Basin Pre-Ash Placement 90th Percentile				
350	Where concentration data have been reported below the laboratory limit of reporting (LOR) half the LOR were used to calculate the average and 90th percentile values.			

Groundwater - Early Warning Assessment (EC, TDS, chloride, sulphate and fluoride)		F - 7C
Drawing No: 0470260m_LN_G014_R4.mxd	Lamberts North Ash Repository Water Quality Assessment - 350 Boulder Road, Portland, NSW	
Date: 16/11/2018	Drawing Size: A4	
Drawn By: GC / GR	Reviewed By: GW	Client: EnergyAustralia
Coordinate System: GDA 1994 MGA Zone 56		 This figure may be based on third party data or data which has not been verified by ERM and it may not be to scale. Unless expressly agreed otherwise, this figure is intended as a guide only and ERM does not warrant its accuracy.





D1	As	Ba	B	Cd	Cr	Cu	Fe	Mn	Mo	Ni	Pb	Se	Zn
50th Percentile	8	31.5	1,940	<0.1	1	<1	38,850	18,100	1	1,140	<1	0.2	120

D8	As	Ba	B	Cd	Cr	Cu	Fe	Mn	Mo	Ni	Pb	Se	Zn
50th Percentile	<1	36	120	<0.1	<1	1	287	626	<1	63	<1	<0.2	85

D11	As	Ba	B	Cd	Cr	Cu	Fe	Mn	Mo	Ni	Pb	Se	Zn
50th Percentile	8	16.5	2,895	<0.1	3	3	82,600	18,100	1	950	<1	0.2	138

D9	As	Ba	B	Cd	Cr	Cu	Fe	Mn	Mo	Ni	Pb	Se	Zn
50th Percentile	1	34	880	0.2	<1	2	18,850	13,650	2.5	362	1	0.25	131

D10	As	Ba	B	Cd	Cr	Cu	Fe	Mn	Mo	Ni	Pb	Se	Zn
50th Percentile	<1	16	4,200	6.9	3.5	2	4,010	8,365	1	995	5	3.7	1040

D19	As	Ba	B	Cd	Cr	Cu	Fe	Mn	Mo	Ni	Pb	Se	Zn
50th Percentile	7.5	18.5	2,560	0.2	23	3	26,900	12,850	2.5	937.5	7.0	1.4	456

D18	As	Ba	B	Cd	Cr	Cu	Fe	Mn	Mo	Ni	Pb	Se	Zn
50th Percentile	1.5	479	75	0.2	1	2	11	139	4	8	1	0.3	49

D15	As	Ba	B	Cd	Cr	Cu	Fe	Mn	Mo	Ni	Pb	Se	Zn
50th Percentile	5	16	295	0.4	40.5	6	17,800	2,335	2	700	5.5	0.45	1245

D16	As	Ba	B	Cd	Cr	Cu	Fe	Mn	Mo	Ni	Pb	Se	Zn
50th Percentile	<1	13.5	75	<0.1	6	10	1,580	33	<1	6	<1	<0.02	10

D17	As	Ba	B	Cd	Cr	Cu	Fe	Mn	Mo	Ni	Pb	Se	Zn
50th Percentile	2	18	175	<0.1	14.5	2	24,900	3,430	<1	124	<1	<0.02	98

Legend

- Groundwater Monitoring Location
- Lamberts North Ash Repository
- Mt Piper Ash Repository

Source:
 - (c) Department Finance, Services and Innovation DCDB/DTDB, 2018
 - Imagery Data : Bing Map Aerial, March 2014

Adopted Assessment Criteria Early Warning

Criteria (ug/L)	As	Ba	B	Cd	Cr	Cu	Fe	Mn	Mo	Ni	Pb	Se	Zn
90th Percentile	1	37	244	2	1	1	664	5704	1	550.9	1	2	908

Adopted Assessment Criteria Early Warning

Groundwater Collection Basin Pre-Ash Placement 90th Percentile

350	Highlighted cells indicate value is equal to or above the adopted assessment criteria.
-----	--

Where concentration data have been reported below the laboratory limit of reporting (LOR) half the LOR were used to calculate the average and 90th percentile values.

Groundwater - Early Warning Assessment (Metals)

F - 7D

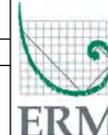
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 Date: 28/11/2018
 Drawn By: GC / GR

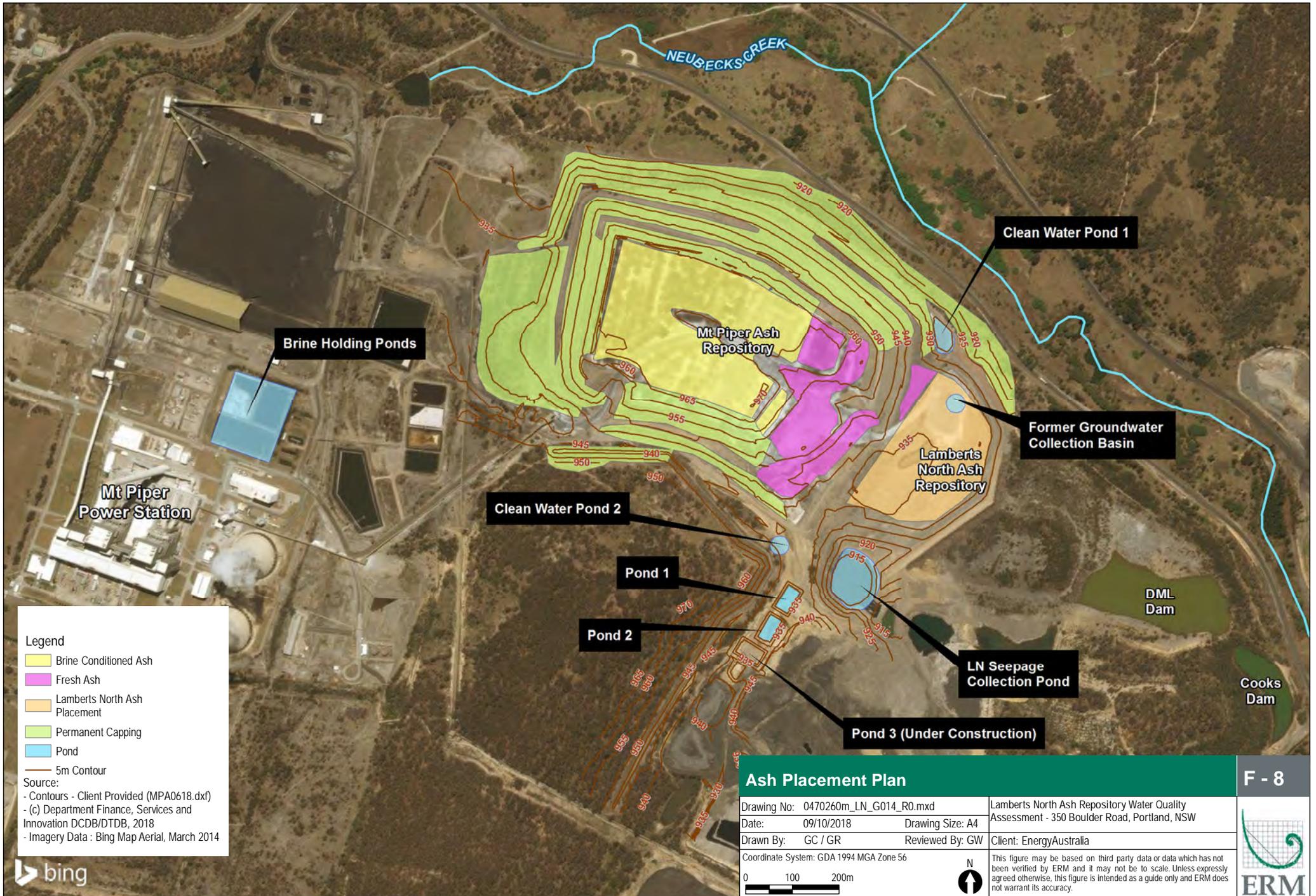
Lamberts North Ash Repository Water Quality Assessment - 350 Boulder Road, Portland, NSW
 Drawing Size: A4
 Reviewed By: GW
 Client: EnergyAustralia

Coordinate System: GDA 1994 MGA Zone 56



This figure may be based on third party data or data which has not been verified by ERM and it may not be to scale. Unless expressly agreed otherwise, this figure is intended as a guide only and ERM does not warrant its accuracy.





Legend

- Brine Conditioned Ash
- Fresh Ash
- Lamberts North Ash Placement
- Permanent Capping
- Pond
- 5m Contour

Source:

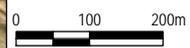
- Contours - Client Provided (MPA0618.dxf)
- (c) Department Finance, Services and Innovation DCDB/DTDB, 2018
- Imagery Data : Bing Map Aerial, March 2014

Ash Placement Plan

Drawing No: 0470260m_LN_G014_R0.mxd
 Date: 09/10/2018
 Drawn By: GC / GR

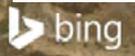
Lamberts North Ash Repository Water Quality Assessment - 350 Boulder Road, Portland, NSW
 Drawing Size: A4
 Reviewed By: GW
 Client: EnergyAustralia

Coordinate System: GDA 1994 MGA Zone 56



This figure may be based on third party data or data which has not been verified by ERM and it may not be to scale. Unless expressly agreed otherwise, this figure is intended as a guide only and ERM does not warrant its accuracy.

F - 8



Annex A

Statement of Limitations

STATEMENT OF LIMITATIONS

This report is based solely on the scope of work described in our proposal dated 25 June 2018 (**Scope of Work**) and performed by Environmental Resources Management Australia Pty Ltd (**ERM**) for EnergyAustralia NSW Pty Ltd (the **Client**). The Scope of Work was governed by a contract between ERM and the Client (**Contract**).

No limitation, qualification or caveat set out below is intended to derogate from the rights and obligations of ERM and the Client under the Contract.

The findings of this report are solely based on, and the information provided in this report is strictly limited to that required by, the Scope of Work. Except to the extent stated otherwise, in preparing this report ERM has not considered any question, nor provides any information, beyond that required by the Scope of Work.

This report was prepared between 01 August 2018 and 28 November 2018 and is based on conditions encountered and information reviewed at the time of preparation. The report does not, and cannot, take into account changes in law, factual circumstances, applicable regulatory instruments or any other future matter. ERM does not, and will not, provide any on-going advice on the impact of any future matters unless it has agreed with the Client to amend the Scope of Work or has entered into a new engagement to provide a further report.

Unless this report expressly states to the contrary, ERM's Scope of Work was limited strictly to identifying typical environmental conditions associated with the subject site(s) and does not evaluate the condition of any structure on the subject site nor any other issues. Although normal standards of professional practice have been applied, the absence of any identified hazardous or toxic materials or any identified impacted soil or groundwater on the site(s) should not be interpreted as a guarantee that such materials or impacts do not exist.

This report is based on one or more site inspections conducted by ERM personnel, the sampling and analyses described in the report, and information provided by the Client or third parties (including regulatory agencies). All conclusions and recommendations made in the report are the professional opinions of the ERM personnel involved. Whilst normal checking of data accuracy was undertaken, except to the extent expressly set out in this report ERM:

- did not, nor was able to, make further enquiries to assess the reliability of the information or independently verify information provided by;
- assumes no responsibility or liability for errors in data obtained from,
- the Client, any third parties or external sources (including regulatory agencies).

Although the data that has been used in compiling this report is generally based on actual circumstances, if the report refers to hypothetical examples those examples may, or may not, represent actual existing circumstances.

Only the environmental conditions and or potential contaminants specifically referred to in this report have been considered. To the extent permitted by law and except as is specifically stated in this report, ERM makes no warranty or representation about:

- the suitability of the site(s) for any purpose or the permissibility of any use;
- the presence, absence or otherwise of any environmental conditions or contaminants at the site(s) or elsewhere; or
- the presence, absence or otherwise of asbestos, asbestos containing materials or any hazardous materials on the site(s).

Use of the site for any purpose may require planning and other approvals and, in some cases, environmental regulator and accredited site auditor approvals. ERM offers no opinion as to the likelihood of obtaining any such approvals, or the conditions and obligations which such approvals may impose, which may include the requirement for additional environment works.

The ongoing use of the site or use of the site for a different purpose may require the management of or remediation of site conditions, such as contamination and other conditions, including but not limited to conditions referred to in this report.

This report should be read in full and no excerpts are to be taken as representative of the whole report. To ensure its contextual integrity, the report is not to be copied, distributed or referred to in part only. No responsibility or liability is accepted by ERM for use of any part of this report in any other context.

Except to the extent that ERM has agreed otherwise with the Client in the Scope of Work or the Contract, this report:

- has been prepared and is intended only for the exclusive use of the Client;
- must not to be relied upon or used by any other party;
- has not been prepared nor is intended for the purpose of advertising, sales, promoting or endorsing any Client interests including raising investment capital, recommending investment decisions, or other publicity purposes;
- does not purport to recommend or induce a decision to make (or not make) any purchase, disposal, investment, divestment, financial commitment or otherwise in or in relation to the site(s); and
- does not purport to provide, nor should be construed as, legal advice.

Annex B

Project Approvals

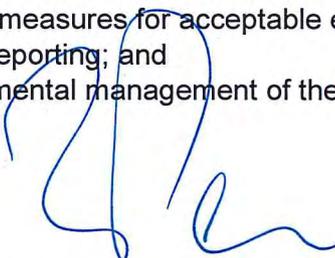
Project Approval

Section 75J of the *Environmental Planning & Assessment Act 1979*

As delegate of the Minister for Planning and Infrastructure under delegation from the Minister enforced from 1 October 2011, I approve the project application referred to in Schedule 1, subject to the conditions in Schedule 2.

These conditions are required to:

- prevent, minimise, and/or offset adverse environmental impacts;
- set standards and performance measures for acceptable environmental performance;
- require regular monitoring and reporting; and
- provide for the ongoing environmental management of the project.



Richard Pearson
Deputy Director-General
Development Assessment and Systems Performance

Sydney 16 February 2012

SCHEDULE 1

Application No.:	09_0186
Proponent:	Delta Electricity
Approval Authority:	Minister for Planning and Infrastructure
Land:	The project site is located in the central-west of NSW, at 350 Boulder Road, Portland and located within Lot 9 DP804929, Lot 15 DP804929, Lot 501 DP 825541, Lot 13 DP 751651, Lot 357 DP751651.
Project:	The construction and operation of new ash placement areas at the Lamberts South and Lamberts North sites to cater for the ash generated from the existing Mt Piper Power Station and the proposed Mt Piper Power Station Extension.

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DEFINITIONS

Act, the	Environmental Planning and Assessment Act 1979
Ancillary Facility	Temporary facility for construction. Examples may include an office and amenities compound, construction compound, batch plant, materials storage compound and stockpile areas.
Conditions of Approval	The Minister's Conditions of Approval for the project.
Construction	Includes all work in respect of the project other than survey, acquisitions, fencing, investigative drilling or excavation, building/road dilapidation surveys, minor clearing (except where threatened species, populations or ecological communities would be affected), establishing ancillary facilities, or other activities determined by the Environmental Representative to have minimal environmental impact (e.g. minor adjustments to utilities).
Department, the	NSW Department of Planning and Infrastructure
Director-General, the	Director-General of the NSW Department of Planning and Infrastructure (or delegate)
Director-General's Approval	A written approval from the Director-General (or delegate). Where the Director-General's approval is required by a condition, the Director-General will endeavour to provide a response within one month of receiving an approval request. The Director-General may ask for additional information if the approval request is considered incomplete. When further information is requested the time taken for the Proponent to respond in writing will be added to the one month period.
DPI	Department of Primary Industries
EA	Environmental Assessment
EPA	Environment Protection Authority
Environment Protection Licence	An Environment Protection Licence issued by the NSW Environment Protection Authority pursuant to the Protection of the Environment Operations Act 1997.
Environmental Incident	Any incident with actual or potential significant impacts on the biophysical environment and/or off-site impacts on people.
Minister, the	Minister for Planning and Infrastructure
NOW	NSW Office of Water
OEH	The Office of Environment and Heritage

Operation	Means the Operation of the Project, including ash haulage, ash truck movements, ash placement and management, operation of on-site water management systems, landscaping and revegetation/rehabilitation of the site but does not include commissioning trials of equipment or temporary use of parts of the project during construction.
Project	The project that is the subject of Major Project Application 09_0186.
Project Area	Lamberts North and Lamberts South ash disposal areas as identified in the Proponent's Environmental Assessment, August 2010.
Proponent	Delta Electricity
Publicly Available	Available for inspection by a member of the general public (for example, available on an internet site)
Reasonable and Feasible	Consideration of best practice taking into account the benefit of proposed measures and their technological and associated operational application in the NSW and Australian context. Feasible relates to engineering considerations and what is practical to build. Reasonable relates to the application of judgement in arriving at a decision, taking into account mitigation benefits, cost of mitigation versus benefits provided, community views, and nature and extent of potential improvements.
SCA	Sydney Catchment Authority
Sensitive Receiver	Residence, educational institution (e.g. school, TAFE college), health care facility (e.g. nursing home, hospital), religious facility (e.g. church), or child care facility.
Waste	For the purpose of this project, ash and brine are not considered waste.

SCHEDULE 2
PART A - ADMINISTRATIVE CONDITIONS

Terms of Approval

- A1. The Proponent shall carry out the project generally in accordance with the:
- (a) Major Project Application 09_0186;
 - (b) Mt Piper Ash Placement (two volumes) – Environmental Assessment (EA), prepared by Sinclair Knight Merz, August 2010;
 - (c) Mt Piper Ash Placement – Submissions Report, prepared by Sinclair Knight Merz, March 2011;
 - (d) Delta’s Letter to the Department – Submissions Report Response to the Department and Agency Issues (dated 22 June 2011); and
 - (e) the conditions of this approval.
- A2. In the event of an inconsistency between:
- (a) the conditions of this approval and any document listed from condition A1a) to A1(d) inclusive, the conditions of this approval shall prevail to the extent of the inconsistency; and
 - (b) any of the documents listed from conditions A1a) to A1(d) inclusive, the most recent document shall prevail to the extent of inconsistency.
- A3. The Proponent shall comply with the reasonable requirements of the Director-General arising from the Department’s assessment of:
- (a) any reports, plans or correspondence that are submitted in accordance with this approval; and
 - (b) the implementation of any actions or measures contained in these reports, plans or correspondence.
- A4. The Proponent shall meet the requirements of the Director-General in respect of the implementation of any measure necessary to ensure compliance with the conditions of this approval, and general consistency with the documents listed under condition A1 of this approval.

Limits of Approval

- A5. This approval shall lapse five years after the date on which it is granted, unless the works that are the subject of this approval are physically commenced on or before that time.

Statutory Requirements

- A6. The Proponent shall ensure that all licences, permits and approvals are updated and/or obtained as required by law and maintained as required with respect to the project. No condition of this approval removes the obligation for the Proponent to obtain, renew or comply with such licences, permits or approvals.

Staging

- A7. Where the Proponent intends to construct and operate the project in discrete stages (i.e Lamberts North and Lamberts South) it may comply with the requirements in conditions B4, B5, D2, D3 and D4 separately for each stage.
-

PART B – PRIOR TO CONSTRUCTION

Environmental Representative

- B1. Prior to the commencement of any construction activities, or as otherwise agreed by the Director-General, the Proponent shall nominate for the approval of the Director-General a suitably qualified and experienced Environmental Representative(s). The Proponent shall engage the Environmental Representative(s) during any construction activities, and throughout the life of the project, or as otherwise agreed by the Director-General. The Environmental Representative(s) shall:
- (a) oversee the implementation of all environmental management plans and monitoring programs required under this approval, and advise the Proponent upon the achievement of these plans/programs;
 - (b) consider and advise the Proponent on its compliance obligations against all matters specified in the conditions of this approval and the Statement of Commitments; and
 - (c) have the authority and independence to recommend to the Proponent reasonable steps to be taken to avoid or minimise unintended or adverse environmental impacts and, failing the effectiveness of such steps, to recommend to the Proponent that relevant activities are to be ceased as soon as reasonably practicable if there is a significant risk that an adverse impact on the environment will be likely to occur.

Groundwater Modelling

- B2. The Proponent shall undertake groundwater modelling by either adapting the existing UTS (2007) groundwater model to Lamberts North or developing a new groundwater model for Lamberts North. The updated model should be calibrated to site-specific data. In either case, the model shall incorporate the findings of groundwater monitoring of the existing ash placement areas. The Proponent shall consult with the SCA in the preparation of the groundwater model and the model shall be provided to the SCA within five months of project approval, unless otherwise agreed by the Director-General. The model shall address but not necessarily be limited to the following:
- (a) the findings of the groundwater monitoring of existing ash placement areas and be based on average groundwater quality data;
 - (b) updated predictions of the long term behaviour, fate and impacts of ash placement, in particular for water quality parameters such as sulphates, chlorides, boron, manganese, nickel, zinc, molybdenum copper, arsenic and barium;
 - (c) updated risk assessment for ground and surface water quality impacts under a range of rainfall events of differing duration and intensities (including up to a 100 year ARI event);
 - (d) calibration to site-specific data; and
 - (e) identification of appropriate surface and groundwater management measures required in order to achieve a neutral or beneficial effect on water quality.

Prior to construction of Lamberts South, the Lamberts North groundwater model is to be updated as set out above in items (a) - (e) in consultation with the SCA, to apply to Lamberts South.

Groundwater Monitoring

- B3. Baseline groundwater monitoring data, including groundwater quality, location of groundwater monitoring wells, depth and flow of groundwater in the project area should be obtained for a minimum of two sampling events prior to construction and a minimum of two sampling events after construction and prior to ash placement commencing. The baseline monitoring data along with the modelling predictions in B2 should be used in the consideration of the design of the ash placement facilities. The location of groundwater monitoring wells and parameters to be monitored should be undertaken in consultation with the SCA.

Prior to construction of Lamberts South the Proponent shall conduct baseline groundwater data collection as set out above, and use the results and the modelling predictions in B2 in the consideration of the design of the ash placement facilities.

Construction Environmental Management Plan

B4. The Proponent shall prepare and implement a Construction Environmental Management Plan (CEMP) to outline environmental management practices and procedures to be followed during construction of the project. The Plan shall be prepared in consultation with Lithgow City Council and relevant government agencies, and be consistent with the Guideline for the Preparation of Environmental Management Plans (DIPNR, 2004 or its latest revision) and shall include, but not necessarily be limited to:

- (a) a description of all relevant activities to be undertaken on the site during construction including an indication of stages of construction, where relevant;
- (b) identification of the potential for cumulative impacts with other construction activities occurring in the vicinity and how such impacts would be managed;
- (c) details of any site compounds and mitigation, monitoring, management and rehabilitation measures specific to the site compound(s) that would be implemented;
- (d) statutory and other obligations that the Proponent is required to fulfil during construction including all relevant approvals, consultations and agreements required from authorities and other stakeholders, and key legislation and policies;
- (e) evidence of consultation with relevant government agencies required under this condition and how issues raised by the agencies have been addressed in the plan;
- (f) a description of the roles and responsibilities for all relevant employees involved in the construction of the project including relevant training and induction provisions for ensuring that all employees, contractors and sub-contractors are aware of their environmental and compliance obligations under these conditions of approval;
- (g) details of how the environmental performance of construction will be managed and monitored, and what actions will be taken to address identified potential adverse environmental impacts;
- (h) specific consideration of relevant measures to address any requirements identified in the documents referred to under conditions A1(b) and A1(d);
- (i) a complaints handling procedure during construction;
- (j) emergency management measures including measures to control bushfires;
- (k) details of waste management including reuse and/or recycling of waste material, to minimise the need for treatment or disposal of those materials outside the site; and
- (l) the additional requirements of this approval.

The CEMP for the project (or any stage of the project) shall be submitted to the Director-General for approval at least four weeks prior to the commencement of any construction work associated with the project (or stage as relevant), unless otherwise agreed by the Director-General. Construction shall not commence until written approval has been received from the Director-General.

B5. As part of the CEMP for the project, the Proponent shall prepare and implement the following plans:

- a) a **Construction Noise Management Plan** to detail how construction noise impacts would be minimised and managed. The Plan shall be developed in consultation with the EPA and shall include, but not necessarily be limited to:
 - i) details of construction activities and an indicative schedule for construction works;

- ii) identification of construction activities that have the potential to generate noise impacts on sensitive receivers;
 - iii) identification of noise criteria and procedures for assessing noise levels at sensitive receivers;
 - iv) details of reasonable and feasible actions and measures to be implemented to minimise noise impacts;
 - v) details of noise monitoring and if any noise exceedance is detected, how any non-compliance would be rectified; and
 - vi) procedures for notifying sensitive receivers of construction activities that are likely to affect their noise amenity.
- b) a **Groundwater Management Plan** to detail measures to manage groundwater impacts. The Plan shall be prepared in consultation with the NOW and the SCA and include, but not necessarily be limited to:
- i) identification of the construction activities that could affect groundwater at the site, including groundwater interference and impacts to groundwater users and dependent species;
 - ii) a description of the management controls to minimise impacts to groundwater during construction;
 - iii) methods for monitoring groundwater during construction including a program to monitor groundwater flows and groundwater quality in the project area;
 - iv) a response program to address identified exceedances of existing groundwater quality criteria approved for Area 1 (the existing ash placement area); and
 - v) provisions for periodic reporting of results to the SCA during construction.
- c) a **Soil and Surface Water Management Plan** to outline measures that will be employed to manage water on the site, to minimise soil erosion and the discharge of sediments and other pollutants to lands and/or waters throughout the construction period. The Plan shall be based on best environmental practice and shall be prepared in consultation with the SCA and the NOW and any other relevant government agency. The Plan shall include, but not necessarily be limited to:
- i) baseline data on the water quality and available flow data in Huons Creek, Lamberts Gully Creek and Neubecks Creek;
 - ii) water quality objectives and impact assessment criteria for Huons Creek, Lamberts Gully Creek and Neubecks Creek;
 - iii) a geomorphic assessment of the capacity of Lamberts Gully Creek to accommodate additional flow under a range of rainfall events and duration, prior to commencement of construction works;
 - iv) identification of the construction activities that could cause soil erosion or discharge sediment or water pollutants from the site;
 - v) description of stockpile locations and disposal methods;
 - vi) a description of the management methods to minimise soil erosion or discharge of sediment or water pollutants from the site, including a strategy to minimise the area of bare surfaces, stabilise disturbed areas, and minimise bank erosion;
 - vii) demonstration that the proposed erosion and sediment control measures will conform with, or exceed, the relevant requirements of *Managing Urban Stormwater: Soils and Construction* (Landcom, 2004);
 - viii) a site water management strategy identifying drainage design including the separation of clean and dirty water areas for the project, details of the lining of surface water collection ponds and the associated water management measures including erosion and sediment controls and provisions for recycling/reuse of water and the procedures for decommissioning water management structures on the site and

- consideration to the treatment of water prior to discharge to the environment;
- ix) measures to monitor and manage soil and water impacts in consultation with NOW and DPI (Fisheries) including: control measures for works close to or involving waterway crossings (including rehabilitation measures following disturbance and monitoring measures and completion criteria to determine rehabilitation success);
 - x) measures to monitor and manage flood impacts in consultation with NOW and shall include, but not necessarily be limited to a flood model for predicted water levels and contingency measures for the site during potential floods;
 - xi) a program to monitor surface water quality, including Lamberts Gully Creek and Neubecks Creek;
 - xii) a protocol for the investigation of identified exceedances in the impact assessment criteria;
 - xiii) a response plan to address potential adverse surface water quality exceedances; and
 - xiv) provisions for periodic reporting of results to the DPI (Fisheries), NOW and the SCA as per condition B8.
- d) a **Air Quality Management Plan**, to provide details of dust control measures to be implemented during the construction of the project. The Plan shall be prepared in consultation with the EPA and should include, but not necessarily be limited to:
- i) identification of sources of dust deposition including, truck movements, regrading, backfilling, stockpiles and other exposed surfaces;
 - ii) identification of criteria, monitoring and mitigation measures for the above sources; and
 - iii) a reactive management programme detailing how and when construction operations are to be modified to minimise the potential for dust emissions, should emissions exceed the relevant criteria.
- e) a **Flora and Fauna Management Plan**, to outline measures to protect and minimise loss of native vegetation and native fauna habitat as a result of construction of the project. The Plan shall be prepared in consultation with the EPA and shall include, but not necessarily be limited to:
- i) plans showing terrestrial vegetation communities; important flora and fauna habitat areas; locations of threatened flora and fauna and areas to be cleared. The plans shall also identify vegetation adjoining the site where this contains important habitat areas and/or threatened species, populations or ecological communities;
 - ii) procedures to accurately determine the total area, type and condition of vegetation community to be cleared;
 - iii) methods to manage impacts on flora and fauna species and their habitat which may be directly or indirectly affected by the project, procedures for vegetation clearing or soil removal/stockpiling and procedures for identifying and re-locating hollows, installing nesting boxes and managing weeds; and
 - iv) a procedure to review management methods where they are found to be ineffective.
- f) an **Aboriginal Heritage Plan** to monitor and manage Aboriginal heritage impacts in consultation with registered Aboriginal stakeholders and prepared in consultation with the EPA. The plan should include but not necessarily limited to:

- i) an updated Cultural Heritage Management Plan to cover the protection of sites previously recorded in the 2005 Aboriginal heritage assessment;
 - ii) procedures for the management of unidentified objects and/or human remains, including ceasing work;
 - iii) Aboriginal cultural heritage induction processes for construction personnel; and
 - iv) procedures for ongoing Aboriginal consultation and involvement should Aboriginal heritage sites or objects be found during construction.
- g) an **Ash Transportation Plan** to provide details on the preferred option for the transportation of ash from the Mt Piper Power Station to the ash placement areas. The Plan shall include but not necessarily limited to:
- i) justification of the proposed option for ash transportation (either haulage access roads and/or conveyor) for ash transportation;
 - ii) details of the proposed option, including construction requirements, impacts and mitigation measures;
 - iii) plans showing the location of the chosen option; and
 - iv) provision of mitigation measures should the conveyor breakdown.

Biodiversity Offsets

B6. The Proponent shall develop and submit for the approval of the Director-General, a Biodiversity Offset Management Plan. The Biodiversity Offset Management Plan is to be submitted within 12 months of the project approval, unless otherwise agreed to by the Director-General. The Plan shall be developed in consultation with the EPA and shall:

- a) identify the objectives and outcomes to be met by the Biodiversity Offset Management Plan;
- b) describe the size and quality of the habitat/vegetation communities of the offset;
- c) identify biodiversity impacts, including impacts related to the loss of impacted flora and fauna including threatened Capertee Stringybark (*Eucalyptus cannonii*), nine (9) hectares of remnant vegetation (including, Red Stringy Bark Woodland, Scribbly Gum Woodland, Ribbon Gum Woodland), habitat for microbat and woodland bird species and the 31 ha of rehabilitated vegetation to be removed;
- d) describe the decision-making framework used in selecting the priority ranking of compensatory habitat options available in the region. Where possible, this should include purchase of land, development of agreements with identified land management authorities (e.g EPA, local Council) for long term management and funding of offsets and mitigation measures, and installation of identified mitigation measures;
- e) include an offset for direct and indirect impacts of the proposal which maintains or improves biodiversity values;
- f) identify the mechanisms for securing the biodiversity values of the offset measures in perpetuity and identify a monitoring regime, responsibilities, timeframes and performance criteria; and
- g) detail contingency measures to be undertaken should monitoring against performance criteria indicate that the offset/ rehabilitation measures have not achieved performance outcomes. Rehabilitation measures are required to be implemented to ensure that the biodiversity impacts are consistent with a maintain or improve biodiversity outcome.

Ecological Monitoring Program

B7. The Proponent shall prepare and implement an **Ecological Monitoring Program** prior to construction, in consultation with the NOW and the DPI (Fisheries), to monitor and quantify the impacts on the ecology of Neubecks Creek and the

associated riparian environment. The Program shall include, but not necessarily be limited to:

- a) a sampling, data collection and assessment regime to establish baseline ecological health and for ongoing monitoring of ecological health of the in-stream environment during construction and throughout the life of the project (including operation);
- b) at least one in-stream sampling period prior to ash placement at Neubecks Creek and at least two (2) sampling periods following ash placement at each of Lamberts North and Lamberts South;
- c) an assessment regime for monitoring the ecological health of the riparian environment for a period of at least five (5) years after final capping; and
- d) management measures to address any adverse ecological impacts.

Compliance Monitoring and Tracking

B8. The Proponent shall develop and implement a Compliance Tracking Program for the project, prior to commencing construction, to track compliance with the requirements of this approval and shall include, but not necessarily be limited to:

- a) provisions for periodic review of the compliance status of the project against the requirements of this approval and the Statement of Commitments detailed in the document referred to in condition A1c) of this approval;
- b) provisions for periodic reporting of the compliance status to the Director-General;
- c) a program for independent environmental auditing in accordance with AS/NZ ISO 19011:2003 - Guidelines for Quality and/or Environmental Management Systems Auditing;
- d) procedures for rectifying any non-compliance identified during environmental auditing or review of compliance;
- e) mechanisms for recording environmental incidents and actions taken in response to those incidents;
- f) provisions for reporting environmental incidents to the Director-General during construction and operation; and
- g) provisions for ensuring all employees, contractors and sub-contractors are aware of, and comply with, the conditions of this approval relevant to their respective activities.

The Compliance Tracking Program shall be implemented prior to construction of the project with a copy submitted to the Director-General for approval at least four weeks prior to the commencement of the project, unless otherwise agreed by the Director-General.

B9. Nothing in this approval restricts the Proponent from utilising any existing compliance tracking programs administered by the Proponent to satisfy the requirements of condition B8. In doing so, the Proponent must demonstrate to the Director-General how these systems address the requirements and/or have been amended to comply with the requirements of the condition.

Community Information and Complaints Management Provision of Information

B10. Prior to the construction of the project, the Proponent shall establish and maintain a website for the provision of electronic information associated with the project. The Proponent shall, subject to confidentiality, publish and maintain up-to-date information on this website or dedicated pages including, but not necessarily limited to:

- a) the documents referred to under condition A1 of this approval;
- b) this project approval, Environment Protection Licence and any other relevant environmental approval, licence or permit required and obtained in relation to the project;
- c) all strategies, plans and programs required under this project approval, or details of where this information can be viewed;

- d) information on construction and operational progress; and
- e) the outcomes of compliance tracking in accordance with the requirements of this project approval.

Complaints and Enquiries Procedure

B11. Prior to the construction of the project, the Proponent shall ensure that the following are available for community complaints and enquiries during construction and operation:

- a) a 24 hour contact number(s) on which complaints and enquiries about construction and operational activities may be registered;
- b) a postal address to which written complaints and enquiries may be sent; and
- c) an email address to which electronic complaints and enquiries may be transmitted.

The telephone number, postal address and email address shall be published in a newspaper circulating in the local area prior to the commencement of the project. The above details shall also be provided on the website required by condition B11 of this approval.

B12. The Proponent shall record the details of complaints received through the means listed under condition B11 of this approval in a Complaints Register. The Register shall record, but not necessarily be limited to:

- a) the date and time of the complaint;
- b) the means by which the complaint was made (e.g. telephone, email, mail, in person);
- c) any personal details of the complainant that were provided, or if no details were provided a note to that effect;
- d) the nature of the complaint;
- e) the time taken to respond to the complaint;
- f) any investigations and actions taken by the Proponent in relation to the complaint;
- g) any follow-up contact with, and feedback from, the complainant; and
- h) if no action was taken by the Proponent in relation to the complaint, the reason(s) why no action was taken.

The Complaints Register shall be made available for inspection by the Director-General upon request.

Community Information Plan

B13. Prior to the commencement of construction of the project, the Proponent shall prepare and implement a Community Information Plan which sets out the community communications and consultation processes to be undertaken during construction and operation of the project. The Plan shall include but not be limited to:

- a) measures for disseminating information on the development status of the project and methods for actively engaging with surrounding landowners, including Forests NSW and affected stakeholders regarding issues that would be of interest/ concern to them during the construction and operation of the project; and
- b) procedures to inform the community where work has been approved to be undertaken outside the normal Construction hours, in particular noisy activities.

A copy of the Plan shall be provided to the Director-General one month prior to the commencement of construction.

Design

B14. The ash placement areas shall be designed by a suitably qualified expert to ensure structural stability of the ash placement areas.

PART C – DURING CONSTRUCTION

Environmental Incident Reporting

- C1. The Proponent shall notify the Director-General of any environmental incident within 12 hours of becoming aware of the incident. The Proponent shall provide full written details of the incident to the Director-General within seven days of the date on which the incident occurred.
- C2. The Proponent shall meet the requirements of the Director-General to address the cause or impact of any environmental incident, as it relates to this approval, reported in accordance with condition C1 of this approval, within such period as the Director-General may require.

Construction Hours

- C3. Construction activities associated with the project shall only be undertaken during the following hours:
- 7:00 am to 6:00 pm, Mondays to Fridays, inclusive;
 - 8:00 am to 1:00 pm on Saturdays; and
 - at no time on Sundays or public holidays.
- C4. Construction outside the hours stipulated in condition C3 of this approval is permitted in the following circumstances:
- where construction works do not cause audible noise at any sensitive receiver; or
 - for the delivery of materials required outside these hours by the Police or other authorities for safety reasons; or
 - where it is required in an emergency to avoid the loss of lives, property and/or to prevent environmental harm.
- C5. The hours of construction activities specified under condition C3 of this approval may be varied with the prior written approval of the Director-General. Any request to alter the hours of construction specified under condition C3 shall be:
- considered on a case-by-case basis;
 - accompanied by details of the nature and need for activities to be conducted during the varied construction hours; and
 - accompanied by information necessary for the Director-General to reasonably determine that activities undertaken during the varied construction hours will not adversely impact on the acoustic amenity of sensitive receivers in the vicinity of the site.

Construction Noise

- C6. The construction noise objective for the project is to manage noise from construction activities (as measured by $L_{Aeq(15\text{ minute})}$ descriptor) so as not to exceed:

Location	Day ($L_{Aeq(15\text{ minute})}$) dB(A)
All private receivers within the township of Blackmans Flat	46
All other residences	43

The Proponent shall implement reasonable and feasible noise mitigation measures with the aim of achieving the construction noise objective consistent with the requirements of the Interim Construction Noise Guideline (DECC, July 2009), including noise generated by heavy vehicle haulage and other construction traffic associated with the project. Any activities that have the potential for noise emissions that exceed the objective must be identified and managed in accordance with the

Construction Noise Management Plan (as referred to under condition B5a) of this approval).

Dust Generation

- C7. The Proponent shall construct the project in a manner that minimises dust emissions from the site, including wind-blown from earth works and stockpiles and traffic-generated dust. All activities on the site shall be undertaken with the objective of preventing visible emissions of dust from the site. Should such visible dust emissions occur at any time, the Proponent shall identify and implement all practicable dust mitigation measures, including cessation of relevant works, as appropriate, such that emissions of visible dust cease.

Heritage Impacts

- C8. If during the course of construction the Proponent becomes aware of any previously unidentified Aboriginal object(s), all work likely to affect the object(s) shall cease immediately and the EPA (OEH) informed in accordance with the *National Parks and Wildlife Act 1974*. In addition, registered Aboriginal stakeholders shall be informed of the finds. Works shall not recommence until an appropriate strategy for managing the objects has been determined in consultation with the EPA (OEH) and the registered Aboriginal stakeholders and written authorisation from the EPA (OEH) is received by the Proponent.
- C9. If during the course of construction the Proponent becomes aware of any unexpected historical relic(s), all work likely to affect the relic(s) shall cease immediately and the EPA (OEH (Heritage Branch)) notified in accordance with the *Heritage Act 1977*. Works shall not recommence until the Proponent receives written authorisation from the EPA (OEH (Heritage Branch)).

Soil and Water Quality Impacts

- C10. The Proponent shall comply with section 120 of the Protection of the Environment Operations Act 1997 which prohibits the pollution of waters.
- C11. Soil and water management controls shall be employed to minimise soil erosion and the discharge of sediment and other pollutants to lands and/or waters during construction activities, in accordance with:
- (a) Managing Urban Stormwater: Soils and Conservation (Landcom, 2004);
 - (b) Managing Stormwater: Urban Soils and Construction 2A Installation of Services (DECC 2008); and
 - (c) Managing Stormwater: Urban Soils and Construction Vol 2C Unsealed Roads (DECC 2008).
- C12. During construction, the Proponent shall maintain a buffer of 50 metres from the construction work to Neubecks Creek.
- C13. Surface water drainage must be appropriately engineered and stabilised to convey run off without collapse or erosion. Surface water run off collection ponds are to be lined.

Waste Generation and Management

- C14. All waste materials removed from the site shall only be directed to a waste management facility lawfully permitted to accept the materials.
- C15. The Proponent shall not cause, permit or allow any waste generated outside the site to be received at the site for storage, treatment, processing, reprocessing, or disposal on the site, except as expressly permitted by a licence under the Protection of the Environment Operations Act 1997, if such a licence is required in relation to that waste.

- C16. The Proponent shall ensure that all liquid and / or non-liquid waste generated and / or stored on the site is assessed and classified in accordance with the Waste Classification Guidelines (DECC, 2008), or any future guideline that may supersede that document.
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PART D – PRIOR TO OPERATION

Ash Management

- D1. The Proponent shall prepare a long-term ash management strategy including a program for investigation and assessment of alternative ash management measures with a goal of 40% reuse of ash by 31 December 2020. The report shall be submitted to the Director-General six months prior to the commencement of operations. The Proponent shall report on the status and outcomes of its investigations to the Director-General every two years from the commencement of the operation of the project, unless otherwise agreed by the Director-General.

Operational Environmental Management Plan

- D2. The Proponent shall prepare and implement an Operational Environmental Management Plan (OEMP) to detail an environmental management framework, practices and procedures to be followed during operation of the project. The Plan shall be prepared in consultation with Lithgow City Council and relevant government agencies, and shall be consistent with the Guideline for the Preparation of Environmental Management Plans (DIPNR 2004) and shall include, but not necessarily be limited to:
- a) identification of all statutory and other obligations that the Proponent is required to fulfil in relation to operation of the project, including all approvals, licences, approvals and consultations;
 - b) a description of the roles and responsibilities for all relevant employees (including contractors) involved in the operation of the project;
 - c) overall environmental policies and principles to be applied to the operation of the project;
 - d) standards and performance measures to be applied to the project, and a means by which environmental performance can be periodically reviewed and improved, where appropriate;
 - e) management policies to ensure that environmental performance goals are met and to comply with the conditions of this approval;
 - f) the environmental monitoring requirements outlined under conditions E12 to E18 inclusive;
 - g) details of waste management including reuse and/or recycling of waste material, to minimise the need for treatment or disposal of those materials outside the site;
 - h) specific consideration of relevant measures to address any requirements identified in the documents referred to under conditions A1(b) and A1(d) of this approval; and
 - i) the additional requirements of this approval.

The Plan shall be submitted for the approval of the Director-General no later than four weeks prior to the commencement of operation of the project, unless otherwise agreed by the Director-General. Operation shall not commence until written approval has been received from the Director-General.

Nothing in this approval precludes the Proponent from incorporating the requirements of the Operational Environmental Management Plan into existing environmental management systems and plans administered by the Proponent.

- D3. As part of the OEMP for the project, required under condition D2 of this approval, the Proponent shall prepare and implement the following Management Plans:
- a) an **Operational Noise Management Plan** to detail measures to mitigate and manage noise during operation of the project. The Plan shall be prepared in consultation with the EPA and include, but not necessarily be limited to:
 - i) identification of activities that will be carried out in relation to the project and the associated noise sources;

- ii) identification of all relevant sensitive receivers and the applicable criteria at those receivers commensurate with the noise limit specified under condition E7 of this approval;
 - iii) noise monitoring procedures (as referred to in condition E12 of this approval) for periodic assessment of noise impacts at the relevant receivers against the noise limits specified under this approval and the predicted noise levels as detailed in the EA;
 - iv) details of all management methods and procedures that will be implemented to control individual and overall noise emissions from the site during operation, including the feasibility of noise reducing benching;
 - v) procedures to ensure that all reasonable and feasible noise mitigation measures are applied during operation of the project and procedures and corrective actions to be undertaken if non-compliance against the operational noise criteria as detailed in condition E7 is detected at the sensitive receivers; and
 - vi) provisions for periodic reporting of results to the EPA as per condition B8.
- b) a **Groundwater Management Plan** to detail measures to mitigate and manage groundwater impacts. The Plan shall be prepared in consultation with the NOW and the SCA and include, but not necessarily be limited to:
- i) consideration of the revised updated groundwater model as per condition B2;
 - ii) baseline data on groundwater quality (including Huons Creek), location of groundwater monitoring wells, depth and available flow of groundwater in the project area;
 - iii) identification of potential sources of water pollutants and management measures;
 - iv) groundwater assessment criteria including trigger levels for remedial measures;
 - v) a contingency plan for events that have the potential to pollute or contaminate groundwater sources of water. The plan shall include remediation actions and communication strategies (including notification of potentially affected nearby bore users) for the effective management of such an event to prevent discharge of these pollutants from all sources within the project area;
 - vi) a monitoring program as per condition E15 for groundwater connectivity, water levels, groundwater flow and water quality over the short and long term that includes upstream and downstream locations. The program shall continue for a minimum of five years following final capping and landscaping;
 - vii) a protocol for the investigation of identified exceedances of the groundwater impact assessment criteria; and
 - viii) provisions for periodic reporting of results to the SCA as per condition B8.
- c) a **Soil and Surface Water Management Plan** to outline measures that will be employed to manage water on the site, to minimise soil erosion and the discharge of sediments and other pollutants to lands and/or waters throughout the life of the project. The Plan shall be based on best environmental practice and shall be prepared in consultation with the NOW and the SCA and DPI (Fisheries). The Plan shall include, but not necessarily be limited to:
- i) baseline data on the surface water quality and available flow in Neubecks Creek and Lamberts Gully Creek;
 - ii) water quality objectives and impact assessment criteria for Neubecks Creek and Lamberts Gully Creek;

- iii) identification of the operation activities that could cause soil erosion or discharge sediment or water pollutants from the site;
 - iv) a description of the management controls to minimise soil erosion or discharge of sediment or water pollutants from the site, including a strategy to minimise the area of bare surfaces, stabilise disturbed areas and minimise bank erosion;
 - v) demonstration that the proposed erosion and sediment control measures will conform with, or exceed, the relevant requirements of Managing Urban Stormwater: Soils and Construction (Landcom, 2004);
 - vi) details of the water management system including separation of clean and contaminated/polluted water flows, provisions for the treatment, recycling/reuse and/or discharge of flows;
 - vii) site water balance including water usage for ash placement, sources of water and quantity of run-off generated;
 - viii) details of the lining for the surface water collection ponds;
 - ix) measures to minimise potential surface water infiltration;;
 - x) a flow and water quality monitoring program for Neubecks Creek and Lamberts Gully Creek that includes discharge points, upstream and downstream locations as per condition E16 and limits for identified pollutants;
 - xi) specified remedial actions and contingency plans to mitigate any water quality exceedances on receiving waters including identified trigger levels for remedial measures or the activation of contingency plans; and
 - xii) provisions for periodic reporting of results to the DPI (Fisheries) and the SCA as per condition B8.
- d) a **Air Quality Management Plan** to outline measures to minimise impacts from the project on local air quality. The Plan shall be prepared in consultation with NSW Health and the EPA and include, but not necessarily be limited to:
- i) baseline data on dust deposition levels;
 - ii) air quality objectives and impact assessment criteria;
 - iii) an assessment of alternative methods of ash placement to minimise the exposure of active placement areas to prevailing winds;
 - iv) mitigation measures to be incorporated during ash placement activities, haulage, etc;
 - v) an operating protocol for the ash placement irrigation system including activation rates, application rates and area of coverage and means of dealing with water shortages;
 - vi) detail how ash placement moisture levels will be maintained;
 - vii) a contingency plan to deal with high winds and dust suppression;
 - viii) a protocol for the investigation of visible emissions from the ash placement area;
 - ix) a response plan to address exceedances in visible emissions including PM₁₀, TSP and deposited dust from the ash placement areas; and
 - x) an air quality monitoring program as referred to in condition E18 of this approval including identified air quality monitoring locations (including monitoring at sensitive receivers) and meteorological monitoring to predict high wind speed events;
 - xi) provisions for periodic reporting of results to the EPA as per condition B8; and
 - xii) a protocol for suppressing dust emissions within licence limits under normal and adverse weather conditions at all stages of the ash placement process.
- e) a **Landscape/Revegetation Plan** to outline measures to minimise the visual impacts of the ash placement areas and ensure the long-term stabilisation of

the site and compatibility with the surrounding landscape and land use. The Plan shall include, but not necessarily be limited to:

- i) identification of design objectives and standards based on local environmental values, vistas, and land uses;
 - ii) identification of the timing and progressive implementation of revegetation works for ash placement areas as they are completed, including short-term and long term goals including landscape plans;
 - iii) a schedule of species to be used in revegetation, including the use of local native species in revegetation works selected by a qualified expert to ensure the rehabilitation works do not compromise the long term integrity of the capping; and
 - iv) procedures and methods to monitor and maintain revegetated areas during the establishment phase and long-term.
- f) a **Site Rehabilitation Management Plan** to outline measures to stabilise and rehabilitate the site following project completion. The Plan shall be prepared in consultation with the SCA. The Plan shall include, but not necessarily be limited to:
- i) reinstatement of geomorphologic stable drainage lines on the rehabilitated areas and a timeframe for rehabilitation;
 - ii) restoration, rehabilitation and revegetation of the project's site;
 - iii) measures to control water pollutants from rehabilitated areas; and
 - iv) a program and timeframe for monitoring rehabilitated areas.

Groundwater Quality and Geotechnical Impacts

D4. Prior to commencement of operation the Proponent shall submit a geotechnical report prepared by a suitably qualified expert that demonstrates the site has been engineered as being suitable for ash placement. The report must also provide an evaluation of groundwater levels once re-profiling has been completed.

PART E – DURING OPERATIONS

Operational Hours

- E1. Operational activities associated with the project shall only be undertaken from 6.00 am to 8.00 pm Monday to Friday and 6.00am to 5.00pm Saturday and Sunday.
- E2. Operations outside the hours stipulated in condition E1 of this approval are only permitted in the following emergency situations:
- where it is required to avoid the loss of lives, property and/or to prevent environmental harm; or
 - breakdown of plant and/or equipment at the ash placement areas or the Mt Piper Power Station and the proposed Mt Piper Power Station Extension project with the effect of limiting or preventing ash storage at the power station outside the operating hours defined in condition E1; or
 - a breakdown of an ash haulage truck(s) or the conveyor preventing haulage during the operating hours stipulated in condition E1 combined with insufficient storage capacity at the Mt Piper Power Station including the proposed Mt Piper Power Station Extension to store ash outside of the project operating hours; or
 - in the event that the Australian Energy Market Operator (AEMO), or a person authorised by AEMO, directs the Proponent (as a licensee) under the National Electricity Rules to maintain, increase or be available to increase power generation for system security and there is insufficient ash storage capacity at the Mt Piper Power Station to allow for the ash to be stored.

In the event of conditions E2b) or E2c) arising, the Proponent is to take all reasonable and feasible measures to repair the breakdown in the shortest time possible.

- E3. In the event that an emergency situation as referred to under condition E2b) or E2c) occurs more than once in any two month period, the Proponent shall prepare and submit to the Director-General for approval a report including, but not limited to:
- the dates and a description of the emergency situations;
 - an assessment of all reasonable and feasible mitigation measures to avoid recurrence of the emergency situations;
 - identification of a preferred mitigation measure(s); and
 - timing and responsibility for implementation of the mitigation measure(s).

The report is to be submitted to the Director-General within 60 days of the second emergency situation occurring. The Proponent shall implement all reasonable and feasible mitigation measures in accordance with the requirements of the Director-General.

- E4. The Proponent shall notify the EPA prior to undertaking any emergency ash haulage or placement operations outside of the hours of operation stipulated in condition E1 of this approval and keep a log of such operations.
- E5. The Proponent shall notify the Director-General in writing within seven days of undertaking any emergency ash haulage or placement operations outside of the hours of operation stipulated in condition E1 of this approval.
- E6. The Proponent shall notify nearby sensitive receivers (as defined in the Operational Noise Management Plan required under condition D3(a) of this approval) prior to 8.00 pm where it is known that emergency ash haulage or placement operations will be required outside of the hours of operation stipulated in condition E1 of this approval.

Operational Noise

E7. The cumulative operational noise from the ash placement area and ash haulage activity shall not exceed the following $L_{Aeq(15\text{ minute})}$ dB(A):

Location	Day (7am to 6pm)	Evening (6pm to 10pm)	Night (10pm to 7am)
All private sensitive receivers within the township of Blackmans Flat	42	38	35
All other sensitive receivers	42	38	35

This noise criteria set out above applies under all meteorological conditions except for any of the following:

- (a) wind speed greater than 3 metres/second at 10 metres above ground level;
- (b) stability category F temperature inversion conditions and wind speed greater than 2 metres/second at 10 metres above ground level; and
- (c) stability category G temperature inversion conditions.

This criteria does not apply where the Proponent and an affected landowner have reached a negotiated agreement in regard to noise, and a copy of the agreement has been forwarded to the Director-General and the EPA.

E8. To determine compliance with the $L_{Aeq(15\text{ minute})}$ noise limits, the noise monitoring equipment must be located at the most affected point:

- a) within 30 metres of a dwelling façade where any dwelling on the property is situated more than 30 metres from the property boundary that is closest to the premises; or
- b) approximately on the boundary where any dwelling is situated 30 metres or less from the property boundary that is closest to the premises.

E9. For the purposes of monitoring noise from the premises to determine compliance with the noise limits:

- a) Class 1 or 2 noise monitoring equipment as defined by AS IEC61672.1-2004 and ASIEC61672.2-2004, or other noise monitoring equipment accepted by the EPA in writing, must be used;
- b) the modification factors in Section 4 of the NSW Industrial Noise Policy must be applied, as appropriate, to the noise levels measured by the noise monitoring equipment;
- c) the meteorological data to be used for determining meteorological conditions is the data recorded by the meteorological weather station at the premises; and
- d) stability category temperature inversion conditions are to be determined by the sigma theta method referred to in Part E4 of Appendix E to the NSW Industrial Noise Policy.

E10. The Proponent shall implement measures to ensure noise attenuation of trucks. These measures may include, but are not necessarily limited to, installation of residential class mufflers, engine shrouds, body dampening, speed limiting, fitting of rubber stoppers to tail gates, limiting the use of compression braking, and ensuring trucks operate in a one-way system at the ash placement areas where feasible.

Operational Noise Review

E11. Within 60 days of the commencement of operation of the project, unless otherwise agreed to by the Director-General, the Proponent shall submit to the Director-

General an **Operational Noise Review** to confirm the operational noise impacts of the project. The Operational Noise Review shall be prepared in consultation with the EPA. The Review shall:

- a) identify the appropriate operational noise objectives and levels for sensitive receivers;
- b) describe the methodologies for noise monitoring, including the frequency of measurements and location of monitoring sites;
- c) document the operational noise levels at sensitive receivers as ascertained by the noise monitoring program;
- d) assess the noise performance of the project against the noise criteria specified in condition E7 of this approval and the predicted noise levels as detailed in the report referred to under condition A1(b) of this approval; and
- e) provide details of any entries in the Complaints Register relating to noise impacts.

Where monitoring indicates noise levels in excess of the operational noise criteria specified in condition E7 of this approval, the Proponent shall prepare a report as required by condition E13 of this approval.

Ongoing Operational Noise Monitoring

E12. The Proponent shall prepare and implement an **Operational Noise Monitoring Program** to assess compliance against the operational noise criteria stipulated in condition E7 of this approval, throughout the life of the project. The noise monitoring program shall be prepared in consultation with the EPA and must include the proposed frequency of monitoring and as a minimum must include monitoring when there are any significant changes in work locations or processes.

The noise monitoring program shall be prepared in accordance with the requirements of the *New South Wales Industrial Noise Policy* (EPA, 2000) and shall include, but not be limited to:

- a) monitoring at Lamberts North, Lamberts South and Blackmans Flat during ash placement activities; and
- b) monitoring of the effectiveness of any noise mitigation measures implemented under condition D3(a) of this approval, against the noise criteria specified in condition E7 of this approval.

The Proponent shall forward to the EPA and the Director-General a report containing the results of any non-compliance within 14 days of conducting a noise assessment. The monitoring program shall form part of the Operational Noise Management Plan referred to in condition D3 (a) of this approval.

E13. Where noise monitoring including as required by condition E11 and E12 of this approval identifies any non-compliance with the operational noise criteria specified under condition E7 of this approval the Proponent shall prepare and submit to the Director-General a report including, but not limited to:

- a) an assessment of all reasonable and feasible physical and other mitigation measures for reducing noise at the source;
- b) identification of the preferred measure(s) for reducing noise at the source;
- c) feedback from directly affected property owners and the EPA on the proposed noise mitigation measures; and
- d) location, type, timing and responsibility for implementation of the noise mitigation measure(s).

The report is to be submitted to the Director-General within 60 days of undertaking the noise monitoring which has identified exceedances of the operational noise criteria specified under condition E7, unless otherwise agreed to by the Director-

General. The Proponent shall implement all reasonable and feasible mitigation measures in accordance with the requirements of the Director-General.

- E14. If after the implementation of all reasonable and feasible source controls, as identified in the report required by condition E13, the noise generated by the project continues to exceed the criteria stipulated in condition E7 the Proponent shall implement at the receiver reasonable and feasible noise mitigation measures, such as double glazing, insulation, air conditioning and or other building acoustic treatments, in consultation with and with the agreement of the affected landowner.

Groundwater Monitoring

- E15. The Proponent shall prepare and implement a **Groundwater Monitoring Program** to monitor the impacts of ash placement activities on local groundwater quality and hydrology. The Program shall be developed in consultation with the SCA, and shall describe the location, frequency, rationale and procedures and protocols for collecting groundwater samples as well as the parameters analysed and methods of analysis. The monitoring program shall be ongoing for the operation of the project and for a minimum of 5 years following project completion and include, but not be limited to:
- a) monitoring at established bore sites (or replacement bore sites in the event that existing sites are damaged or lost) as described in the Groundwater Management Plan as per condition D3(b); and
 - b) a schedule for periodic monitoring of groundwater quality, depth and flow at all monitoring sites, at an initial frequency of no less than once every month for the first 12 months of operation.

The monitoring program shall form part of the Groundwater Management Plan referred to in condition D3(b) of this approval.

Surface Water Quality Monitoring

- E16. The Proponent shall prepare and implement a surface water quality monitoring program to monitor the impacts of the ash placement activities on Neubecks Creek and Lamberts Gully. The Program shall be developed in consultation with the DPI (Fisheries) and the SCA, and shall describe the location, frequency, rationale and the procedures and protocols for collecting water samples as well as the parameters analysed and methods of analysis. The program shall include, but not necessarily be limited to:
- a) monitoring at the existing water quality monitoring sites as described in the document referred to under condition A1b);
 - b) monitoring at surface water discharge points from Lamberts Gully Creek;
 - c) monitoring at surface water discharge points into Neubecks Creek;
 - d) wet weather monitoring with a minimum of two events recorded within the first 12 months operation of the project; and
 - e) a schedule for periodic monitoring of surface quality at all sites throughout the life of the project, at an initial frequency of no less than once every month for the first 12 months and must include, but not be limited to, monitoring of dissolved oxygen, turbidity, sulphates, salinity, boron, manganese, iron chloride, total phosphorus and total nitrogen.

Hydrological Monitoring Program

- E17. A Hydrological Monitoring Program to assess and quantify the impacts and effectiveness of the transformed section of Huons Creek into a sub-surface drainage line in consultation with the DPI (Fisheries). Monitoring is to be undertaken for a period of five (5) years upon completion of the creek transformation. The program must include sampling for identified pollutants before and after the transformation works and include a sampling site downstream of the sub-surface section of Huons Creek. In the first 12 months following completion of the transformation, monitoring

is to be undertaken at least every three (3) months upon completion of the creek transformation and after any heavy wet weather event.

The monitoring program shall form part of the Soil and Surface Water Management Plan referred to in condition D3(c) of this approval.

Air Quality Monitoring

E18. The Proponent shall prepare an Air Quality Monitoring Program, in consultation with the EPA and NSW Health. The Program shall include, but not necessarily be limited to, monitoring for dust. Monitoring sites shall be identified as per condition D3 (d). The air quality monitoring program shall be ongoing for the life of the project, and during final rehabilitation and stabilisation of the site.

The monitoring program shall form part of the Air Quality Management Plan referred to in condition D3(d) of this approval.

Environmental Incident Reporting

E19. The Proponent shall notify the Director-General of any environmental incident within 12 hours of becoming aware of the incident. The Proponent shall provide full written details of the incident to the Director-General within seven days of the date on which the incident occurred.

E20. The Proponent shall meet the requirements of the Director-General to address the cause or impact of any environmental incident, as it relates to this approval, reported in accordance with condition E19 of this approval, within such period as the Director-General may require.

Annual Performance Reporting

E21. The Proponent shall, throughout the life of the project, prepare and submit to the Director-General, an Annual Environmental Management Report (AEMR). The AEMR shall review the performance of the project against the Operation Environmental Management Plan (refer to condition D2 of this approval) and the conditions of this approval. The AEMR shall include, but not necessarily be limited to:

- a) details of compliance with the conditions of this approval;
- b) a copy of the Complaints Register (refer to condition B11 of this approval) for the preceding twelve-month period (exclusive of personal details), and details of how these complaints were addressed and resolved;
- c) identification of any circumstances in which the environmental impacts and performance of the project during the twelve month period have not been generally consistent with the environmental impacts and performance predicted in the documents listed under condition A1 of this approval, with details of additional mitigation measures applied to the project to address recurrence of these circumstances;
- d) results of all environmental monitoring required under conditions of this approval, including interpretations and discussion by a suitably qualified person; and
- e) a list of occasions in the twelve month period when environmental goals/objectives/impact assessment criteria for the project have not been achieved, indicating the reason for failure to meet the criteria and the action taken to prevent recurrence of that type of failure.

The Proponent shall submit a copy of the AEMR to the Director-General every year, with the first AEMR to be submitted no later than fourteen months after the commencement of operation of the project unless otherwise agreed by the Director-General. The Director-General may require the Proponent to address certain matters in relation to the environmental performance of the project in response to the Director-General's review of the Annual Environmental Management Report. Any action

required to be undertaken shall be completed within such period as the Director-General may require. The Proponent shall make copies of each AEMR available for public inspection on request. Copies of the AEMR shall be sent to the EPA and the SCA.

Independent Environmental Auditing

- E22. Within 12 months of commencement of operation of Lamberts North and Lamberts South and then as may be directed by the Director-General, the Proponent shall commission an independent person or team to undertake an Environmental Audit of the project. The independent person or team shall be approved by the Director-General prior to the commencement of the Audit. The Audit shall:
- a) be carried out in accordance with ISO 19011:2002 - Guidelines for Quality and or Environmental Management Systems Auditing;
 - b) assess compliance with the requirements of this approval, and other licences and approvals that apply to the project;
 - c) assess the environmental performance of the project against the predictions made and conclusions drawn in the documents referred to under condition A1 of this approval;
 - d) review the effectiveness of the environmental management of the project, including any environmental impact mitigation works; and
 - e) review the adequacy of the Proponent's response to any complaints made about the project identified in the Complaints Register.

The Environmental Audit Report shall be submitted to the Director-General within two months of the completion of the Audit, detailing the findings and recommendations of the Audit and including a detailed response from the Proponent to any of the recommendations contained in the Report.

Waste Generation and Management

- E23. All waste materials removed from the site shall only be directed to a waste management facility lawfully permitted to accept the materials.
- E24. The Proponent shall not cause, permit or allow any waste generated outside the site to be received at the site for storage, treatment, processing, reprocessing, or disposal on the site, except as expressly permitted by a licence under the Protection of the Environment Operations Act 1997, if such a licence is required in relation to that waste.
- E25. The Proponent shall ensure that all liquid and / or non-liquid waste generated and / or stored on the site is assessed and classified in accordance with the Waste Classification Guidelines (DECC, 2008), or any future guideline that may supersede that document.
-

PART F – POST OPERATIONS

Project Completion Management Plan

- F1. No later than one month prior to the decommissioning of the project, or as otherwise agreed by the Director-General, the Proponent is to prepare a Project Completion Management Plan, in consultation with the SCA, for the approval of the Director-General. The Plan is to include but not necessarily be limited to:
- (a) identification of structures to be removed and how they will be removed;
 - (b) measures to reduce impacts on the environment and surrounding sensitive land uses;
 - (c) details of components to be recycled;
 - (d) details of rehabilitation and revegetation with reference to the biodiversity offset required under condition B6;
 - (e) groundwater assessment criteria including trigger levels for remedial measures;
 - (f) a groundwater monitoring program as per condition E15 for groundwater connectivity, water levels, groundwater flow and water quality over the short and long term that includes upstream and downstream locations. The program shall continue for a minimum of five years following final capping and landscaping;
 - (g) a contingency plan to address potential exceedances and mitigation measures in groundwater and groundwater quality impacts and if exceedances continue, implementation of further measures and groundwater monitoring to demonstrate compliance;
 - (h) surface water assessment criteria including trigger levels for remedial measures;
 - (i) available flow and water quality monitoring program for Neubecks Creek and Lamberts Gully Creek that includes discharge points, upstream and downstream locations as per condition E16 and limits for identified pollutants. The program shall continue for a minimum of five years following final capping and landscaping; and
 - (j) a contingency plan to address potential exceedances and mitigation measures in surface water and surface water quality impacts and if exceedances continue, implementation of further measures and surface water monitoring to demonstrate compliance.
-

Annex C

BoM Data

Daily Weather Observations for Lithgow, New South Wales for September 2017

Prepared at 13:00 UTC on Tuesday 10 July 2018 IDCJDW2075.201709

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Observations were drawn from Lithgow (Coerwull) {station 063226}

Date	Minimum temperature (°C)	Maximum temperature (°C)	Rainfall (mm)	9am Temperature (°C)	9am relative humidity (%)	9am cloud amount (oktas)	9am wind direction	9am wind speed (km/h)
1/09/2017	-5.7	14.2	0	6.4	66		1 SSE	7
2/09/2017	-3.7	16.4	0	8.5	60		1 WSW	4
3/09/2017	1	22	0	16.1	30		3 NW	19
4/09/2017	6.5	13.1	0	8.9	54		2 WNW	28
5/09/2017	3.4	9.6	0	5	63		6 NW	22
6/09/2017	4	10.7	0	4.6	67		7 WNW	28
7/09/2017	4.7	11.6	0	7.4	63		6 SW	19
8/09/2017	4.6	11.7	0.2	6.1	80		7 W	15
9/09/2017	1.7	14.2	0.4	5.6	76		0 W	7
10/09/2017	-3.4	16.8	0	9	82		1 S	7
11/09/2017	-2.5	17.5	0	11	55		1 NW	11
12/09/2017	1.4	23.5	0	16.1	42		6 NNW	7
13/09/2017	14.7	25.2	0	21.2	23		2 NNW	28
14/09/2017	2.5	7.6	2.6	3	71		7 WSW	19
15/09/2017	1.9	12.1	0.4	7.1	75		7 W	19
16/09/2017	5.2	14.9	0	11.4	54		4 NW	28
17/09/2017	-5	17.2	0	8.1	47		0 SE	7
18/09/2017	-1.8	20.7	0	13.2	41		0 NNW	15
19/09/2017	9.4	14	0	11.3	56		1 WSW	19
20/09/2017	-3.5	17.5	0	8.2	63		0 NE	4
21/09/2017	-0.7	23.8	0	15.7	30		0 N	4
22/09/2017	1.9	25.6	0	17.9	25		2 NNW	11
23/09/2017	3.3	28.4	0	21.4	21		5 NNW	19
24/09/2017	16.4	19.2	0	16.9	34		7 WSW	19
25/09/2017	7.3	16.7	0	13.6	45		0 NW	22
26/09/2017	3.9	18.9	0	10.6	57		0 W	15
27/09/2017	3.6	24.5	0	14.3	67		2 ESE	4
28/09/2017	12.9	16	1	12.9	81		8 WNW	9
29/09/2017	4.5	17.4	0.6	11.3	62		1 SW	11
30/09/2017	9.1	15.4	0	12	51		6 NW	28

Daily Weather Observations for Lithgow, New South Wales for October 2017

Prepared at 13:00 UTC on Monday 9 July 2018 IDCJDW2075.201710

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Observations were drawn from Lithgow (Coerwull) {station 063226}

Date	Minimum temperature (°C)	Maximum temperature (°C)	Rainfall (mm)	9am Temperature (°C)	9am relative humidity (%)	9am cloud amount (oktas)	9am wind direction	9am wind speed (km/h)
1/10/2017	3.7	18.2	0	9	64		0 W	7
2/10/2017	-0.6	22.2	0	10.4	74		2	Calm
3/10/2017	4.7	20.2	0	12.7	76		5 N	4
4/10/2017	3.9	23.7	0	11.1	85		6	Calm
5/10/2017	8.7	25.2	0	14.2	84		4 NNW	11
6/10/2017	8.6	19.2	0	12.5	67		7 WSW	11
7/10/2017	8.3	17.2	0	9	80		7 SE	15
8/10/2017	3.1	18.7	0	9.6	87		8 NNW	19
9/10/2017	9.8	24.3	1.2	18.4	72		2 W	7
10/10/2017	7.7	23.3	1	12.5	93		7 SE	4
11/10/2017	12.8	26.6	0	15.4	81		7 N	11
12/10/2017	14	19.5	3.4	15.5	80		4 WNW	15
13/10/2017	1.1	21.5	0	11.4	66		0 N	7
14/10/2017	9.8	13.2	0	9.8	96		8 SE	15
15/10/2017	9.6	15.9	0.8	11	99		8 SE	7
16/10/2017	8.7	19.4	0.6	13.1	73		5 E	11
17/10/2017	8.5	21.2	0	13.5	73		5 E	11
18/10/2017	11	22.5	0	14.2	79		8 NE	7
19/10/2017	7.1	26.2	0	17.7	66		0 NNW	11
20/10/2017	14.9	16.5	15	15.1	100		8 WSW	7
21/10/2017	6.8	16.4	29	7.2	89		8 SE	11
22/10/2017	4.4	17.8	0	11.4	75		4 NW	15
23/10/2017	6.2	18.6	6.2	9.9	87		7 SE	7
24/10/2017	5	22.7	0	14.9	66		2 N	7
25/10/2017	9.8	24.2	0	19.2	48		3 WNW	22
26/10/2017	12.6	23.2	0.2	17.1	77		4 NW	4
27/10/2017	9.8	19.3	9	12.7	92		8 SSE	11
28/10/2017	8.6	22.6	0	16.9	77		2 NW	7
29/10/2017	12.4	25	0	20.5	58		5 WNW	22
30/10/2017	10.6	26	0	21.2	53		0 NNW	19
31/10/2017	4	16	0	8.3	58		4 S	15

Daily Weather Observations for Lithgow, New South Wales for November 2017

Prepared at 13:00 UTC on Sunday 8 July 2018 IDCJDW2075.201711

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Observations were drawn from Lithgow (Coerwull) {station 063226}

Date	Minimum temperature (°C)	Maximum temperature (°C)	Rainfall (mm)	9am Temperature (°C)	9am relative humidity (%)	9am cloud amount (oktas)	9am wind direction	9am wind speed (km/h)
1/11/2017	4.1	17.9	0.6	10.1	57		3 W	11
2/11/2017	2.9	23	0	13.4	61		1 S	4
3/11/2017	8.1	23.5	0	16.7	40		6 NW	19
4/11/2017	10.4	15.8	0.6	12.9	82		7 SSE	11
5/11/2017	9.1	14.8	0	10.5	88		8 SSE	7
6/11/2017	9.2	17.6	1.4	13.5	89		8 NNW	22
7/11/2017	2.4	19.4	0.8	11.7	64		2 SW	7
8/11/2017	7.4	16.2	0	9.6	77		7 SE	11
9/11/2017	1.7	20.1	0	12.9	59		1 S	4
10/11/2017	1.6	21.1	0	13.4	68		3 E	7
11/11/2017	4.6	21.5	0	15.1	50		3 ESE	7
12/11/2017	6.7	21.2	0	13.7	65		3 SE	11
13/11/2017	10.4	20.3	0	13.7	67		7 ESE	7
14/11/2017	9.5	22.5	0.2	14.1	58		0 SE	4
15/11/2017	4.9	24.7	0	16.4	58		4 NW	7
16/11/2017	6.8	19.3	0	17.1	60		7 SE	4
17/11/2017	12.3	22.7	1.8	18	71		6 NNW	7
18/11/2017	13.2	16.1	4.4	13.5	89		8 ENE	11
19/11/2017	11.4	18.9	13	13	86		7 E	7
20/11/2017	9.4	18.9	0.4	11.7	94		8 SSE	15
21/11/2017	9.6	19.8	0.2	14.2	76		6 ESE	11
22/11/2017	11.7	21.9	0	14.5	76		7 N	7
23/11/2017	9.4	22.9	0	17.4	70		2 NNW	11
24/11/2017	7.2	25.6	1.6	20.4	61		1 NNW	7
25/11/2017	8	26.1	0	20.9	65		0 E	11
26/11/2017	9.3	27.1	0	20.4	61		2 ENE	7
27/11/2017	14.7	22.1	5.2	16.8	86		8 N	4
28/11/2017	10.1	24.7	1.6	19.6	74		4 SSE	7
29/11/2017	14.6	23.9	0.4	17.8	83		7 ENE	4
30/11/2017	14.4	25.8	0	18	80		7 E	4

Daily Weather Observations for Lithgow, New South Wales for December 2017

Prepared at 16:00 UTC on Saturday 7 July 2018 IDCJDW2075.201712

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Observations were drawn from Lithgow (Coerwull) {station 063226}

Date	Minimum temperature (°C)	Maximum temperature (°C)	Rainfall (mm)	9am Temperature (°C)	9am relative humidity (%)	9am cloud amount (oktas)	9am wind direction	9am wind speed (km/h)
1/12/2017	13	28.2	0	20.5	77	2	NNW	19
2/12/2017	18.5	20.5	0	19.6	83	8	NNW	28
3/12/2017	11.2	19	24.8	14.2	79	5	WNW	28
4/12/2017	6.2	17.7	0	12.4	91	8	S	11
5/12/2017	11.4	18.9	0.6	12.8	90	7	SE	7
6/12/2017	10.4	19.5	23.4	13.2	83	7	WNW	15
7/12/2017	11.1	25.2	0	18.9	59	0	NNW	11
8/12/2017	9.9	23.4	0	19.8	65	1	WNW	11
9/12/2017	11.7	23.7	0.2	12.6	91	8	E	4
10/12/2017	7.2	26.4	0	18.4	62	0	ESE	4
11/12/2017	9.1	28.1	0	20.3	63	1	NNW	4
12/12/2017	13.9	29.7	0	21.6	67	0	SSW	7
13/12/2017	11.5	30.5	0	23.4	68	0	NNW	15
14/12/2017	12.5	32.7	0	26	57	1	NNW	19
15/12/2017	18.1	25.4	0	22	73	7	SSE	7
16/12/2017	16.7	31.9	0.6	25	58	1	N	11
17/12/2017	15.6	29.4	1.6	19.1	87	4	SE	11
18/12/2017	14.5	31.9	23.6	21.9	68	4	NNW	7
19/12/2017	17.5	33	1.2	24.7	71	5	NNW	15
20/12/2017	22.8	31.9	0	24.9	66	6	NNW	7
21/12/2017	13.8	18.6	0.8	16.2	80	7	SE	15
22/12/2017	15.5	24.5	0.2	18	79	8	ESE	4
23/12/2017	12.3	29.9	0	24.2	55	3	NNW	7
24/12/2017	12.2	32.6	0	26.4	39	1	NNW	19
25/12/2017	13.5	16	0.2	13.5	92	8	SSE	11
26/12/2017	11.9	16.4	1.4	12.9	89	8	ESE	7
27/12/2017	13.1	23	0.8	16.1	88	8	NNE	7
28/12/2017	9.9	29.6	0	21	64	5	NW	7
29/12/2017	14.5	30.1	1.8	24.5	64	5	NNW	11
30/12/2017	18.5	27	9	19.6	90	8	WSW	15
31/12/2017	12.4	26.9	0	18.5	77	6	E	7

Daily Weather Observations for Lithgow, New South Wales for January 2018

Prepared at 13:00 UTC on Friday 20 July 2018 IDCJDW2075.201801

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Observations were drawn from Lithgow (Coerwull) {station 063226}

Date	Minimum temperature (°C)	Maximum temperature (°C)	Rainfall (mm)	9am Temperature (°C)	9am relative humidity (%)	9am cloud amount (oktas)	9am wind direction	9am wind speed (km/h)
1/01/2018	13.9	28.6	0	21.2	69		1 SSW	11
2/01/2018	9.9	29	0	17.5	83		0 N	11
3/01/2018	8.7	23.8	0	16.5	84		6 SSE	7
4/01/2018	13.4	25.5	0	15.6	80		7 NNE	7
5/01/2018	9	31.6	0	20.9	62		2	Calm
6/01/2018	11.1	34.1	0	25.5	54		1 NNW	11
7/01/2018	15.4	36.9	0	28.4	57		0 NNW	19
8/01/2018	19.4	32.9	0	24.2	70		7 NNW	4
9/01/2018	17.3	28.1	34.6	18.2	92		8 NNW	15
10/01/2018	14.9	20.4	3	16.4	82		8 ESE	7
11/01/2018	14	29	0	16.7	88		7 NW	11
12/01/2018	15.2	33.7	0	20.5	83		7 ENE	4
13/01/2018	20	25.2	0	22	64		7 NW	11
14/01/2018	9.5	18.8	0.8	10.9	65		6 SSW	19
15/01/2018	7.2	23	0	12.9	57		0 ESE	4
16/01/2018	10.5	21.4	0	12.6	61		1 S	19
17/01/2018	8	25.2	0	14	61		0 SSE	11
18/01/2018	5.9	31.6	0	19.4	36		3 NNW	7
19/01/2018	8.1	34.1	0	22.9	40		0 ENE	4
20/01/2018	6.3	32.9	0	24.1	22		1 E	4
21/01/2018	7.9	34.6	0	24	27		1	Calm
22/01/2018	12.3	35.2	0	27	31		3 NNW	15
23/01/2018	17	29.6	0	22.4	62		8	Calm
24/01/2018	14.5	32.6	0	21.4	60		5 N	4
25/01/2018	15.7	27.9	1.8	19.7	74		8 NNE	4
26/01/2018	16.4	29.3	1	20.9	77		5 E	4
27/01/2018	17.4	28.6	1.6	21.5	72		4 SSE	7
28/01/2018	19	26.7	15.4	20.3	80		7 E	7
29/01/2018	15.6	27.6	0.2	18.9	73		2 N	11
30/01/2018	10.7	31.4	0	18	76		0 NNW	7
31/01/2018	14.7	16.4	1	14.7	91		8 SSE	7

Daily Weather Observations for Lithgow, New South Wales for February 2018

Prepared at 13:00 UTC on Thursday 19 July 2018 IDCDW2075.201802

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Observations were drawn from Lithgow (Coerwull) {station 063226}

Date	Minimum temperature (°C)	Maximum temperature (°C)	Rainfall (mm)	9am Temperature (°C)	9am relative humidity (%)	9am cloud amount (oktas)	9am wind direction	9am wind speed (km/h)
1/02/2018	9.9	16.8	0	11.7	71	7 SSE		11
2/02/2018	10.4	17.7	0.4	12	83	7 SSE		15
3/02/2018	10.9	20.3	0.2	13.2	84	7 SSE		11
4/02/2018	12.1	22.6	0.4	14	79	6 SE		11
5/02/2018	7.7	27.9	0	14	84	1	Calm	
6/02/2018	9.4	25.8	0	14.9	71	5 NNW		11
7/02/2018	9.9	27.8	0	15.8	76	2	Calm	
8/02/2018	10.2	30.9	0	17.4	59	1 NNW		7
9/02/2018	13.3	35	0	19.2	66	6	Calm	
10/02/2018	12.3	33.7	2.4	17.6	85	0	Calm	
11/02/2018	17.8	30.7	1.2	21.1	71	6 NW		15
12/02/2018	12.4	29.2	0	18.6	78	0 NNW		19
13/02/2018	16.4	28.5	0	18.9	78	6 ESE		4
14/02/2018	13.3	30.6	0	17.9	90	5 NNW		15
15/02/2018	8.6	30.8	0	16.5	81	0 NNW		7
16/02/2018	6.5	27.1	0	18.7	32	7 SW		4
17/02/2018	14.1	29.2	0	18.4	65	3 NNE		11
18/02/2018	11	31.4	0	20	70	2	Calm	
19/02/2018	14	26.3	0	19	70	6 SSE		11
20/02/2018	12.6	15.9	28.8	12.6	92	8 ESE		19
21/02/2018	7	22.2	0.2	12.7	75	7 NNE		7
22/02/2018	10.1	24.3	0	13.2	92	8	Calm	
23/02/2018	11.4	27.5	0	16.7	82	5 SE		4
24/02/2018	15.2	29.1	0	21.7	78	5 NNW		11
25/02/2018	21.7	25.2	0	22.5	82	7 NNW		7
26/02/2018	11.4	15.4	51	11.7	97	8 SE		15
27/02/2018	10.3	22.3	3.4	12.9	83	6 SSE		15
28/02/2018	7.5	28.2	0	15.9	79	1 NNW		11

Daily Weather Observations for Lithgow, New South Wales for March 2018
 Prepared at 13:00 UTC on Wednesday 18 July 2018 IDCIDW2075.201803
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 Observations were drawn from Lithgow (Coerwull) {station 063226}

Date	Minimum temperature (°C)	Maximum temperature (°C)	Rainfall (mm)	9am Temperature (°C)	9am relative humidity (%)	9am cloud amount (oktas)	9am wind direction	9am wind speed (km/h)
1/03/2018	10.4	27.6	0	18	68	0	SW	4
2/03/2018	13.5	23	0	15.9	82	2	SE	4
3/03/2018	13	28.4	0	16	86	4	NW	15
4/03/2018	13.6	28.6	0	22.4	69	2	NNW	7
5/03/2018	15.8	23.1	0	18.4	90	8	N	4
6/03/2018	12.1	17.8	10.2	12.2	99	8	SSE	11
7/03/2018	12.3	18.4	2.8	14.2	86	6	ESE	11
8/03/2018	11.2	19.5	0	13.6	87	7	SE	11
9/03/2018	9.2	20.1	0	13.4	90	7	SSE	15
10/03/2018	12.4	20.8	0	15	83	7	SE	11
11/03/2018	7.4	25.5	0	10.7	96	0		Calm
12/03/2018	6.4	26.9	0	13.5	85	4		Calm
13/03/2018	13.9	20.5	0.1	14.9	93	8	SE	7
14/03/2018	13.2	24.9	0.2	15.9	91	8	N	4
15/03/2018	13.1	27.5	2	19.4	78	0	NNW	15
16/03/2018	13.4	25.6	0	16.5	90	7	ESE	4
17/03/2018	15.3	30	0	16.4	95	4	NNE	4
18/03/2018	11.6	31.3	0	22	59	0	NNW	15
19/03/2018	10.6	29.9	0	17.4	74	0	NNW	7
20/03/2018	4.2	24.8	0	11	75	3		Calm
21/03/2018	10.9	15.3	5.8	12.9	97	8	SE	19
22/03/2018	11.1	14.5	7	11.6	97	8	SE	11
23/03/2018	11.8	16.5	3.2	12.6	97	8	SE	4
24/03/2018	10.6	24.7	0.2	14.5	91	3	NNW	11
25/03/2018	14	25.2	1.4	19	77	2	NNW	22
26/03/2018	13	16.6	6.4	13.1	81	5	W	28
27/03/2018	-0.2	20.8	0	4.7	88	0		Calm
28/03/2018	5	26.2	0	13.7	89	3	N	7
29/03/2018	9.6	27.6	0	13.2	99	1		Calm
30/03/2018	8.9	28.1	0	13.5	98	0		Calm
31/03/2018	10.7	25.2	0	15.9	91	7	ESE	7

Daily Weather Observations for Lithgow, New South Wales for April 2018
 Prepared at 13:00 UTC on Tuesday 17 July 2018 IDCJDW2075.201804
 Copyright 2003 Commonwealth Bureau of Meteorology
 Observations were drawn from Lithgow (Coerwull) {station 063226}

Date	Minimum temperature (°C)	Maximum temperature (°C)	Rainfall (mm)	9am Temperature (°C)	9am relative humidity (%)	9am cloud amount (oktas)	9am wind direction	9am wind speed (km/h)
1/04/2018	9.6	28	0	20.6	56		1 NNW	11
2/04/2018	11.4	27.9	0	21.1	61		5 WNW	4
3/04/2018	14.7	19.6	0	14.7	94		8 SE	4
4/04/2018	14.9	23	0.1	18	68		2 E	7
5/04/2018	10.1	25.2	0	17.6	74		0 N	7
6/04/2018	7.8	27.8	0	19.3	57		0 SE	4
7/04/2018	9.9	26.7	0.2	15	88		0 NNW	11
8/04/2018	6.3	27.6	0	21	49		0	Calm
9/04/2018	6.9	27.7	0	22.9	31		0 W	15
10/04/2018	8.4	24.3	0	15.2	76		3 N	11
11/04/2018	10.8	29	0	15.4	84		0 E	4
12/04/2018	9.6	27	0	20.4	51		0 NNW	11
13/04/2018	14	26	0	21.2	42		3 NNW	15
14/04/2018	14	22	3.6	16.4	85		7 NNW	26
15/04/2018	10.1	16.9	0	10.9	65		6 WNW	20
16/04/2018	10.8	20.1	0	15.7	72		3 W	30
17/04/2018	4.2	20.5	0	14.3	73		2 SSW	4
18/04/2018	9.4	16.6	0	12.2	76		8 NE	7
19/04/2018	5.5	21.5	0	16	75		3 NNW	11
20/04/2018	5.1	21.6	3.6	14.7	83		3	Calm
21/04/2018	10.1	19.4	0	14.2	78		7 ESE	4
22/04/2018	5.5	19.5	0	12.3	78		5 SE	11
23/04/2018	6.4	20.9	0	11.3	94		1	Calm
24/04/2018	6.6	20.9	0.2	7.4	100		8 NE	4
25/04/2018	-0.1	21.4	0	10.1	87		1	Calm
26/04/2018	6.6	20.8	0	12.6	92		6	Calm
27/04/2018	10.4	15.6	0	11.4	82		6 ESE	7
28/04/2018	8.3	11.9	0.1	9.5	92		8 SE	11
29/04/2018	7.3	16	2.8	10.9	77		5 SSE	11
30/04/2018	4.8	16.5	2.8	10.1	85		7 SSW	11

Daily Weather Observations for Lithgow, New South Wales for May 2018

Prepared at 16:00 UTC on Monday 16 July 2018 IDCJDW2075.201805

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Observations were drawn from Lithgow (Coerwull) {station 063226}

Date	Minimum temperature (°C)	Maximum temperature (°C)	Rainfall (mm)	9am Temperature (°C)	9am relative humidity (%)	9am cloud amount (oktas)	9am wind direction	9am wind speed (km/h)
1/05/2018	1.6	20.4	0.2	10.9	83		2 NNW	7
2/05/2018	5	19	0	9.6	89		8	Calm
3/05/2018	3.6	21.8	0	14.1	71		1 N	7
4/05/2018	11.6	16.8	0	14.9	76		5 NNW	19
5/05/2018	2.1	18.5	0	9.7	68		0 W	11
6/05/2018	-2.5	18.1	0	6.4	86		0	Calm
7/05/2018	0.1	19.7	0.1	12.7	75		0 NNW	15
8/05/2018	2.4	19.1	0	10.3	77		8	Calm
9/05/2018	0.8	20	0	8.8	84		2	Calm
10/05/2018	5	17.1	0	14.2	37		2 NW	22
11/05/2018	1.4	9.2	1.2	2.3	80		7 NW	28
12/05/2018	2.4	12.6	0.8	8.9	81		7 WSW	19
13/05/2018	6.3	12.1	0	10	64		6 SE	4
14/05/2018	6.9	13.6	0	8.5	75		7 SSE	11
15/05/2018	-3.3	16.5	0	5.9	81		0 ESE	4
16/05/2018	-1.6	13.9	0	8.7	74		5 SSE	7
17/05/2018	-1	14.2	0.1	6.2	93		1 NNW	7
18/05/2018	-2.4	15	0	7.1	67		1 NNE	4
19/05/2018	-2.4	14.8	0	4	56		0	Calm
20/05/2018	0.8	13.9	0	5.6	75		2 WSW	7
21/05/2018	3.6	12.9	0	8.9	78		8 W	19
22/05/2018	6.5	13.7	0	8.4	74		2 SW	11
23/05/2018	-0.6	18.3	0	4.4	97		0	Calm
24/05/2018	-1.6	19.6	0	5.5	87		0 N	4
25/05/2018	5.1	14.4	0	9.9	79		7 SE	4
26/05/2018	-2.3	18	0.1	2	68		0	Calm
27/05/2018	-2.8	17.5	0	2.3	64		2	Calm
28/05/2018	1.1	16	0	5.6	97		7	Calm
29/05/2018	0.4	18.1	0	11	72		0 NNW	7
30/05/2018	5	9	11	6.7	76		3 WSW	11
31/05/2018	3.3	10.1	0	5.5	79		6 SW	19

Daily Weather Observations for Lithgow, New South Wales for June 2018
 Prepared at 13:00 UTC on Saturday 21 July 2018 IDCJDW2075.201806
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 Observations were drawn from Lithgow (Coerwull) {station 063226}

Date	Minimum temperature (°C)	Maximum temperature (°C)	Rainfall (mm)	9am Temperature (°C)	9am relative humidity (%)	9am cloud amount (oktas)	9am wind direction	9am wind speed (km/h)
1/06/2018	3.7	10.6	0	5	76		3 SSE	7
2/06/2018	0.4	11.3	0	6.8	68		6 SSE	11
3/06/2018	6.8	12.9	0.4	8	85		6 ESE	7
4/06/2018	5.9	12.9	0	7.4	89		6 SE	4
5/06/2018	3.5	9.9	0	6.6	76		3 SSE	7
6/06/2018	6.7	12.8	1.8	7.9	91		7 SSE	4
7/06/2018	7.9	14.3	1.4	9.2	86		8 ENE	4
8/06/2018	5.3	12.1	0.1	9.5	74		8 NNW	15
9/06/2018	7.4	9.7	5.2	8.8	88		8 WNW	7
10/06/2018	1.8	11.1	2.2	6.6	91		7 SSE	7
11/06/2018	6.2	12.1	0.6	6.7	90		7 SSE	4
12/06/2018	-0.2	14.7	0	7.2	84		7 NNW	11
13/06/2018	6.2	10.9	0	7.4	81		5 WSW	11
14/06/2018	5.4	9.9	0	7	71		5 WSW	4
15/06/2018	3.6	10.7	0	8.8	55		3 NW	19
16/06/2018	4.3	9.8	2.2	5.7	68		2 NW	11
17/06/2018	1.5	5	2.2	2	85		8 WNW	15
18/06/2018	2	9.6	1	4.8	76		7 SW	11
19/06/2018	2.4	9	1	5.8	81		8 SSE	11
20/06/2018	5.8	11.7	1.2	6.2	83		5 SE	7
21/06/2018	-1.7	12.9	0.1	2.3	96		8	Calm
22/06/2018	-2	12.8	0	-1.3	95		0	Calm
23/06/2018	-4.4	13.1	0.2	1	82		3	Calm
24/06/2018	-6.6	12.7	0	-2	96		0	Calm
25/06/2018	-3.1	13.4	0.2	-0.2	94		0	Calm
26/06/2018	-1.3	13.5	0	4.8	89		3 NE	4
27/06/2018	0.7	12.6	0	8	81		5 ENE	7
28/06/2018	7.5	9	3.2	8.4	91		8	Calm
29/06/2018	1.7	7.2	10.2	4.2	80		7 NNW	7
30/06/2018	3.4	11.2	0	6.6	69		5 NW	15

Daily Weather Observations for Lithgow, New South Wales for July 2018
 Prepared at 16:00 UTC on Sunday 2 September 2018 IDCIDW2075.201807
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 Observations were drawn from Lithgow (Coerwull) {station 063226}

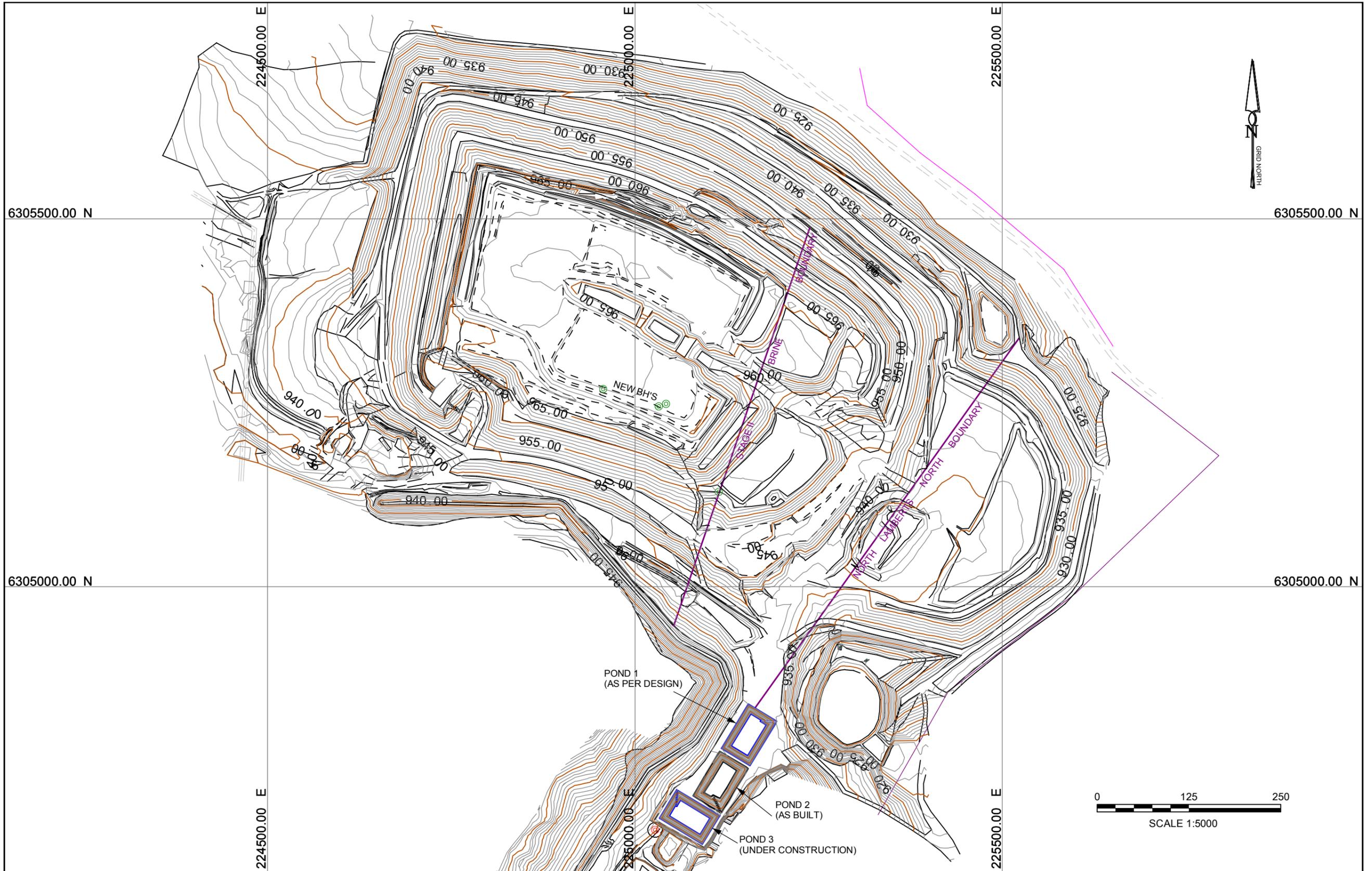
Date	Minimum temperature (°C)	Maximum temperature (°C)	Rainfall (mm)	9am Temperature (°C)	9am relative humidity (%)	9am cloud amount (oktas)	9am wind direction	9am wind speed (km/h)
1/07/2018	-4.5	11.9	0	-0.1	87	2	Calm	
2/07/2018	0.2	8.5	2.4	5.9	93	8 ESE		11
3/07/2018	3.5	12.8	0.4	6	99	7 N		4
4/07/2018	-0.9	16.1	0.2	5.2	100	8 N		4
5/07/2018	1.8	17.6	0.1	10.6	74	1 NNW		11
6/07/2018	10.7	16.3	0	13.2	73	6 NW		19
7/07/2018	3.1	7	1	5.3	61	7 WNW		22
8/07/2018	2.9	6.9	1.6	3.3	81	8 WSW		7
9/07/2018	3.4	10.9	0.1	4.8	75	1 WSW		7
10/07/2018	-5.4	12.6	0	-0.2	94	0	Calm	
11/07/2018	-4.3	11.6	0.1	0.2	94	5	Calm	
12/07/2018	-4.2	11.1	0	0.3	91	4	Calm	
13/07/2018	0.4	7.5	0	2.4	76	6 SW		11
14/07/2018	-6.7	10.5	0	-3.4	97	0	Calm	
15/07/2018	-9.3	10.1	0	-3.6	90	0	Calm	
16/07/2018	-7.6	9.9	0.1	2.5	62	0 N		4
17/07/2018	0.4	14.2	0	9.5	30	0 NNW		11
18/07/2018	3.9	13.2	0	6.9	61	0 NNE		4
19/07/2018	0.8	14.5	0	7.9	52	3 NNW		11
20/07/2018	8	10.6	0	10.1	35	7 WNW		7
21/07/2018	2.7	9.4	0.2	3.4	73	4 WSW		15
22/07/2018	-7.9	11.9	0	-1	92	1	Calm	
23/07/2018	-6.3	13.6	0	3.7	49	0 N		4
24/07/2018	3.9	15.8	0	10.4	38	0 NW		19
25/07/2018	6.9	14.8	0	9.9	56	0 WNW		11
26/07/2018	0.4	12.9	0	6.6	81	1 SE		7
27/07/2018	-4.6	13.7	0	0	89	0	Calm	
28/07/2018	-0.7	15.9	0	6.4	74	7	Calm	
29/07/2018	6.6	15.4	1.8	12.5	64	1 WNW		22
30/07/2018	3.4	9	0	4.3	68	5 WSW		19
31/07/2018	1.4	12.9	0	8	55	2 NW		19

Daily Weather Observations for Lithgow, New South Wales for August 2018
 Prepared at 13:00 UTC on Friday 7 September 2018 IDCJDW2075.201808
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 Observations were drawn from Lithgow (Coerwull) {station 063226}

Date	Minimum temperature (°C)	Maximum temperature (°C)	Rainfall (mm)	9am Temperature (°C)	9am relative humidity (%)	9am cloud amount (oktas)	9am wind direction	9am wind speed (km/h)
1/08/2018	6.6	13.3	0	7.6	63	2	W	22
2/08/2018	-4.9	14.6	0.1	1	80	0		Calm
3/08/2018	-1.8	16.5	0.2	8.3	69	1	NNW	11
4/08/2018	5	11.1	7	5.6	72	5	WSW	22
5/08/2018	-3	15.6	0	6	63	3		Calm
6/08/2018	6.3	9.9	6	6.8	91	8	W	11
7/08/2018	3.4	7.8	3.6	3.5	85	7	WNW	7
8/08/2018	1.3	10.9	0	6.4	56	6	W	19
9/08/2018	1.7	12.6	0	6.5	79	1	SSW	4
10/08/2018	-4.6	16.8	0.1	7.3	62	1	NNW	7
11/08/2018	7.5	17.3	0	12.9	61	1	NNW	28
12/08/2018	1.4	6	1.8	2.1	85	7	SW	7
13/08/2018	0.8	9.2	0	4.3	86	7	SW	15
14/08/2018	1.5	15.9	0	5.8	77	0	N	4
15/08/2018	-0.2	16.8	0	9.6	50	0	WNW	22
16/08/2018	8	12.4	0	9	62	0	WSW	19
17/08/2018	-5.1	10.4	0	4	53	0		Calm
18/08/2018	0.1	13.5	0	8.6	48	0	WNW	15
19/08/2018	1.4	6.5	2.8	3	71	5	W	22
20/08/2018	-0.9	8.7	1	2.2	65	0	SW	11
21/08/2018	2	6.6	0	3.3	76	7	SW	15
22/08/2018	3.4	10.6	0	4.9	83	7	SW	7
23/08/2018	-0.5	10	0	7	77	6	ESE	7
24/08/2018	1.9	14.6	0	7.1	84	3	NE	4
25/08/2018	7.4	10.9	0	9.2	85	8	N	11
26/08/2018	3	9.6	4.4	7.5	99	8		Calm
27/08/2018	2.2	13.3	8.8	6.5	99	6		Calm
28/08/2018	1.2	10.6	0	4.6	76	5	NNE	7
29/08/2018	-5.5	11	0	2.6	59	0		Calm
30/08/2018	-6.6	15.6	0	1.9	68	0		Calm
31/08/2018	1.4	12.8	0	10.1	38	8	NNW	11

Annex D

Ash Repository Survey



NOTES:

CEH SURVEY

CONSULTING LAND, ENGINEERING AND MINING SURVEYORS

"Astrolabe" 1 Rutherford Lane,
LITHGOW 2790

ABN: 68 056 544 551 Office: (02) 6351 2281
Email: survey@ceh.com.au Website: www.ceh.com.au



DATE	21/06/2018
AMENDED	
SURVEYOR	BN/LB
DRAWN	GM
CHECKED	

LEND LEASE SERVICES PTY. LTD. MOUNT PIPER - ASH PLACEMENT SURVEY : 21st JUNE 2018

SCALE - 1:5000 (A3 SHEET)

DATUM: MGA (ZONE 56)

DRAWING No:
MPA0618
(as surveyed)

CCAD6 JOB & DWG:
MPA0618 - MPA0618 as survey

Annex E

Tabulated Surface Water Data

		Metals																																								
		Barium	Barium (Filtered)	Beryllium	Beryllium (Filtered)	Boron	Boron (Filtered)	Cadmium	Cadmium (Filtered)	Chromium	Chromium (Filtered)	Cobalt	Cobalt (Filtered)	Copper	Copper (Filtered)	Iron	Iron (Filtered)	Lead	Lead (Filtered)	Manganese	Manganese (Filtered)	Mercury	Mercury (Filtered)	Nickel	Nickel (Filtered)	Phosphorus	Selenium	Selenium (Filtered)	Zinc	Zinc (Filtered)												
		µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L													
ANZECC (2000) or Local Guidelines - Surface Water		700	700	100	100	370	370	0.85	0.85	2	2	1	1	1	1	300	300	5	5	1900	1900	0.06	0.06	10	10	17	17	5	5	0.05	0.05											
ANZECC (2000) Tr - Freshwater (95%)						370	370	0.2	0.2					1.4	1.4			3.4	3.4	1900	1900			11	11		11	11														
Neubecks Creek at WX22 Pre-placement 90th Percentile		29	29	1	1	90	90	1	1	1	1	1	1	1	1	281	281	1	1	720	720			1	1	5	5			116	116											
NHMRC (2011) Recommended Drinking Water Guidelines - Aesthetic (Ver. 3.3)		2000	2000	60	60	4000	4000	2	2	50	50			2000	2000							1	1	50	50	20	20	0.0001	10	10	100	100	4		3000	3000						
NHMRC (2011) Recommended Drinking Water Guidelines - Health (Ver. 3.3)																																										
Field ID	Sampled Date	Time	SampleCode	LocCode	Matrix	Type																																				
LDP01	12/09/2017		5134264	LDP01	Surf. Water																																					
LDP01	19/09/2017		5147432	LDP01	Surf. Water																																					
LDP01	22/09/2017		5148335	LDP01	Surf. Water	24	<1	<50	<0.1	<1			4	2	149	16	<1		56	44	<0.04		3		4		<0.01	0.4		<1	0.093	<10	<10	12	7							
LDP01	26/09/2017		5161183	LDP01	Surf. Water																																					
LDP01	4/10/2017		5174391	LDP01	Surf. Water																																					
LDP01	10/10/2017		5186863	LDP01	Surf. Water																																					
LDP01	17/10/2017		5200238	LDP01	Surf. Water																																					
LDP01	19/10/2017		5201096	LDP01	Surf. Water	29	<1	<50	<0.1	<1			7	4	542	31	<1		188	32	<0.04		4		8		0.03	0.6		<1	0.123	<10	<10	31	6							
LDP01	24/10/2017		5213102	LDP01	Surf. Water																																					
LDP01	31/10/2017		5229233	LDP01	Surf. Water																																					
LDP01	7/11/2017		5240956	LDP01	Surf. Water																																					
LDP01	14/11/2017		5252866	LDP01	Surf. Water																																					
LDP01	16/11/2017		5253682	LDP01	Surf. Water	19	<1	<50	<0.1	<1			8	5	472	83	<1		73	52	<0.04		4		4		0.01	0.4		<1	0.072	<10	<10	22	<5							
LDP01	21/11/2017		5264981	LDP01	Surf. Water																																					
LDP01	28/11/2017		5276343	LDP01	Surf. Water																																					
LDP01	5/12/2017		5287233	LDP01	Surf. Water																																					
LDP01	12/12/2017		5299784	LDP01	Surf. Water																																					
LDP01	19/12/2017		5314031	LDP01	Surf. Water																																					
LDP01	20/12/2017		5314579	LDP01	Surf. Water	32	<1	110	0.1	2			19	8	1260	160	4		194	104	<0.04		2		9		0.06	0.4		<1	0.065	<10	<10	50	12							
LDP01	27/12/2017		5327479	LDP01	Surf. Water																																					
LDP01	3/01/2018		5334811	LDP01	Surf. Water																																					
LDP01	9/01/2018		5342542	LDP01	Surf. Water																																					
LDP01	16/01/2018		5352814	LDP01	Surf. Water																																					
LDP01	17/01/2018		5353239	LDP01	Surf. Water	24	<1	100	<0.1	<1			5	3	298	38	<1		144	120	<0.04		3		2		0.02	0.3		<1	0.068	<10	<10	12	<5							
LDP01	23/01/2018		5363933	LDP01	Surf. Water																																					
LDP01	30/01/2018		5375279	LDP01	Surf. Water																																					
LDP01	6/02/2018		5388622	LDP01	Surf. Water																																					
LDP01	13/02/2018		5398567	LDP01	Surf. Water																																					
LDP01	14/02/2018		5398991	LDP01	Surf. Water	24	<1	230	<0.1	17			9	3	624	52	1		260	206	<0.04		5		10		0.02	0.3		<1	0.082	<10	<10	36.00	13							
LDP01	20/02/2018		5409972	LDP01	Surf. Water																																					
LDP01	27/02/2018		5420667	LDP01	Surf. Water																																					
LDP01	6/03/2018		5432001	LDP01	Surf. Water																																					
LDP01	13/03/2018		5443735	LDP01	Surf. Water																																					
LDP01	14/03/2018		5444182	LDP01	Surf. Water	20	<1	<50	<0.1	<1			2	3	59	233	<1		204	238	<0.04		1		4		0.02	0.3		<1	0.063	<10	<10	11	11							
LDP01	20/03/2018		5456507	LDP01	Surf. Water																																					
LDP01	27/03/2018		5469147	LDP01	Surf. Water																																					
LDP01	4/04/2018		5482233	LDP01	Surf. Water																																					
LDP01	10/04/2018		5494744	LDP01	Surf. Water																																					
LDP01	17/04/2018		5508509	LDP01	Surf. Water																																					
LDP01	19/04/2018		5509477	LDP01	Surf. Water																																					
LDP01	19/04/2018		LDP01_19 Apr 18	LDP01	Surf. Water	27	<1	<50	<0.1	<1			3	2		43	<1		120	<0.04		3		3		0.3		<1		<10	<10	11	<5									
LDP01	24/04/2018		5525000	LDP01	Surf. Water																																					
LDP01	1/05/2018		LDP01_01 May 18	LDP01	Surf. Water																																					
LDP01	8/05/2018		LDP01_08 May 18	LDP01	Surf. Water																																					
LDP01	15/05/2018		55384269003	LDP01	Surf. Water	36	34	<1	<1	50	<50	<0.1	<0.1	<1	<1	<1	<1	<1	2	6	280	<50	<1	<1	293	205	<0.1	<0.1	3	2	2	2	3		<10	<10	<1	<1	<10	<10	6	6
LDP01	17/05/2018		LDP01_17 May 18	LDP01	Surf. Water	26	<1	100	<0.1	<1			3	2		44	<1			51	<0.04		5		2		0.4		<1		<10	<10	9	5								
LDP01	22/05/2018		LDP01_22 May 18	LDP01	Surf. Water																																					
LDP01	29/05/2018		LDP01_29 May 18	LDP01	Surf. Water																																					
LDP01	5/06/2018		LDP01_05 Jun 18	LDP01	Surf. Water																																					
LDP01	13/06/2018		LDP01_13 Jun 18	LDP01	Surf. Water																																					
LDP01	20/06/2018		LDP01_20 Jun 18	LDP01	Surf. Water	25	<1	<50	<0.1	<1			5	3		45	<1		40	<0.04		2		4		0.4		<1		<10	<10	18	<5									
LDP01	26/06/2018		LDP01_26 Jun 18	LDP01	Surf. Water																																					
LDP01	3/07/2018		LDP01_03 Jul 18	LDP01	Surf. Water																																					
LDP01	10/07/2018		LDP01_10 Jul 18	LDP01	Surf. Water																																					
LDP01	19/07/2018		LDP01_19 Jul 18	LDP01	Surf. Water	15	<1		<0.1	<1			5	3		58	<1		34	<0.04		1		3		0.3		<1		<10	<10	22	11									
LDP01	24/07/2018		LDP01_24 Jul 18	LDP01	Surf. Water																																					
LDP01	31/07/2018		LDP01_31 Jul 18	LDP01	Surf. Water																																					
LDP01	7/08/2018		LDP01_07 Aug 18	LDP01	Surf. Water																																					
LDP01	15/08/2018		LDP01_15 Aug 18	LDP01	Surf. Water	24	<1		<0.1	<1			7	5		41	<1		31	<0.04		3		3		0.4		<1		<10	<10	27	13									
LDP01	21/08/2018		LDP01_21 Aug 18	LDP01	Surf. Water																																					
LDP01	28/08/2018		LDP01_28 Aug 18	LDP01	Surf. Water																																					
LDP01	Average					25			118	0.10	9.50			6	4	461	70	3		177	98			3		4.46		0.38				0.08		21	9							
LDP01	50th Percentile					24			100	0.1	9.5			5	3	385	45	3		191	52			3		4		0.4				0.072		18	11							
LDP01	90th Percentile					31			182	0.1	15.5			9	6	815	152	4		270	206			4.8		8.8		0.4				0.105		35	13							
LDP01	Minimum					15			50	0.10	2.00			2	2	59	16	1		56	31			1.00		2.00		0.30				0.06		6	5							
LDP01	Maximum					36			230	0.10	17.00			19	8	1260	233	4		293	238			5.00		10.00		0.60				0.12		50	13							

		Metals																																							
		Barium	Barium (Filtered)	Beryllium	Beryllium (Filtered)	Boron	Boron (Filtered)	Cadmium	Cadmium (Filtered)	Chromium	Chromium (Filtered)	Cobalt	Cobalt (Filtered)	Copper	Copper (Filtered)	Iron	Iron (Filtered)	Lead	Lead (Filtered)	Manganese	Manganese (Filtered)	Mercury	Mercury (Filtered)	Nickel	Nickel (Filtered)	Nickel (Filtered)	Phosphorus	Selenium	Selenium (Filtered)	Silver	Silver (Filtered)	Titanium	Vanadium	Vanadium (Filtered)	Zinc	Zinc (Filtered)					
		µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L				
EQI		1	1	1	1	50	50	0.1	0.1	1	1	1	1	1	1	300	300	5	5	1900	1900	0.06	0.06	10	10	17	17	0.2	10	1	1	1	1	1	1	1	1				
ANZECC (2000) or Local Guidelines - Surface Water		700	700	100	100	370	370	0.85	0.85	2	2	2	2	2	2	300	300	5	5	1900	1900	0.06	0.06	10	10	17	17	5	5	0.05	0.05	10	10	10	10	10	116	116			
ANZECC (2000) T1 - Freshwater (95%)		370	370	0.2	0.2									1.4	1.4			3.4	3.4	1900	1900	0.6	0.6			11	11			11	11	0.05	0.05			8	8				
Neubecks Creek at WX22 Pre-placement 90th Percentile		29	29	1	1	90	90	1	1	1	1	1	1	1	1	281	281	1	1	720	720			1	1	5	5	1	1							116	116				
NHMRC (2011) Recommended Drinking Water Guidelines - Aesthetic (Ver. 3.3)		2000	2000	60	60	4000	4000	2	2	50	50			2000	2000	300	300			500	500	1	1	50	50	20	20	0.0001	10	10	100	100	4		3000	3000					
NHMRC (2011) Recommended Drinking Water Guidelines - Health (Ver. 3.3)																																									
Field ID	Sampled Date	Time	SampleCode	LocCode	Matrix Type																																				
NC01	22/09/2017		5147893	NC01	Surf. Water	27	<	<	<	<	<	<	<	<	<	785	206	<	<	193	192	<	<	<	<	2	<	0.01	<	<	<	<	<	0.101	<	<	<	<			
NC01	19/10/2017		5200608	NC01	Surf. Water	45	<	<	<	<	<	<	<	<	<	1450	251	<	<	709	611	<	<	1	1	2	<	0.03	<	<	<	<	<	0.102	<	<	<	<			
NC01	16/11/2017		5253314	NC01	Surf. Water	31	<	<	<	<	<	<	<	<	<	774	189	<	<	341	201	<	<	<	<	2	<	0.02	0.2	<	<	<	<	<	<	0.077	<	<	<		
NC01	20/12/2017		5314358	NC01	Surf. Water	27	<	<	<	<	<	<	<	<	<	3	2	1240	311	<	<	278	225	<	<	6	<	0.04	<	<	<	<	<	0.058	<	<	<	12	<		
NC01	17/01/2018		5353075	NC01	Surf. Water	44	<	<	<	<	<	<	<	<	<	2370	286	<	<	991	857	<	<	3	<	3	<	0.01	<	<	<	<	<	0.086	<	<	<	<			
NC01	14/02/2018		5398862	NC01	Surf. Water	44	<	<	<	<	<	<	<	<	<	1370	86	<	<	1110	849	<	<	3	<	3	<	0.02	<	<	<	<	<	0.076	<	<	<	<			
NC01	14/03/2018		5444016	NC01	Surf. Water	34	<	<	<	<	<	<	<	<	<	3740	2750	<	<	614	694	0.09	<	1	6	<	<	0.03	0.2	<	<	<	<	0.065	<	<	<	<			
NC01	15/05/2018		ES1814249004	NC01	Surf. Water	30	23	<	<	<	<	<	<	<	<	840	<	<	89	71	<	<	<	<	3	2	<	<	<	<	<	<	<	<	<	<	<	<			
NC01	19/04/2018		NC01_19 Apr 18	NC01	Surf. Water	56	<	<	<	<	<	<	<	<	<	2	<	2960	<	<	1660	<	<	4	<	<	<	<	<	<	<	<	<	<	<	<	<	<			
NC01	17/05/2018		NC01_17 May 18	NC01	Surf. Water	28	<	<	<	<	<	<	<	<	<	<	<	206	<	<	206	<	<	2	<	<	<	<	<	<	<	<	<	<	<	<	<	<			
NC01	20/06/2018		NC01_20 Jun 18	NC01	Surf. Water	22	<	<	<	<	<	<	<	<	<	<	<	264	<	<	57	<	<	2	<	<	<	<	<	<	<	<	<	<	<	<	<	<			
NC01	18/07/2018		NC01_18 Jul 18	NC01	Surf. Water	16	<	<	<	<	<	<	<	<	<	<	<	59	<	<	24	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<			
NC01	15/08/2018		NC01_15 Aug 18	NC01	Surf. Water	21	<	<	<	<	<	<	<	<	<	<	<	329	<	<	125	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<		
				NC01	Average	33	23	<	<	<	<	<	<	<	<	3	2	1571	686	1	541	444	0	1	3	2	0	0	<	<	<	<	<	<	0	<	11	<			
				NC01	50th Percentile	30	23	<	<	<	<	<	<	<	<	3	2	1305	258	1	478	206	0	1	3	2	0	0	<	<	<	<	<	<	0	<	12	<			
				NC01	90th Percentile	45	23	<	<	<	<	<	<	<	<	4	2	2781	2539	1	1022	855	0	2	6	2	0	0	<	<	<	<	<	<	0	<	12	<			
				NC01	Minimum	16	23	<	<	<	<	<	<	<	<	2	2	774	59	1	89	24	0	1	2	2	0	0	<	<	<	<	<	<	0	<	8	<			
				NC01	Maximum	56	23	<	<	<	<	<	<	<	<	4	2	3740	2960	1	1110	1660	0	2	6	2	0	0	<	<	<	<	<	<	0	<	12	<			
WX22	27/09/2017		5162801	WX22	Surf. Water	37	<	<	<	<	<	<	<	<	<	241	87	<	<	309	294	<	<	20	<	0.01	<	<	<	<	<	0.22	<	<	<	<	9	<			
WX22	25/10/2017		5214142	WX22	Surf. Water	16	<	<	<	<	<	<	<	<	<	354	64	<	<	141	132	<	<	6	<	<	<	<	<	<	<	<	<	<	<	<	<	<			
WX22	22/11/2017		5265410	WX22	Surf. Water	18	<	<	<	<	<	<	<	<	<	206	73	<	<	177	166	<	<	10	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<		
WX22	13/12/2017		5300324	WX22	Surf. Water	18	<	<	<	<	<	<	<	<	<	714	102	<	<	582	506	<	<	22	<	<	<	<	<	<	<	<	<	0.14	<	<	<	18	10		
WX22	24/01/2018		5364316	WX22	Surf. Water	43	<	<	<	<	<	<	<	<	<	618	90	<	<	1450	1450	<	<	115	<	<	<	<	<	<	<	<	<	0.594	<	<	<	<	80	60	
WX22	21/02/2018		5410561	WX22	Surf. Water	49	<	<	<	<	<	<	<	<	<	592	137	<	<	2140	2230	<	<	136	<	<	<	<	<	<	<	<	<	<	0.594	<	<	<	<	93	87
WX22	21/03/2018		5459366	WX22	Surf. Water	21	<	<	<	<	<	<	<	<	<	415	199	<	<	729	725	<	<	31	<	<	<	<	<	<	<	<	<	0.148	<	<	<	<	14	10	
WX22	26/04/2018		WX22_26 Apr 18	WX22	Surf. Water	30	<	<	<	<	<	<	<	<	<	<	<	<	171	<	<	1150	<	<	31	<	<	<	<	<	<	<	<	<	<	<	<	<	10	8	
WX22	23/05/2018		WX22_23 May 18	WX22	Surf. Water	32	<	<	<	<	<	<	<	<	<	<	<	<	141	<	<	632	<	<	28	<	<	<	<	<	<	<	<	<	<	<	<	<	7	7	
WX22	27/06/2018		WX22_27 Jun 18	WX22	Surf. Water	20	<	<	<	<	<	<	<	<	<	<	<	<	103	<	<	273	<	<	16	<	<	<	<	<	<	<	<	<	<	<	<	<	12	10	
WX22	26/07/2018		WX22_26 Jul 18	WX22	Surf. Water	15	<	<	<	<	<	<	<	<	<	<	<	<	322	<	<	167	<	<	12	<	<	<	<	<	<	<	<	<	<	<	<	<	<		
WX22	22/08/2018		WX22_22 Aug 18	WX22	Surf. Water	16	<	<	<	<	<	<	<	<	<	<	<	<	115	<	<	160	<	<	15	<	<	<	<	<	<	<	<	<	<	<	<	<	11	8	
				WX22	Average	26										1	449	117		790	614	0	2	37	0									0.28			25	22			
				WX22	50th Percentile	21																																			

Annex F

Tabulated Groundwater Data

				Field Parameters			Major Anions and Cations						Other		BTEX	Metals																				
Field ID	Sampled Date	Sample Code	Location (Matrix_Type)	pH (Field)	Electrical Conductivity (Field)	Purge Volume	Calcium	Magnesium	Sodium	Potassium	Chloride	Sulfate (as SO4)	Total Alkalinity (as CaCO3)	Fluoride	Total Dissolved Solids (TDS)	Benzene	Aluminium	Arsenic	Barium	Boron	Cadmium	Chromium	Chromium (Hexavalent)	Copper	Iron (Filtered)	Lead	Manganese (Filtered)	Mercury	Molybdenum	Nickel	Selenium	Silver	Vanadium	Vanadium (Filtered)	Zinc	
				pH units	uS/cm	L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	
LOR																	10	1	1	50	0.1	1		1	1	1	1	0.04	1	1	0.2	1	10	10	5	
ANZECC (2000) or Local Guidelines - Groundwater				6.5-8	2600						350	1000		1.5	2000			24	700	370	2	5		5	664	5	5704	0.06	10	550.9	5	0.05			908	
Groundwater Collection Basin Pre-placement 90th Percentile				1576							31.5	824		0.435	1306			1	37	244	2	1		1	664	1	5704	0.1	1	550.9	2	1			908	
NA5	27/09/2017	5162860	NA5 G.Water	5.73	5560	12	400	167	618	150	263	3320	84	3.62	4860	-	2260	<1	30	7720	19.3	32	-	3	1480	<1	15,100	<0.04	14	816	36.4	<1	<10	<10	1470	
NA5	26/10/2017	5214215	NA5 G.Water	5.84	5510	11	395	169	640	141	241	2950	99	4.08	4970	-	2040	<1	42	10,100	20.2	550	-	16	1620	2	15,200	<0.04	47	1120	30.9	<1	<10	<10	1260	
NA5	22/11/2017	5265483	NA5 G.Water	5.75	5420	11	387	151	686	148	223	3050	100	3.84	4770	-	2020	1	36	9890	17.5	279	-	11	890	2	15,100	<0.04	38	898	45.7	<1	<10	<10	1130	
NA5	13/12/2017	5300433	NA5 G.Water	5.81	5290	11	389	144	701	136	205	2960	97	3.78	4160	-	1630	<1	31	9910	15.4	134	-	7	570	1	11,000	<0.04	56	804	41.7	<1	<10	<10	1080	
NA5	24/01/2018	5364449	NA5 G.Water	5.87	5090	11	405	134	684	164	152	2490	114	2.5	4080	-	970	<1	28	8150	11.6	2	-	2	190	<1	7150	<0.04	121	489	26	<1	<10	<10	767	
NA5	21/02/2018	5410673	NA5 G.Water	5.89	4870	10	387	117	623	135	142	2550	124	2.92	4310	-	1220	<1	36	7360	10.4	2	-	2	530	<1	6110	<0.04	234	419	20.6	<1	<10	<10	680	
NA5	21/03/2018	5457491	NA5 G.Water	5.83	4930	11	375	117	642	132	154	2680	118	3.09	3890	-	930	<1	28	9330	9.3	162	-	5	840	<1	8390	<0.04	203	527	18.3	<1	<10	<10	629	
NA5	26/04/2018	NA5_26 Apr 18	NA5 G.Water	5.85	4950	11	385	118	643	135	154	2740	109	<5	3670	-	1260	<1	27	9470	9.7	6	-	2	570	<1	7020	<0.04	246	450	22	<1	<10	<10	700	
NA5	24/05/2018	NA5_24 May 18	NA5 G.Water	5.86	4880	11	339	112	685	140	145	2500	121	5.13	4060	-	1240	<1	27	10600	8.6	2	-	12	460	<1	6650	<0.04	164	427	20.4	<1	<10	<10	667	
NA5	27/06/2018	NA5_27 Jun 18	NA5 G.Water	5.9	4950	12	376	125	628	144	142	2760	136	5.41	3780	-	1490	<1	28	12,600	8.7	10	-	2	840	<1	7900	<0.04	173	498	29.5	<1	<10	<10	713	
			NA5 Average	5.82	5154.17	11	381	138	647	141	189	2813	107	3.90	4302	-	1592	-	32	9189	13.9	101	-	6	860	2	10352	-	111	657	30.3	<1	<10	<10	943	
			NA5 50th Percentile	5.84	5080.00	11	386	139	641	139	180	2750	105	3.78	4235	-	1560	-	31	9400	13.4	20	-	3	840	2	9695	-	89	589.5	30.2	-	-	-	909	
			NA5 90th Percentile	5.888	5501	12	399.5	165.7	685.9	149.8	239.5	3047	123.7	5.13	4851	-	2238	1	38.7	10550	20.11	267.3	-	12	1458	2	15100	-	230.9	889.8	41.55	-	-	-	1251	
			NA5 Minimum	5.73	4870	10	278	112	591	54	142	2400	84	0.207	3670	-	930	<1	27	560	0.5	2	-	2	190	1	2810	-	4	419	0.6	<1	<10	<10	629	
			NA5 Maximum	5.9	5560	12	405	169	701	164	263	3320	136	5.41	4970	-	2390	1	42	12600	20.7	550	0	16	1620	2	15200	0	246	1120	45.7	<1	<10	<10	1470	
Statistical Summary																																				
Number of Results	#####	197	78	197	197	197	197	197	197	197	197	197	197	197	197	-	197	197	197	197	197	197	56	197	197	197	197	197	197	197	197	197	197	197	197	
Number of Detects	#####	197	78	197	197	197	197	197	197	197	197	197	197	197	197	-	182	138	197	194	106	114	55	120	197	98	197	29	102	197	116	22	24	22	190	
Minimum Concentration	#####	204	13	14	9.98	6.78	1.93	3.4	45.6	8	0.015	181				-	5	<1	10	<50	<0.1	<1	<10	<1	6	<1	4	<0.04	0.5	1	<0.02	<1	<10	<10	<5	
Minimum Detect	#####	204	13	14	9.98	6.78	1.93	3.4	45.6	8	0.015	181				-	5	1	10	50	0.1	1	ND	1	6	1	4	0.05	0.5	1	0.2	ND	10	ND	6	
Maximum Concentration	#####	11230	81	643	466	2340	236	1060	6370	393	5.44	9760				-	3270	21	604	5320	9.7	501	<10	351	113000	94	27900	0.1	16	1340	5	<1	10	<10	1960	
Maximum Detect	#####	11230	81	643	466	2340	236	1060	6370	393	5.44	9760				-	3270	21	604	5320	9.7	501	ND	351	113000	94	27900	0.1	16	1340	5	ND	10	ND	1960	
Average Concentration	#####	4435	31	272	209	564	52	333	2151	157	0.36	3605				-	481	3.8	69	1295	0.99	17		7.4	18910	4.5	8649	0.022	2	522	0.7	0.5	5.1	5	366	
Median Concentration	#####	3950	16	256	162	398	30.4	221	1970	130	0.129	3160				-	110	2	23	650	0.1	1	5	2	11500	0.5	3792	0.02	0.5	522	0.2	0.5	5	5	142	
Standard Deviation	#####	3087	19	152	141	565	55	315	1598	111	0.7	2665				-	765	4.1	139	1369	2.1	58		36	24608	12	8405	0.009	2.6	415	1.2	0	0.53	0	420	
Number of Guideline Exceedances	#####	147	0	0	0	0	0	0	167	147	0	47	147			-	0	132	54	134	29	110	0	118	162	86	96	5	92	95	22	175	0	0	34	
Number of Guideline Exceedances(Detects Only)	#####	147	0	0	0	0	0	0	167	147	0	40	147			-	0	132	54	134	29	110	0	118	162	86	96	5	92	95	22	0	0	0	34	



Table F2. Groundwater levels
Lamberts North Ash Repository 0470260

LocCode	Date	Top of Casing mAHD	Water Depth mbTOC	Water Level mAHD
D1	23/08/2017	912.6	2.8	909.8
D1	27/09/2017	912.6	2.8	909.8
D1	25/10/2017	912.6	2.9	909.7
D1	22/11/2017	912.6	2.9	909.7
D1	13/12/2017	912.6	2.8	909.8
D1	24/01/2018	912.6	2.8	909.8
D1	21/02/2018	912.6	2.9	909.7
D1	21/03/2018	912.6	2.7	909.9
D1	26/04/2018	912.6	2.9	909.7
D1	23/05/2018	912.6	3.1	909.5
D1	27/06/2018	912.6	3.6	909
D1	25/07/2018	912.6	2.7	909.9
D1	22/08/2018	912.6	3.8	908.8
D8	24/08/2017	906.45	2.4	904.05
D8	28/09/2017	906.45	2.5	903.95
D8	26/10/2017	906.45	2.1	904.35
D8	23/11/2017	906.45	2.4	904.05
D8	14/12/2017	906.45	2.3	904.15
D8	25/01/2018	906.45	2.5	903.95
D8	22/02/2018	906.45	2.6	903.85
D8	22/03/2018	906.45	2.4	904.05
D8	27/04/2018	906.45	2.5	903.95
D8	24/05/2018	906.45	2.6	903.85
D8	28/06/2018	906.45	2.6	903.85
D8	26/07/2018	906.45	2.6	903.85
D8	23/08/2018	906.45	2.6	903.85
D9	24/08/2017	909.66	2.1	907.56
D9	28/09/2017	909.66	2.2	907.46
D9	26/10/2017	909.66	2	907.66
D9	23/11/2017	909.66	2.1	907.56
D9	14/12/2017	909.66	2	907.66
D9	25/01/2018	909.66	2	907.66
D9	22/02/2018	909.66	2.1	907.56
D9	22/03/2018	909.66	1.9	907.76
D9	27/04/2018	909.66	2.1	907.56
D9	24/05/2018	909.66	2.3	907.36
D9	28/06/2018	909.66	2.4	907.26
D9	26/07/2018	909.66	2.4	907.26
D9	23/08/2018	909.66	2.6	907.06



Table F2. Groundwater levels
Lamberts North Ash Repository 0470260

LocCode	Date	Top of Casing mAHD	Water Depth mbTOC	Water Level mAHD
D10	23/08/2017	926.09	14.2	911.89
D10	27/09/2017	926.09	14.6	911.49
D10	25/10/2017	926.09	14.8	911.29
D10	22/11/2017	926.09	15	911.09
D10	14/12/2017	926.09	14.9	911.19
D10	24/01/2018	926.09	15	911.09
D10	21/02/2018	926.09	14.8	911.29
D10	21/03/2018	926.09	14.3	911.79
D10	26/04/2018	926.09	15	911.09
D10	23/05/2018	926.09	15.4	910.69
D10	28/06/2018	926.09	15.4	910.69
D10	25/07/2018	926.09	15.6	910.49
D10	23/08/2018	926.09	15.9	910.19
D11	24/08/2017	937.49	25.8	911.69
D11	28/09/2017	937.49	26.1	911.39
D11	25/10/2017	937.49	26.3	911.19
D11	22/11/2017	937.49	26.4	911.09
D11	13/12/2017	937.49	26.4	911.09
D11	24/01/2018	937.49	26.4	911.09
D11	21/02/2018	937.49	26.2	911.29
D11	21/03/2018	937.49	25.7	911.79
D11	26/04/2018	937.49	26.2	911.29
D11	24/05/2018	937.49	26.7	910.79
D11	27/06/2018	937.49	26.7	910.79
D11	25/07/2018	937.49	28.4	909.09
D11	22/08/2018	937.49	28.7	908.79
D15	24/08/2017	940.83	24.7	916.13
D15	28/09/2017	940.83	25.2	915.63
D15	26/10/2017	940.83	25.1	915.73
D15	23/11/2017	940.83	26	914.83
D15	14/12/2017	940.83	25.6	915.23
D15	25/01/2018	940.83	25.8	915.03
D15	22/02/2018	940.83	25.6	915.23
D15	22/03/2018	940.83	25	915.83
D15	27/04/2018	940.83	26.2	914.63
D15	24/05/2018	940.83	26.3	914.53
D15	28/06/2018	940.83	24.7	916.13
D15	26/07/2018	940.83	26.4	914.43
D15	23/08/2018	940.83	25.8	915.03



Table F2. Groundwater levels
Lamberts North Ash Repository 0470260

LocCode	Date	Top of Casing mAHD	Water Depth mbTOC	Water Level mAHD
D16	26/10/2017	921.82	13.1	908.72
D16	23/11/2017	921.82	13	908.82
D16	14/12/2017	921.82	12.7	909.12
D16	25/01/2018	921.82	12.7	909.12
D16	22/02/2018	921.82	12.8	909.02
D16	22/03/2018	921.82	12.7	909.12
D16	27/04/2018	921.82	13	908.82
D16	24/05/2018	921.82	13.5	908.32
D16	28/06/2018	921.82	13.4	908.42
D16	26/07/2018	921.82	13.6	908.22
D16	23/08/2018	921.82	13.9	907.92
D17	24/08/2017	936.5	28.1	908.4
D17	28/09/2017	936.5	28.1	908.4
D17	26/10/2017	936.5	28.1	908.4
D17	23/11/2017	936.5	27.9	908.6
D17	14/12/2017	936.5	27.6	908.9
D17	25/01/2018	936.5	27.7	908.8
D17	22/02/2018	936.5	27.8	908.7
D17	22/03/2018	936.5	27.7	908.8
D17	27/04/2018	936.5	28	908.5
D17	24/05/2018	936.5	28.4	908.1
D17	28/06/2018	936.5	28.6	907.9
D17	26/07/2018	936.5	28.7	907.8
D17	23/08/2018	936.5	29	907.5
D18	24/08/2017	932.79	24.6	908.19
D18	28/09/2017	932.79	24.1	908.69
D18	26/10/2017	932.79	24.5	908.29
D18	23/11/2017	932.79	24.8	907.99
D18	14/12/2017	932.79	25.6	907.19
D18	25/01/2018	932.79	23.6	909.19
D18	22/02/2018	932.79	24.4	908.39
D18	22/03/2018	932.79	23.9	908.89
D18	27/04/2018	932.79	24.2	908.59
D18	24/05/2018	932.79	24.6	908.19
D18	28/06/2018	932.79	23.8	908.99
D18	26/07/2018	932.79	20.3	912.49
D18	23/08/2018	932.79	23.8	908.99
D19	23/08/2017	917.61	9.8	907.81
D19	27/09/2017	917.61	9.7	907.91
D19	25/10/2017	917.61	9.7	907.91
D19	22/11/2017	917.61	9	908.61
D19	13/12/2017	917.61	8.5	909.11
D19	24/01/2018	917.61	8.8	908.81
D19	21/02/2018	917.61	9.2	908.41
D19	21/03/2018	917.61	9.5	908.11
D19	27/04/2018	917.61	9.7	907.91
D19	24/05/2018	917.61	9.8	907.81
D19	27/06/2018	917.61	10.1	907.51
D19	25/07/2018	917.61	10.2	907.41
D19	22/08/2018	917.61	10.4	907.21

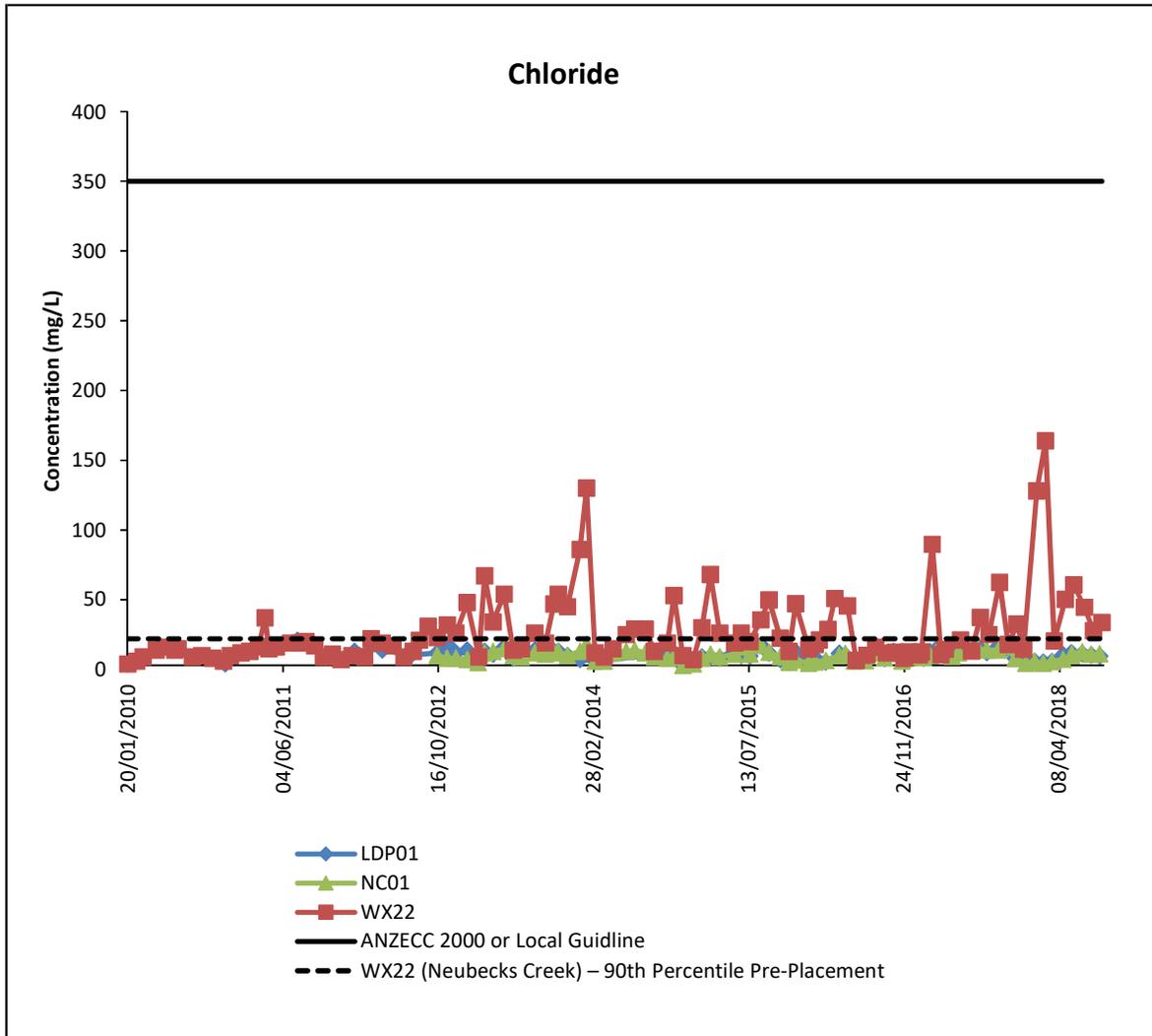


Table F2. Groundwater levels
Lamberts North Ash Repository 0470260

LocCode	Date	Top of Casing mAHD	Water Depth mbTOC	Water Level mAHD
D20	23/08/2017	929.09	17.4	911.69
D20	28/09/2017	929.09	17.4	911.69
D20	25/10/2017	929.09	17.3	911.79
D20	22/11/2017	929.09	17.4	911.69
D20	13/12/2017	929.09	17.3	911.79
D20	24/01/2018	929.09	17.4	911.69
D20	21/02/2018	929.09	17.4	911.69
D20	21/03/2018	929.09	17.3	911.79
D20	27/04/2018	929.09	17.5	911.59
D20	24/05/2018	929.09	17.7	911.39
D20	27/06/2018	929.09	17.6	911.49
D20	25/07/2018	929.09	17.8	911.29
D20	22/08/2018	929.09	17.7	911.39
D23	23/08/2017	935.84	23.9	911.94
D23	28/09/2017	935.84	24.3	911.54
D23	25/10/2017	935.84	24.5	911.34
D23	22/11/2017	935.84	24.7	911.14
D23	13/12/2017	935.84	24.7	911.14
D23	24/01/2018	935.84	24.8	911.04
D23	21/02/2018	935.84	24.5	911.34
D23	21/03/2018	935.84	24	911.84
D23	26/04/2018	935.84	24.7	911.14
D23	23/05/2018	935.84	25.1	910.74
D23	27/06/2018	935.84	25	910.84
D23	25/07/2018	935.84	25.1	910.74
D23	22/08/2018	935.84	25.5	910.34

Annex G

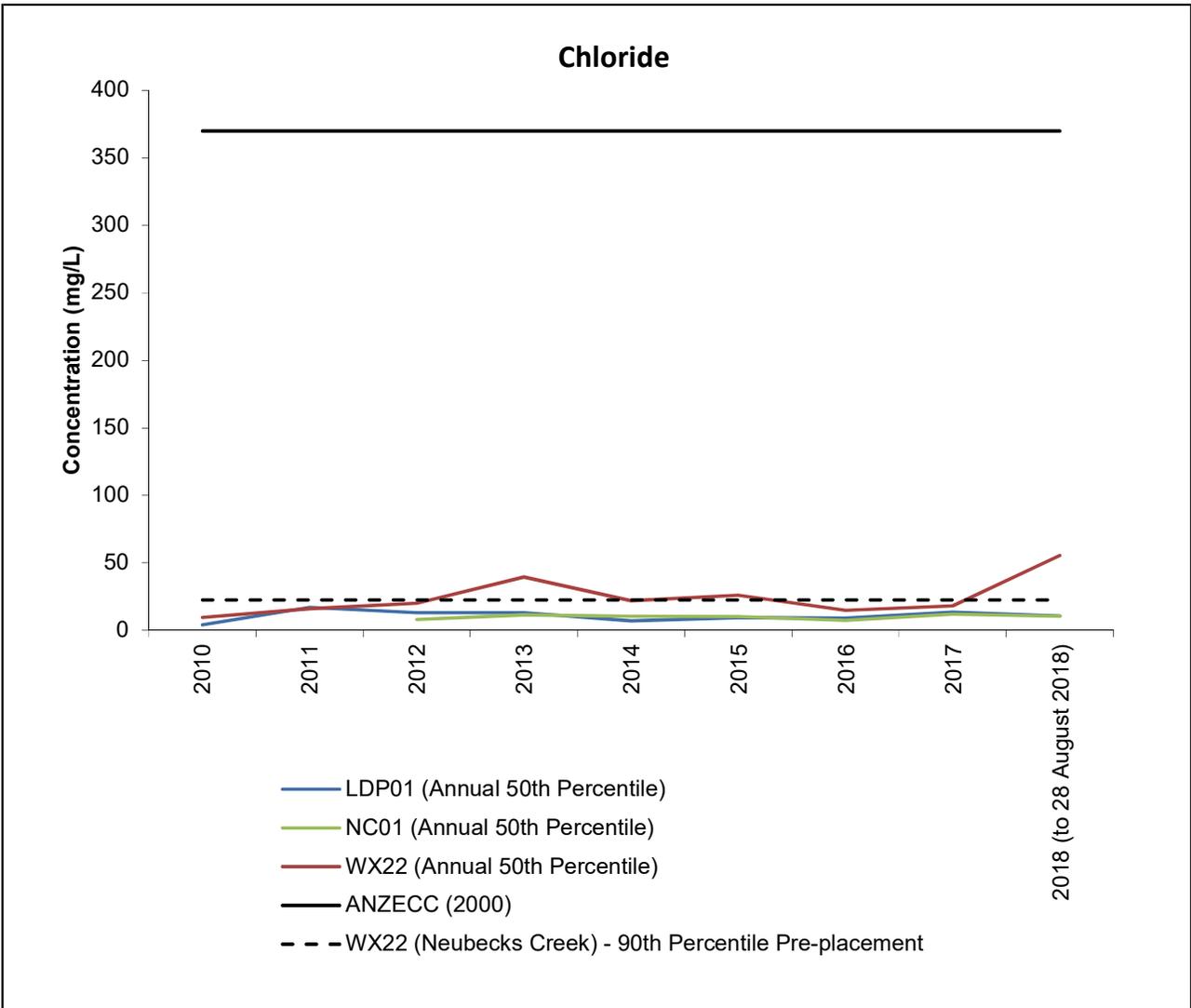
Trend Graphs - Surface Water



**Graph 1a - Chloride Concentrations
(Surface Water)**

Date: Oct 18	Drawn:
Scale:	Chk'd:
Original:	Rev:
File Reference: 470260	

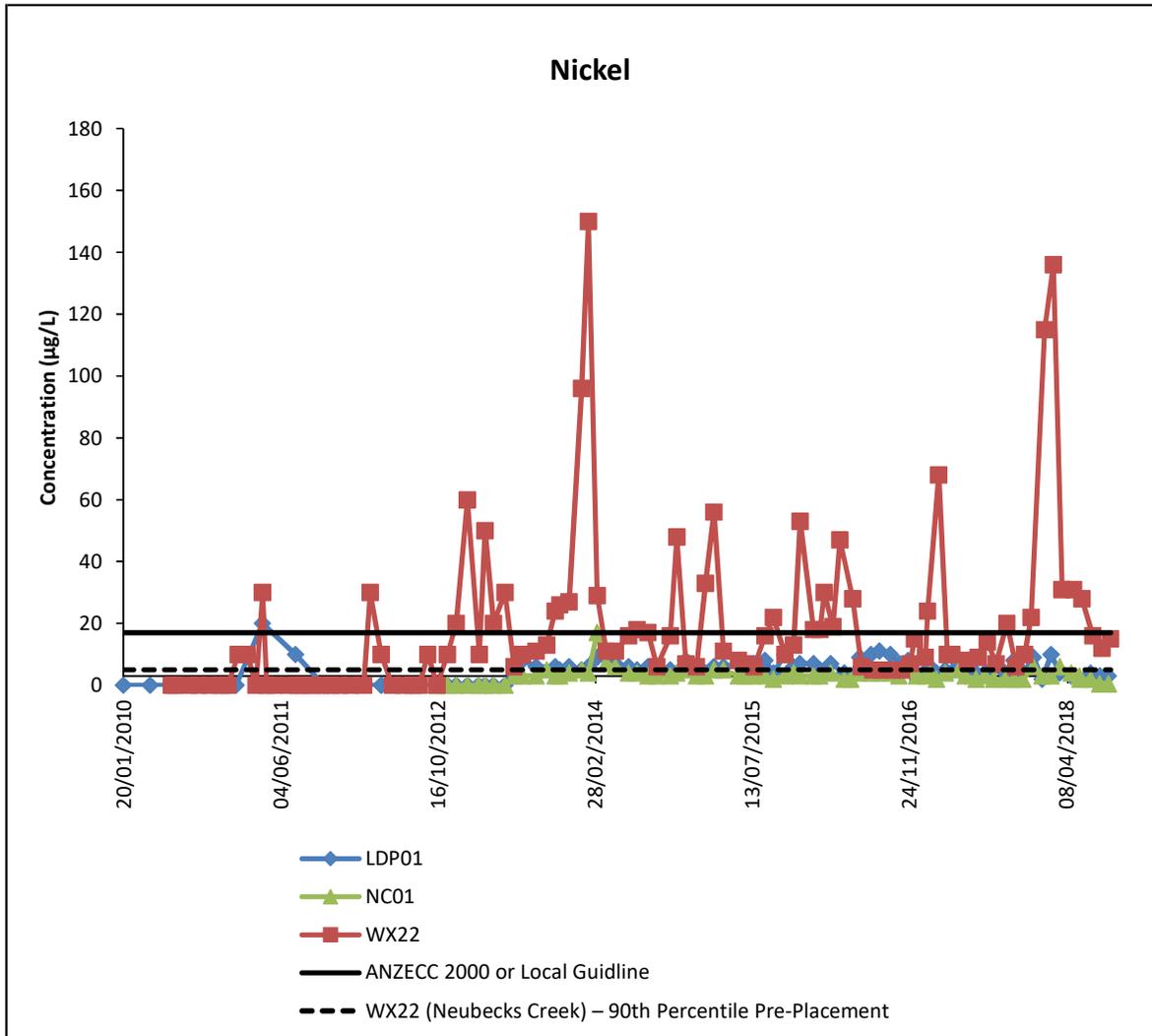




**Graph 1b - Chloride Concentrations
(Surface Water - 50th Percentile)**

Date: Oct 18	Drawn:
Scale:	Chk'd:
Original:	Rev:
File Reference: 470260	

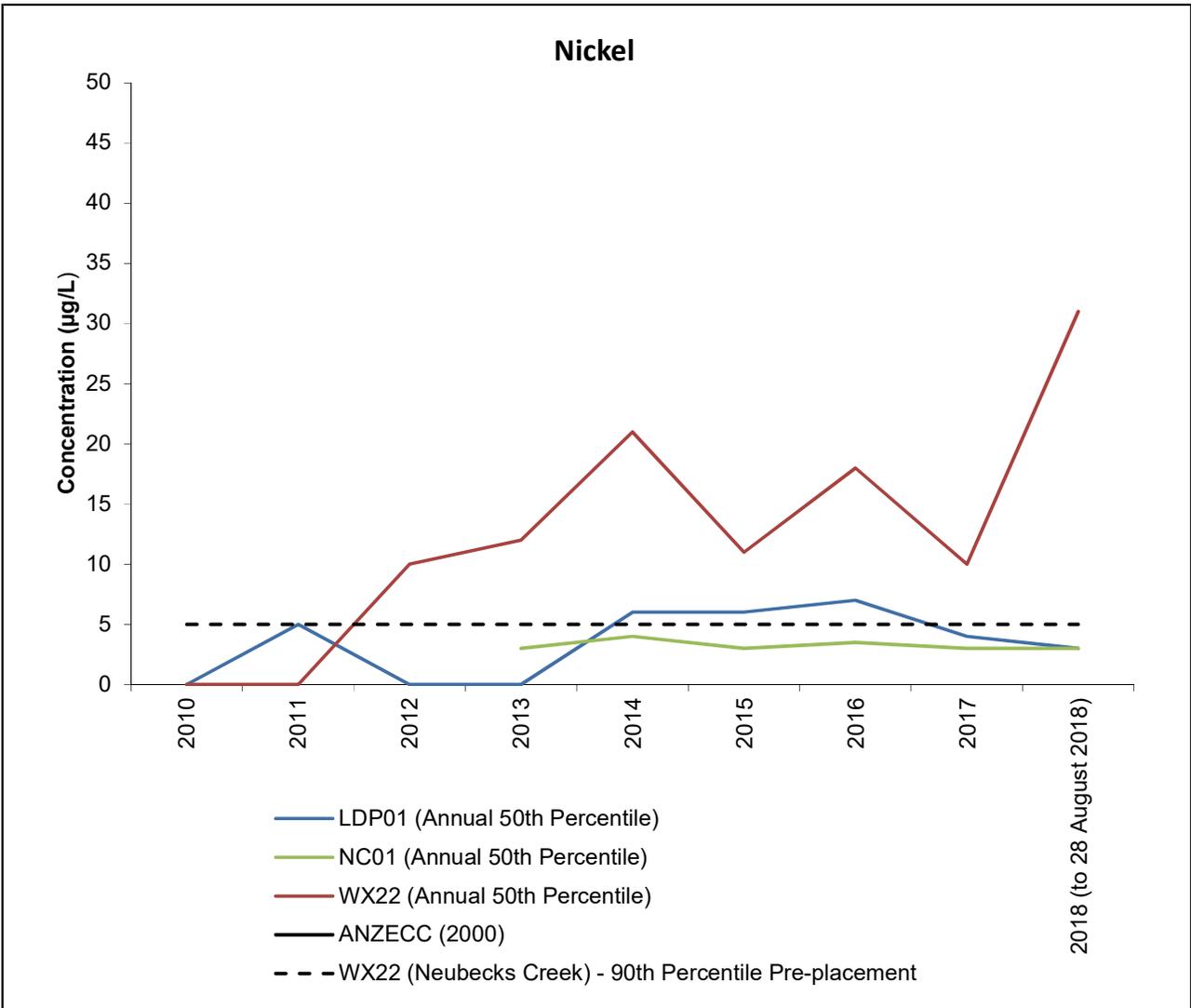




**Graph 2a - Nickel Concentrations
(Surface Water)**

Date: Oct 18	Drawn:
Scale:	Chk'd:
Original:	Rev:
File Reference: 470260	

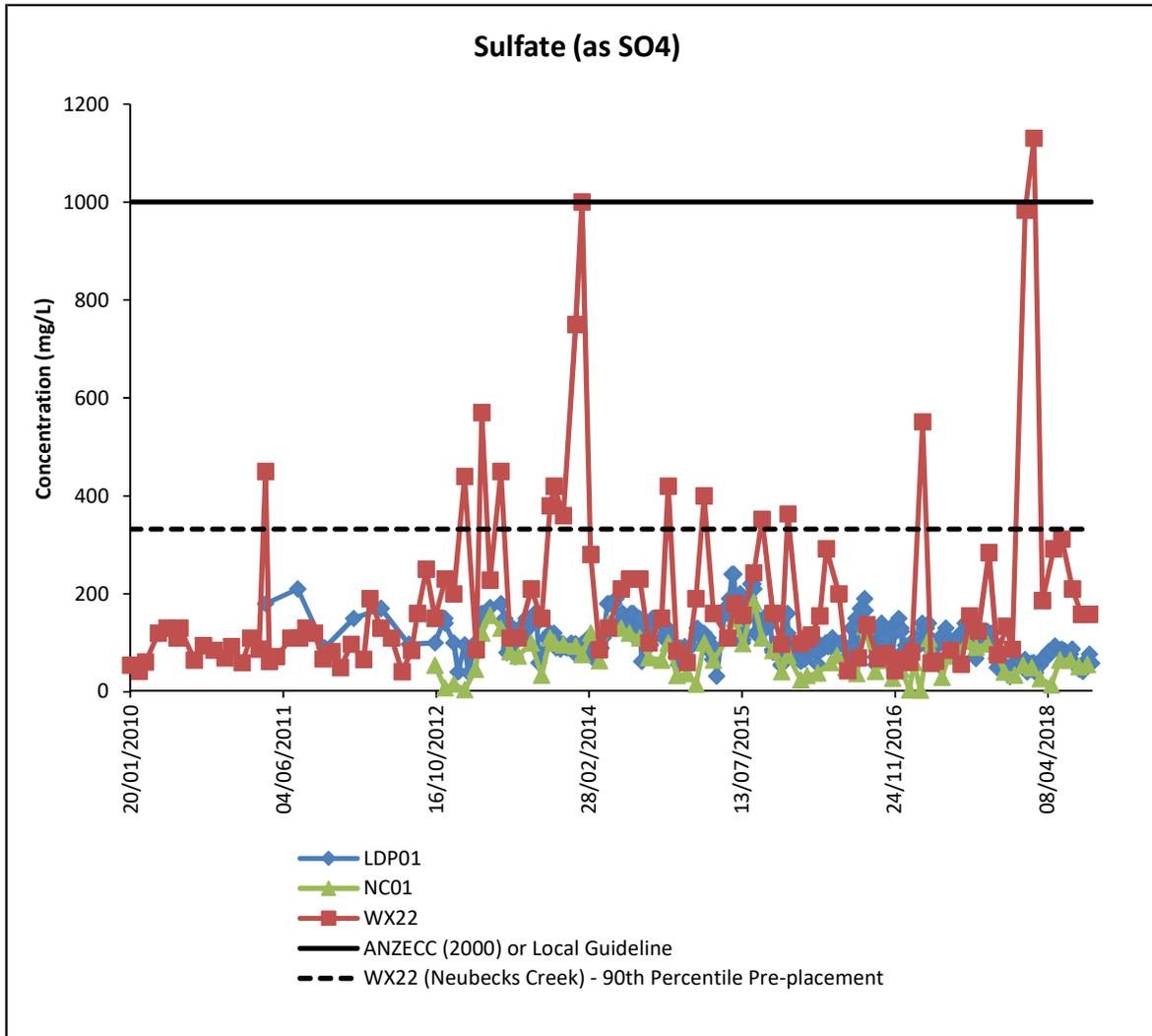




Graph 2b - Nickel Concentrations
 (Surface Water - 50th Percentile)

Date: Oct 18	Drawn:
Scale:	Chk'd:
Original:	Rev:
File Reference: 470260	



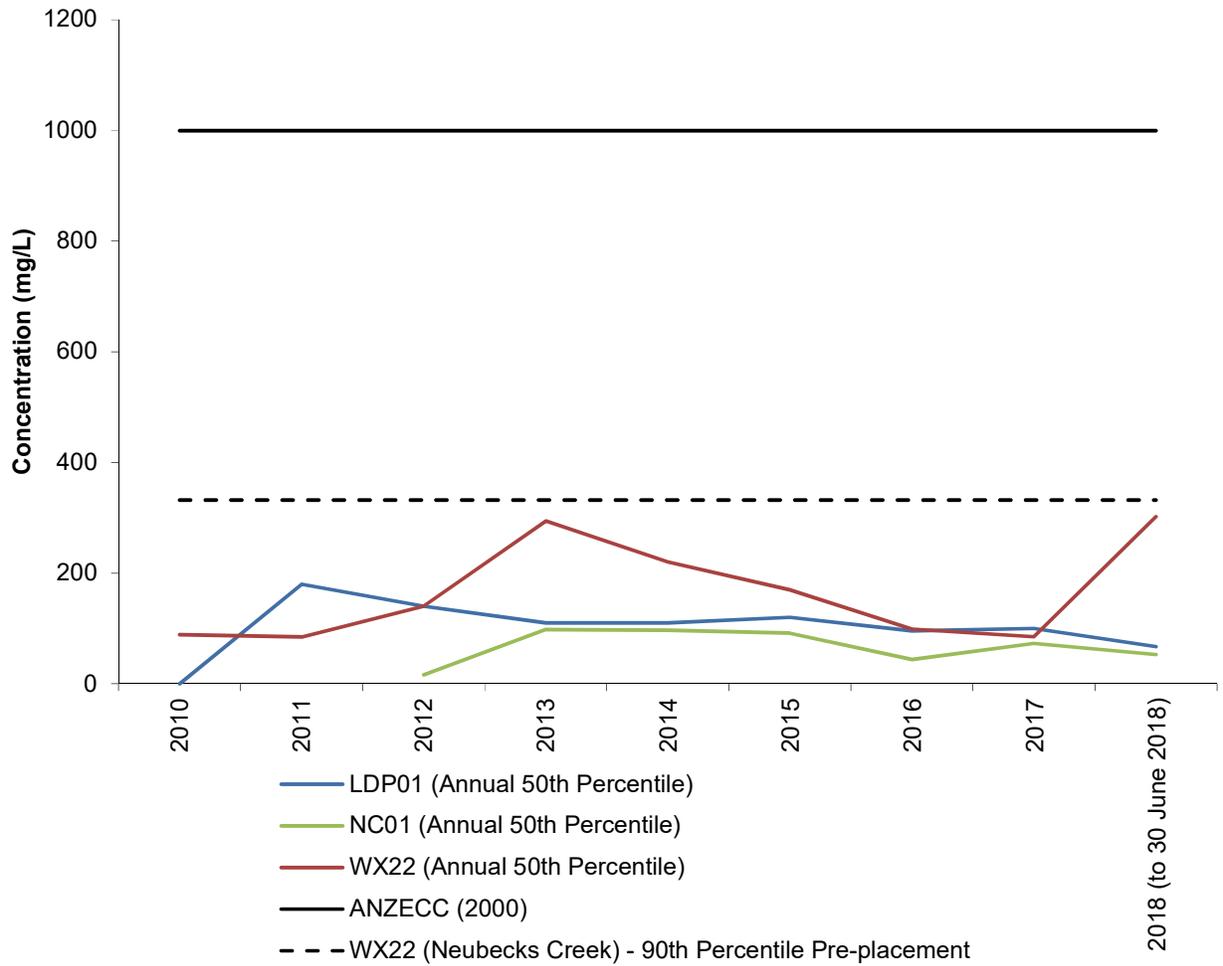


Graph 3a - Sulfate Concentrations
(Surface Water)

Date:	Oct 18	Drawn:	
Scale:		Chk'd:	
Original:		Rev:	
File Reference:	470260		

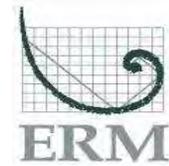


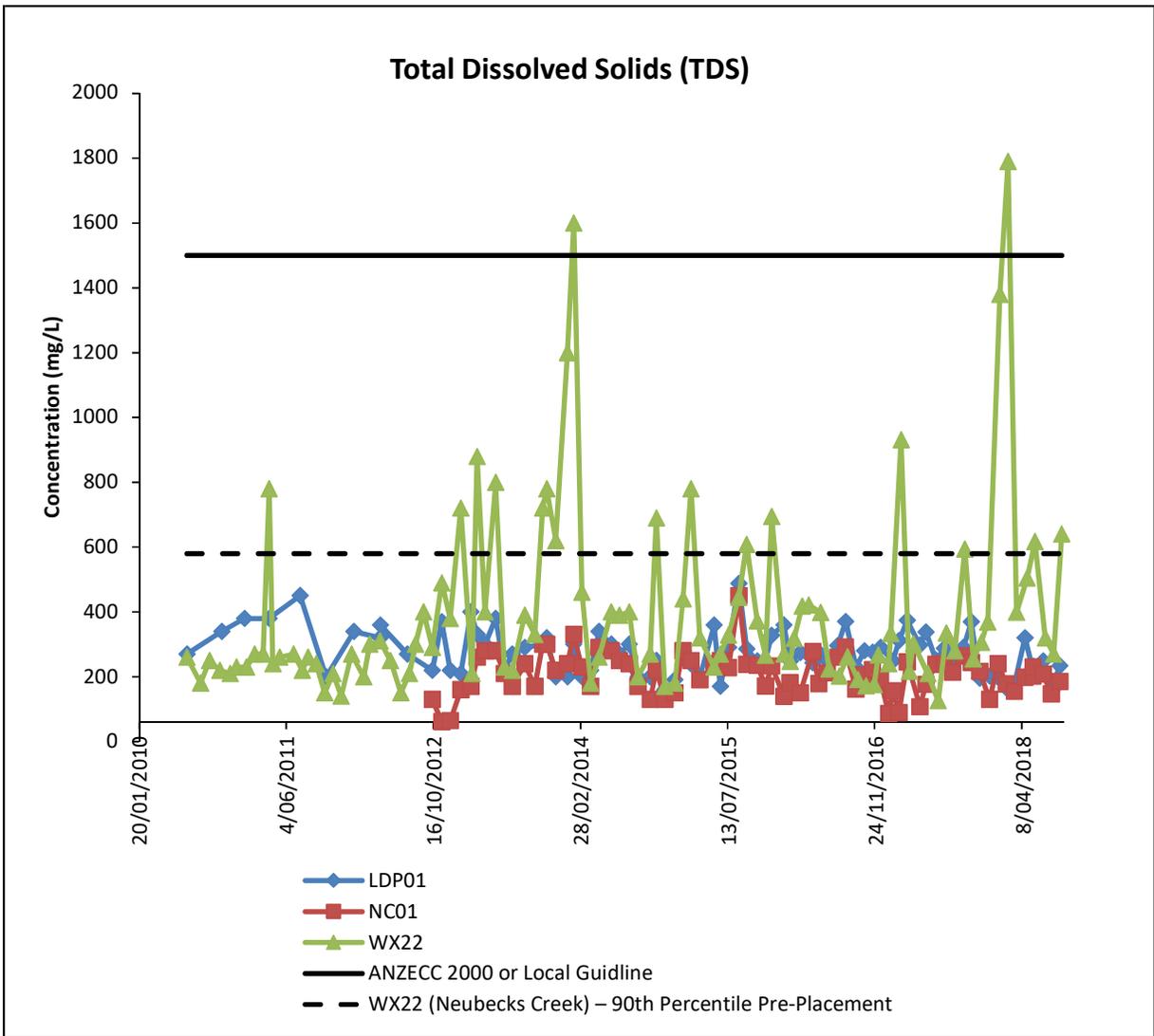
Sulfate



**Graph 3b - Sulphate Concentrations
(Surface Water) - 50th Percentile**

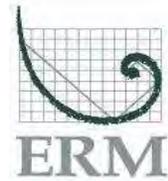
Date: Aug 18	Drawn:
Scale:	Chk'd:
Original:	Rev:
File Reference: 470260	



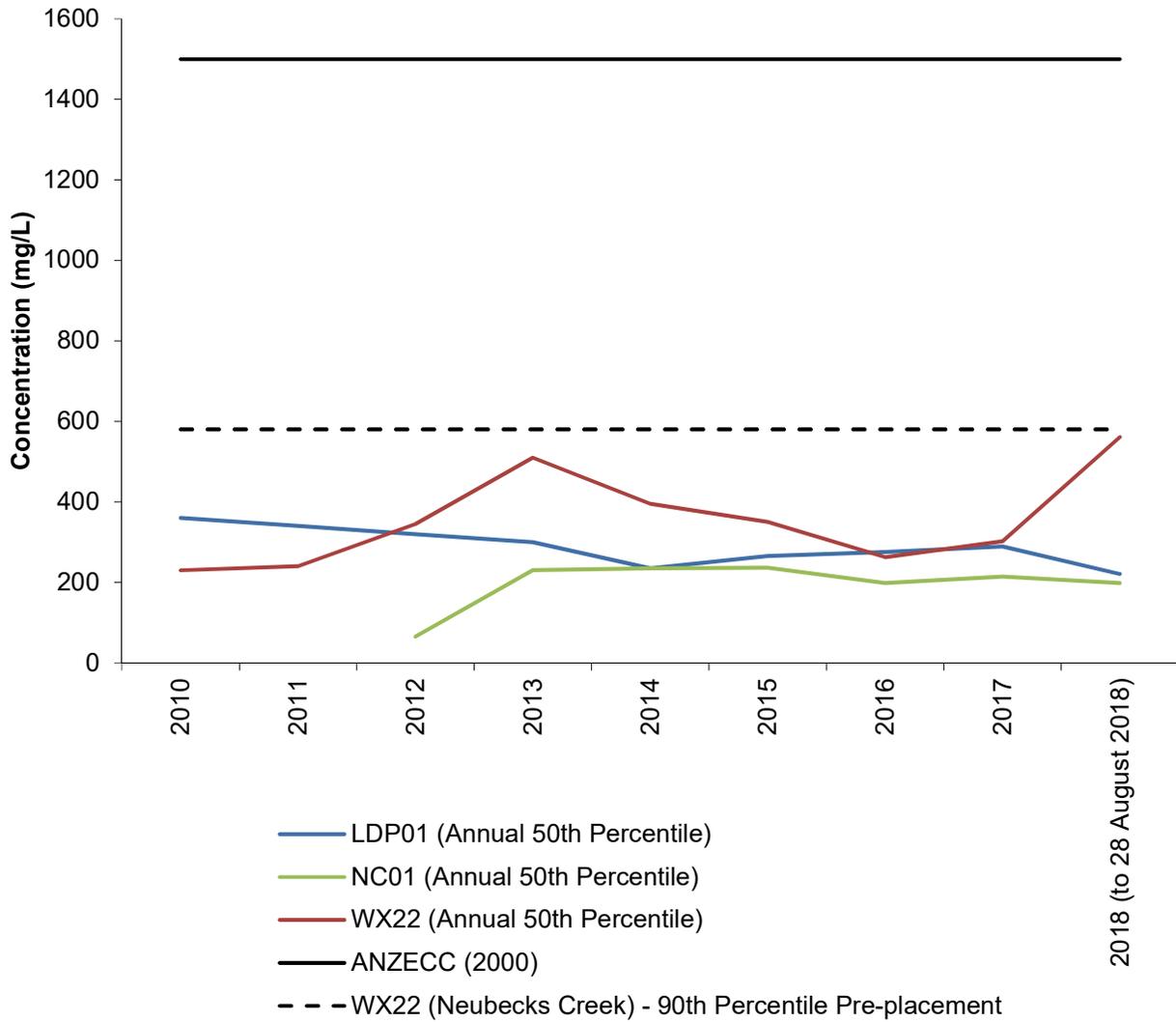


**Graph 4a - Total Dissolved Solids (TDS)
Concentrations (Surface Water)**

Date:	Oct 18	Drawn:
Scale:		Chk'd:
Original:		Rev:
File Reference:	470260	

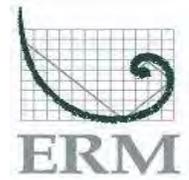


Total Dissolved Solids (TDS)

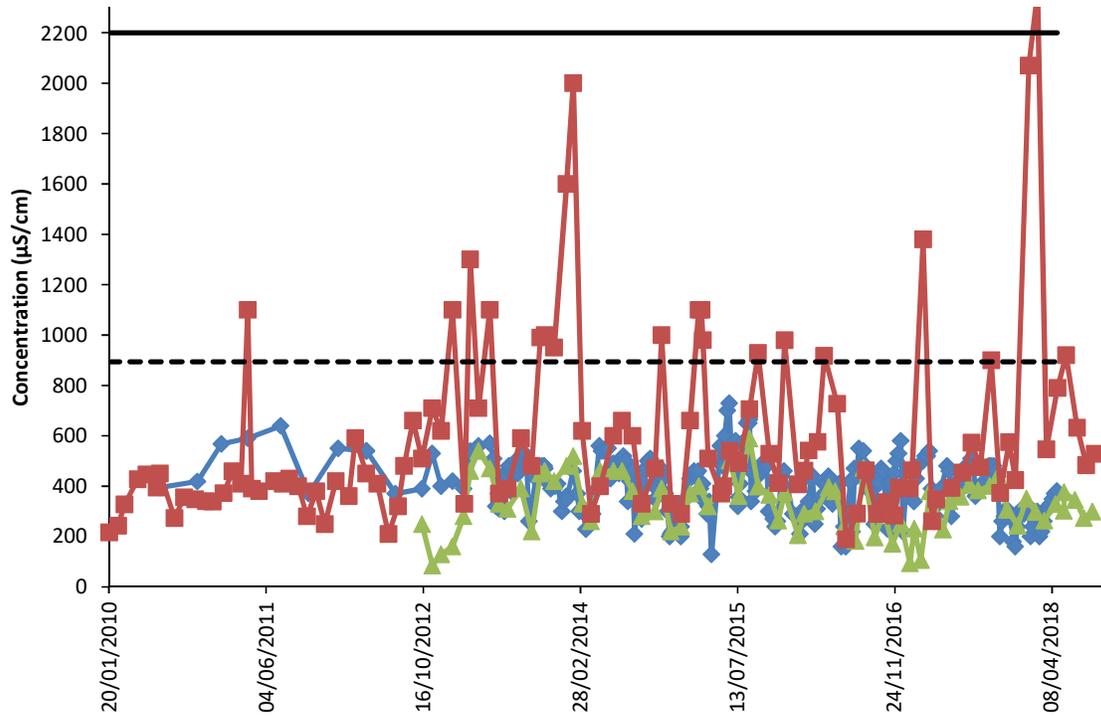


**Graph 4b - Total Dissolved Solids Concentrations
(Surface Water - 50th Percentile)**

Date: Oct 18	Drawn:
Scale:	Chk'd:
Original:	Rev:
File Reference: 470260	



Electrical Conductivity



Note:
 Electrical conductivity (laboratory):
 21 January 2010 - 16 September 2015

Electrical conductivity (field):
 25 August 2015 - 23 August 2018

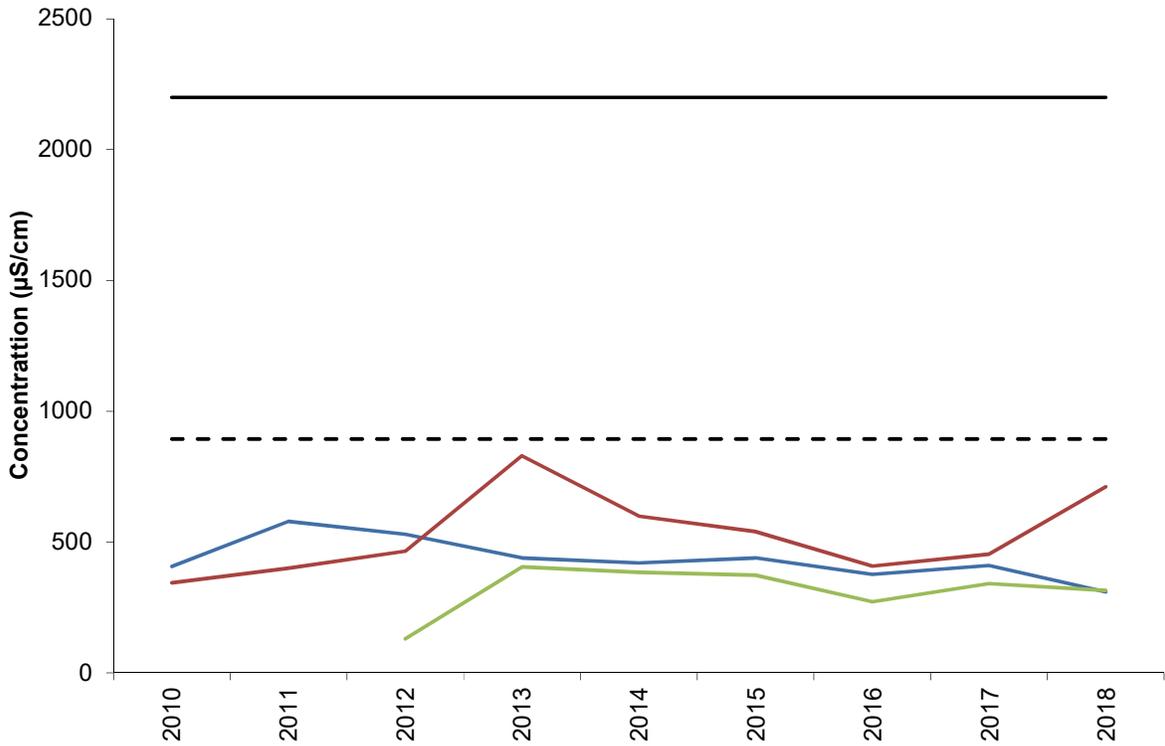
- ◆ LDP01
- ▲ NCO1
- WX22
- ANZECC 2000 or Local Guideline
- WX22 (Neubecks Creek) – 90th Percentile Pre-Placement

**Graph 5a - Electrical Conductivity
 (Surface Water)**

Date: Oct 18	Drawn:
Scale:	Chk'd:
Original:	Rev:
File Reference: 470260	



Electrical Conductivity



Note:

Electrical conductivity (laboratory):

LMP01: 20 January 2010 - 19 April 2018

NC01: 12 January 2012 - 20 August 2015

WX22: 21 January 2010 - 20 August 2015

Electrical conductivity (field):

LMP01: 19 April 2018 - 28 August 2018

NC01: 16 September 2015 - 28 August 2018

— LDP01 (Annual 50th Percentile)

— NC01 (Annual 50th Percentile)

— WX22 (Annual 50th Percentile)

— ANZECC (2000)

- - - WX22 (Neubecks Creek) - 90th Percentile Pre-placement

Graph 5b - Electrical Conductivity Concentrations
(Surface Water - 50th Percentile)

Date: Oct 18	Drawn:
Scale:	Chk'd:
Original:	Rev:
File Reference: 470260	

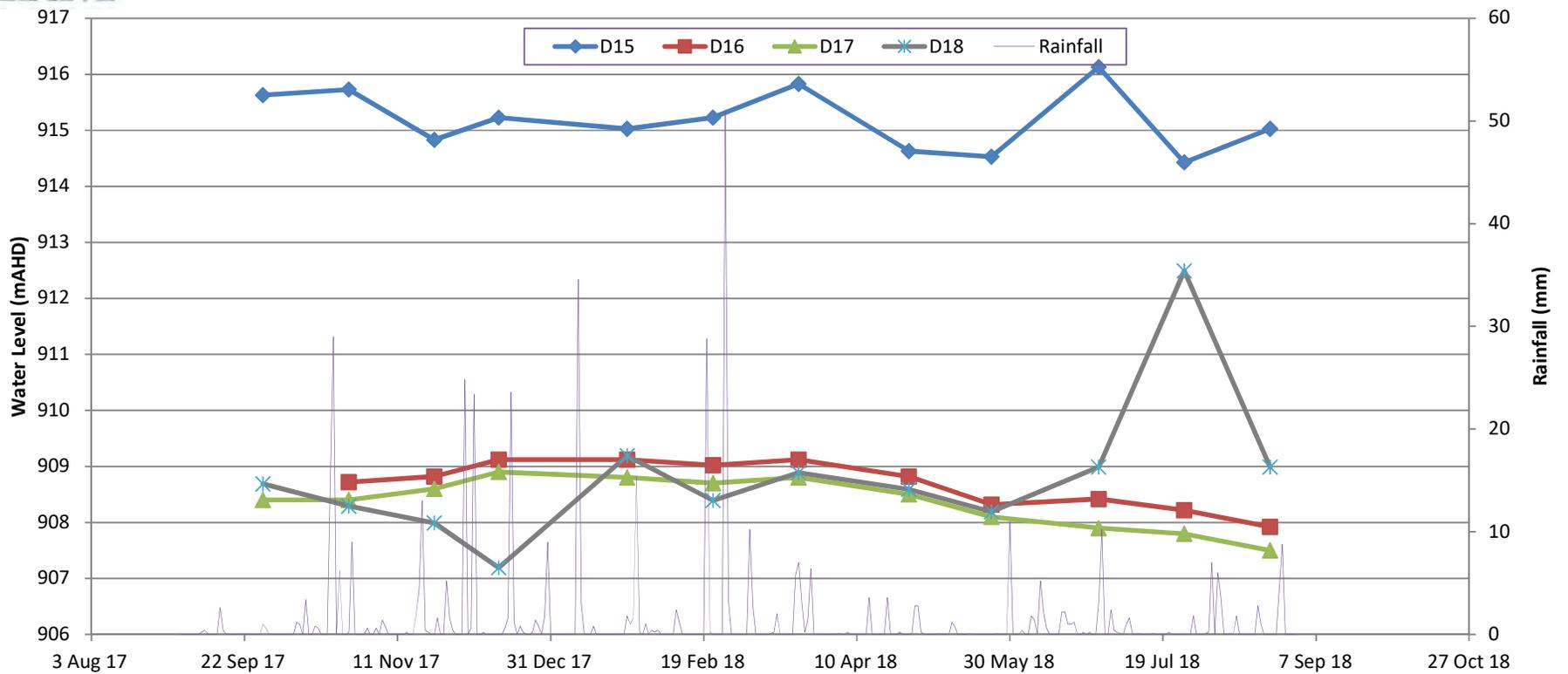


Annex H

Trend Graphs - Groundwater

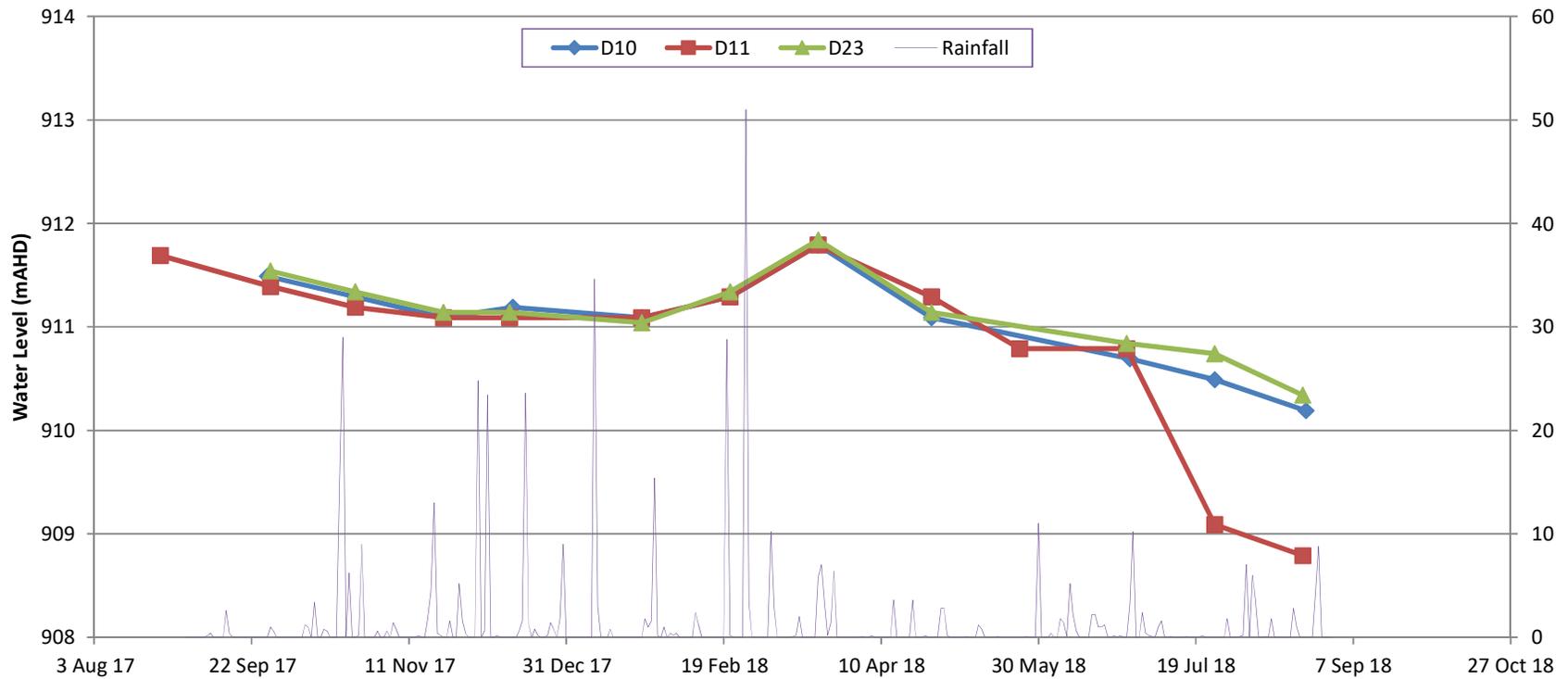


Graph 1. Water Level Over Time - South and Cross Gradient
Lamberts North
Annual Report September 2017 to August 2018 - 0470260

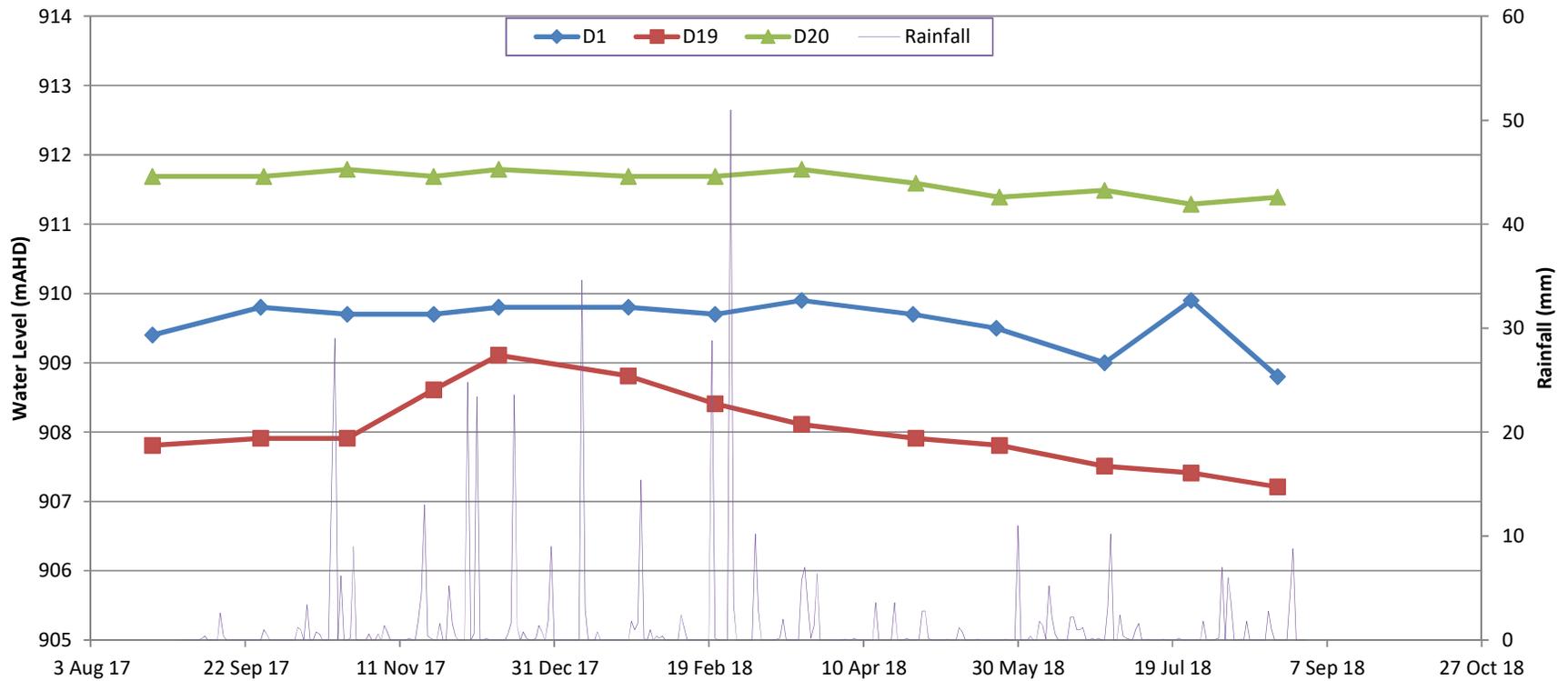




Graph 2. Water Level Over Time - Adjacent and Up Gradient
Lamberts North
Annual Report September 2017 to August 2018 - 0470260

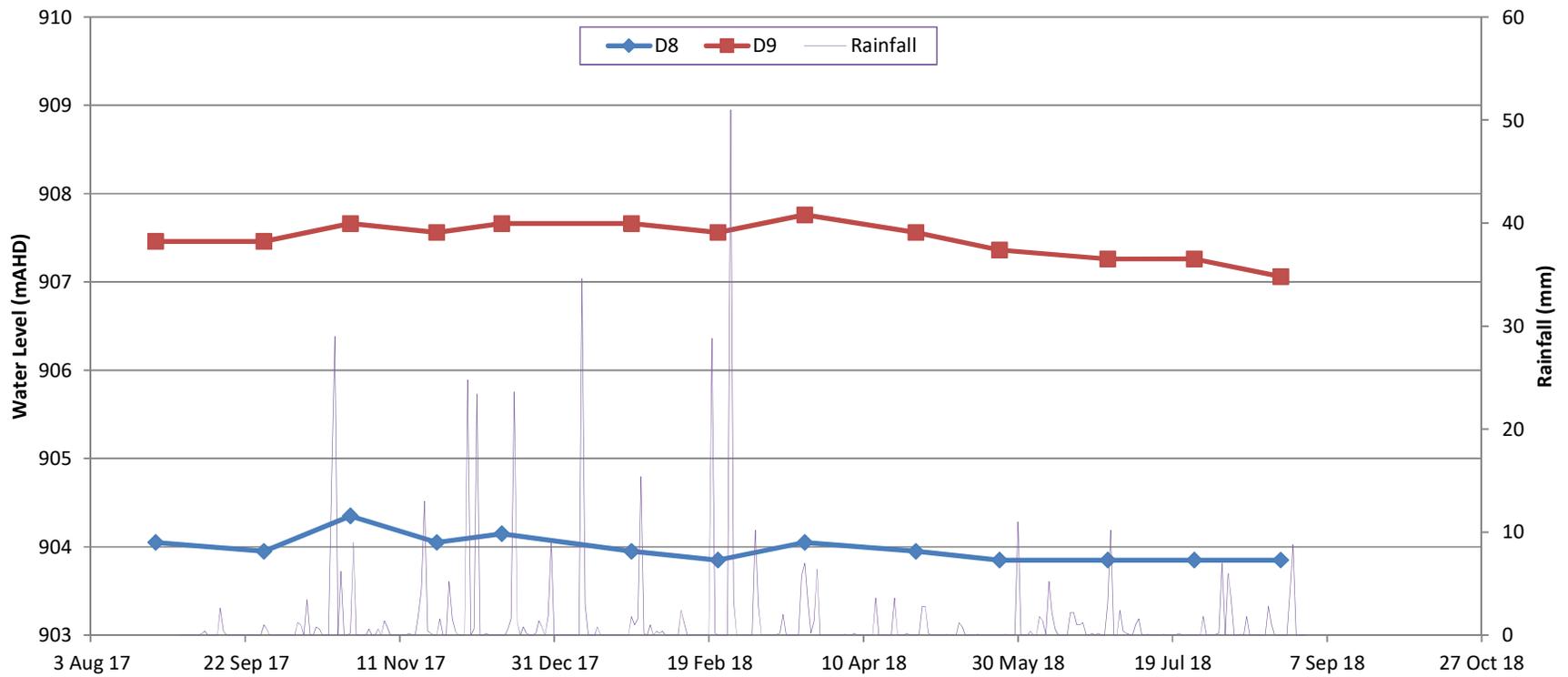


Graph 3. Water Level Over Time - Boundary
Lamberts North
Annual Report September 2017 to August 2018 - 0470260

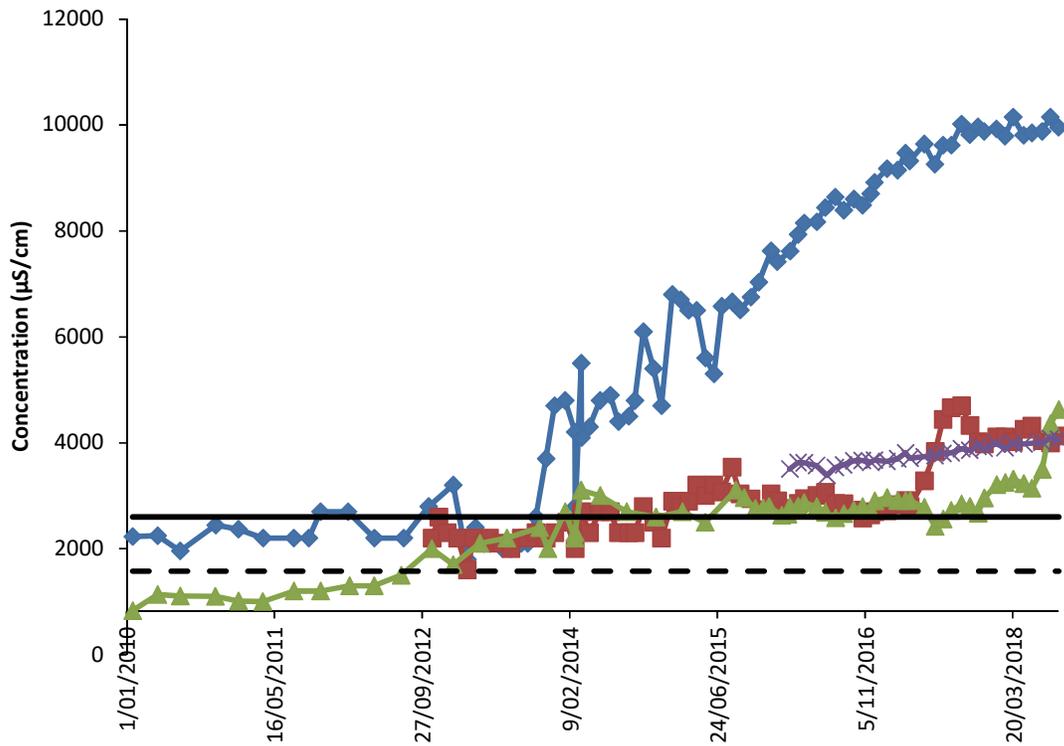




Graph 4. Water Level Over Time - Adjacent Neubecks
Lamberts North
Annual Report September 2017 to August 2018 - 0470260



Electrical Conductivity



Note:

Electrical conductivity (laboratory):
21 January 2010 - 26 August 2015

Electrical conductivity (field):
25 August 2015 - 23 August 2018

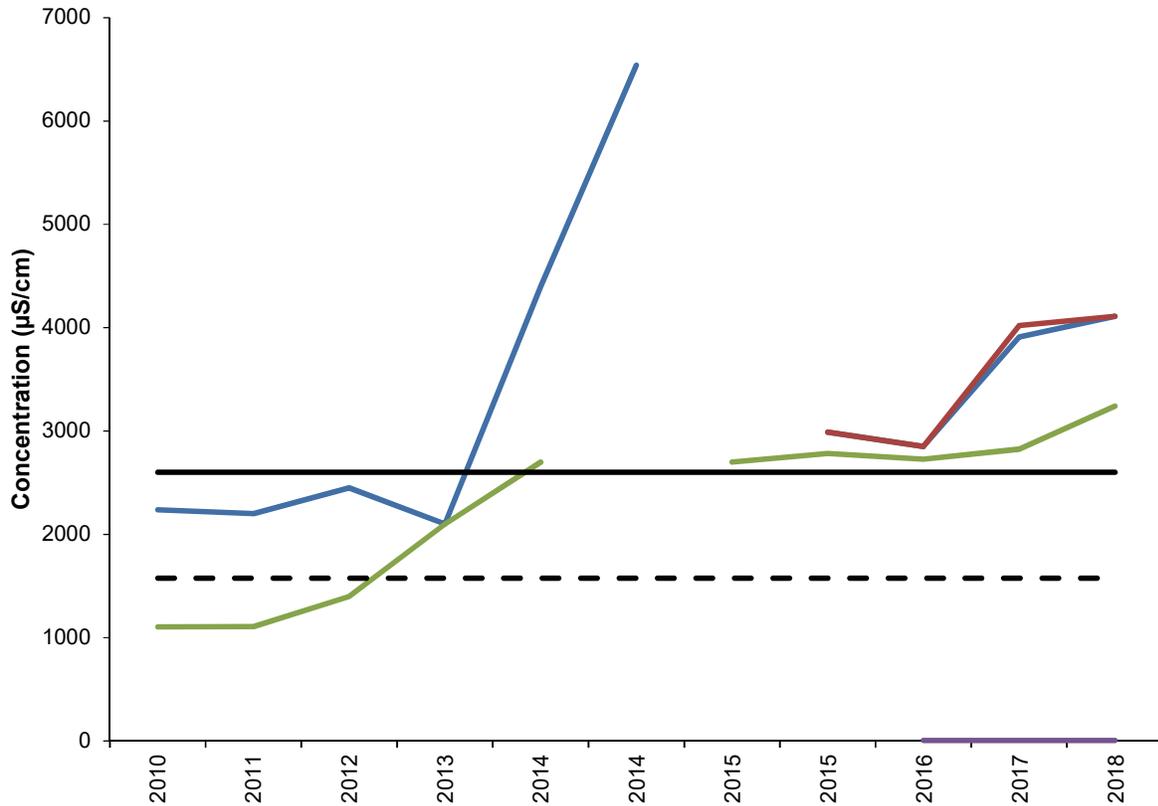
- ◆ D11 (Adjacent Mt Piper AR. Up-gradient of Lamberts North)
- D15 (South/Cross Gradient of Ash Repository)
- ▲ D9 (South of Neubecks Creek)
- ✕ D20 (Boundary of Ash Repository)
- ANZECC (2000)
- - - Groundwater Collection Basin - 90th Percentile Pre-Placement

**Graph 1a - Electrical Conductivity
(Groundwater)**

Date:	Oct 18	Drawn:	
Scale:		Chk'd:	
Original:		Rev:	
File Reference:	470260		



Electrical Conductivity



Note:
Electrical conductivity (laboratory): 21 - January 2010 - 23 September 2015
Electrical conductivity (field): 29 September 2015 - 28 August 2018

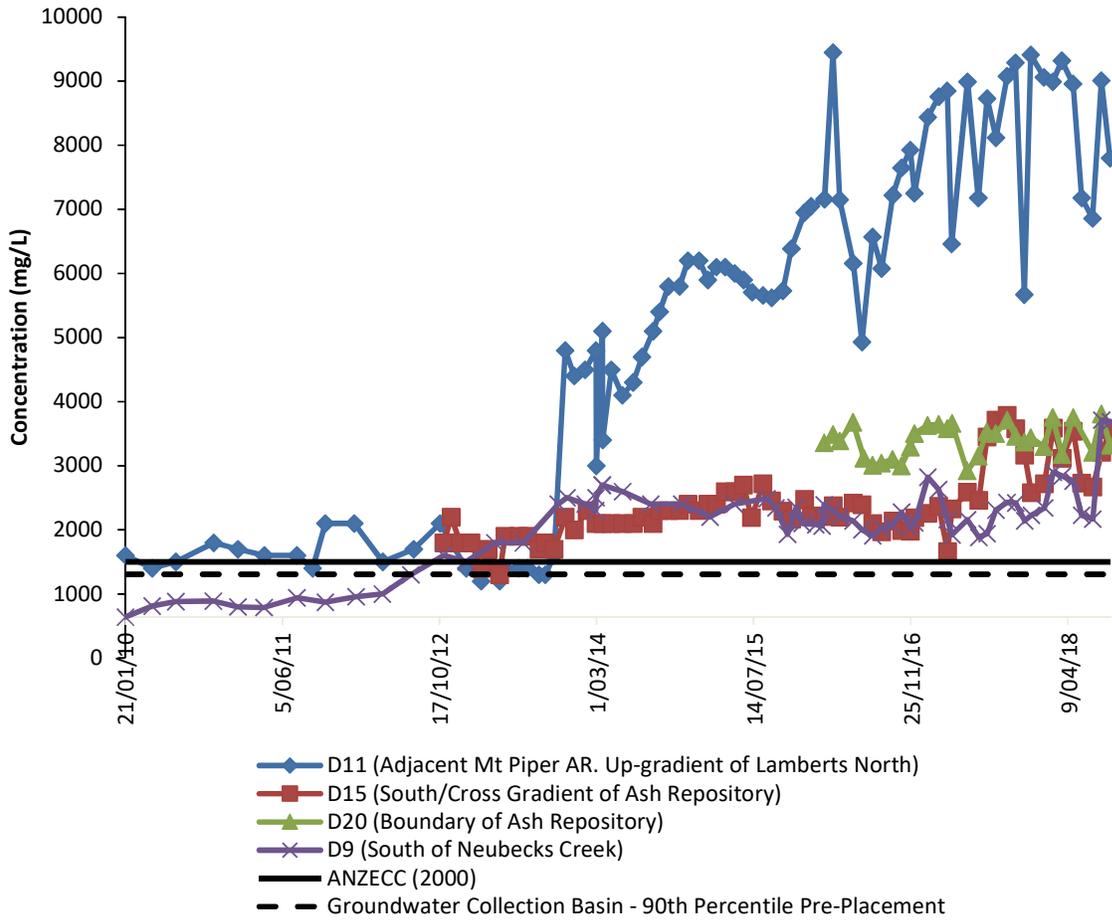
- D11 (Adjacent Mt Piper AR. Up-gradient of Lamberts North) - Annual 50th Percentile
- D15 (South/Cross Gradient of Ash Repository) - Annual 50th Percentile
- D9 (South of Neubecks Creek) - Annual 50th Percentile
- D20 (Boundary of Ash Repository) - Annual 50th Percentile
- ANZECC (2000)
- - Groundwater Collection Basin - 90th Percentile Pre-Placement

Graph 1b - Electrical Conductivity
50th percentile

Date:	Oct 18	Drawn:	
Scale:		Chk'd:	
Original:		Rev:	
File Reference:	470260		



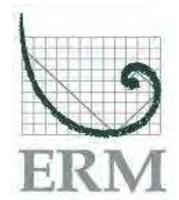
Total Dissolved Solids (TDS)



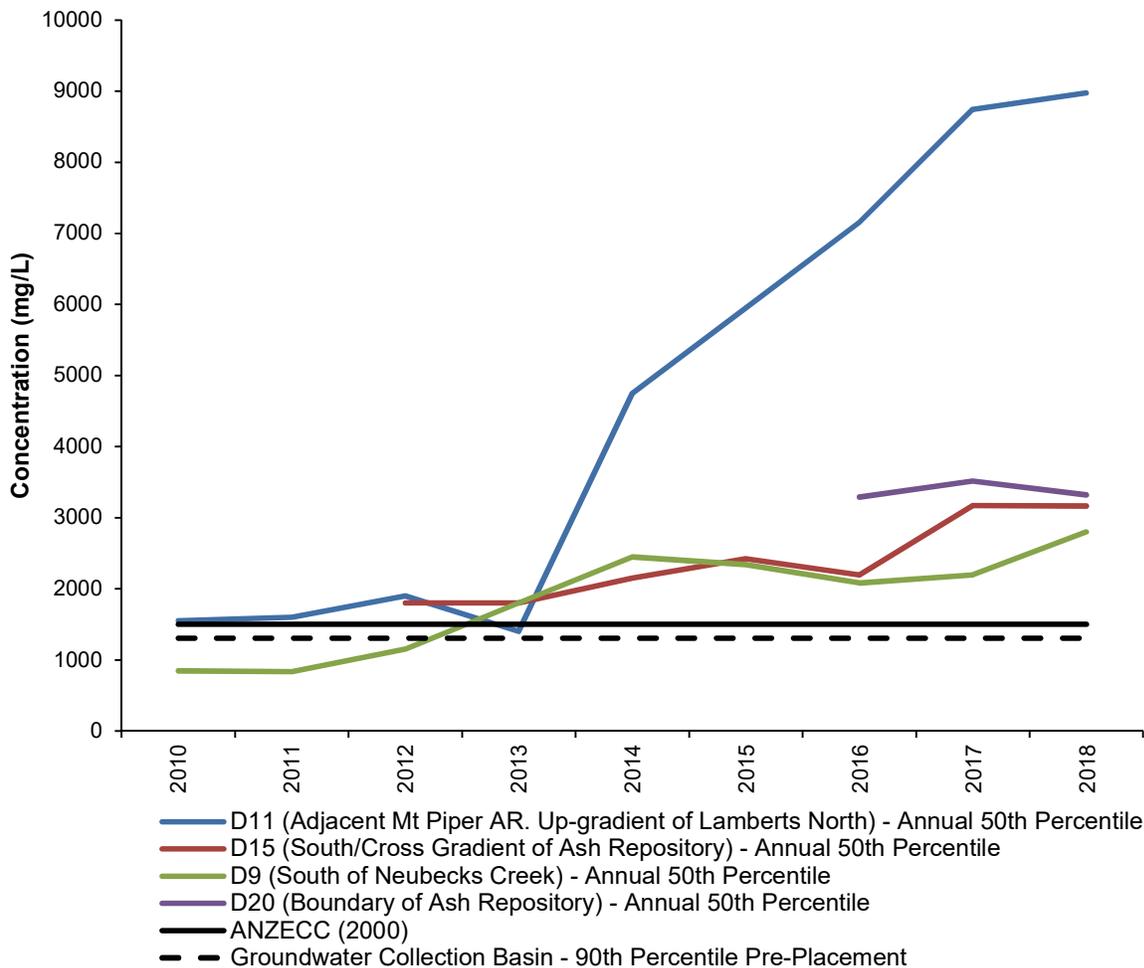
Graph 2a - TDS Concentrations
(Groundwater)

[Project_Name]

Date:	Oct 18	Drawn:	
Scale:		Chk'd:	
Original:		Rev:	
File Reference:	470260		



Total Dissolved Solids (TDS)

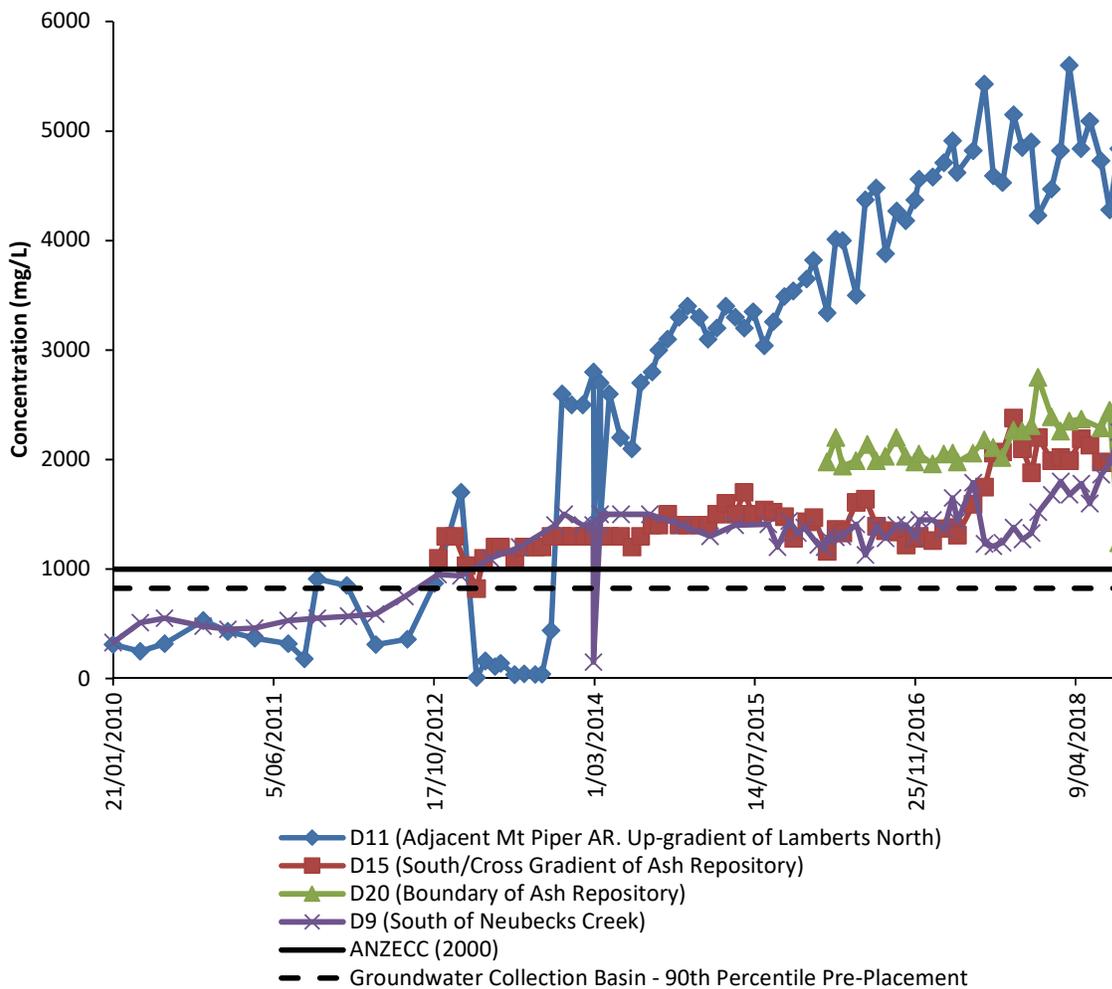


Graph 2b - TDS - 50th percentile

Date: Oct 18	Drawn:
Scale:	Chk'd:
Original:	Rev:
File Reference: 470260	



Sulfate (as SO4)

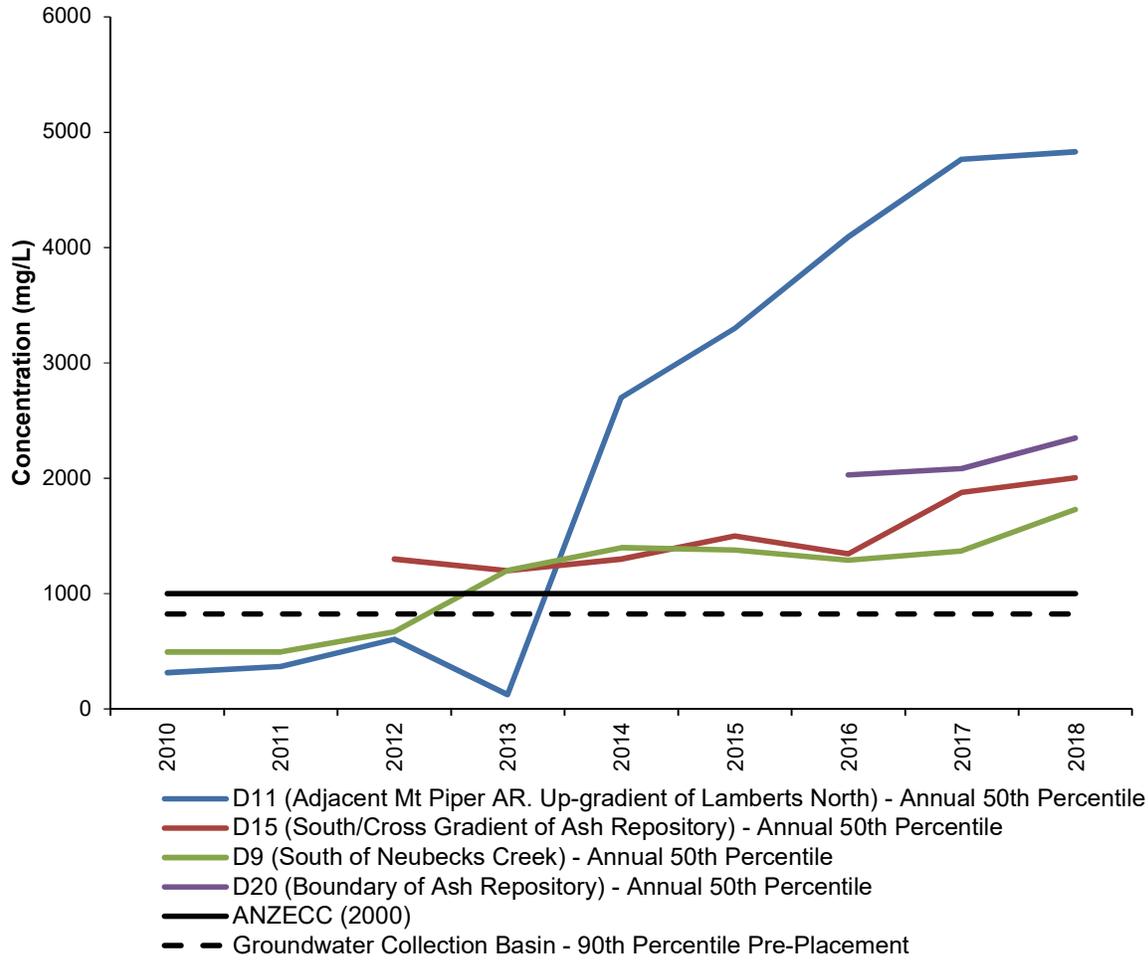


**Graph 3a - Sulfate Concentrations
(Groundwater)**

Date:	Oct 18	Drawn:
Scale:		Chk'd:
Original:		Rev:
File Reference:	470260	

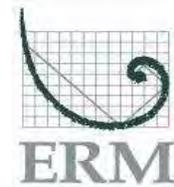


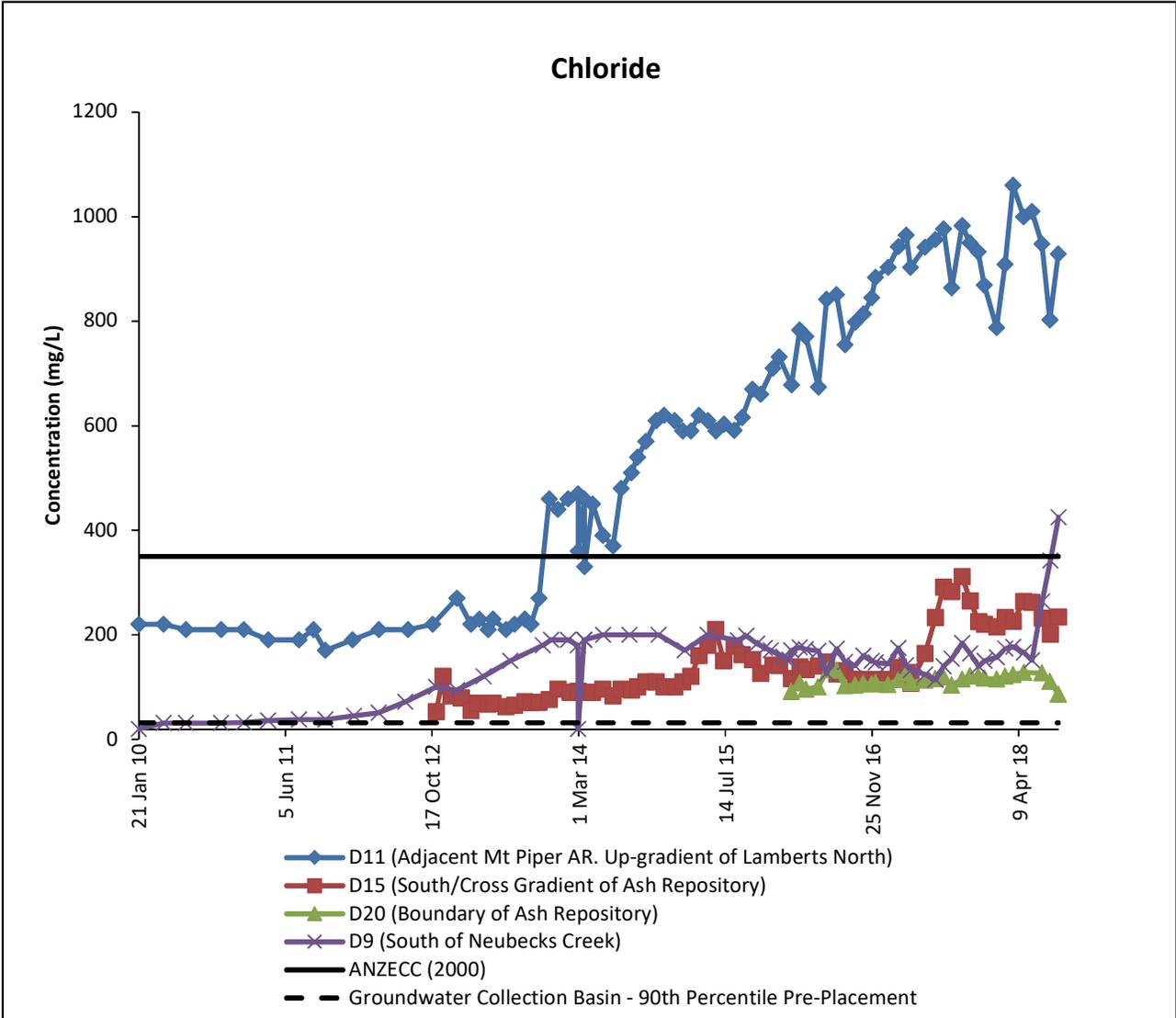
Sulfate



Graph 3b - Sulfate - 50th percentile

Date: Oct 18	Drawn:
Scale:	Chk'd:
Original:	Rev:
File Reference: 470260	



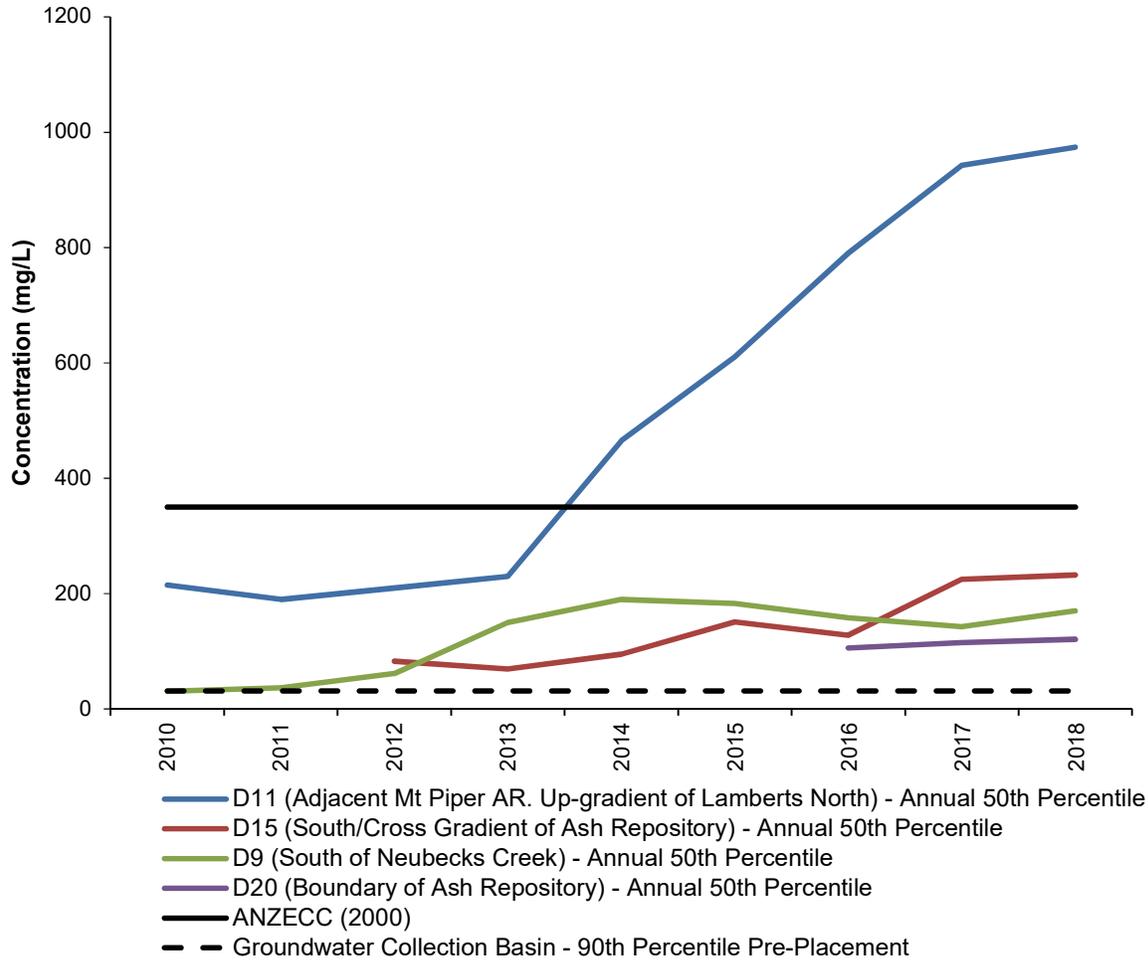


**Graph 4a - Chloride Concentrations
(Groundwater)**

Date:	Oct 18	Drawn:	
Scale:		Chk'd:	
Original:		Rev:	
File Reference:	470260		



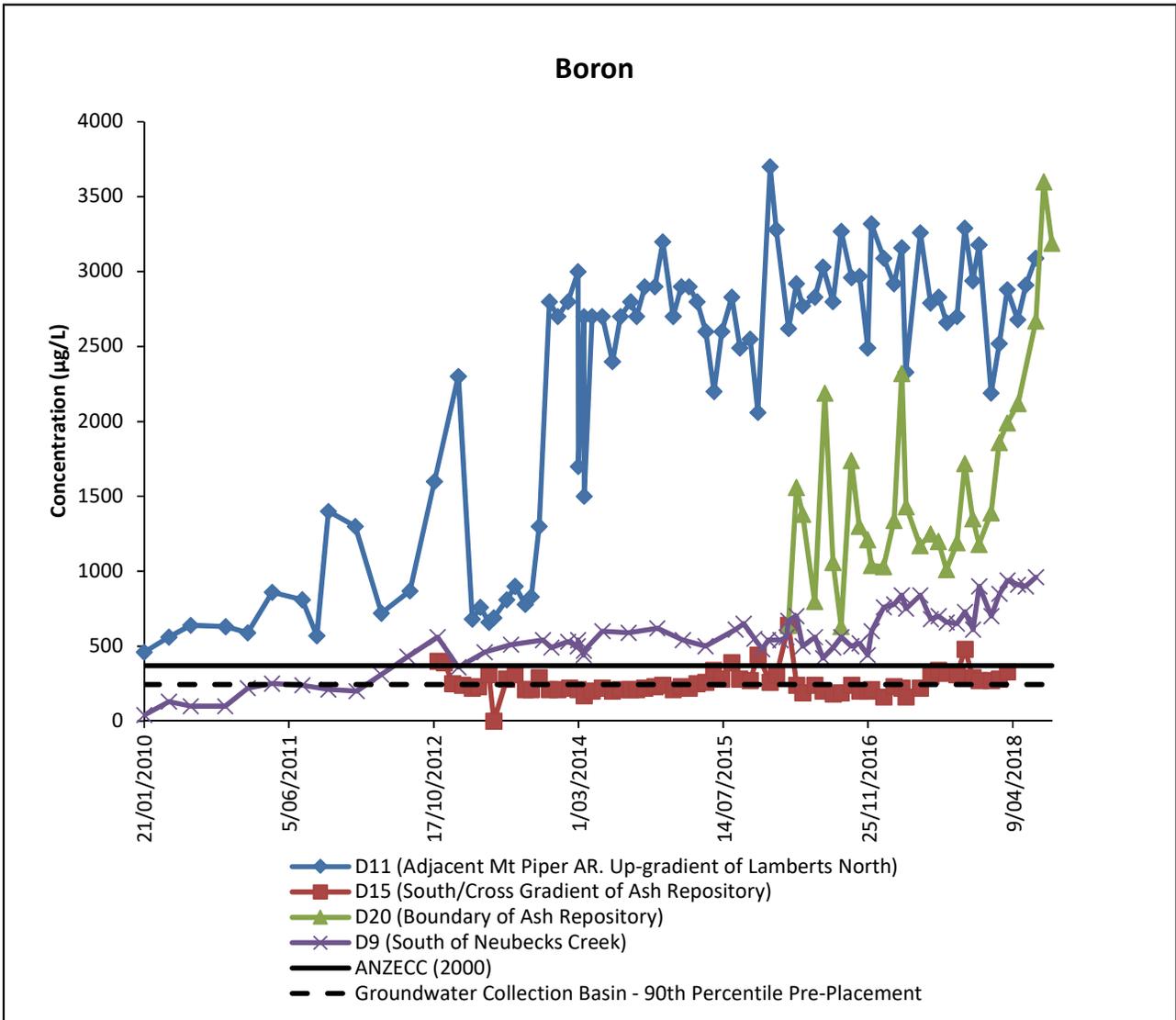
Chloride



Graph 4b - Chloride - 50th percentile

Date: Oct 18	Drawn:
Scale:	Chk'd:
Original:	Rev:
File Reference: 470260	



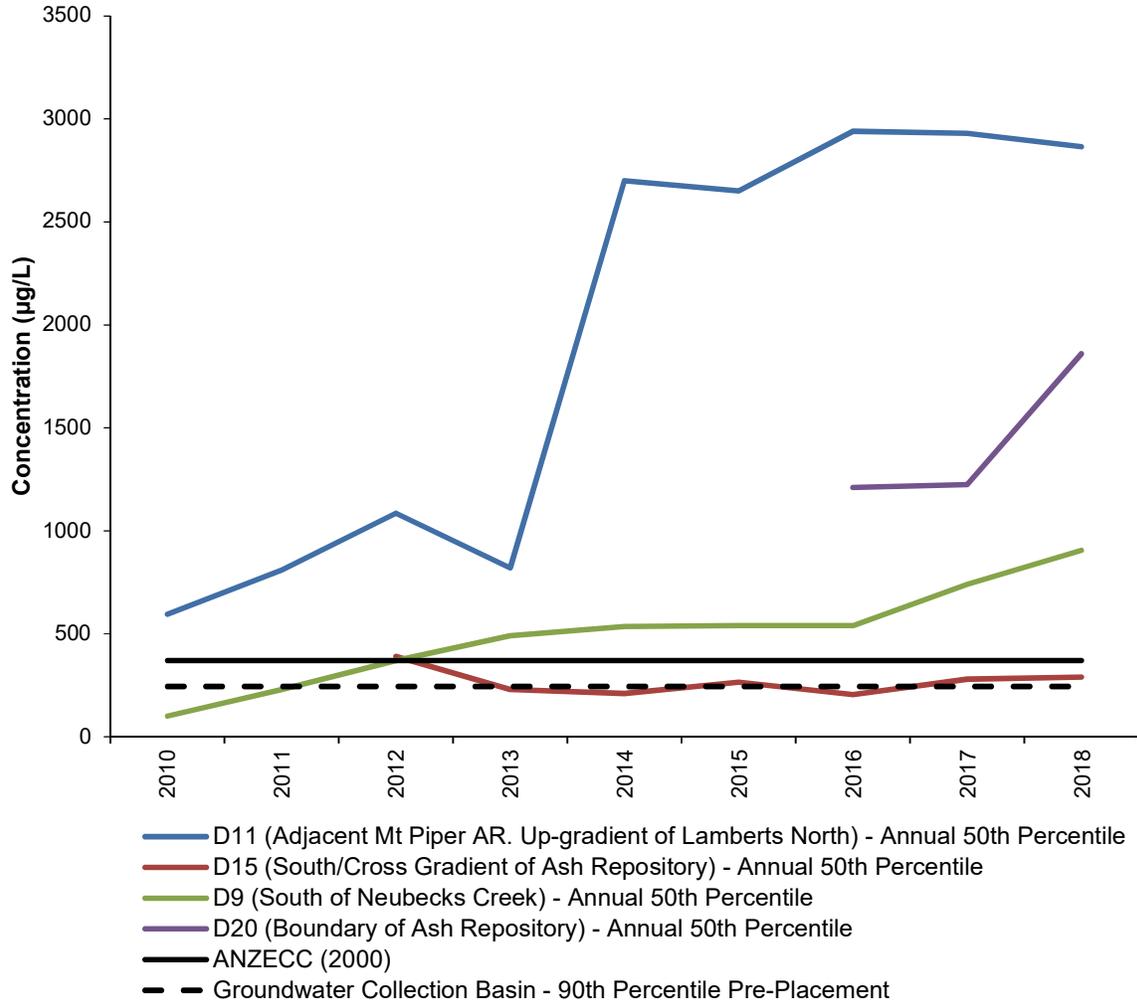


**Graph 5a - Boron Concentrations
(Groundwater)**

Date:	Oct 18	Drawn:	
Scale:		Chk'd:	
Original:		Rev:	
File Reference:	470260		



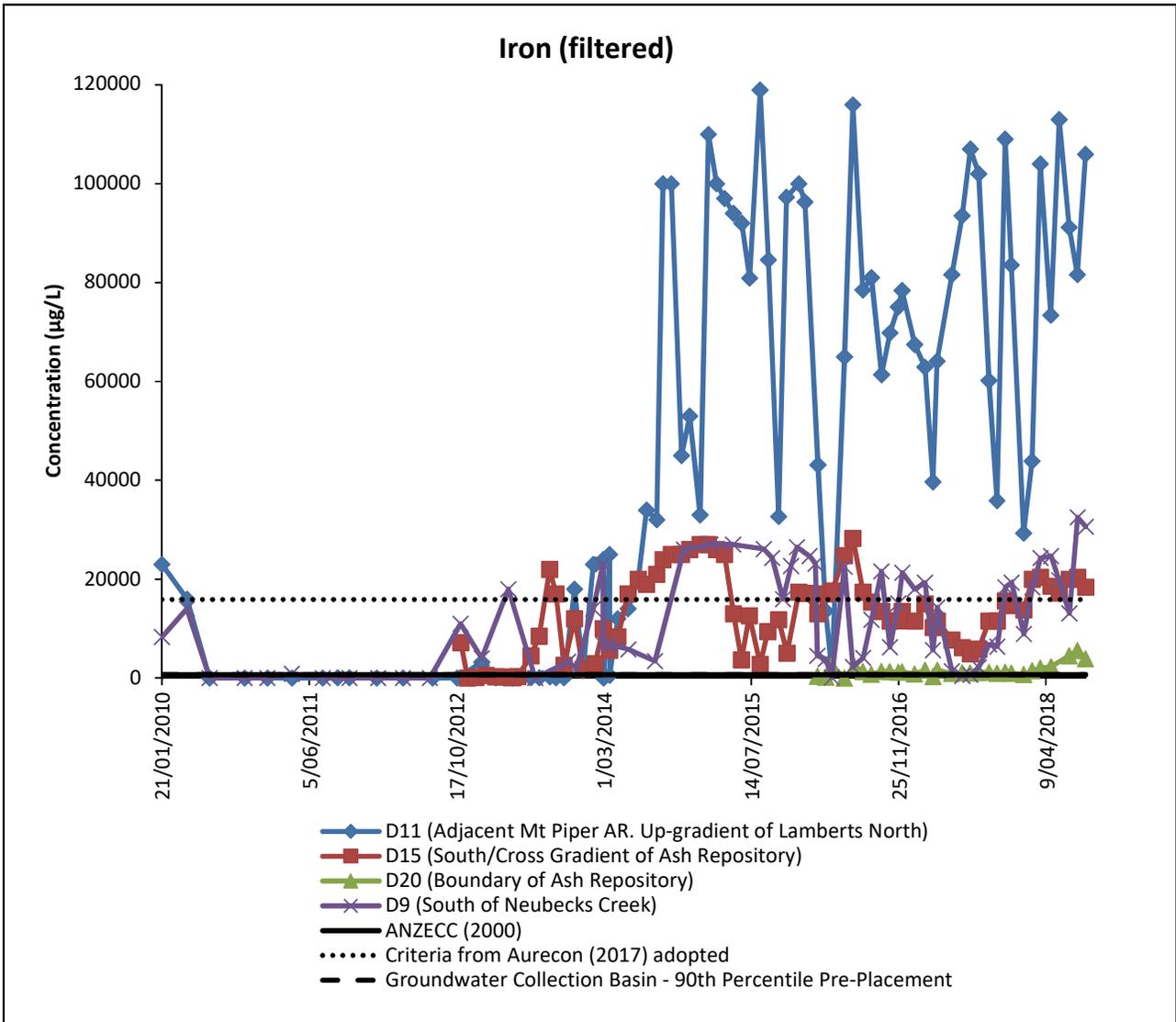
Boron



Graph 5b - Boron - 50th percentile

Date:	Oct 18	Drawn:	
Scale:		Chk'd:	
Original:		Rev:	
File Reference:	470260		



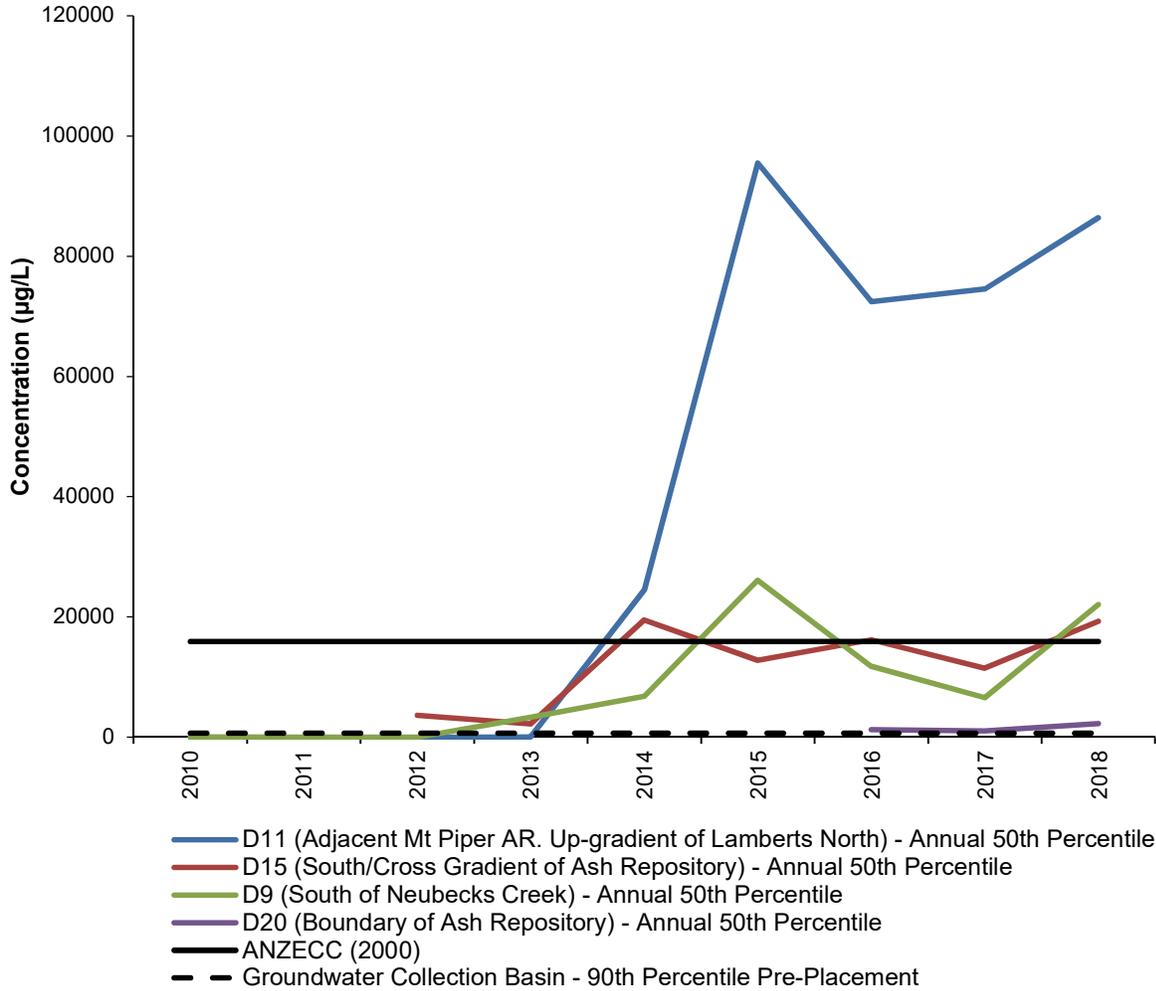


**Graph 6a - Iron Concentrations
(Groundwater)**

Date:	Oct 18	Drawn:	
Scale:		Chk'd:	
Original:		Rev:	
File Reference:	470260		



Iron (Filtered)

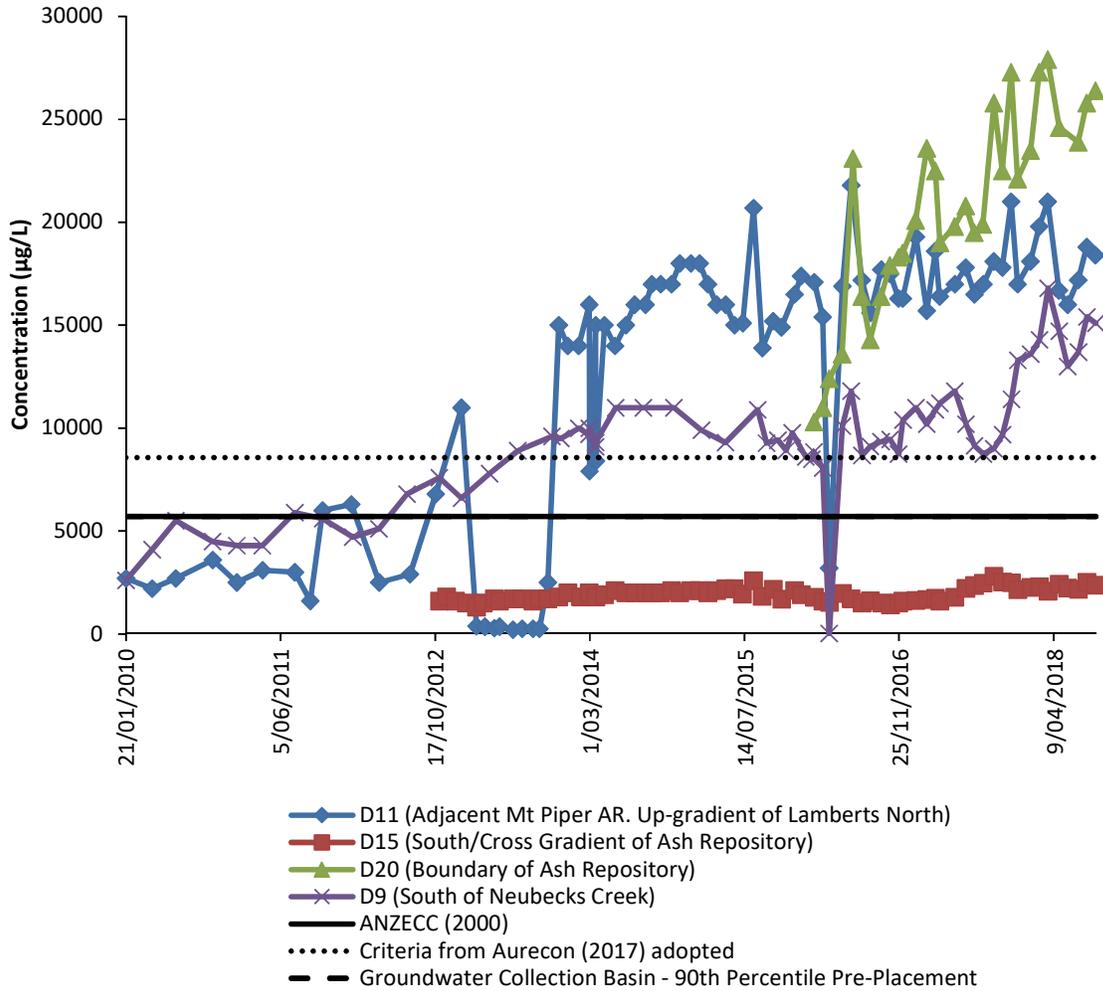


Graph 6b - Iron (filtered) - 50th percentile

Date: Oct 18	Drawn:
Scale:	Chk'd:
Original:	Rev:
File Reference: 470260	



Manganese (filtered)

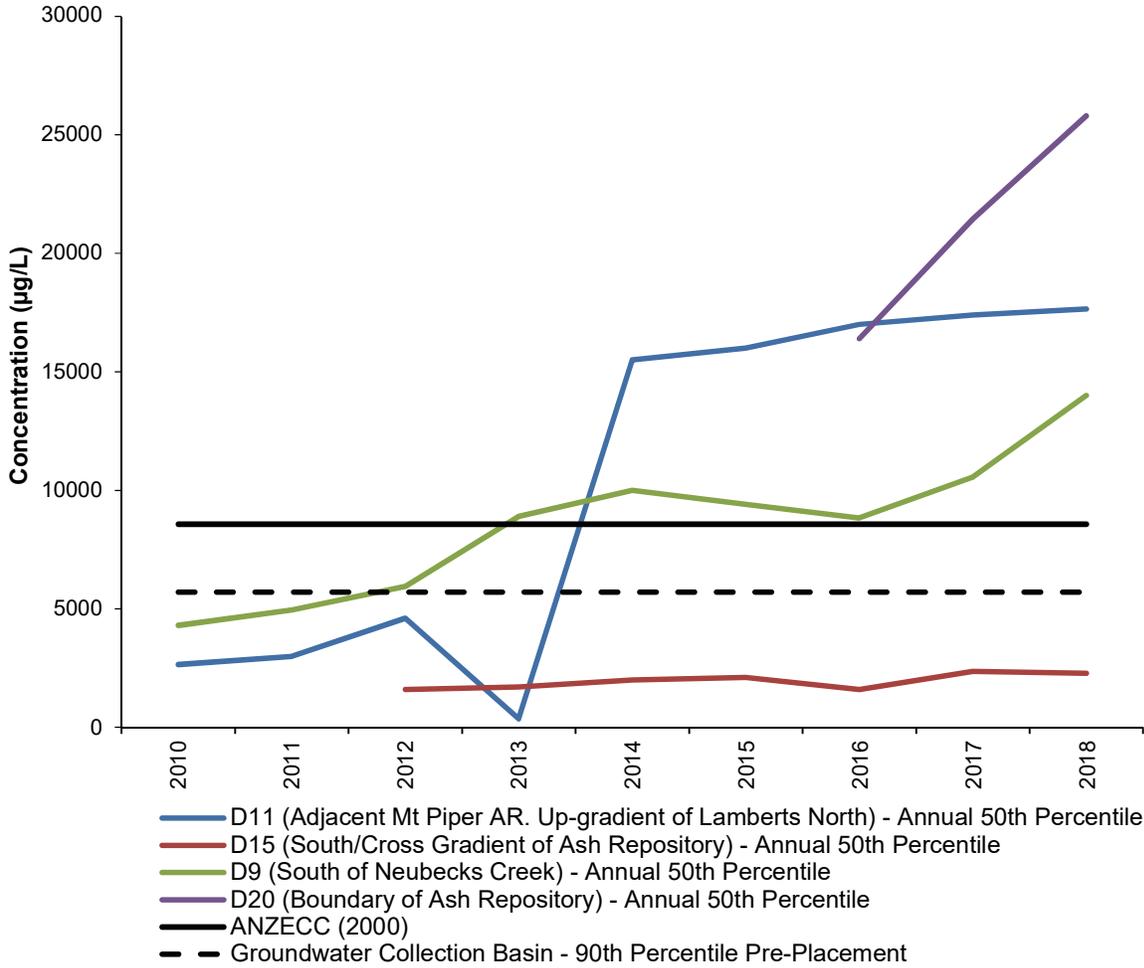


**Graph 7a - Manganese Concentrations
(Groundwater)**

Date:	Oct 18	Drawn:
Scale:		Chk'd:
Original:		Rev:
File Reference:	470260	



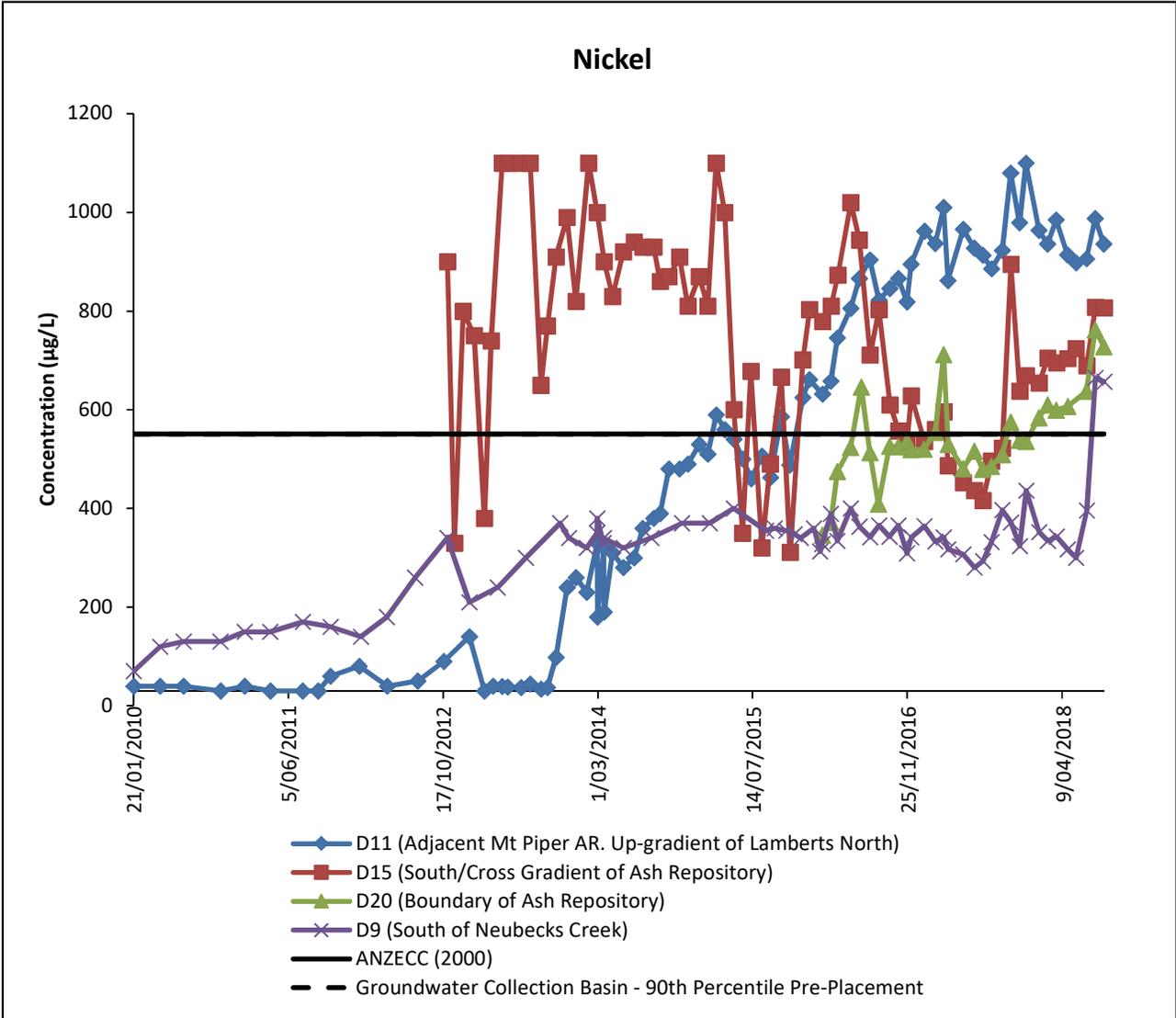
Manganese (Filtered)



Graph 7b - Manganese (filtered) - 50th percentile

Date:	Oct 18	Drawn:	
Scale:		Chk'd:	
Original:		Rev:	
File Reference:	470260		

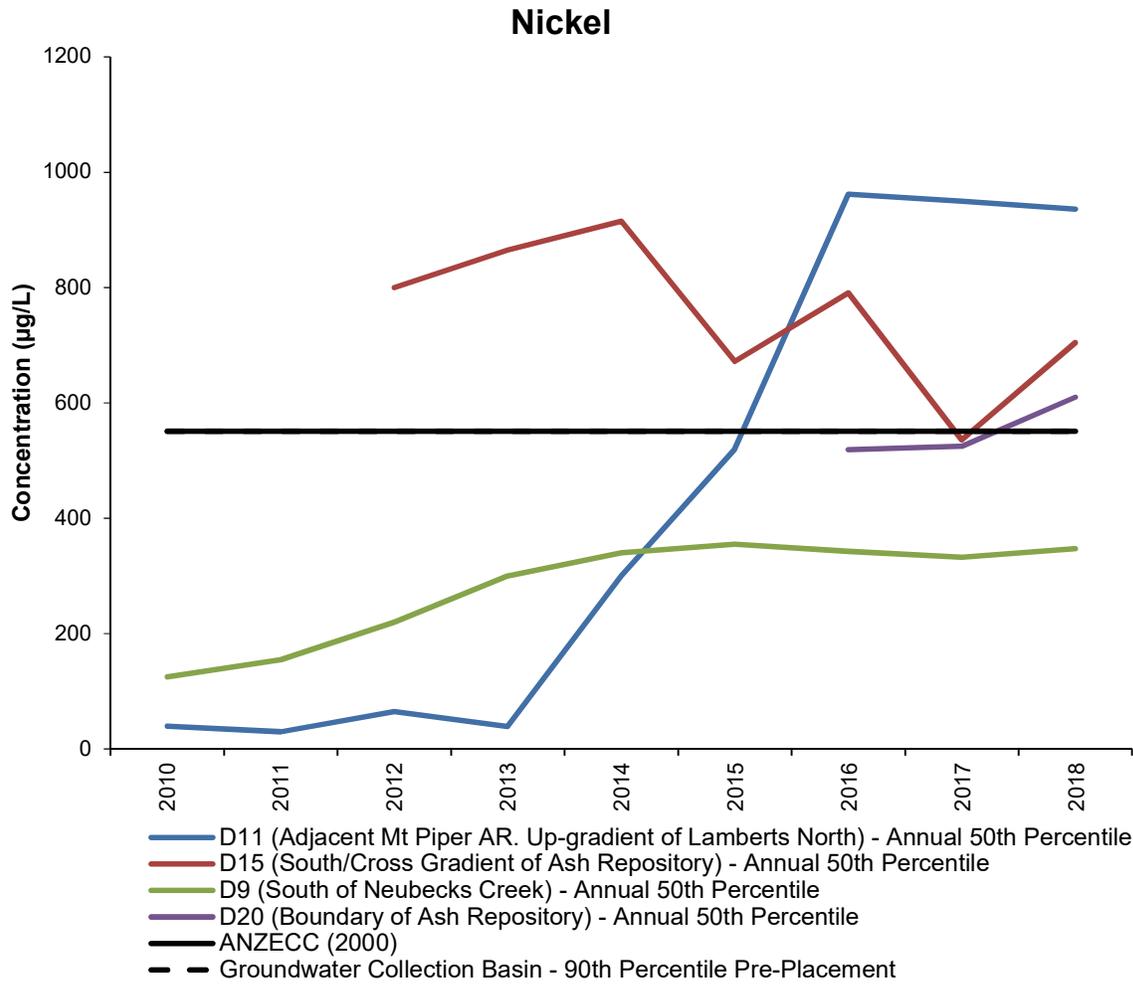




**Graph 8a - Nickel Concentrations
(Groundwater)**

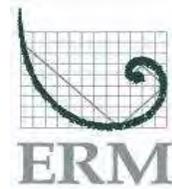
Date:	Oct 18	Drawn:	
Scale:		Chk'd:	
Original:		Rev:	
File Reference:	470260		





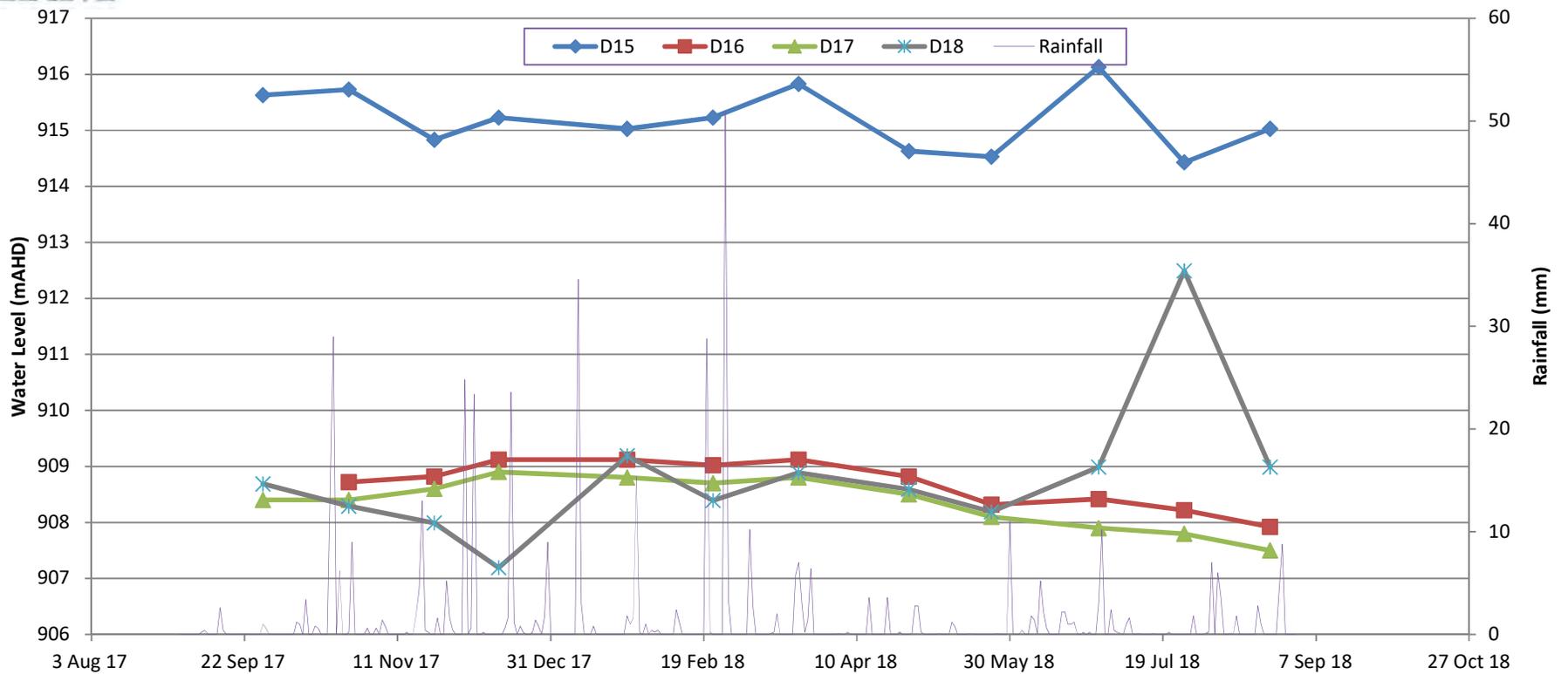
Graph 8b - Nickel - 50th percentile

Date: Oct 18	Drawn:
Scale:	Chk'd:
Original:	Rev:
File Reference: 470260	



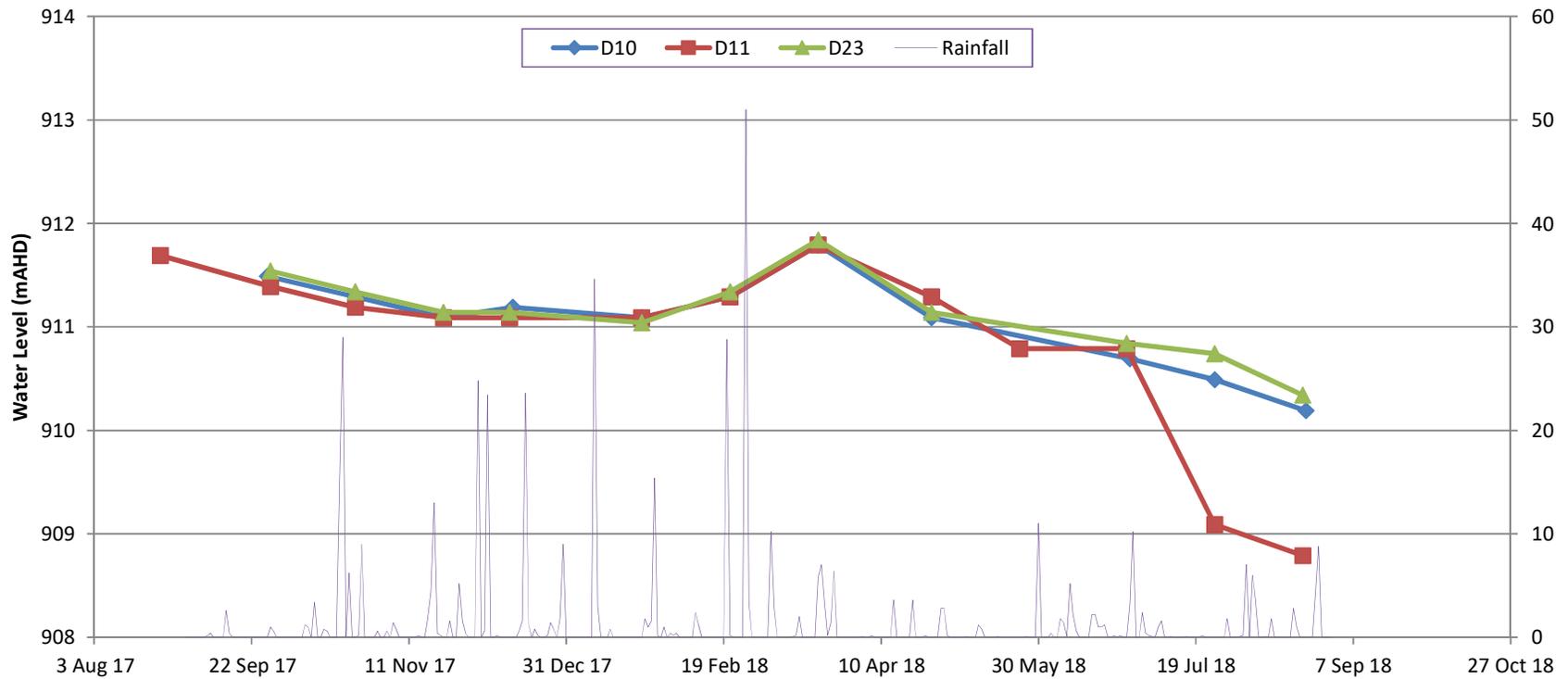


Graph 1. Water Level Over Time - South and Cross Gradient
Lamberts North
Annual Report September 2017 to August 2018 - 0470260

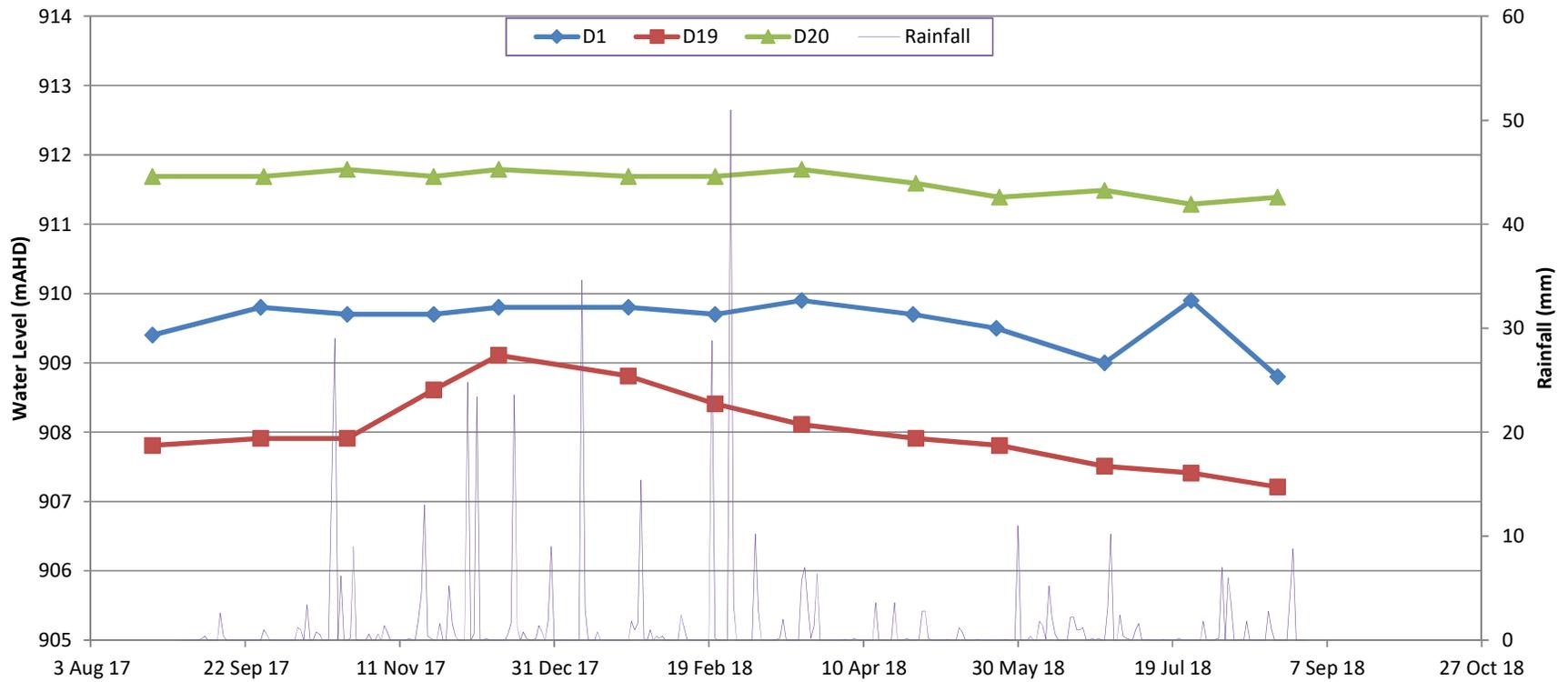




Graph 2. Water Level Over Time - Adjacent and Up Gradient
Lamberts North
Annual Report September 2017 to August 2018 - 0470260

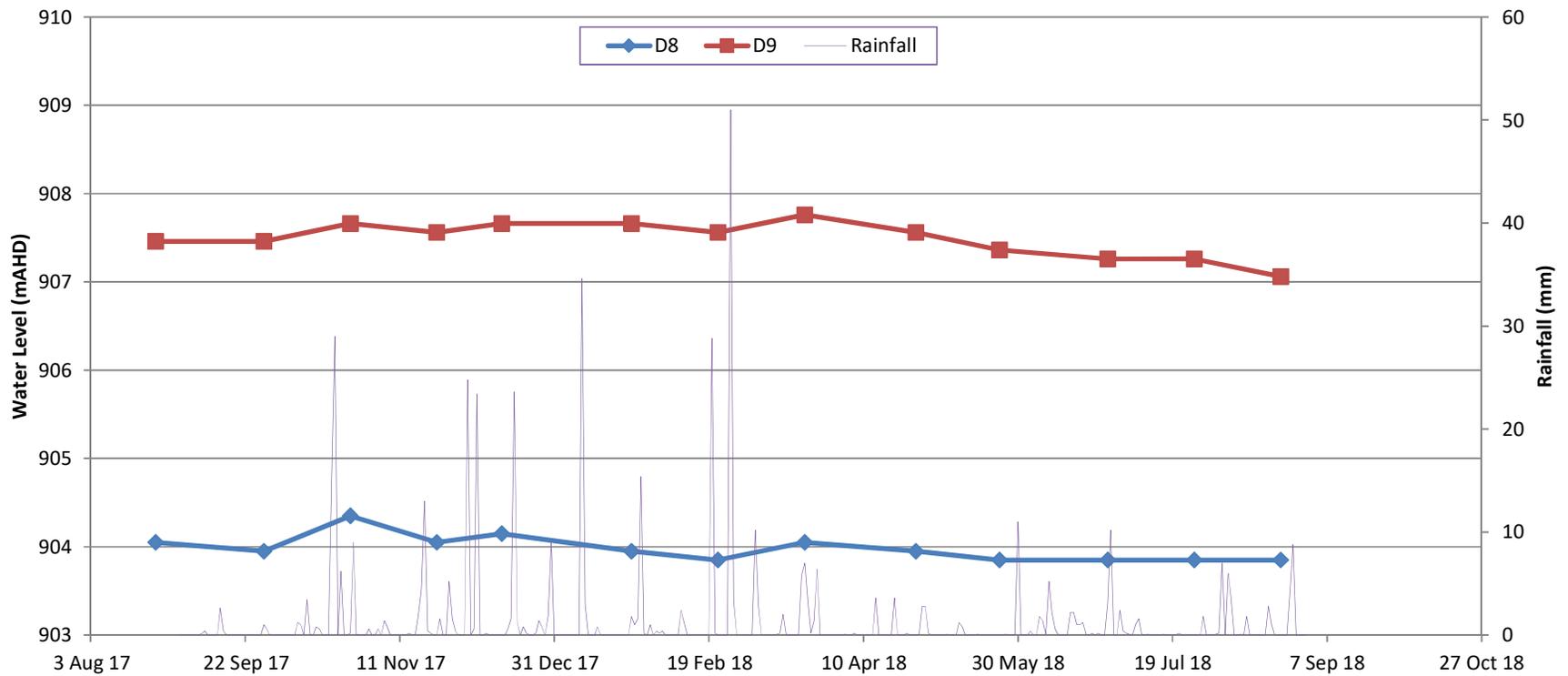


Graph 3. Water Level Over Time - Boundary
 Lamberts North
 Annual Report September 2017 to August 2018 - 0470260





Graph 4. Water Level Over Time - Adjacent Neubecks
Lamberts North
Annual Report September 2017 to August 2018 - 0470260



Annex I

Laboratory Certificates of
Analysis and Nalco
Procedures

Customer Analytical Services

Mount Piper Power Station 350 Boulder Road Portland 2847 NSW

Email: customeranalyticalservices@nalco.com

NALCO Water
An Ecolab Company

Amended - Report Number: 2141557

Replaces previous report number: 2136936 1-Sep-2017 8:15

ENERGY AUSTRALIA C/- MT PIPER POWER

BOULDER ROAD

PORTLAND NSW 2847 AUSTRALIA

Sold To: 0500082301 Ship To: 0500082301

Representative: Clive Stacey

Sampled By: Allan Bowcher

Sample Number

MPW018074

Date Sampled

24-Aug-2017 08:00

Date Received

25-Aug-2017

Date Completed

1-Sep-2017

Date Authorised

11-Sep-2017

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Groundwater Bore MPGM4

Source: MP

Customer Sampling Point: 014

Sampling Code: D9

Sample Frequency: Month

Testing Laboratory: Mount Piper

Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	2.1 m
Bore Volume Pumped	*Analysis in Field	1 L
Recharge Bore Level	*Analysis in Field	2.2 m
pH	CA12125	5.82
Conductivity	CA12125	2720 µS/cm

Testing Laboratory: ALS Environmental

Water

Cations - Metals	Test Method	Filtered	Total
Mercury (Hg)	EG035T-LL		<0.00004 mg/L
Aluminium (Al)	EG020A-T		0.05 mg/L
Arsenic (As)	EG020A-T		<0.001 mg/L
Barium (Ba)	EG020A-T		0.030 mg/L
Boron (B)	EG020A-T		0.66 mg/L
Cadmium (Cd)	EG020A-T		<0.0001 mg/L
Calcium (Ca)	ED093T-UL		178 mg/L
Chromium (Cr)	EG020A-T		<0.001 mg/L
Copper (Cu)	EG020A-T		<0.001 mg/L
Iron (Fe)	EG020A-F	2.19 mg/L	
Lead (Pb)	EG020A-T		<0.001 mg/L
Magnesium (Mg)	ED093T-UL		171 mg/L
Manganese (Mn)	EG020A-F	8.74 mg/L	
Molybdenum (Mo)	EG020A-T		<0.001 mg/L
Nickel (Ni)	EG020A-T		0.332 mg/L
Potassium (K)	ED093T-UL		15.8 mg/L
Selenium (Se)	EG094B-T		<0.0002 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		168 mg/L
Vanadium (V)	EG020A-F	<0.01 mg/L	

* NATA accreditation does not cover the performance of this service



Accreditation Number 1099

Accredited for compliance with ISO/IEC 17025 - Testing.

Authorised by Thanh Hoang Le
Senior Chemist

Amended - Report Number: 2141557

Replaces previous report number: 2136936 1-Sep-2017 8:15

ENERGY AUSTRALIA C/- MT PIPER POWER

BOULDER ROAD

PORTLAND NSW 2847 AUSTRALIA

Sold To: 0500082301 **Ship To:** 0500082301

Representative: Clive Stacey

Sampled By: Allan Bowcher

Sample Number MPW018074
Date Sampled 24-Aug-2017 08:00
Date Received 25-Aug-2017
Date Completed 1-Sep-2017
Date Authorised 11-Sep-2017

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Groundwater Bore MPGM4

Source: MP

Customer Sampling Point: 014

Sampling Code: D9

Sample Frequency: Month

Testing Laboratory: ALS Environmental

Vanadium (V)	EG020A-T	<0.01 mg/L
Zinc (Zn)	EG020A-T	0.096 mg/L

Anions	Test Method	Filtered
Fluoride (F)	ED009-X	0.064 mg/L
Chloride (Cl)	ED009-X	154 mg/L
Sulfate (SO4)	ED009-X	1240 mg/L

ED009x: Samples ES1721202-3, 4, 5, 11, 15, 16, 17 and 18 required dilution due to sample matrix. LOR values have been adjusted accordingly.

Alkalinity Test Method: ED037-P	Total
Total Alkalinity (CaCO3)	86 mg/L

Physical Test Method: EA015H	Total
Total Dissolved Solids @ 180°C	2310 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1721202. Report Date: 31-Aug-2017

* NATA accreditation does not cover the performance of this service



Accreditation Number 1099
 Accredited for compliance with ISO/IEC 17025 - Testing.

Authorised by Thanh Hoang Le
 Senior Chemist

Customer Analytical Services

Mount Piper Power Station 350 Boulder Road Portland 2847 NSW

Email: customeranalyticalservices@nalco.com



Amended - Report Number: 2141557

Replaces previous report number: 2136936 1-Sep-2017 8:15

ENERGY AUSTRALIA C/- MT PIPER POWER

BOULDER ROAD

PORTLAND NSW 2847 AUSTRALIA

Sold To: 0500082301 **Ship To:** 0500082301

Representative: Clive Stacey

Sampled By: Allan Bowcher

Sample Number

MPW018075

Date Sampled

23-Aug-2017 08:30

Date Received

25-Aug-2017

Date Completed

1-Sep-2017

Date Authorised

1-Sep-2017

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Stream Gauge

Source: MP

Customer Sampling Point: 003

Sampling Code: WX22

Sample Frequency: Month

Testing Laboratory: Mount Piper

Water

Field Analysis	Test Method	Total
Discharge Flowing	*Analysis in Field	Flow
Appearance	*Analysis in Field	Clear
pH	CA12125	7.36
Conductivity	CA12125	475 μ S/cm
Temperature	CA12125	3.4 $^{\circ}$ C
Dissolved Oxygen (O2)	*Analysis in Field	15.0 mg/L



field photo

Testing Laboratory: ALS Environmental

Water

Cations - Metals	Test Method	Filtered	Total
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Authorised by Thanh Hoang Le
Senior Chemist

Amended - Report Number: 2141557

Replaces previous report number: 2136936 1-Sep-2017 8:15

ENERGY AUSTRALIA C/- MT PIPER POWER

BOULDER ROAD

PORTLAND NSW 2847 AUSTRALIA

Sold To: 0500082301 **Ship To:** 0500082301

Representative: Clive Stacey

Sampled By: Allan Bowcher

Sample Number

MPW018075

Date Sampled

23-Aug-2017 08:30

Date Received

25-Aug-2017

Date Completed

1-Sep-2017

Date Authorised

1-Sep-2017

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Stream Gauge

Source: MP

Customer Sampling Point: 003

Sampling Code: WX22

Sample Frequency: Month

Testing Laboratory: ALS Environmental

Mercury (Hg)	EG035T-LL	<0.00004 mg/L
Aluminium (Al)	EG020A-F	<0.01 mg/L
Aluminium (Al)	EG020A-T	0.02 mg/L
Arsenic (As)	EG020A-T	<0.001 mg/L
Barium (Ba)	EG020A-T	0.018 mg/L
Boron (B)	EG020A-T	<0.05 mg/L
Cadmium (Cd)	EG020A-T	<0.0001 mg/L
Calcium (Ca)	ED093T-UL	26.3 mg/L
Chromium (Cr)	EG020A-T	<0.001 mg/L
Copper (Cu)	EG020A-F	<0.001 mg/L
Copper (Cu)	EG020A-T	<0.001 mg/L
Iron (Fe)	EG094B-F	0.091 mg/L
Iron (Fe)	EG094B-T	0.162 mg/L
Lead (Pb)	EG020A-T	<0.001 mg/L
Magnesium (Mg)	ED093T-UL	17.7 mg/L
Manganese (Mn)	EG020A-F	0.093 mg/L
Manganese (Mn)	EG020A-T	0.101 mg/L
Molybdenum (Mo)	EG020A-T	<0.001 mg/L
Nickel (Ni)	EG020A-T	0.007 mg/L
Potassium (K)	ED093T-UL	4.51 mg/L
Selenium (Se)	EG094B-T	<0.0002 mg/L
Silver (Ag)	EG020B-T	<0.001 mg/L
Sodium (Na)	ED093T-UL	28.4 mg/L
Strontium (Sr)	EG020B-T	0.104 mg/L
Vanadium (V)	EG020A-F	<0.01 mg/L
Vanadium (V)	EG020A-T	<0.01 mg/L
Zinc (Zn)	EG020A-F	<0.005 mg/L
Zinc (Zn)	EG020A-T	<0.005 mg/L

* NATA accreditation does not cover the performance of this service



Accreditation Number 1099
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Amended - Report Number: 2141557

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ENERGY AUSTRALIA C/- MT PIPER POWER

BOULDER ROAD

PORTLAND NSW 2847 AUSTRALIA

Sold To: 0500082301 **Ship To:** 0500082301

Representative: Clive Stacey

Sampled By: Allan Bowcher

Sample Number

MPW018075

Date Sampled

23-Aug-2017 08:30

Date Received

25-Aug-2017

Date Completed

1-Sep-2017

Date Authorised

1-Sep-2017

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Stream Gauge

Source: MP

Customer Sampling Point: 003

Sampling Code: WX22

Sample Frequency: Month

Testing Laboratory: ALS Environmental

Anions	Test Method	Filtered
Fluoride (F)	ED009-X	0.088 mg/L
Chloride (Cl)	ED009-X	25.0 mg/L
Sulfate (SO4)	ED009-X	124 mg/L
Nitrate (N)	EK058G	<0.01 mg/L
Nitrite (N)	EK057G	<0.01 mg/L
Nitrate and Nitrite (N)	EK059G	<0.01 mg/L

Alkalinity	Test Method: ED037-P	Total
Total Alkalinity (CaCO3)		66 mg/L
Phenolphthalein Alkalinity (CaCO3)		<1 mg/L
Bicarbonate (CaCO3)		66 mg/L

Phosphate	Test Method: EK067G	Total
Total Phosphorus (P)		<0.01 mg/L

Physical	Test Method	Total
Total Dissolved Solids @ 180°C	EA015H	280 mg/L
Turbidity	EA045	1.4 NTU

Other	Test Method	Total
Nitrogen (N)	EK062G	0.2 mg/L
Nitrogen (N) - Kjeldahl	EK061G	0.2 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1721202. Report Date: 31-Aug-2017

* NATA accreditation does not cover the performance of this service



Accreditation Number 1099
 Accredited for compliance with ISO/IEC 17025 - Testing.

Authorised by Thanh Hoang Le
 Senior Chemist

Customer Analytical Services

Mount Piper Power Station 350 Boulder Road Portland 2847 NSW

Email: customeranalyticalservices@nalco.com



Amended - Report Number: 2141557

Replaces previous report number: 2136936 1-Sep-2017 8:15

ENERGY AUSTRALIA C/- MT PIPER POWER

BOULDER ROAD

PORTLAND NSW 2847 AUSTRALIA

Sold To: 0500082301 **Ship To:** 0500082301

Representative: Clive Stacey

Sampled By: Allan Bowcher

Sample Number

MPW018076

Date Sampled

23-Aug-2017 09:10

Date Received

25-Aug-2017

Date Completed

1-Sep-2017

Date Authorised

1-Sep-2017

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Groundwater Bore MPGM4

Source: MP

Customer Sampling Point: 006

Sampling Code: D1

Sample Frequency: Month

Testing Laboratory: Mount Piper

Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	2.8 m
Bore Volume Pumped	*Analysis in Field	123 L
Recharge Bore Level	*Analysis in Field	3.2 m
pH	CA12125	5.80
Conductivity	CA12125	5290 µS/cm

Testing Laboratory: ALS Environmental

Water

Cations - Metals	Test Method	Filtered	Total
Mercury (Hg)	EG035T-LL		<0.00004 mg/L
Aluminium (Al)	EG020A-T		0.18 mg/L
Arsenic (As)	EG020A-T		0.009 mg/L
Barium (Ba)	EG020A-T		0.034 mg/L
Boron (B)	EG020A-T		2.00 mg/L
Cadmium (Cd)	EG020A-T		<0.0001 mg/L
Calcium (Ca)	ED093T-UL		389 mg/L
Chromium (Cr)	EG020A-T		<0.001 mg/L
Copper (Cu)	EG020A-T		<0.001 mg/L
Iron (Fe)	EG020A-F	41.7 mg/L	
Lead (Pb)	EG020A-T		<0.001 mg/L
Magnesium (Mg)	ED093T-UL		281 mg/L
Manganese (Mn)	EG020A-F	15.6 mg/L	
Molybdenum (Mo)	EG020A-T		<0.001 mg/L
Nickel (Ni)	EG020A-T		0.972 mg/L
Potassium (K)	ED093T-UL		37.0 mg/L
Selenium (Se)	EG094B-T		<0.0002 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		455 mg/L
Vanadium (V)	EG020A-F	<0.01 mg/L	

* NATA accreditation does not cover the performance of this service



Accreditation Number 1099

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Authorised by Thanh Hoang Le
Senior Chemist

Amended - Report Number: 2141557

Replaces previous report number: 2136936 1-Sep-2017 8:15

ENERGY AUSTRALIA C/- MT PIPER POWER

BOULDER ROAD

PORTLAND NSW 2847 AUSTRALIA

Sold To: 0500082301 **Ship To:** 0500082301

Representative: Clive Stacey

Sampled By: Allan Bowcher

Sample Number	MPW018076
Date Sampled	23-Aug-2017 09:10
Date Received	25-Aug-2017
Date Completed	1-Sep-2017
Date Authorised	1-Sep-2017

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Groundwater Bore MPMG4

Source: MP

Customer Sampling Point: 006

Sampling Code: D1

Sample Frequency: Month

Testing Laboratory: ALS Environmental

Vanadium (V)	EG020A-T	<0.01 mg/L
Zinc (Zn)	EG020A-T	0.113 mg/L

Anions Test Method: ED009-X

Fluoride (F)	Filtered	
	<0.200 mg/L	
Chloride (Cl)	522 mg/L	
Sulfate (SO4)	2210 mg/L	

Alkalinity Test Method: ED037-P

Total Alkalinity (CaCO3)	Total	
	188 mg/L	

Physical Test Method: EA015H

Total Dissolved Solids @ 180°C	Total	
	4490 mg/L	

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1721202. Report Date: 31-Aug-2017

* NATA accreditation does not cover the performance of this service



Accreditation Number 1099
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Authorised by Thanh Hoang Le
 Senior Chemist

Customer Analytical Services

Mount Piper Power Station 350 Boulder Road Portland 2847 NSW

Email: customeranalyticalservices@nalco.com

NALCO Water
An Ecolab Company

Amended - Report Number: 2141557

Replaces previous report number: 2136936 1-Sep-2017 8:15

ENERGY AUSTRALIA C/- MT PIPER POWER

BOULDER ROAD

PORTLAND NSW 2847 AUSTRALIA

Sold To: 0500082301 Ship To: 0500082301

Representative: Clive Stacey

Sampled By: Allan Bowcher

Sample Number

MPW018077

Date Sampled

24-Aug-2017 09:50

Date Received

25-Aug-2017

Date Completed

1-Sep-2017

Date Authorised

1-Sep-2017

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Groundwater Bore MPGM4

Source: MP

Customer Sampling Point: 013

Sampling Code: D8

Sample Frequency: Month

Testing Laboratory: Mount Piper

Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	2.4 m
Bore Volume Pumped	*Analysis in Field	45 L
Recharge Bore Level	*Analysis in Field	2.4 m
pH	CA12125	5.34
Conductivity	CA12125	348 µS/cm

Testing Laboratory: ALS Environmental

Water

Cations - Metals	Test Method	Filtered	Total
Mercury (Hg)	EG035T-LL		<0.00004 mg/L
Aluminium (Al)	EG020A-T		0.17 mg/L
Arsenic (As)	EG020A-T		<0.001 mg/L
Barium (Ba)	EG020A-T		0.028 mg/L
Boron (B)	EG020A-T		<0.05 mg/L
Cadmium (Cd)	EG020A-T		<0.0001 mg/L
Calcium (Ca)	ED093T-UL		18.8 mg/L
Chromium (Cr)	EG020A-T		<0.001 mg/L
Copper (Cu)	EG020A-T		<0.001 mg/L
Iron (Fe)	EG094B-F	0.034 mg/L	
Lead (Pb)	EG020A-T		<0.001 mg/L
Magnesium (Mg)	ED093T-UL		15.9 mg/L
Manganese (Mn)	EG020A-F	0.241 mg/L	
Molybdenum (Mo)	EG020A-T		<0.001 mg/L
Nickel (Ni)	EG020A-T		0.040 mg/L
Potassium (K)	ED093T-UL		2.25 mg/L
Selenium (Se)	EG094B-T		<0.0002 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		13.5 mg/L
Vanadium (V)	EG020A-F	<0.01 mg/L	

* NATA accreditation does not cover the performance of this service



Accreditation Number 1099

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Authorised by Thanh Hoang Le
Senior Chemist

Amended - Report Number: 2141557

Replaces previous report number: 2136936 1-Sep-2017 8:15

ENERGY AUSTRALIA C/- MT PIPER POWER

BOULDER ROAD

PORTLAND NSW 2847 AUSTRALIA

Sold To: 0500082301 **Ship To:** 0500082301

Representative: Clive Stacey

Sampled By: Allan Bowcher

Sample Number	MPW018077
Date Sampled	24-Aug-2017 09:50
Date Received	25-Aug-2017
Date Completed	1-Sep-2017
Date Authorised	1-Sep-2017

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Groundwater Bore MPM4

Source: MP **Customer Sampling Point:** 013 **Sampling Code:** D8 **Sample Frequency:** Month

Testing Laboratory: ALS Environmental

Vanadium (V)	EG020A-T	<0.01 mg/L
Zinc (Zn)	EG020A-T	0.051 mg/L

Anions Test Method: ED009-X	Filtered
Fluoride (F)	<0.050 mg/L
Chloride (Cl)	9.26 mg/L
Sulfate (SO4)	124 mg/L

Alkalinity Test Method: ED037-P	Total
Total Alkalinity (CaCO3)	10 mg/L

Physical Test Method: EA015H	Total
Total Dissolved Solids @ 180°C	222 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1721202. Report Date: 31-Aug-2017

* NATA accreditation does not cover the performance of this service



Accreditation Number 1099
 Accredited for compliance with ISO/IEC 17025 - Testing.

Authorised by Thanh Hoang Le
 Senior Chemist

Amended - Report Number: 2141557

Replaces previous report number: 2136936 1-Sep-2017 8:15

ENERGY AUSTRALIA C/- MT PIPER POWER

BOULDER ROAD

PORTLAND NSW 2847 AUSTRALIA

Sold To: 0500082301 **Ship To:** 0500082301

Representative: Clive Stacey

Sampled By: Allan Bowcher

Sample Number

MPW018078

Date Sampled

23-Aug-2017 13:50

Date Received

25-Aug-2017

Date Completed

25-Aug-2017

Date Authorised

25-Aug-2017

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: MP Ash - D10 - D21

Source: MP

Customer Sampling Point: 253

Sampling Code: D21

Sample Frequency:

ADDITIONAL_MONTH

Testing Laboratory: Mount Piper

Water

Field Analysis **Test Method:** Analysis in Field
Dry

Total

Allan Bowcher

Authorised by Allan Bowcher
Chemist

Amended - Report Number: 2141557

Replaces previous report number: 2136936 1-Sep-2017 8:15

ENERGY AUSTRALIA C/- MT PIPER POWER

BOULDER ROAD

PORTLAND NSW 2847 AUSTRALIA

Sold To: 0500082301 **Ship To:** 0500082301

Representative: Clive Stacey

Sampled By: Allan Bowcher

Sample Number

MPW018079

Date Sampled

23-Aug-2017 13:45

Date Received

25-Aug-2017

Date Completed

1-Sep-2017

Date Authorised

1-Sep-2017

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: MP Ash - D10 - D23

Source: MP

Customer Sampling Point: 254

Sampling Code: D23

Sample Frequency:

ADDITIONAL_MONTH

Testing Laboratory: Mount Piper

Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	23.9 m
Bore Volume Pumped	*Analysis in Field	55 L
Recharge Bore Level	*Analysis in Field	23.9 m
pH	CA12125	5.87
Conductivity	CA12125	4550 µS/cm

Testing Laboratory: ALS Environmental

Water

Cations - Metals	Test Method	Filtered	Total
Mercury (Hg)	EG035T-LL		<0.00004 mg/L
Aluminium (Al)	EG020A-T		0.33 mg/L
Arsenic (As)	EG020A-T		<0.001 mg/L
Barium (Ba)	EG020A-T		0.023 mg/L
Boron (B)	EG020A-T		0.44 mg/L
Cadmium (Cd)	EG020A-T		0.0003 mg/L
Calcium (Ca)	ED093T-UL		191 mg/L
Chromium (Cr)	EG020A-T		0.008 mg/L
Copper (Cu)	EG020A-T		<0.001 mg/L
Iron (Fe)	EG020A-F	4.24 mg/L	
Lead (Pb)	EG020A-T		0.001 mg/L
Magnesium (Mg)	ED093T-UL		117 mg/L
Manganese (Mn)	EG020A-F	2.33 mg/L	
Molybdenum (Mo)	EG020A-T		<0.001 mg/L
Nickel (Ni)	EG020A-T		0.356 mg/L
Potassium (K)	ED093T-UL		40.9 mg/L
Selenium (Se)	EG094B-T		0.0004 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		699 mg/L

* NATA accreditation does not cover the performance of this service



Accreditation Number 1099
 Accredited for compliance with ISO/IEC 17025 - Testing.

Authorised by Thanh Hoang Le
 Senior Chemist

Amended - Report Number: 2141557
Replaces previous report number: 2136936 1-Sep-2017 8:15
ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Allan Bowcher

Sample Number MPW018079
Date Sampled 23-Aug-2017 13:45
Date Received 25-Aug-2017
Date Completed 1-Sep-2017
Date Authorised 1-Sep-2017

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: MP Ash - D10 - D23

Source: MP **Customer Sampling Point:** 254 **Sampling Code:** D23 **Sample Frequency:** ADDITIONAL_MONTH

Testing Laboratory: ALS Environmental

Vanadium (V)	EG020A-F	<0.01 mg/L
Vanadium (V)	EG020A-T	<0.01 mg/L
Zinc (Zn)	EG020A-T	0.285 mg/L

Anions	Test Method: ED009-X	Filtered
Fluoride (F)		<0.500 mg/L
Chloride (Cl)		274 mg/L
Sulfate (SO4)		2040 mg/L

Alkalinity	Test Method: ED037-P	Total
Total Alkalinity (CaCO3)		132 mg/L

Physical	Test Method: EA015H	Total
Total Dissolved Solids @ 180°C		3600 mg/L

TDS by method EA-015 may bias high for various samples due to the presence of fine particulate matter, which may pass through the prescribed GF/C paper.

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1721202. Report Date: 31-Aug-2017

* NATA accreditation does not cover the performance of this service



Accreditation Number 1099
 Accredited for compliance with ISO/IEC 17025 - Testing.

Authorised by Thanh Hoang Le
 Senior Chemist

Customer Analytical Services

Mount Piper Power Station 350 Boulder Road Portland 2847 NSW

Email: customeranalyticalservices@nalco.com



Amended - Report Number: 2141557

Replaces previous report number: 2136936 1-Sep-2017 8:15

ENERGY AUSTRALIA C/- MT PIPER POWER

BOULDER ROAD

PORTLAND NSW 2847 AUSTRALIA

Sold To: 0500082301 **Ship To:** 0500082301

Representative: Clive Stacey

Sampled By: Allan Bowcher

Sample Number

MPW018080

Date Sampled

24-Aug-2017 12:08

Date Received

25-Aug-2017

Date Completed

1-Sep-2017

Date Authorised

1-Sep-2017

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Groundwater Bore MPGM4

Source: MP

Customer Sampling Point: 223

Sampling Code: D18

Sample Frequency: Month

Testing Laboratory: Mount Piper

Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	24.6 m
Bore Volume Pumped	*Analysis in Field	40 L
Recharge Bore Level	*Analysis in Field	36.9 m
pH	CA12125	6.69
Conductivity	CA12125	780 µS/cm

Testing Laboratory: ALS Environmental

Water

Cations - Metals	Test Method	Filtered	Total
Mercury (Hg)	EG035T-LL		<0.00004 mg/L
Aluminium (Al)	EG020A-T		0.40 mg/L
Arsenic (As)	EG020A-T		<0.001 mg/L
Barium (Ba)	EG020A-T		0.426 mg/L
Boron (B)	EG020A-T		0.06 mg/L
Cadmium (Cd)	EG020A-T		<0.0001 mg/L
Calcium (Ca)	ED093T-UL		69.1 mg/L
Chromium (Cr)	EG020A-T		0.001 mg/L
Copper (Cu)	EG020A-T		0.001 mg/L
Iron (Fe)	EG094B-F	0.004 mg/L	
Lead (Pb)	EG020A-T		<0.001 mg/L
Magnesium (Mg)	ED093T-UL		30.5 mg/L
Manganese (Mn)	EG020A-F	0.133 mg/L	
Molybdenum (Mo)	EG020A-T		0.013 mg/L
Nickel (Ni)	EG020A-T		0.007 mg/L
Potassium (K)	ED093T-UL		17.6 mg/L
Selenium (Se)	EG094B-T		0.0003 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		31.8 mg/L
Vanadium (V)	EG020A-F	<0.01 mg/L	

* NATA accreditation does not cover the performance of this service



Accreditation Number 1099

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Authorised by Thanh Hoang Le
Senior Chemist

Amended - Report Number: 2141557

Replaces previous report number: 2136936 1-Sep-2017 8:15

ENERGY AUSTRALIA C/- MT PIPER POWER

BOULDER ROAD

PORTLAND NSW 2847 AUSTRALIA

Sold To: 0500082301 **Ship To:** 0500082301

Representative: Clive Stacey

Sampled By: Allan Bowcher

Sample Number	MPW018080
Date Sampled	24-Aug-2017 12:08
Date Received	25-Aug-2017
Date Completed	1-Sep-2017
Date Authorised	1-Sep-2017

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Groundwater Bore MPMG4

Source: MP

Customer Sampling Point: 223

Sampling Code: D18

Sample Frequency: Month

Testing Laboratory: ALS Environmental

Vanadium (V)	EG020A-T	<0.01 mg/L
Zinc (Zn)	EG020A-T	0.028 mg/L

Anions Test Method: ED009-X

Fluoride (F)	Filtered 0.445 mg/L
Chloride (Cl)	13.5 mg/L
Sulfate (SO4)	68.9 mg/L

Alkalinity Test Method: ED037-P

Total Alkalinity (CaCO3)	Total 374 mg/L
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Physical Test Method: EA015H

Total Dissolved Solids @ 180°C	Total 415 mg/L
--------------------------------	--------------------------

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1721202. Report Date: 31-Aug-2017

* NATA accreditation does not cover the performance of this service



Accreditation Number 1099
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Authorised by Thanh Hoang Le
 Senior Chemist

Customer Analytical Services

Mount Piper Power Station 350 Boulder Road Portland 2847 NSW

Email: customeranalyticalservices@nalco.com



Amended - Report Number: 2141557

Replaces previous report number: 2136936 1-Sep-2017 8:15

ENERGY AUSTRALIA C/- MT PIPER POWER

BOULDER ROAD

PORTLAND NSW 2847 AUSTRALIA

Sold To: 0500082301 **Ship To:** 0500082301

Representative: Clive Stacey

Sampled By: Allan Bowcher

Sample Number

MPW018081

Date Sampled

23-Aug-2017 11:30

Date Received

25-Aug-2017

Date Completed

25-Aug-2017

Date Authorised

25-Aug-2017

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: MP Ash - D10 - SW3-S

Source: MP

Customer Sampling Point: 257

Sampling Code: SW3-S

Sample Frequency:

ADDITIONAL_MONTH

Testing Laboratory: Mount Piper

Water

Field Analysis **Test Method:** Analysis in Field
Dry

Total

Allan Bowcher

Authorised by Allan Bowcher
Chemist

Amended - Report Number: 2141557

Replaces previous report number: 2136936 1-Sep-2017 8:15

ENERGY AUSTRALIA C/- MT PIPER POWER

BOULDER ROAD

PORTLAND NSW 2847 AUSTRALIA

Sold To: 0500082301 **Ship To:** 0500082301

Representative: Clive Stacey

Sampled By: Allan Bowcher

Sample Number

MPW018082

Date Sampled

23-Aug-2017 11:37

Date Received

25-Aug-2017

Date Completed

25-Aug-2017

Date Authorised

25-Aug-2017

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: MP Ash - D10 - SW3-D

Source: MP

Customer Sampling Point: 256

Sampling Code: SW3-D

Sample Frequency:

ADDITIONAL_MONTH

Testing Laboratory: Mount Piper

Water

Field Analysis Test Method: Analysis in Field

Total

Initial Bore Level

25.2 m

insufficient volume to sample

Allan Bowcher

Authorised by Allan Bowcher
Chemist

Customer Analytical Services

Mount Piper Power Station 350 Boulder Road Portland 2847 NSW

Email: customeranalyticalservices@nalco.com



Amended - Report Number: 2141557

Replaces previous report number: 2136936 1-Sep-2017 8:15

ENERGY AUSTRALIA C/- MT PIPER POWER

BOULDER ROAD

PORTLAND NSW 2847 AUSTRALIA

Sold To: 0500082301 **Ship To:** 0500082301

Representative: Clive Stacey

Sampled By: Allan Bowcher

Sample Number

MPW018083

Date Sampled

24-Aug-2017 11:50

Date Received

25-Aug-2017

Date Completed

1-Sep-2017

Date Authorised

1-Sep-2017

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: MP Ash - D10 - B5

Source: MP

Customer Sampling Point: 250

Sampling Code: B5

Sample Frequency:

ADDITIONAL_MONTH

Testing Laboratory: Mount Piper

Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	36.2 m
Bore Volume Pumped	*Analysis in Field	1.5 L
Recharge Bore Level	*Analysis in Field	36.2 m
pH	CA12125	5.97
Conductivity	CA12125	37910 µS/cm

Testing Laboratory: ALS Environmental

Water

Cations - Metals	Test Method	Filtered	Total
Mercury (Hg)	EG035T-LL		<0.00004 mg/L
Aluminium (Al)	EG020A-T		0.70 mg/L
Arsenic (As)	EG020A-T		<0.010 mg/L
Barium (Ba)	EG020A-T		0.039 mg/L
Boron (B)	EG020A-T		13.5 mg/L
Cadmium (Cd)	EG020A-T		0.0890 mg/L
Calcium (Ca)	ED093T-UL		424 mg/L
Chromium (Cr)	EG020A-T		<0.010 mg/L
Copper (Cu)	EG020A-T		0.076 mg/L
Iron (Fe)	EG020A-F	1.97 mg/L	
Lead (Pb)	EG020A-T		<0.010 mg/L
Magnesium (Mg)	ED093T-UL		1100 mg/L
Manganese (Mn)	EG020A-F	10.0 mg/L	
Molybdenum (Mo)	EG020A-T		7.18 mg/L
Nickel (Ni)	EG020A-T		1.34 mg/L
Potassium (K)	ED093T-UL		1260 mg/L
Selenium (Se)	EG094B-T		0.0432 mg/L
Silver (Ag)	EG020B-T		<0.010 mg/L
Sodium (Na)	ED093T-UL		10500 mg/L

* NATA accreditation does not cover the performance of this service



Accreditation Number 1099

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Authorised by Thanh Hoang Le
Senior Chemist

Amended - Report Number: 2141557

Replaces previous report number: 2136936 1-Sep-2017 8:15

ENERGY AUSTRALIA C/- MT PIPER POWER

BOULDER ROAD

PORTLAND NSW 2847 AUSTRALIA

Sold To: 0500082301 **Ship To:** 0500082301

Representative: Clive Stacey

Sampled By: Allan Bowcher

Sample Number

MPW018083

Date Sampled

24-Aug-2017 11:50

Date Received

25-Aug-2017

Date Completed

1-Sep-2017

Date Authorised

1-Sep-2017

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: MP Ash - D10 - B5

Source: MP

Customer Sampling Point: 250

Sampling Code: B5

Sample Frequency:

ADDITIONAL_MONTH

Testing Laboratory: ALS Environmental

Vanadium (V)	EG020A-F	<0.10 mg/L
Vanadium (V)	EG020A-T	<0.10 mg/L
Zinc (Zn)	EG020A-T	1.12 mg/L

Anions Test Method: ED009-X

	Filtered
Fluoride (F)	0.631 mg/L
Chloride (Cl)	2550 mg/L
Sulfate (SO4)	23200 mg/L

Alkalinity Test Method: ED037-P

Total Alkalinity (CaCO3)	Total 58 mg/L
--------------------------	-------------------------

Physical Test Method: EA015H

Total Dissolved Solids @ 180°C	Total 39900 mg/L
--------------------------------	----------------------------

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1721202. Report Date: 31-Aug-2017

* NATA accreditation does not cover the performance of this service



Accreditation Number 1099
 Accredited for compliance with ISO/IEC 17025 - Testing.

Authorised by Thanh Hoang Le
 Senior Chemist

Customer Analytical Services

Mount Piper Power Station 350 Boulder Road Portland 2847 NSW

Email: customeranalyticalservices@nalco.com



Amended - Report Number: 2141557

Replaces previous report number: 2136936 1-Sep-2017 8:15

ENERGY AUSTRALIA C/- MT PIPER POWER

BOULDER ROAD

PORTLAND NSW 2847 AUSTRALIA

Sold To: 0500082301 **Ship To:** 0500082301

Representative: Clive Stacey

Sampled By: Allan Bowcher

Sample Number

MPW018084

Date Sampled

24-Aug-2017 11:35

Date Received

25-Aug-2017

Date Completed

1-Sep-2017

Date Authorised

1-Sep-2017

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: MP Ash - D10 - B5-1

Source: MP

Customer Sampling Point: 251

Sampling Code: B5-1

Sample Frequency:

ADDITIONAL_MONTH

Testing Laboratory: Mount Piper

Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	35.1 m
Bore Volume Pumped	*Analysis in Field	11 L
Recharge Bore Level	*Analysis in Field	35.1 m
pH	CA12125	5.41
Conductivity	CA12125	49200 µS/cm

Testing Laboratory: ALS Environmental

Water

Cations - Metals	Test Method	Filtered	Total
Mercury (Hg)	EG035T-LL		<0.00004 mg/L
Aluminium (Al)	EG020A-T		3.16 mg/L
Arsenic (As)	EG020A-T		<0.010 mg/L
Barium (Ba)	EG020A-T		0.049 mg/L
Boron (B)	EG020A-T		8.50 mg/L
Cadmium (Cd)	EG020A-T		0.0876 mg/L
Calcium (Ca)	ED093T-UL		363 mg/L
Chromium (Cr)	EG020A-T		<0.010 mg/L
Copper (Cu)	EG020A-T		<0.010 mg/L
Iron (Fe)	EG020A-F	2.75 mg/L	
Lead (Pb)	EG020A-T		<0.010 mg/L
Magnesium (Mg)	ED093T-UL		1520 mg/L
Manganese (Mn)	EG020A-F	50.9 mg/L	
Molybdenum (Mo)	EG020A-T		<0.010 mg/L
Nickel (Ni)	EG020A-T		2.33 mg/L
Potassium (K)	ED093T-UL		970 mg/L
Selenium (Se)	EG094B-T		0.112 mg/L
Silver (Ag)	EG020B-T		<0.010 mg/L
Sodium (Na)	ED093T-UL		12700 mg/L

* NATA accreditation does not cover the performance of this service



Accreditation Number 1099

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Authorised by Thanh Hoang Le
Senior Chemist

Amended - Report Number: 2141557

Replaces previous report number: 2136936 1-Sep-2017 8:15

ENERGY AUSTRALIA C/- MT PIPER POWER

BOULDER ROAD

PORTLAND NSW 2847 AUSTRALIA

Sold To: 0500082301 **Ship To:** 0500082301

Representative: Clive Stacey

Sampled By: Allan Bowcher

Sample Number

MPW018084

Date Sampled

24-Aug-2017 11:35

Date Received

25-Aug-2017

Date Completed

1-Sep-2017

Date Authorised

1-Sep-2017

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: MP Ash - D10 - B5-1

Source: MP

Customer Sampling Point: 251

Sampling Code: B5-1

Sample Frequency:

ADDITIONAL_MONTH

Testing Laboratory: ALS Environmental

Vanadium (V)	EG020A-F	<0.10 mg/L	
Vanadium (V)	EG020A-T		<0.10 mg/L
Zinc (Zn)	EG020A-T		3.75 mg/L

Anions Test Method: ED009-X

	Filtered	
Fluoride (F)	2.22 mg/L	
Chloride (Cl)	4140 mg/L	
Sulfate (SO4)	34600 mg/L	

Alkalinity Test Method: ED037-P

Total Alkalinity (CaCO3)	Total
	108 mg/L

Physical Test Method: EA015H

Total Dissolved Solids @ 180°C	Total
	55700 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1721202. Report Date: 31-Aug-2017

* NATA accreditation does not cover the performance of this service



Accreditation Number 1099
 Accredited for compliance with ISO/IEC 17025 - Testing.

Authorised by Thanh Hoang Le
 Senior Chemist

Customer Analytical Services

Mount Piper Power Station 350 Boulder Road Portland 2847 NSW

Email: customeranalyticalservices@nalco.com



Amended - Report Number: 2141557

Replaces previous report number: 2136936 1-Sep-2017 8:15

ENERGY AUSTRALIA C/- MT PIPER POWER

BOULDER ROAD

PORTLAND NSW 2847 AUSTRALIA

Sold To: 0500082301 **Ship To:** 0500082301

Representative: Clive Stacey

Sampled By: Allan Bowcher

Sample Number

MPW018085

Date Sampled

23-Aug-2017 14:57

Date Received

25-Aug-2017

Date Completed

1-Sep-2017

Date Authorised

1-Sep-2017

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: MP Ash - D10 - NA5

Source: MP

Customer Sampling Point: 255

Sampling Code: NA5

Sample Frequency:

ADDITIONAL_MONTH

Testing Laboratory: Mount Piper

Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	25.1 m
Bore Volume Pumped	*Analysis in Field	12 L
Recharge Bore Level	*Analysis in Field	25.2 m
pH	CA12125	5.74
Conductivity	CA12125	5330 µS/cm

Testing Laboratory: ALS Environmental

Water

Cations - Metals	Test Method	Filtered	Total
Mercury (Hg)	EG035T-LL		<0.00004 mg/L
Aluminium (Al)	EG020A-T		2.39 mg/L
Arsenic (As)	EG020A-T		<0.001 mg/L
Barium (Ba)	EG020A-T		0.039 mg/L
Boron (B)	EG020A-T		7.71 mg/L
Cadmium (Cd)	EG020A-T		0.0207 mg/L
Calcium (Ca)	ED093T-UL		384 mg/L
Chromium (Cr)	EG020A-T		0.030 mg/L
Copper (Cu)	EG020A-T		0.003 mg/L
Iron (Fe)	EG020A-F	1.26 mg/L	
Lead (Pb)	EG020A-T		0.001 mg/L
Magnesium (Mg)	ED093T-UL		154 mg/L
Manganese (Mn)	EG020A-F	12.2 mg/L	
Molybdenum (Mo)	EG020A-T		0.015 mg/L
Nickel (Ni)	EG020A-T		0.785 mg/L
Potassium (K)	ED093T-UL		137 mg/L
Selenium (Se)	EG094B-T		0.0402 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		618 mg/L

* NATA accreditation does not cover the performance of this service



Accreditation Number 1099

Accredited for compliance with ISO/IEC 17025 - Testing.

Authorised by Thanh Hoang Le
Senior Chemist

Amended - Report Number: 2141557

Replaces previous report number: 2136936 1-Sep-2017 8:15

ENERGY AUSTRALIA C/- MT PIPER POWER

BOULDER ROAD

PORTLAND NSW 2847 AUSTRALIA

Sold To: 0500082301 **Ship To:** 0500082301

Representative: Clive Stacey

Sampled By: Allan Bowcher

Sample Number

MPW018085

Date Sampled

23-Aug-2017 14:57

Date Received

25-Aug-2017

Date Completed

1-Sep-2017

Date Authorised

1-Sep-2017

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: MP Ash - D10 - NA5

Source: MP

Customer Sampling Point: 255

Sampling Code: NA5

Sample Frequency:

ADDITIONAL_MONTH

Testing Laboratory: ALS Environmental

Vanadium (V)	EG020A-F	<0.01 mg/L
Vanadium (V)	EG020A-T	<0.01 mg/L
Zinc (Zn)	EG020A-T	1.17 mg/L

Anions Test Method: ED009-X

	Filtered
Fluoride (F)	3.73 mg/L
Chloride (Cl)	226 mg/L
Sulfate (SO4)	3020 mg/L

Alkalinity Test Method: ED037-P

Total Alkalinity (CaCO3)	Total 98 mg/L
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Physical Test Method: EA015H

Total Dissolved Solids @ 180°C	Total 4720 mg/L
--------------------------------	---------------------------

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1721202. Report Date: 31-Aug-2017

* NATA accreditation does not cover the performance of this service



Accreditation Number 1099
 Accredited for compliance with ISO/IEC 17025 - Testing.

Authorised by Thanh Hoang Le
 Senior Chemist

Customer Analytical Services

Mount Piper Power Station 350 Boulder Road Portland 2847 NSW

Email: customeranalyticalservices@nalco.com

NALCO Water
An Ecolab Company

Amended - Report Number: 2141557

Replaces previous report number: 2136936 1-Sep-2017 8:15

ENERGY AUSTRALIA C/- MT PIPER POWER

BOULDER ROAD

PORTLAND NSW 2847 AUSTRALIA

Sold To: 0500082301 Ship To: 0500082301

Representative: Clive Stacey

Sampled By: Allan Bowcher

Sample Number

MPW018086

Date Sampled

23-Aug-2017 14:32

Date Received

25-Aug-2017

Date Completed

1-Sep-2017

Date Authorised

1-Sep-2017

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: MP Ash - D10 - D20

Source: MP

Customer Sampling Point: 252

Sampling Code: D20

Sample Frequency:

ADDITIONAL_MONTH

Testing Laboratory: Mount Piper

Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	17.4 m
Bore Volume Pumped	*Analysis in Field	16 L
Recharge Bore Level	*Analysis in Field	17.4 m
pH	CA12125	6.02
Conductivity	CA12125	3810 µS/cm

Testing Laboratory: ALS Environmental

Water

Cations - Metals	Test Method	Filtered	Total
Mercury (Hg)	EG035T-LL		<0.00004 mg/L
Aluminium (Al)	EG020A-T		4.83 mg/L
Arsenic (As)	EG020A-T		0.007 mg/L
Barium (Ba)	EG020A-T		0.101 mg/L
Boron (B)	EG020A-T		1.01 mg/L
Cadmium (Cd)	EG020A-T		0.0025 mg/L
Calcium (Ca)	ED093T-UL		282 mg/L
Chromium (Cr)	EG020A-T		0.025 mg/L
Copper (Cu)	EG020A-T		0.015 mg/L
Iron (Fe)	EG020A-F	1.14 mg/L	
Lead (Pb)	EG020A-T		0.012 mg/L
Magnesium (Mg)	ED093T-UL		346 mg/L
Manganese (Mn)	EG020A-F	19.9 mg/L	
Molybdenum (Mo)	EG020A-T		0.001 mg/L
Nickel (Ni)	EG020A-T		0.485 mg/L
Potassium (K)	ED093T-UL		20.1 mg/L
Selenium (Se)	EG094B-T		0.0006 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		140 mg/L

* NATA accreditation does not cover the performance of this service



Accreditation Number 1099

Accredited for compliance with ISO/IEC 17025 - Testing.

Authorised by Thanh Hoang Le
Senior Chemist

Amended - Report Number: 2141557

Replaces previous report number: 2136936 1-Sep-2017 8:15

ENERGY AUSTRALIA C/- MT PIPER POWER

BOULDER ROAD

PORTLAND NSW 2847 AUSTRALIA

Sold To: 0500082301 **Ship To:** 0500082301

Representative: Clive Stacey

Sampled By: Allan Bowcher

Sample Number

MPW018086

Date Sampled

23-Aug-2017 14:32

Date Received

25-Aug-2017

Date Completed

1-Sep-2017

Date Authorised

1-Sep-2017

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: MP Ash - D10 - D20

Source: MP

Customer Sampling Point: 252

Sampling Code: D20

Sample Frequency:

ADDITIONAL_MONTH

Testing Laboratory: ALS Environmental

Vanadium (V)	EG020A-F	<0.01 mg/L	
Vanadium (V)	EG020A-T		0.01 mg/L
Zinc (Zn)	EG020A-T		0.275 mg/L

Anions Test Method: ED009-X

	Filtered	
Fluoride (F)	0.195 mg/L	
Chloride (Cl)	104 mg/L	
Sulfate (SO4)	2020 mg/L	

Alkalinity Test Method: ED037-P

Total Alkalinity (CaCO3)		Total
		403 mg/L

Physical Test Method: EA015H

Total Dissolved Solids @ 180°C		Total
		3500 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1721202. Report Date: 31-Aug-2017

* NATA accreditation does not cover the performance of this service



Accreditation Number 1099
 Accredited for compliance with ISO/IEC 17025 - Testing.

Authorised by Thanh Hoang Le
 Senior Chemist

Customer Analytical Services

Mount Piper Power Station 350 Boulder Road Portland 2847 NSW

Email: customeranalyticalservices@nalco.com



Amended - Report Number: 2141557

Replaces previous report number: 2136936 1-Sep-2017 8:15

ENERGY AUSTRALIA C/- MT PIPER POWER

BOULDER ROAD

PORTLAND NSW 2847 AUSTRALIA

Sold To: 0500082301 **Ship To:** 0500082301

Representative: Clive Stacey

Sampled By: Allan Bowcher

Sample Number

MPW018087

Date Sampled

23-Aug-2017 14:10

Date Received

25-Aug-2017

Date Completed

8-Sep-2017

Date Authorised

11-Sep-2017

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Groundwater Bore MPGM4

Source: MP

Customer Sampling Point: 224

Sampling Code: D19

Sample Frequency: Month

Testing Laboratory: Mount Piper

Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	9.8 m
Bore Volume Pumped	*Analysis in Field	13 L
Recharge Bore Level	*Analysis in Field	9.8 m
pH	CA12125	5.82
Conductivity	CA12125	7070 µS/cm

Testing Laboratory: ALS Environmental

Water

Cations - Metals	Test Method	Filtered	Total
Chromium Hexavalent (Cr)	EG050G-F	<0.10 mg/L	
Mercury (Hg)	EG035T-LL		<0.00004 mg/L
Aluminium (Al)	EG020A-T		2.18 mg/L
Arsenic (As)	EG020A-T		0.010 mg/L
Barium (Ba)	EG020A-T		0.061 mg/L
Boron (B)	EG020A-T		2.86 mg/L
Cadmium (Cd)	EG020A-T		0.0002 mg/L
Calcium (Ca)	ED093T-UL		323 mg/L
Chromium (Cr)	EG020A-T		0.122 mg/L
Copper (Cu)	EG020A-T		0.012 mg/L
Iron (Fe)	EG094B-F	36.9 mg/L	
Lead (Pb)	EG020A-T		0.030 mg/L
Magnesium (Mg)	ED093T-UL		289 mg/L
Manganese (Mn)	EG020A-F	13.9 mg/L	
Molybdenum (Mo)	EG020A-T		0.003 mg/L
Nickel (Ni)	EG020A-T		1.08 mg/L
Potassium (K)	ED093T-UL		66.8 mg/L
Selenium (Se)	EG094B-T		0.0007 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		1010 mg/L

* NATA accreditation does not cover the performance of this service



Accreditation Number 1099

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Senior Chemist

Amended - Report Number: 2141557

Replaces previous report number: 2136936 1-Sep-2017 8:15

ENERGY AUSTRALIA C/- MT PIPER POWER

BOULDER ROAD

PORTLAND NSW 2847 AUSTRALIA

Sold To: 0500082301 **Ship To:** 0500082301

Representative: Clive Stacey

Sampled By: Allan Bowcher

Sample Number

MPW018087

Date Sampled

23-Aug-2017 14:10

Date Received

25-Aug-2017

Date Completed

8-Sep-2017

Date Authorised

11-Sep-2017

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Groundwater Bore MPGM4

Source: MP

Customer Sampling Point: 224

Sampling Code: D19

Sample Frequency: Month

Testing Laboratory: ALS Environmental

Vanadium (V)	EG020A-F	<0.01 mg/L	
Vanadium (V)	EG020A-T		<0.01 mg/L
Zinc (Zn)	EG020A-T		0.447 mg/L

Anions Test Method: ED009-X

	Filtered	
Fluoride (F)	<0.500 mg/L	
Chloride (Cl)	563 mg/L	
Sulfate (SO4)	3620 mg/L	

Alkalinity Test Method: ED037-P

Total Alkalinity (CaCO3)	Total
	150 mg/L

Physical Test Method: EA015H

Total Dissolved Solids @ 180°C	Total
	6100 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1721202. Report Date: 31-Aug-2017

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1721202. Report Date: 4-Sep-2017

* NATA accreditation does not cover the performance of this service



Accreditation Number 1099
 Accredited for compliance with ISO/IEC 17025 - Testing.

Authorised by Thanh Hoang Le
 Senior Chemist

Customer Analytical Services

Mount Piper Power Station 350 Boulder Road Portland 2847 NSW

Email: customeranalyticalservices@nalco.com

NALCO Water
An Ecolab Company

Amended - Report Number: 2141557

Replaces previous report number: 2136936 1-Sep-2017 8:15

ENERGY AUSTRALIA C/- MT PIPER POWER

BOULDER ROAD

PORTLAND NSW 2847 AUSTRALIA

Sold To: 0500082301 Ship To: 0500082301

Representative: Clive Stacey

Sampled By: Allan Bowcher

Sample Number

MPW018088

Date Sampled

24-Aug-2017 08:40

Date Received

25-Aug-2017

Date Completed

1-Sep-2017

Date Authorised

1-Sep-2017

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Groundwater Bore MPGM4

Source: MP

Customer Sampling Point: 008

Sampling Code: D3

Sample Frequency: Month

Testing Laboratory: Mount Piper

Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	7.4 m
Bore Volume Pumped	*Analysis in Field	208 L
Recharge Bore Level	*Analysis in Field	9.8 m
pH	CA12125	5.98
Conductivity	CA12125	910 µS/cm

Testing Laboratory: ALS Environmental

Water

Cations - Metals	Test Method	Filtered	Total
Mercury (Hg)	EG035T-LL		<0.00004 mg/L
Aluminium (Al)	EG020A-T		0.04 mg/L
Arsenic (As)	EG020A-T		<0.001 mg/L
Barium (Ba)	EG020A-T		0.022 mg/L
Boron (B)	EG020A-T		<0.05 mg/L
Cadmium (Cd)	EG020A-T		<0.0001 mg/L
Calcium (Ca)	ED093T-UL		71.8 mg/L
Chromium (Cr)	EG020A-T		0.001 mg/L
Copper (Cu)	EG020A-T		<0.001 mg/L
Iron (Fe)	EG020A-F	12.7 mg/L	
Lead (Pb)	EG020A-T		<0.001 mg/L
Magnesium (Mg)	ED093T-UL		43.3 mg/L
Manganese (Mn)	EG020A-F	0.754 mg/L	
Molybdenum (Mo)	EG020A-T		<0.001 mg/L
Nickel (Ni)	EG020A-T		0.004 mg/L
Potassium (K)	ED093T-UL		9.06 mg/L
Selenium (Se)	EG094B-T		<0.0002 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		32.5 mg/L
Vanadium (V)	EG020A-F	<0.01 mg/L	

* NATA accreditation does not cover the performance of this service



Accreditation Number 1099

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Authorised by Thanh Hoang Le
Senior Chemist

Amended - Report Number: 2141557

Replaces previous report number: 2136936 1-Sep-2017 8:15

ENERGY AUSTRALIA C/- MT PIPER POWER

BOULDER ROAD

PORTLAND NSW 2847 AUSTRALIA

Sold To: 0500082301 **Ship To:** 0500082301

Representative: Clive Stacey

Sampled By: Allan Bowcher

Sample Number	MPW018088
Date Sampled	24-Aug-2017 08:40
Date Received	25-Aug-2017
Date Completed	1-Sep-2017
Date Authorised	1-Sep-2017

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Groundwater Bore MPM4

Source: MP **Customer Sampling Point:** 008 **Sampling Code:** D3 **Sample Frequency:** Month

Testing Laboratory: ALS Environmental

Vanadium (V)	EG020A-T	<0.01 mg/L
Zinc (Zn)	EG020A-T	<0.005 mg/L

Anions Test Method: ED009-X	Filtered
Fluoride (F)	0.057 mg/L
Chloride (Cl)	24.8 mg/L
Sulfate (SO4)	306 mg/L

Alkalinity Test Method: ED037-P	Total
Total Alkalinity (CaCO3)	145 mg/L

Physical Test Method: EA015H	Total
Total Dissolved Solids @ 180°C	579 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1721202. Report Date: 31-Aug-2017

* NATA accreditation does not cover the performance of this service



Accreditation Number 1099
 Accredited for compliance with ISO/IEC 17025 - Testing.

Authorised by Thanh Hoang Le
 Senior Chemist

Customer Analytical Services

Mount Piper Power Station 350 Boulder Road Portland 2847 NSW

Email: customeranalyticalservices@nalco.com



Amended - Report Number: 2141557

Replaces previous report number: 2136936 1-Sep-2017 8:15

ENERGY AUSTRALIA C/- MT PIPER POWER

BOULDER ROAD

PORTLAND NSW 2847 AUSTRALIA

Sold To: 0500082301 **Ship To:** 0500082301

Representative: Clive Stacey

Sampled By: Allan Bowcher

Sample Number

MPW018089

Date Sampled

24-Aug-2017 11:15

Date Received

25-Aug-2017

Date Completed

1-Sep-2017

Date Authorised

1-Sep-2017

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Groundwater Bore MPGM4

Source: MP

Customer Sampling Point: 016

Sampling Code: D11

Sample Frequency: Month

Testing Laboratory: Mount Piper

Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	25.8 m
Bore Volume Pumped	*Analysis in Field	138 L
Recharge Bore Level	*Analysis in Field	25.8 m
pH	CA12125	6.11
Conductivity	CA12125	9620 µS/cm

Testing Laboratory: ALS Environmental

Water

Cations - Metals	Test Method	Filtered	Total
Mercury (Hg)	EG035T-LL		<0.00004 mg/L
Aluminium (Al)	EG020A-T		<0.01 mg/L
Arsenic (As)	EG020A-T		0.010 mg/L
Barium (Ba)	EG020A-T		0.019 mg/L
Boron (B)	EG020A-T		2.66 mg/L
Cadmium (Cd)	EG020A-T		<0.0001 mg/L
Calcium (Ca)	ED093T-UL		537 mg/L
Chromium (Cr)	EG020A-T		<0.001 mg/L
Copper (Cu)	EG020A-T		<0.001 mg/L
Iron (Fe)	EG020A-F	102 mg/L	
Lead (Pb)	EG020A-T		<0.001 mg/L
Magnesium (Mg)	ED093T-UL		393 mg/L
Manganese (Mn)	EG020A-F	17.0 mg/L	
Molybdenum (Mo)	EG020A-T		<0.001 mg/L
Nickel (Ni)	EG020A-T		0.886 mg/L
Potassium (K)	ED093T-UL		88.1 mg/L
Selenium (Se)	EG094B-T		<0.0002 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		1400 mg/L
Vanadium (V)	EG020A-F	<0.01 mg/L	

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Accreditation Number 1099

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Authorised by Thanh Hoang Le
Senior Chemist

Amended - Report Number: 2141557

Replaces previous report number: 2136936 1-Sep-2017 8:15

ENERGY AUSTRALIA C/- MT PIPER POWER

BOULDER ROAD

PORTLAND NSW 2847 AUSTRALIA

Sold To: 0500082301 **Ship To:** 0500082301

Representative: Clive Stacey

Sampled By: Allan Bowcher

Sample Number	MPW018089
Date Sampled	24-Aug-2017 11:15
Date Received	25-Aug-2017
Date Completed	1-Sep-2017
Date Authorised	1-Sep-2017

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Groundwater Bore MPMG4

Source: MP

Customer Sampling Point: 016

Sampling Code: D11

Sample Frequency: Month

Testing Laboratory: ALS Environmental

Vanadium (V)	EG020A-T	<0.01 mg/L
Zinc (Zn)	EG020A-T	0.140 mg/L

Anions Test Method: ED009-X

Fluoride (F)	Filtered	
	0.085 mg/L	
Chloride (Cl)	864 mg/L	
Sulfate (SO4)	4530 mg/L	

Alkalinity Test Method: ED037-P

Total Alkalinity (CaCO3)	Total	
	208 mg/L	

Physical Test Method: EA015H

Total Dissolved Solids @ 180°C	Total	
	8120 mg/L	

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1721202. Report Date: 31-Aug-2017

* NATA accreditation does not cover the performance of this service



Accreditation Number 1099
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Authorised by Thanh Hoang Le
 Senior Chemist

Customer Analytical Services

Mount Piper Power Station 350 Boulder Road Portland 2847 NSW

Email: customeranalyticalservices@nalco.com

NALCO Water
An Ecolab Company

Amended - Report Number: 2141557

Replaces previous report number: 2136936 1-Sep-2017 8:15

ENERGY AUSTRALIA C/- MT PIPER POWER

BOULDER ROAD

PORTLAND NSW 2847 AUSTRALIA

Sold To: 0500082301 **Ship To:** 0500082301

Representative: Clive Stacey

Sampled By: Allan Bowcher

Sample Number

MPW018090

Date Sampled

23-Aug-2017 13:10

Date Received

25-Aug-2017

Date Completed

1-Sep-2017

Date Authorised

1-Sep-2017

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Groundwater Bore MPGM4

Source: MP

Customer Sampling Point: 015

Sampling Code: D10

Sample Frequency: Month

Testing Laboratory: Mount Piper

Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	14.2 m
Bore Volume Pumped	*Analysis in Field	165 L
Recharge Bore Level	*Analysis in Field	14.2 m
pH	CA12125	5.48
Conductivity	CA12125	7530 µS/cm

Testing Laboratory: ALS Environmental

Water

Cations - Metals	Test Method	Filtered	Total
Mercury (Hg)	EG035T-LL		<0.00004 mg/L
Aluminium (Al)	EG020A-T		0.08 mg/L
Arsenic (As)	EG020A-T		<0.001 mg/L
Barium (Ba)	EG020A-T		0.018 mg/L
Boron (B)	EG020A-T		2.20 mg/L
Cadmium (Cd)	EG020A-T		0.0046 mg/L
Calcium (Ca)	ED093T-UL		232 mg/L
Chromium (Cr)	EG020A-T		<0.001 mg/L
Copper (Cu)	EG020A-T		<0.001 mg/L
Iron (Fe)	EG020A-F	9.99 mg/L	
Lead (Pb)	EG020A-T		0.003 mg/L
Magnesium (Mg)	ED093T-UL		241 mg/L
Manganese (Mn)	EG020A-F	5.37 mg/L	
Molybdenum (Mo)	EG020A-T		<0.001 mg/L
Nickel (Ni)	EG020A-T		0.702 mg/L
Potassium (K)	ED093T-UL		126 mg/L
Selenium (Se)	EG094B-T		0.0020 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		1270 mg/L
Vanadium (V)	EG020A-F	<0.01 mg/L	

* NATA accreditation does not cover the performance of this service



Accreditation Number 1099

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Authorised by Thanh Hoang Le
Senior Chemist

Amended - Report Number: 2141557

Replaces previous report number: 2136936 1-Sep-2017 8:15

ENERGY AUSTRALIA C/- MT PIPER POWER

BOULDER ROAD

PORTLAND NSW 2847 AUSTRALIA

Sold To: 0500082301 **Ship To:** 0500082301

Representative: Clive Stacey

Sampled By: Allan Bowcher

Sample Number MPW018090
Date Sampled 23-Aug-2017 13:10
Date Received 25-Aug-2017
Date Completed 1-Sep-2017
Date Authorised 1-Sep-2017

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Groundwater Bore MPMG4

Source: MP

Customer Sampling Point: 015

Sampling Code: D10

Sample Frequency: Month

Testing Laboratory: ALS Environmental

Vanadium (V)	EG020A-T	<0.01 mg/L
Zinc (Zn)	EG020A-T	0.861 mg/L

Anions Test Method: ED009-X

	Filtered
Fluoride (F)	0.330 mg/L
Chloride (Cl)	545 mg/L
Sulfate (SO4)	3450 mg/L

Alkalinity Test Method: ED037-P

Total Alkalinity (CaCO3)	Total 82 mg/L
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Physical Test Method: EA015H

Total Dissolved Solids @ 180°C	Total 6240 mg/L
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Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1721202. Report Date: 31-Aug-2017

* NATA accreditation does not cover the performance of this service



Accreditation Number 1099
 Accredited for compliance with ISO/IEC 17025 - Testing.

Authorised by Thanh Hoang Le
 Senior Chemist

Customer Analytical Services

Mount Piper Power Station 350 Boulder Road Portland 2847 NSW

Email: customeranalyticalservices@nalco.com



Amended - Report Number: 2141557

Replaces previous report number: 2136936 1-Sep-2017 8:15

ENERGY AUSTRALIA C/- MT PIPER POWER

BOULDER ROAD

PORTLAND NSW 2847 AUSTRALIA

Sold To: 0500082301 **Ship To:** 0500082301

Representative: Clive Stacey

Sampled By: Allan Bowcher

Sample Number

MPW018091

Date Sampled

24-Aug-2017 14:30

Date Received

25-Aug-2017

Date Completed

1-Sep-2017

Date Authorised

1-Sep-2017

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Groundwater Bore MPGM4

Source: MP

Customer Sampling Point: 222

Sampling Code: D17

Sample Frequency: Month

Testing Laboratory: Mount Piper

Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	28.1 m
Bore Volume Pumped	*Analysis in Field	32 L
Recharge Bore Level	*Analysis in Field	28.1 m
pH	CA12125	6.01
Conductivity	CA12125	3390 µS/cm

Testing Laboratory: ALS Environmental

Water

Cations - Metals	Test Method	Filtered	Total
Mercury (Hg)	EG035T-LL		<0.00004 mg/L
Aluminium (Al)	EG020A-T		0.04 mg/L
Arsenic (As)	EG020A-T		0.002 mg/L
Barium (Ba)	EG020A-T		0.020 mg/L
Boron (B)	EG020A-T		0.11 mg/L
Cadmium (Cd)	EG020A-T		<0.0001 mg/L
Calcium (Ca)	ED093T-UL		212 mg/L
Chromium (Cr)	EG020A-T		<0.001 mg/L
Copper (Cu)	EG020A-T		<0.001 mg/L
Iron (Fe)	EG020A-F	28.4 mg/L	
Lead (Pb)	EG020A-T		<0.001 mg/L
Magnesium (Mg)	ED093T-UL		138 mg/L
Manganese (Mn)	EG020A-F	3.22 mg/L	
Molybdenum (Mo)	EG020A-T		<0.001 mg/L
Nickel (Ni)	EG020A-T		0.133 mg/L
Potassium (K)	ED093T-UL		21.0 mg/L
Selenium (Se)	EG094B-T		<0.0002 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		370 mg/L
Vanadium (V)	EG020A-F	<0.01 mg/L	

* NATA accreditation does not cover the performance of this service



Accreditation Number 1099

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Authorised by Thanh Hoang Le
Senior Chemist

Amended - Report Number: 2141557

Replaces previous report number: 2136936 1-Sep-2017 8:15

ENERGY AUSTRALIA C/- MT PIPER POWER

BOULDER ROAD

PORTLAND NSW 2847 AUSTRALIA

Sold To: 0500082301 **Ship To:** 0500082301

Representative: Clive Stacey

Sampled By: Allan Bowcher

Sample Number	MPW018091
Date Sampled	24-Aug-2017 14:30
Date Received	25-Aug-2017
Date Completed	1-Sep-2017
Date Authorised	1-Sep-2017

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Groundwater Bore MPM4

Source: MP

Customer Sampling Point: 222

Sampling Code: D17

Sample Frequency: Month

Testing Laboratory: ALS Environmental

Vanadium (V)	EG020A-T	<0.01 mg/L
Zinc (Zn)	EG020A-T	0.087 mg/L

Anions Test Method: ED009-X

Fluoride (F)	Filtered	
Chloride (Cl)	<0.500 mg/L	
Sulfate (SO4)	192 mg/L	
	1550 mg/L	

Alkalinity Test Method: ED037-P

Total Alkalinity (CaCO3)	Total	
	134 mg/L	

Physical Test Method: EA015H

Total Dissolved Solids @ 180°C	Total	
	2730 mg/L	

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1721202. Report Date: 31-Aug-2017

* NATA accreditation does not cover the performance of this service



Accreditation Number 1099
 Accredited for compliance with ISO/IEC 17025 - Testing.

Authorised by Thanh Hoang Le
 Senior Chemist

Customer Analytical Services

Mount Piper Power Station 350 Boulder Road Portland 2847 NSW

Email: customeranalyticalservices@nalco.com

NALCO Water
An Ecolab Company

Amended - Report Number: 2141557

Replaces previous report number: 2136936 1-Sep-2017 8:15

ENERGY AUSTRALIA C/- MT PIPER POWER

BOULDER ROAD

PORTLAND NSW 2847 AUSTRALIA

Sold To: 0500082301 **Ship To:** 0500082301

Representative: Clive Stacey

Sampled By: Allan Bowcher

Sample Number

MPW018092

Date Sampled

24-Aug-2017 15:00

Date Received

25-Aug-2017

Date Completed

8-Sep-2017

Date Authorised

11-Sep-2017

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Groundwater Bore MPGM4

Source: MP

Customer Sampling Point: 220

Sampling Code: D15

Sample Frequency: Month

Testing Laboratory: Mount Piper

Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	24.7 m
Bore Volume Pumped	*Analysis in Field	35 L
Recharge Bore Level	*Analysis in Field	24.7 m
pH	CA12125	5.72
Conductivity	CA12125	4660 µS/cm

Testing Laboratory: ALS Environmental

Water

Cations - Metals	Test Method	Filtered	Total
Chromium Hexavalent (Cr)	EG050G-F	<0.01 mg/L	
Mercury (Hg)	EG035T-LL		<0.00004 mg/L
Aluminium (Al)	EG020A-T		0.56 mg/L
Arsenic (As)	EG020A-T		0.005 mg/L
Barium (Ba)	EG020A-T		0.017 mg/L
Boron (B)	EG020A-T		0.32 mg/L
Cadmium (Cd)	EG020A-T		0.0004 mg/L
Calcium (Ca)	ED093T-UL		201 mg/L
Chromium (Cr)	EG020A-T		0.071 mg/L
Copper (Cu)	EG020A-T		0.004 mg/L
Iron (Fe)	EG020A-F	5.88 mg/L	
Lead (Pb)	EG020A-T		0.004 mg/L
Magnesium (Mg)	ED093T-UL		115 mg/L
Manganese (Mn)	EG020A-F	2.48 mg/L	
Molybdenum (Mo)	EG020A-T		0.002 mg/L
Nickel (Ni)	EG020A-T		0.496 mg/L
Potassium (K)	ED093T-UL		38.0 mg/L
Selenium (Se)	EG094B-T		0.0005 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		779 mg/L

* NATA accreditation does not cover the performance of this service



Accreditation Number 1099

Accredited for compliance with ISO/IEC 17025 - Testing.

Authorised by Thanh Hoang Le
Senior Chemist

Amended - Report Number: 2141557

Replaces previous report number: 2136936 1-Sep-2017 8:15

ENERGY AUSTRALIA C/- MT PIPER POWER

BOULDER ROAD

PORTLAND NSW 2847 AUSTRALIA

Sold To: 0500082301 **Ship To:** 0500082301

Representative: Clive Stacey

Sampled By: Allan Bowcher

Sample Number	MPW018092
Date Sampled	24-Aug-2017 15:00
Date Received	25-Aug-2017
Date Completed	8-Sep-2017
Date Authorised	11-Sep-2017

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Groundwater Bore MPGM4

Source: MP

Customer Sampling Point: 220

Sampling Code: D15

Sample Frequency: Month

Testing Laboratory: ALS Environmental

Vanadium (V)	EG020A-F	<0.01 mg/L	
Vanadium (V)	EG020A-T		<0.01 mg/L
Zinc (Zn)	EG020A-T		0.648 mg/L

Anions Test Method: ED009-X

	Filtered	
Fluoride (F)	<0.500 mg/L	
Chloride (Cl)	283 mg/L	
Sulfate (SO4)	2070 mg/L	

Alkalinity Test Method: ED037-P

Total Alkalinity (CaCO3)	Total
	91 mg/L

Physical Test Method: EA015H

Total Dissolved Solids @ 180°C	Total
	3710 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1721202. Report Date: 31-Aug-2017

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1721202. Report Date: 4-Sep-2017

* NATA accreditation does not cover the performance of this service



Accreditation Number 1099
 Accredited for compliance with ISO/IEC 17025 - Testing.

Authorised by Thanh Hoang Le
 Senior Chemist

Amended - Report Number: 2141557

Replaces previous report number: 2136936 1-Sep-2017 8:15

ENERGY AUSTRALIA C/- MT PIPER POWER

BOULDER ROAD

PORTLAND NSW 2847 AUSTRALIA

Sold To: 0500082301 **Ship To:** 0500082301

Representative: Clive Stacey

Sampled By: Allan Bowcher

Sample Number

MPW018093

Date Sampled

24-Aug-2017 15:10

Date Received

25-Aug-2017

Date Completed

25-Aug-2017

Date Authorised

25-Aug-2017

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Groundwater Bore MPMG4

Source: MP

Customer Sampling Point: 221

Sampling Code: D16

Sample Frequency: Month

Testing Laboratory: Mount Piper

Water

Field Analysis Test Method: Analysis in Field
instrument in top of bore. Unable to sample

Total

Allan Bowcher

Authorised by Allan Bowcher
Chemist

Customer Analytical Services

Mount Piper Power Station 350 Boulder Road Portland 2847 NSW

Email: customeranalyticalservices@nalco.com



Amended - Report Number: 2141557

Replaces previous report number: 2136936 1-Sep-2017 8:15

ENERGY AUSTRALIA C/- MT PIPER POWER

BOULDER ROAD

PORTLAND NSW 2847 AUSTRALIA

Sold To: 0500082301 **Ship To:** 0500082301

Representative: Clive Stacey

Sampled By: Allan Bowcher

Sample Number

MPW018094

Date Sampled

23-Aug-2017 11:37

Date Received

25-Aug-2017

Date Completed

25-Aug-2017

Date Authorised

25-Aug-2017

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: MP Ash - D10 - SW3-D (Purged)

Source: MP

Customer Sampling Point: 256

Sampling Code: SW3-D

Sample Frequency: Ad-Hoc

Testing Laboratory: Mount Piper

Water

Field Analysis **Test Method:** Analysis in Field
insufficient volume to sample

Total

•System out of service.

Water

Authorised by Nikki Tomlinson
Senior Chemist

Customer Analytical Services

Mount Piper Power Station 350 Boulder Road Portland 2847 NSW

Email: customeranalyticalservices@nalco.com



Amended - Report Number: 2141557

Replaces previous report number: 2136936 1-Sep-2017 8:15

ENERGY AUSTRALIA C/- MT PIPER POWER

BOULDER ROAD

PORTLAND NSW 2847 AUSTRALIA

Sold To: 0500082301 **Ship To:** 0500082301

Representative: Clive Stacey

Sampled By: Allan Bowcher

Sample Number

MPW018095

Date Sampled

23-Aug-2017 10:40

Date Received

25-Aug-2017

Date Completed

1-Sep-2017

Date Authorised

1-Sep-2017

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: MP Ash - D10 - B5 (Purged)

Source: MP

Customer Sampling Point: 250

Sampling Code: B5

Sample Frequency: Ad-Hoc

Testing Laboratory: Mount Piper

Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	36.2 m
Bore Volume Pumped	*Analysis in Field	1.5 L
Recharge Bore Level	*Analysis in Field	36.2 m
pH	CA12125	5.73
Conductivity	CA12125	39140 µS/cm

Testing Laboratory: ALS Environmental

Water

Cations - Metals	Test Method	Filtered	Total
Mercury (Hg)	EG035T-LL		<0.00004 mg/L
Aluminium (Al)	EG020A-T		1.30 mg/L
Arsenic (As)	EG020A-T		<0.010 mg/L
Barium (Ba)	EG020A-T		0.042 mg/L
Boron (B)	EG020A-T		13.3 mg/L
Cadmium (Cd)	EG020A-T		0.0914 mg/L
Calcium (Ca)	ED093T-UL		440 mg/L
Chromium (Cr)	EG020A-T		<0.010 mg/L
Copper (Cu)	EG020A-T		0.078 mg/L
Iron (Fe)	EG020A-F	2.36 mg/L	
Lead (Pb)	EG020A-T		<0.010 mg/L
Magnesium (Mg)	ED093T-UL		1180 mg/L
Manganese (Mn)	EG020A-F	11.0 mg/L	
Molybdenum (Mo)	EG020A-T		6.70 mg/L
Nickel (Ni)	EG020A-T		1.30 mg/L
Potassium (K)	ED093T-UL		1410 mg/L
Selenium (Se)	EG094B-T		0.0446 mg/L
Silver (Ag)	EG020B-T		<0.010 mg/L
Sodium (Na)	ED093T-UL		11200 mg/L
Vanadium (V)	EG020A-F	<0.10 mg/L	

* NATA accreditation does not cover the performance of this service



Accreditation Number 1099

Accredited for compliance with ISO/IEC 17025 - Testing.

Authorised by Thanh Hoang Le
Senior Chemist

Amended - Report Number: 2141557

Replaces previous report number: 2136936 1-Sep-2017 8:15

ENERGY AUSTRALIA C/- MT PIPER POWER

BOULDER ROAD

PORTLAND NSW 2847 AUSTRALIA

Sold To: 0500082301 **Ship To:** 0500082301

Representative: Clive Stacey

Sampled By: Allan Bowcher

Sample Number MPW018095
Date Sampled 23-Aug-2017 10:40
Date Received 25-Aug-2017
Date Completed 1-Sep-2017
Date Authorised 1-Sep-2017

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: MP Ash - D10 - B5 (Purged)

Source: MP **Customer Sampling Point:** 250 **Sampling Code:** B5 **Sample Frequency:** Ad-Hoc

Testing Laboratory: ALS Environmental

Vanadium (V)	EG020A-T	<0.10 mg/L
Zinc (Zn)	EG020A-T	1.12 mg/L

Anions	Test Method: ED009-X	Filtered
Fluoride (F)		<2.00 mg/L
Chloride (Cl)		2490 mg/L
Sulfate (SO4)		23200 mg/L

Alkalinity	Test Method: ED037-P	Total
Total Alkalinity (CaCO3)		59 mg/L

Physical	Test Method: EA015H	Total
Total Dissolved Solids @ 180°C		41800 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1721202. Report Date: 31-Aug-2017

* NATA accreditation does not cover the performance of this service



Accreditation Number 1099
 Accredited for compliance with ISO/IEC 17025 - Testing.

Authorised by Thanh Hoang Le
 Senior Chemist

Customer Analytical Services

Mount Piper Power Station 350 Boulder Road Portland 2847 NSW

Email: customeranalyticalservices@nalco.com

NALCO Water
An Ecolab Company

Amended - Report Number: 2141557

Replaces previous report number: 2136936 1-Sep-2017 8:15

ENERGY AUSTRALIA C/- MT PIPER POWER

BOULDER ROAD

PORTLAND NSW 2847 AUSTRALIA

Sold To: 0500082301 Ship To: 0500082301

Representative: Clive Stacey

Sampled By: Allan Bowcher

Sample Number

MPW018096

Date Sampled

23-Aug-2017 10:55

Date Received

25-Aug-2017

Date Completed

1-Sep-2017

Date Authorised

1-Sep-2017

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: MP Ash - D10 - B5-1 (Purged)

Source: MP

Customer Sampling Point: 251

Sampling Code: B5-1

Sample Frequency: Ad-Hoc

Testing Laboratory: Mount Piper

Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	35.1 m
Bore Volume Pumped	*Analysis in Field	11 L
Recharge Bore Level	*Analysis in Field	35.1 m
pH	CA12125	5.55
Conductivity	CA12125	49480 µS/cm

Testing Laboratory: ALS Environmental

Water

Cations - Metals	Test Method	Filtered	Total
Mercury (Hg)	EG035T-LL		<0.00004 mg/L
Aluminium (Al)	EG020A-T		2.42 mg/L
Arsenic (As)	EG020A-T		<0.010 mg/L
Barium (Ba)	EG020A-T		0.044 mg/L
Boron (B)	EG020A-T		7.30 mg/L
Cadmium (Cd)	EG020A-T		0.0883 mg/L
Calcium (Ca)	ED093T-UL		436 mg/L
Chromium (Cr)	EG020A-T		<0.010 mg/L
Copper (Cu)	EG020A-T		<0.010 mg/L
Iron (Fe)	EG020A-F	0.49 mg/L	
Lead (Pb)	EG020A-T		<0.010 mg/L
Magnesium (Mg)	ED093T-UL		1860 mg/L
Manganese (Mn)	EG020A-F	54.5 mg/L	
Molybdenum (Mo)	EG020A-T		0.025 mg/L
Nickel (Ni)	EG020A-T		2.10 mg/L
Potassium (K)	ED093T-UL		1160 mg/L
Selenium (Se)	EG094B-T		0.108 mg/L
Silver (Ag)	EG020B-T		<0.010 mg/L
Sodium (Na)	ED093T-UL		15400 mg/L
Vanadium (V)	EG020A-F	<0.10 mg/L	

* NATA accreditation does not cover the performance of this service



Accreditation Number 1099

Accredited for compliance with ISO/IEC 17025 - Testing.

Authorised by Thanh Hoang Le
Senior Chemist

Amended - Report Number: 2141557

Replaces previous report number: 2136936 1-Sep-2017 8:15

ENERGY AUSTRALIA C/- MT PIPER POWER

BOULDER ROAD

PORTLAND NSW 2847 AUSTRALIA

Sold To: 0500082301 **Ship To:** 0500082301

Representative: Clive Stacey

Sampled By: Allan Bowcher

Sample Number MPW018096
Date Sampled 23-Aug-2017 10:55
Date Received 25-Aug-2017
Date Completed 1-Sep-2017
Date Authorised 1-Sep-2017

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: MP Ash - D10 - B5-1 (Purged)

Source: MP **Customer Sampling Point:** 251 **Sampling Code:** B5-1 **Sample Frequency:** Ad-Hoc

Testing Laboratory: ALS Environmental

Vanadium (V)	EG020A-T	<0.10 mg/L
Zinc (Zn)	EG020A-T	3.50 mg/L

Anions Test Method: ED009-X	Filtered
Fluoride (F)	<5.00 mg/L
Chloride (Cl)	4150 mg/L
Sulfate (SO4)	35600 mg/L

Alkalinity Test Method: ED037-P	Total
Total Alkalinity (CaCO3)	155 mg/L

Physical Test Method: EA015H	Total
Total Dissolved Solids @ 180°C	56000 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1721202. Report Date: 31-Aug-2017

* NATA accreditation does not cover the performance of this service



Accreditation Number 1099
 Accredited for compliance with ISO/IEC 17025 - Testing.

Authorised by Thanh Hoang Le
 Senior Chemist

Customer Analytical Services

Mount Piper Power Station 350 Boulder Road Portland 2847 NSW

Email: customeranalyticalservices@nalco.com

NALCO Water
An Ecolab Company

Final - Report Number: 2169154

ENERGY AUSTRALIA C/- MT PIPER POWER

BOULDER ROAD

PORTLAND NSW 2847 AUSTRALIA

Sold To: 0500082301 **Ship To:** 0500082301

Representative: Clive Stacey

Sampled By: Nikki Tomlinson

Sample Number

MPW018590

Date Sampled

28-Sep-2017 08:08

Date Received

6-Oct-2017

Date Completed

10-Oct-2017

Date Authorised

13-Oct-2017

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Groundwater Bore MPGM4

Source: MP

Customer Sampling Point: 014

Sampling Code: D9

Sample Frequency: Month

Testing Laboratory: Mount Piper

Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	2.2 m
Bore Volume Pumped	*Analysis in Field	2 L
Recharge Bore Level	*Analysis in Field	2.2 m
pH	CA12125	5.72
Conductivity	CA12125	2850 µS/cm

Testing Laboratory: ALS Environmental

Water

Cations - Metals	Test Method	Filtered	Total
Mercury (Hg)	EG035T-LL		<0.00004 mg/L
Aluminium (Al)	EG020A-T		0.02 mg/L
Arsenic (As)	EG020A-T		<0.001 mg/L
Barium (Ba)	EG020A-T		0.030 mg/L
Boron (B)	EG020A-T		0.65 mg/L
Cadmium (Cd)	EG020A-T		<0.0001 mg/L
Calcium (Ca)	ED093T-UL		211 mg/L
Chromium (Cr)	EG020A-T		<0.001 mg/L
Copper (Cu)	EG020A-T		<0.001 mg/L
Iron (Fe)	EG020A-F	6.80 mg/L	
Lead (Pb)	EG020A-T		<0.001 mg/L
Magnesium (Mg)	ED093T-UL		178 mg/L
Manganese (Mn)	EG020A-F	9.00 mg/L	
Molybdenum (Mo)	EG020A-T		<0.001 mg/L
Nickel (Ni)	EG020A-T		0.397 mg/L
Potassium (K)	ED093T-UL		18.0 mg/L
Selenium (Se)	EG094B-T		<0.0002 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		172 mg/L
Vanadium (V)	EG020A-F	<0.01 mg/L	
Vanadium (V)	EG020A-T		<0.01 mg/L

* NATA accreditation does not cover the performance of this service



Accreditation Number 1099

Accredited for compliance with ISO/IEC 17025 - Testing.

Authorised by Thanh Hoang Le
Senior Chemist

Final - Report Number: 2169154
ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Nikki Tomlinson

Sample Number MPW018590
Date Sampled 28-Sep-2017 08:08
Date Received 6-Oct-2017
Date Completed 10-Oct-2017
Date Authorised 13-Oct-2017

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Groundwater Bore MPM4

Source: MP **Customer Sampling Point:** 014 **Sampling Code:** D9 **Sample Frequency:** Month

Testing Laboratory: ALS Environmental

Zinc (Zn)	EG020A-T	0.102 mg/L
-----------	----------	------------

Anions Test Method: ED009-X

Fluoride (F)	Filtered	0.051 mg/L
Chloride (Cl)		184 mg/L
Sulfate (SO4)		1380 mg/L

Alkalinity Test Method: ED037-P

Total Alkalinity (CaCO3)	Total
	78 mg/L

Physical Test Method: EA015H

Total Dissolved Solids @ 180°C	Total
	2430 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1724588. Report Date: 9-Oct-2017

* NATA accreditation does not cover the performance of this service



Accreditation Number 1099
 Accredited for compliance with ISO/IEC 17025 - Testing.

Authorised by Thanh Hoang Le
 Senior Chemist

Final - Report Number: 2169154
ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Nikki Tomlinson

Sample Number MPW018591
Date Sampled 27-Sep-2017 09:10
Date Received 6-Oct-2017
Date Completed 10-Oct-2017
Date Authorised 13-Oct-2017

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Stream Gauge

Source: MP **Customer Sampling Point:** 003 **Sampling Code:** WX22 **Sample Frequency:** Month

Testing Laboratory: Mount Piper
 Water

Field Analysis	Test Method	Total
Discharge Flowing	*Analysis in Field	Flow
pH	CA12125	6.94
Conductivity	CA12125	900 µS/cm
Temperature	CA12125	10.7 °C
Dissolved Oxygen (O2)	*Analysis in Field	11.0 mg/L



Field Photo

Testing Laboratory: ALS Environmental
 Water

Cations - Metals	Test Method	Filtered	Total
Mercury (Hg)	EG035T-LL		<0.00004 mg/L
Aluminium (Al)	EG020A-F	<0.01 mg/L	
Aluminium (Al)	EG020A-T		0.04 mg/L
Arsenic (As)	EG020A-T		<0.001 mg/L

* NATA accreditation does not cover the performance of this service



Accreditation Number 1099
 Accredited for compliance with ISO/IEC 17025 - Testing.

Authorised by Thanh Hoang Le
 Senior Chemist

Final - Report Number: 2169154

ENERGY AUSTRALIA C/- MT PIPER POWER

BOULDER ROAD

PORTLAND NSW 2847 AUSTRALIA

Sold To: 0500082301 **Ship To:** 0500082301

Representative: Clive Stacey

Sampled By: Nikki Tomlinson

Sample Number

MPW018591

Date Sampled

27-Sep-2017 09:10

Date Received

6-Oct-2017

Date Completed

10-Oct-2017

Date Authorised

13-Oct-2017

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Stream Gauge

Source: MP

Customer Sampling Point: 003

Sampling Code: WX22

Sample Frequency: Month

Testing Laboratory: ALS Environmental

Barium (Ba)	EG020A-T	0.037 mg/L
Boron (B)	EG020A-T	0.12 mg/L
Cadmium (Cd)	EG020A-T	<0.0001 mg/L
Calcium (Ca)	ED093T-UL	59.8 mg/L
Chromium (Cr)	EG020A-T	<0.001 mg/L
Copper (Cu)	EG020A-F	<0.001 mg/L
Copper (Cu)	EG020A-T	<0.001 mg/L
Iron (Fe)	EG094B-F	0.087 mg/L
Iron (Fe)	EG094B-T	0.241 mg/L
Lead (Pb)	EG020A-T	<0.001 mg/L
Magnesium (Mg)	ED093T-UL	37.3 mg/L
Manganese (Mn)	EG020A-F	0.294 mg/L
Manganese (Mn)	EG020A-T	0.309 mg/L
Molybdenum (Mo)	EG020A-T	<0.001 mg/L
Nickel (Ni)	EG020A-T	0.020 mg/L
Potassium (K)	ED093T-UL	7.05 mg/L
Selenium (Se)	EG094B-T	<0.0002 mg/L
Silver (Ag)	EG020B-T	<0.001 mg/L
Sodium (Na)	ED093T-UL	58.7 mg/L
Strontium (Sr)	EG020B-T	0.220 mg/L
Vanadium (V)	EG020A-F	<0.01 mg/L
Vanadium (V)	EG020A-T	<0.01 mg/L
Zinc (Zn)	EG020A-F	0.009 mg/L
Zinc (Zn)	EG020A-T	0.010 mg/L

* NATA accreditation does not cover the performance of this service



Accreditation Number 1099
 Accredited for compliance with ISO/IEC 17025 - Testing.

Authorised by Thanh Hoang Le
 Senior Chemist

Final - Report Number: 2169154
ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Nikki Tomlinson

Sample Number MPW018591
Date Sampled 27-Sep-2017 09:10
Date Received 6-Oct-2017
Date Completed 10-Oct-2017
Date Authorised 13-Oct-2017

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Stream Gauge

Source: MP **Customer Sampling Point:** 003 **Sampling Code:** WX22 **Sample Frequency:** Month

Testing Laboratory: ALS Environmental

Anions	Test Method	Filtered
Fluoride (F)	ED009-X	0.091 mg/L
Chloride (Cl)	ED009-X	62.3 mg/L
Sulfate (SO4)	ED009-X	284 mg/L
Nitrate (N)	EK058G	<0.01 mg/L
Nitrite (N)	EK057G	<0.01 mg/L
Nitrate and Nitrite (N)	EK059G	<0.01 mg/L

Alkalinity	Test Method: ED037-P	Total
Total Alkalinity (CaCO3)		72 mg/L
Phenolphthalein Alkalinity (CaCO3)		<1 mg/L
Bicarbonate (CaCO3)		72 mg/L

Phosphate	Test Method: EK067G	Total
Total Phosphorus (P)		0.01 mg/L

Physical	Test Method	Total
Total Dissolved Solids @ 180°C	EA015H	594 mg/L
Turbidity	EA045	1.9 NTU

Other	Test Method	Total
Nitrogen (N)	EK062G	0.5 mg/L
Nitrogen (N) - Kjeldahl	EK061G	0.5 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1724588. Report Date: 9-Oct-2017

* NATA accreditation does not cover the performance of this service



Accreditation Number 1099
 Accredited for compliance with ISO/IEC 17025 - Testing.

Authorised by Thanh Hoang Le
 Senior Chemist

Final - Report Number: 2169154
ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Nikki Tomlinson

Sample Number MPW018592
Date Sampled 27-Sep-2017 09:50
Date Received 6-Oct-2017
Date Completed 10-Oct-2017
Date Authorised 13-Oct-2017

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Groundwater Bore MPGM4

Source: MP **Customer Sampling Point:** 006 **Sampling Code:** D1 **Sample Frequency:** Month

Testing Laboratory: Mount Piper
Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	2.8 m
Bore Volume Pumped	*Analysis in Field	123 L
Recharge Bore Level	*Analysis in Field	3.4 m
pH	CA12125	5.82
Conductivity	CA12125	5770 µS/cm

Testing Laboratory: ALS Environmental
Water

Cations - Metals	Test Method	Filtered	Total
Mercury (Hg)	EG035T-LL		<0.00004 mg/L
Aluminium (Al)	EG020A-T		0.01 mg/L
Arsenic (As)	EG020A-T		0.004 mg/L
Barium (Ba)	EG020A-T		0.036 mg/L
Boron (B)	EG020A-T		2.02 mg/L
Cadmium (Cd)	EG020A-T		<0.0001 mg/L
Calcium (Ca)	ED093T-UL		433 mg/L
Chromium (Cr)	EG020A-T		<0.001 mg/L
Copper (Cu)	EG020A-T		<0.001 mg/L
Iron (Fe)	EG020A-F	52.3 mg/L	
Lead (Pb)	EG020A-T		<0.001 mg/L
Magnesium (Mg)	ED093T-UL		319 mg/L
Manganese (Mn)	EG020A-F	21.2 mg/L	
Molybdenum (Mo)	EG020A-T		<0.001 mg/L
Nickel (Ni)	EG020A-T		1.24 mg/L
Potassium (K)	ED093T-UL		48.5 mg/L
Selenium (Se)	EG094B-T		<0.0002 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		493 mg/L
Vanadium (V)	EG020A-F	<0.01 mg/L	
Vanadium (V)	EG020A-T		<0.01 mg/L

* NATA accreditation does not cover the performance of this service



Accreditation Number 1099
 Accredited for compliance with ISO/IEC 17025 - Testing.

Authorised by Thanh Hoang Le
 Senior Chemist

Final - Report Number: 2169154
ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Nikki Tomlinson

Sample Number MPW018592
Date Sampled 27-Sep-2017 09:50
Date Received 6-Oct-2017
Date Completed 10-Oct-2017
Date Authorised 13-Oct-2017

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Groundwater Bore MPGM4

Source: MP **Customer Sampling Point:** 006 **Sampling Code:** D1 **Sample Frequency:** Month

Testing Laboratory: ALS Environmental

Zinc (Zn) EG020A-T 0.152 mg/L

Anions	Test Method	Filtered
Fluoride (F)	ED009-X	<0.100 mg/L
Chloride (Cl)	ED009-X	606 mg/L
Sulfate (SO4)	ED009-X	2520 mg/L

ED009x: Particular samples required dilution prior to extraction due to matrix interferences. LOR values have been adjusted accordingly.

Alkalinity Test Method: ED037-P **Total**
 Total Alkalinity (CaCO3) 138 mg/L

Physical Test Method: EA015H **Total**
 Total Dissolved Solids @ 180°C 5040 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1724588. Report Date: 9-Oct-2017

* NATA accreditation does not cover the performance of this service



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Authorised by Thanh Hoang Le
 Senior Chemist

Final - Report Number: 2169154
ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Nikki Tomlinson

Sample Number MPW018593
Date Sampled 28-Sep-2017 08:26
Date Received 6-Oct-2017
Date Completed 10-Oct-2017
Date Authorised 13-Oct-2017

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Groundwater Bore MPGM4

Source: MP **Customer Sampling Point:** 013 **Sampling Code:** D8 **Sample Frequency:** Month

Testing Laboratory: Mount Piper
Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	2.5 m
Bore Volume Pumped	*Analysis in Field	45 L
Recharge Bore Level	*Analysis in Field	2.5 m
pH	CA12125	5.54
Conductivity	CA12125	860 µS/cm

Testing Laboratory: ALS Environmental
Water

Cations - Metals	Test Method	Filtered	Total
Mercury (Hg)	EG035T-LL		<0.00004 mg/L
Aluminium (Al)	EG020A-T		0.10 mg/L
Arsenic (As)	EG020A-T		<0.001 mg/L
Barium (Ba)	EG020A-T		0.027 mg/L
Boron (B)	EG020A-T		0.08 mg/L
Cadmium (Cd)	EG020A-T		<0.0001 mg/L
Calcium (Ca)	ED093T-UL		49.2 mg/L
Chromium (Cr)	EG020A-T		<0.001 mg/L
Copper (Cu)	EG020A-T		<0.001 mg/L
Iron (Fe)	EG094B-F	0.523 mg/L	
Lead (Pb)	EG020A-T		<0.001 mg/L
Magnesium (Mg)	ED093T-UL		37.1 mg/L
Manganese (Mn)	EG020A-F	1.80 mg/L	
Molybdenum (Mo)	EG020A-T		<0.001 mg/L
Nickel (Ni)	EG020A-T		0.070 mg/L
Potassium (K)	ED093T-UL		6.00 mg/L
Selenium (Se)	EG094B-T		<0.0002 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		56.8 mg/L
Vanadium (V)	EG020A-F	<0.01 mg/L	
Vanadium (V)	EG020A-T		<0.01 mg/L

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 Senior Chemist

Final - Report Number: 2169154
ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Nikki Tomlinson

Sample Number MPW018593
Date Sampled 28-Sep-2017 08:26
Date Received 6-Oct-2017
Date Completed 10-Oct-2017
Date Authorised 13-Oct-2017

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Groundwater Bore MPGM4

Source: MP **Customer Sampling Point:** 013 **Sampling Code:** D8 **Sample Frequency:** Month

Testing Laboratory: ALS Environmental

Zinc (Zn)	EG020A-T	0.121 mg/L
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Anions Test Method: ED009-X	Filtered	
Fluoride (F)		0.033 mg/L
Chloride (Cl)		45.2 mg/L
Sulfate (SO4)		328 mg/L

Alkalinity Test Method: ED037-P	Total	
Total Alkalinity (CaCO3)		25 mg/L

Physical Test Method: EA015H	Total	
Total Dissolved Solids @ 180°C		620 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1724588. Report Date: 9-Oct-2017

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 Senior Chemist

Final - Report Number: 2169154

ENERGY AUSTRALIA C/- MT PIPER POWER

BOULDER ROAD

PORTLAND NSW 2847 AUSTRALIA

Sold To: 0500082301 **Ship To:** 0500082301

Representative: Clive Stacey

Sampled By: Nikki Tomlinson

Sample Number

MPW018594

Date Sampled

27-Sep-2017 14:15

Date Received

29-Sep-2017

Date Completed

29-Sep-2017

Date Authorised

29-Sep-2017

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: MP Ash - D10 - D21

Source: MP

Customer Sampling Point: 253

Sampling Code: D21

Sample Frequency:

ADDITIONAL_MONTH

Testing Laboratory: Mount Piper

Water

Field Analysis **Test Method:** Analysis in Field
Dry

Total

N Tomlinson

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Senior Chemist

Final - Report Number: 2169154
ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Nikki Tomlinson

Sample Number MPW018595
Date Sampled 28-Sep-2017 11:35
Date Received 6-Oct-2017
Date Completed 10-Oct-2017
Date Authorised 13-Oct-2017

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: MP Ash - D10 - D23

Source: MP **Customer Sampling Point:** 254 **Sampling Code:** D23 **Sample Frequency:** ADDITIONAL_MONTH

Testing Laboratory: Mount Piper
Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	24.3 m
Bore Volume Pumped	*Analysis in Field	52 L
Recharge Bore Level	*Analysis in Field	24.4 m
pH	CA12125	5.80
Conductivity	CA12125	5150 µS/cm

Testing Laboratory: ALS Environmental
Water

Cations - Metals	Test Method	Filtered	Total
Mercury (Hg)	EG035T-LL		<0.00004 mg/L
Aluminium (Al)	EG020A-T		0.32 mg/L
Arsenic (As)	EG020A-T		<0.001 mg/L
Barium (Ba)	EG020A-T		0.024 mg/L
Boron (B)	EG020A-T		0.51 mg/L
Cadmium (Cd)	EG020A-T		0.0005 mg/L
Calcium (Ca)	ED093T-UL		236 mg/L
Chromium (Cr)	EG020A-T		0.028 mg/L
Copper (Cu)	EG020A-T		0.002 mg/L
Iron (Fe)	EG020A-F	5.37 mg/L	
Lead (Pb)	EG020A-T		0.001 mg/L
Magnesium (Mg)	ED093T-UL		134 mg/L
Manganese (Mn)	EG020A-F	2.80 mg/L	
Molybdenum (Mo)	EG020A-T		<0.001 mg/L
Nickel (Ni)	EG020A-T		0.398 mg/L
Potassium (K)	ED093T-UL		54.0 mg/L
Selenium (Se)	EG094B-T		0.0005 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		770 mg/L
Vanadium (V)	EG020A-F	<0.01 mg/L	

* NATA accreditation does not cover the performance of this service



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 Senior Chemist

Final - Report Number: 2169154
ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Nikki Tomlinson

Sample Number MPW018595
Date Sampled 28-Sep-2017 11:35
Date Received 6-Oct-2017
Date Completed 10-Oct-2017
Date Authorised 13-Oct-2017

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: MP Ash - D10 - D23

Source: MP **Customer Sampling Point:** 254 **Sampling Code:** D23 **Sample Frequency:** ADDITIONAL_MONTH

Testing Laboratory: ALS Environmental

Vanadium (V)	EG020A-T	<0.01 mg/L
Zinc (Zn)	EG020A-T	0.424 mg/L

Anions	Test Method	Filtered
Fluoride (F)	ED009-X	<0.100 mg/L
Chloride (Cl)	ED009-X	322 mg/L
Sulfate (SO4)	ED009-X	2400 mg/L

ED009x: Particular samples required dilution prior to extraction due to matrix interferences. LOR values have been adjusted accordingly.

Alkalinity Test Method: ED037-P	Total
Total Alkalinity (CaCO3)	119 mg/L

Physical Test Method: EA015H	Total
Total Dissolved Solids @ 180°C	4150 mg/L

TDS by method EA-015 may bias high for various samples due to the presence of fine particulate matter, which may pass through the prescribed GF/C paper.

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1724588. Report Date: 9-Oct-2017

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 Senior Chemist

Final - Report Number: 2169154
ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Nikki Tomlinson

Sample Number MPW018596
Date Sampled 28-Sep-2017 11:50
Date Received 6-Oct-2017
Date Completed 10-Oct-2017
Date Authorised 13-Oct-2017

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Groundwater Bore MPGM4

Source: MP **Customer Sampling Point:** 223 **Sampling Code:** D18 **Sample Frequency:** Month

Testing Laboratory: Mount Piper
Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	24.1 m
Bore Volume Pumped	*Analysis in Field	45 L
Recharge Bore Level	*Analysis in Field	36.1 m
pH	CA12125	6.62
Conductivity	CA12125	770 µS/cm

Testing Laboratory: ALS Environmental
Water

Cations - Metals	Test Method	Filtered	Total
Mercury (Hg)	EG035T-LL		<0.00004 mg/L
Aluminium (Al)	EG020A-T		0.02 mg/L
Arsenic (As)	EG020A-T		0.002 mg/L
Barium (Ba)	EG020A-T		0.479 mg/L
Boron (B)	EG020A-T		0.07 mg/L
Cadmium (Cd)	EG020A-T		0.0002 mg/L
Calcium (Ca)	ED093T-UL		77.4 mg/L
Chromium (Cr)	EG020A-T		<0.001 mg/L
Copper (Cu)	EG020A-T		<0.001 mg/L
Iron (Fe)	EG094B-F	0.011 mg/L	
Lead (Pb)	EG020A-T		<0.001 mg/L
Magnesium (Mg)	ED093T-UL		29.8 mg/L
Manganese (Mn)	EG020A-F	0.160 mg/L	
Molybdenum (Mo)	EG020A-T		0.003 mg/L
Nickel (Ni)	EG020A-T		0.009 mg/L
Potassium (K)	ED093T-UL		19.2 mg/L
Selenium (Se)	EG094B-T		0.0003 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		33.2 mg/L
Vanadium (V)	EG020A-F	<0.01 mg/L	
Vanadium (V)	EG020A-T		<0.01 mg/L

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 Senior Chemist

Final - Report Number: 2169154
ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Nikki Tomlinson

Sample Number MPW018596
Date Sampled 28-Sep-2017 11:50
Date Received 6-Oct-2017
Date Completed 10-Oct-2017
Date Authorised 13-Oct-2017

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Groundwater Bore MPGM4

Source: MP **Customer Sampling Point:** 223 **Sampling Code:** D18 **Sample Frequency:** Month

Testing Laboratory: ALS Environmental

Zinc (Zn)	EG020A-T	0.050 mg/L
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Anions Test Method: ED009-X	Filtered	
Fluoride (F)		0.432 mg/L
Chloride (Cl)		13.0 mg/L
Sulfate (SO4)		62.9 mg/L

Alkalinity Test Method: ED037-P	Total	
Total Alkalinity (CaCO3)		346 mg/L

Physical Test Method: EA015H	Total	
Total Dissolved Solids @ 180°C		392 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1724588. Report Date: 9-Oct-2017

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Authorised by Thanh Hoang Le
 Senior Chemist

Customer Analytical Services

Mount Piper Power Station 350 Boulder Road Portland 2847 NSW

Email: customeranalyticalservices@nalco.com



Final - Report Number: 2169154

ENERGY AUSTRALIA C/- MT PIPER POWER

BOULDER ROAD

PORTLAND NSW 2847 AUSTRALIA

Sold To: 0500082301 **Ship To:** 0500082301

Representative: Clive Stacey

Sampled By: Nikki Tomlinson

Sample Number

MPW018597

Date Sampled

28-Sep-2017 09:35

Date Received

29-Sep-2017

Date Completed

29-Sep-2017

Date Authorised

29-Sep-2017

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: MP Ash - D10 - SW3-S

Source: MP

Customer Sampling Point: 257

Sampling Code: SW3-S

Sample Frequency:

ADDITIONAL_MONTH

Testing Laboratory: Mount Piper

Water

Field Analysis Test Method: Analysis in Field

	Total
Initial Bore Level	15.5 m
Bore Volume Pumped	0 L
Recharge Bore Level	15.5 m

Volume Not Extractable

Authorised by Nikki Tomlinson
Senior Chemist

Final - Report Number: 2169154

ENERGY AUSTRALIA C/- MT PIPER POWER

BOULDER ROAD

PORTLAND NSW 2847 AUSTRALIA

Sold To: 0500082301 **Ship To:** 0500082301

Representative: Clive Stacey

Sampled By: Nikki Tomlinson

Sample Number

MPW018598

Date Sampled

28-Sep-2017 09:30

Date Received

29-Sep-2017

Date Completed

29-Sep-2017

Date Authorised

29-Sep-2017

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: MP Ash - D10 - SW3-D

Source: MP

Customer Sampling Point: 256

Sampling Code: SW3-D

Sample Frequency:

ADDITIONAL_MONTH

Testing Laboratory: Mount Piper

Water

Field Analysis Test Method: Analysis in Field

Total

Initial Bore Level

24.2 m

Bore Volume Pumped

0 L

Recharge Bore Level

24.2 m

Volume Not Extractable

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Authorised by Nikki Tomlinson
Senior Chemist

Final - Report Number: 2169154
ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Nikki Tomlinson

Sample Number MPW018599
Date Sampled 28-Sep-2017 08:58
Date Received 6-Oct-2017
Date Completed 10-Oct-2017
Date Authorised 13-Oct-2017

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: MP Ash - D10 - B5

Source: MP **Customer Sampling Point:** 250 **Sampling Code:** B5 **Sample Frequency:** ADDITIONAL_MONTH

Testing Laboratory: Mount Piper
Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	36.3 m
Bore Volume Pumped	*Analysis in Field	2 L
Recharge Bore Level	*Analysis in Field	36.3 m
pH	CA12125	6.02
Conductivity	CA12125	43030 µS/cm

Testing Laboratory: ALS Environmental
Water

Cations - Metals	Test Method	Filtered	Total
Mercury (Hg)	EG035T-LL		<0.00004 mg/L
Aluminium (Al)	EG020A-T		1.00 mg/L
Arsenic (As)	EG020A-T		<0.010 mg/L
Barium (Ba)	EG020A-T		0.049 mg/L
Boron (B)	EG020A-T		14.4 mg/L
Cadmium (Cd)	EG020A-T		0.118 mg/L
Calcium (Ca)	ED093T-UL		442 mg/L
Chromium (Cr)	EG020A-T		<0.010 mg/L
Copper (Cu)	EG020A-T		0.105 mg/L
Iron (Fe)	EG020A-F	2.68 mg/L	
Lead (Pb)	EG020A-T		<0.010 mg/L
Magnesium (Mg)	ED093T-UL		1420 mg/L
Manganese (Mn)	EG020A-F	11.4 mg/L	
Molybdenum (Mo)	EG020A-T		5.80 mg/L
Nickel (Ni)	EG020A-T		1.64 mg/L
Potassium (K)	ED093T-UL		1300 mg/L
Selenium (Se)	EG094B-T		0.0483 mg/L
Silver (Ag)	EG020B-T		<0.010 mg/L
Sodium (Na)	ED093T-UL		10600 mg/L
Vanadium (V)	EG020A-F	<0.10 mg/L	

* NATA accreditation does not cover the performance of this service



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 Senior Chemist

Final - Report Number: 2169154
ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Nikki Tomlinson

Sample Number MPW018599
Date Sampled 28-Sep-2017 08:58
Date Received 6-Oct-2017
Date Completed 10-Oct-2017
Date Authorised 13-Oct-2017

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: MP Ash - D10 - B5

Source: MP **Customer Sampling Point:** 250 **Sampling Code:** B5 **Sample Frequency:** ADDITIONAL_MONTH

Testing Laboratory: ALS Environmental

Vanadium (V)	EG020A-T	<0.10 mg/L
Zinc (Zn)	EG020A-T	2.23 mg/L

Anions	Test Method	Filtered
Fluoride (F)	ED009-X	<2.00 mg/L
Chloride (Cl)	ED009-X	3530 mg/L
Sulfate (SO4)	ED009-X	29400 mg/L

ED009x: Particular samples required dilution prior to extraction due to matrix interferences. LOR values have been adjusted accordingly.

Alkalinity Test Method: ED037-P	Total
Total Alkalinity (CaCO3)	70 mg/L

Physical Test Method: EA015H	Total
Total Dissolved Solids @ 180°C	51700 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1724588. Report Date: 9-Oct-2017

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 Senior Chemist

Final - Report Number: 2169154
ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Nikki Tomlinson

Sample Number MPW018600
Date Sampled 28-Sep-2017 09:10
Date Received 6-Oct-2017
Date Completed 10-Oct-2017
Date Authorised 13-Oct-2017

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: MP Ash - D10 - B5-1

Source: MP **Customer Sampling Point:** 251 **Sampling Code:** B5-1 **Sample Frequency:** ADDITIONAL_MONTH

Testing Laboratory: Mount Piper
Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	35.2 m
Bore Volume Pumped	*Analysis in Field	5 L
Recharge Bore Level	*Analysis in Field	35.1 m
pH	CA12125	5.48
Conductivity	CA12125	49480 µS/cm

Testing Laboratory: ALS Environmental
Water

Cations - Metals	Test Method	Filtered	Total
Mercury (Hg)	EG035T-LL		0.00004 mg/L
Aluminium (Al)	EG020A-T		14.0 mg/L
Arsenic (As)	EG020A-T		0.020 mg/L
Barium (Ba)	EG020A-T		0.108 mg/L
Boron (B)	EG020A-T		8.49 mg/L
Cadmium (Cd)	EG020A-T		0.0885 mg/L
Calcium (Ca)	ED093T-UL		437 mg/L
Chromium (Cr)	EG020A-T		0.017 mg/L
Copper (Cu)	EG020A-T		0.033 mg/L
Iron (Fe)	EG020A-F	1.22 mg/L	
Lead (Pb)	EG020A-T		0.027 mg/L
Magnesium (Mg)	ED093T-UL		1880 mg/L
Manganese (Mn)	EG020A-F	48.9 mg/L	
Molybdenum (Mo)	EG020A-T		0.012 mg/L
Nickel (Ni)	EG020A-T		2.39 mg/L
Potassium (K)	ED093T-UL		1280 mg/L
Selenium (Se)	EG094B-T		0.105 mg/L
Silver (Ag)	EG020B-T		<0.010 mg/L
Sodium (Na)	ED093T-UL		12800 mg/L
Vanadium (V)	EG020A-F	<0.10 mg/L	

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 Senior Chemist

Final - Report Number: 2169154
ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Nikki Tomlinson

Sample Number MPW018600
Date Sampled 28-Sep-2017 09:10
Date Received 6-Oct-2017
Date Completed 10-Oct-2017
Date Authorised 13-Oct-2017

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: MP Ash - D10 - B5-1

Source: MP **Customer Sampling Point:** 251 **Sampling Code:** B5-1 **Sample Frequency:** ADDITIONAL_MONTH

Testing Laboratory: ALS Environmental

Vanadium (V)	EG020A-T	<0.10 mg/L
Zinc (Zn)	EG020A-T	3.93 mg/L

Anions	Test Method	Filtered
Fluoride (F)	ED009-X	<2.00 mg/L
Chloride (Cl)	ED009-X	3800 mg/L
Sulfate (SO4)	ED009-X	32700 mg/L

ED009x: Particular samples required dilution prior to extraction due to matrix interferences. LOR values have been adjusted accordingly.

Alkalinity Test Method: ED037-P	Total
Total Alkalinity (CaCO3)	119 mg/L

Physical Test Method: EA015H	Total
Total Dissolved Solids @ 180°C	61600 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1724588. Report Date: 9-Oct-2017

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 Senior Chemist

Final - Report Number: 2169154
ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Nikki Tomlinson

Sample Number MPW018601
Date Sampled 27-Sep-2017 11:12
Date Received 6-Oct-2017
Date Completed 10-Oct-2017
Date Authorised 13-Oct-2017

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: MP Ash - D10 - NA5

Source: MP **Customer Sampling Point:** 255 **Sampling Code:** NA5 **Sample Frequency:** ADDITIONAL_MONTH

Testing Laboratory: Mount Piper
Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	25.1 m
Bore Volume Pumped	*Analysis in Field	12 L
Recharge Bore Level	*Analysis in Field	25.1 m
pH	CA12125	5.73
Conductivity	CA12125	5560 µS/cm

Testing Laboratory: ALS Environmental
Water

Cations - Metals	Test Method	Filtered	Total
Mercury (Hg)	EG035T-LL		<0.00004 mg/L
Aluminium (Al)	EG020A-T		2.26 mg/L
Arsenic (As)	EG020A-T		<0.001 mg/L
Barium (Ba)	EG020A-T		0.030 mg/L
Boron (B)	EG020A-T		7.72 mg/L
Cadmium (Cd)	EG020A-T		0.0193 mg/L
Calcium (Ca)	ED093T-UL		400 mg/L
Chromium (Cr)	EG020A-T		0.032 mg/L
Copper (Cu)	EG020A-T		0.003 mg/L
Iron (Fe)	EG020A-F	1.48 mg/L	
Lead (Pb)	EG020A-T		<0.001 mg/L
Magnesium (Mg)	ED093T-UL		167 mg/L
Manganese (Mn)	EG020A-F	15.1 mg/L	
Molybdenum (Mo)	EG020A-T		0.014 mg/L
Nickel (Ni)	EG020A-T		0.816 mg/L
Potassium (K)	ED093T-UL		150 mg/L
Selenium (Se)	EG094B-T		0.0364 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		618 mg/L
Vanadium (V)	EG020A-F	<0.01 mg/L	

* NATA accreditation does not cover the performance of this service



Accreditation Number 1099
 Accredited for compliance with ISO/IEC 17025 - Testing.

Authorised by Thanh Hoang Le
 Senior Chemist

Final - Report Number: 2169154
ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Nikki Tomlinson

Sample Number MPW018601
Date Sampled 27-Sep-2017 11:12
Date Received 6-Oct-2017
Date Completed 10-Oct-2017
Date Authorised 13-Oct-2017

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: MP Ash - D10 - NA5

Source: MP **Customer Sampling Point:** 255 **Sampling Code:** NA5 **Sample Frequency:** ADDITIONAL_MONTH

Testing Laboratory: ALS Environmental

Vanadium (V)	EG020A-T	<0.01 mg/L
Zinc (Zn)	EG020A-T	1.47 mg/L

Anions Test Method: ED009-X	Filtered
Fluoride (F)	3.62 mg/L
Chloride (Cl)	263 mg/L
Sulfate (SO4)	3320 mg/L

Alkalinity Test Method: ED037-P	Total
Total Alkalinity (CaCO3)	84 mg/L

Physical Test Method: EA015H	Total
Total Dissolved Solids @ 180°C	4860 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1724588. Report Date: 9-Oct-2017

* NATA accreditation does not cover the performance of this service



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Authorised by Thanh Hoang Le
 Senior Chemist

Final - Report Number: 2169154
ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Nikki Tomlinson

Sample Number MPW018602
Date Sampled 28-Sep-2017 13:20
Date Received 6-Oct-2017
Date Completed 13-Oct-2017
Date Authorised 13-Oct-2017

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: MP Ash - D10 - D20

Source: MP **Customer Sampling Point:** 252 **Sampling Code:** D20 **Sample Frequency:** ADDITIONAL_MONTH

Testing Laboratory: Mount Piper
Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	17.4 m
Bore Volume Pumped	*Analysis in Field	16 L
Recharge Bore Level	*Analysis in Field	17.4 m
pH	CA12125	6.06
Conductivity	CA12125	3890 µS/cm

Testing Laboratory: ALS Environmental
Water

Cations - Metals	Test Method	Filtered	Total
Chromium Hexavalent (Cr)	EG050G-F	<0.01 mg/L	
Mercury (Hg)	EG035T-LL		<0.00004 mg/L
Aluminium (Al)	EG020A-T		2.39 mg/L
Arsenic (As)	EG020A-T		0.004 mg/L
Barium (Ba)	EG020A-T		0.061 mg/L
Boron (B)	EG020A-T		1.19 mg/L
Cadmium (Cd)	EG020A-T		0.0026 mg/L
Calcium (Ca)	ED093T-UL		301 mg/L
Chromium (Cr)	EG020A-T		0.057 mg/L
Copper (Cu)	EG020A-T		0.013 mg/L
Iron (Fe)	EG020A-F	1.22 mg/L	
Lead (Pb)	EG020A-T		0.008 mg/L
Magnesium (Mg)	ED093T-UL		354 mg/L
Manganese (Mn)	EG020A-F	25.8 mg/L	
Molybdenum (Mo)	EG020A-T		0.001 mg/L
Nickel (Ni)	EG020A-T		0.509 mg/L
Potassium (K)	ED093T-UL		27.0 mg/L
Selenium (Se)	EG094B-T		0.0005 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		161 mg/L

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 Senior Chemist

Final - Report Number: 2169154
ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Nikki Tomlinson

Sample Number MPW018602
Date Sampled 28-Sep-2017 13:20
Date Received 6-Oct-2017
Date Completed 13-Oct-2017
Date Authorised 13-Oct-2017

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: MP Ash - D10 - D20

Source: MP **Customer Sampling Point:** 252 **Sampling Code:** D20 **Sample Frequency:** ADDITIONAL_MONTH

Testing Laboratory: ALS Environmental

Vanadium (V)	EG020A-F	<0.01 mg/L	
Vanadium (V)	EG020A-T		<0.01 mg/L
Zinc (Zn)	EG020A-T		0.305 mg/L

Anions	Test Method: ED009-X	Filtered	
Fluoride (F)		0.121 mg/L	
Chloride (Cl)		115 mg/L	
Sulfate (SO4)		2270 mg/L	

Alkalinity	Test Method: ED037-P	Total
Total Alkalinity (CaCO3)		371 mg/L

Physical	Test Method: EA015H	Total
Total Dissolved Solids @ 180°C		3710 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1724588. Report Date: 11-Oct-2017

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1724588. Report Date: 9-Oct-2017

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 Senior Chemist

Final - Report Number: 2169154
ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Nikki Tomlinson

Sample Number MPW018603
Date Sampled 27-Sep-2017 14:00
Date Received 6-Oct-2017
Date Completed 10-Oct-2017
Date Authorised 13-Oct-2017

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Groundwater Bore MPGM4

Source: MP **Customer Sampling Point:** 224 **Sampling Code:** D19 **Sample Frequency:** Month

Testing Laboratory: Mount Piper
Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	9.7 m
Bore Volume Pumped	*Analysis in Field	14 L
Recharge Bore Level	*Analysis in Field	9.7 m
pH	CA12125	5.88
Conductivity	CA12125	6930 µS/cm

Testing Laboratory: ALS Environmental
Water

Cations - Metals	Test Method	Filtered	Total
Mercury (Hg)	EG035T-LL		<0.00004 mg/L
Aluminium (Al)	EG020A-T		1.44 mg/L
Arsenic (As)	EG020A-T		0.011 mg/L
Barium (Ba)	EG020A-T		0.035 mg/L
Boron (B)	EG020A-T		2.68 mg/L
Cadmium (Cd)	EG020A-T		0.0002 mg/L
Calcium (Ca)	ED093T-UL		332 mg/L
Chromium (Cr)	EG020A-T		0.008 mg/L
Copper (Cu)	EG020A-T		0.008 mg/L
Iron (Fe)	EG094B-F	31.6 mg/L	
Lead (Pb)	EG020A-T		0.021 mg/L
Magnesium (Mg)	ED093T-UL		286 mg/L
Manganese (Mn)	EG020A-F	13.6 mg/L	
Molybdenum (Mo)	EG020A-T		<0.001 mg/L
Nickel (Ni)	EG020A-T		0.999 mg/L
Potassium (K)	ED093T-UL		86.9 mg/L
Selenium (Se)	EG094B-T		0.0005 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		930 mg/L
Vanadium (V)	EG020A-F	<0.01 mg/L	
Vanadium (V)	EG020A-T		<0.01 mg/L

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 Senior Chemist

Final - Report Number: 2169154
ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Nikki Tomlinson

Sample Number MPW018603
Date Sampled 27-Sep-2017 14:00
Date Received 6-Oct-2017
Date Completed 10-Oct-2017
Date Authorised 13-Oct-2017

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Groundwater Bore MPGM4

Source: MP **Customer Sampling Point:** 224 **Sampling Code:** D19 **Sample Frequency:** Month

Testing Laboratory: ALS Environmental

Zinc (Zn)	EG020A-T	0.516 mg/L
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Anions Test Method: ED009-X	Filtered	
Fluoride (F)	0.023 mg/L	
Chloride (Cl)	651 mg/L	
Sulfate (SO4)	4050 mg/L	

Alkalinity Test Method: ED037-P	Total	
Total Alkalinity (CaCO3)	128 mg/L	

Physical Test Method: EA015H	Total	
Total Dissolved Solids @ 180°C	5920 mg/L	

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1724588. Report Date: 9-Oct-2017

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Authorised by Thanh Hoang Le
 Senior Chemist

Customer Analytical Services

Mount Piper Power Station 350 Boulder Road Portland 2847 NSW

Email: customeranalyticalservices@nalco.com



Final - Report Number: 2169154

ENERGY AUSTRALIA C/- MT PIPER POWER

BOULDER ROAD

PORTLAND NSW 2847 AUSTRALIA

Sold To: 0500082301 **Ship To:** 0500082301

Representative: Clive Stacey

Sampled By: Nikki Tomlinson

Sample Number

MPW018604

Date Sampled

27-Sep-2017 15:50

Date Received

6-Oct-2017

Date Completed

10-Oct-2017

Date Authorised

13-Oct-2017

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Groundwater Bore MPGM4

Source: MP

Customer Sampling Point: 008

Sampling Code: D3

Sample Frequency: Month

Testing Laboratory: Mount Piper

Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	7.5 m
Bore Volume Pumped	*Analysis in Field	206 L
Recharge Bore Level	*Analysis in Field	10.6 m
pH	CA12125	6.04
Conductivity	CA12125	970 µS/cm

Testing Laboratory: ALS Environmental

Water

Cations - Metals	Test Method	Filtered	Total
Mercury (Hg)	EG035T-LL		<0.00004 mg/L
Aluminium (Al)	EG020A-T		0.02 mg/L
Arsenic (As)	EG020A-T		<0.001 mg/L
Barium (Ba)	EG020A-T		0.024 mg/L
Boron (B)	EG020A-T		<0.05 mg/L
Cadmium (Cd)	EG020A-T		<0.0001 mg/L
Calcium (Ca)	ED093T-UL		77.4 mg/L
Chromium (Cr)	EG020A-T		<0.001 mg/L
Copper (Cu)	EG020A-T		<0.001 mg/L
Iron (Fe)	EG020A-F	12.5 mg/L	
Lead (Pb)	EG020A-T		<0.001 mg/L
Magnesium (Mg)	ED093T-UL		44.5 mg/L
Manganese (Mn)	EG020A-F	0.682 mg/L	
Molybdenum (Mo)	EG020A-T		<0.001 mg/L
Nickel (Ni)	EG020A-T		0.004 mg/L
Potassium (K)	ED093T-UL		9.69 mg/L
Selenium (Se)	EG094B-T		<0.0002 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		43.1 mg/L
Vanadium (V)	EG020A-F	<0.01 mg/L	
Vanadium (V)	EG020A-T		<0.01 mg/L

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Senior Chemist

Final - Report Number: 2169154
ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Nikki Tomlinson

Sample Number MPW018604
Date Sampled 27-Sep-2017 15:50
Date Received 6-Oct-2017
Date Completed 10-Oct-2017
Date Authorised 13-Oct-2017

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Groundwater Bore MPM4

Source: MP **Customer Sampling Point:** 008 **Sampling Code:** D3 **Sample Frequency:** Month

Testing Laboratory: ALS Environmental

Zinc (Zn)	EG020A-T	<0.005 mg/L
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Anions Test Method: ED009-X	Filtered	
Fluoride (F)		0.058 mg/L
Chloride (Cl)		41.3 mg/L
Sulfate (SO4)		322 mg/L

Alkalinity Test Method: ED037-P		Total
Total Alkalinity (CaCO3)		138 mg/L

Physical Test Method: EA015H		Total
Total Dissolved Solids @ 180°C		627 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1724588. Report Date: 9-Oct-2017

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Authorised by Thanh Hoang Le
 Senior Chemist

Final - Report Number: 2169154
ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Nikki Tomlinson

Sample Number MPW018605
Date Sampled 28-Sep-2017 11:00
Date Received 6-Oct-2017
Date Completed 10-Oct-2017
Date Authorised 13-Oct-2017

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Groundwater Bore MPGM4

Source: MP **Customer Sampling Point:** 016 **Sampling Code:** D11 **Sample Frequency:** Month

Testing Laboratory: Mount Piper

Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	26.1 m
Bore Volume Pumped	*Analysis in Field	134 L
Recharge Bore Level	*Analysis in Field	26.1 m
pH	CA12125	6.11
Conductivity	CA12125	10020 µS/cm

Testing Laboratory: ALS Environmental

Water

Cations - Metals	Test Method	Filtered	Total
Mercury (Hg)	EG035T-LL		<0.00004 mg/L
Aluminium (Al)	EG020A-T		<0.01 mg/L
Arsenic (As)	EG020A-T		0.007 mg/L
Barium (Ba)	EG020A-T		0.023 mg/L
Boron (B)	EG020A-T		2.70 mg/L
Cadmium (Cd)	EG020A-T		<0.0001 mg/L
Calcium (Ca)	ED093T-UL		592 mg/L
Chromium (Cr)	EG020A-T		<0.001 mg/L
Copper (Cu)	EG020A-T		<0.001 mg/L
Iron (Fe)	EG020A-F	60.2 mg/L	
Lead (Pb)	EG020A-T		<0.001 mg/L
Magnesium (Mg)	ED093T-UL		426 mg/L
Manganese (Mn)	EG020A-F	18.1 mg/L	
Molybdenum (Mo)	EG020A-T		<0.001 mg/L
Nickel (Ni)	EG020A-T		0.923 mg/L
Potassium (K)	ED093T-UL		130 mg/L
Selenium (Se)	EG094B-T		0.0002 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		1360 mg/L
Vanadium (V)	EG020A-F	<0.01 mg/L	
Vanadium (V)	EG020A-T		<0.01 mg/L

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 Senior Chemist

Final - Report Number: 2169154
ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Nikki Tomlinson

Sample Number MPW018605
Date Sampled 28-Sep-2017 11:00
Date Received 6-Oct-2017
Date Completed 10-Oct-2017
Date Authorised 13-Oct-2017

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Groundwater Bore MPGM4

Source: MP **Customer Sampling Point:** 016 **Sampling Code:** D11 **Sample Frequency:** Month

Testing Laboratory: ALS Environmental

Zinc (Zn) EG020A-T 0.146 mg/L

Anions	Test Method	Filtered
Fluoride (F)	ED009-X	<0.200 mg/L
Chloride (Cl)	ED009-X	983 mg/L
Sulfate (SO4)	ED009-X	5150 mg/L

ED009x: Particular samples required dilution prior to extraction due to matrix interferences. LOR values have been adjusted accordingly.

Alkalinity Test Method: ED037-P **Total**
 Total Alkalinity (CaCO3) 102 mg/L

Physical Test Method: EA015H **Total**
 Total Dissolved Solids @ 180°C 9080 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1724588. Report Date: 9-Oct-2017

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 Senior Chemist

Final - Report Number: 2169154
ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Nikki Tomlinson

Sample Number MPW018606
Date Sampled 27-Sep-2017 13:25
Date Received 6-Oct-2017
Date Completed 10-Oct-2017
Date Authorised 13-Oct-2017

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Groundwater Bore MPGM4

Source: MP **Customer Sampling Point:** 015 **Sampling Code:** D10 **Sample Frequency:** Month

Testing Laboratory: Mount Piper
Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	14.6 m
Bore Volume Pumped	*Analysis in Field	159 L
Recharge Bore Level	*Analysis in Field	14.6 m
pH	CA12125	5.53
Conductivity	CA12125	9480 µS/cm

Testing Laboratory: ALS Environmental
Water

Cations - Metals	Test Method	Filtered	Total
Mercury (Hg)	EG035T-LL		0.00010 mg/L
Aluminium (Al)	EG020A-T		0.13 mg/L
Arsenic (As)	EG020A-T		<0.001 mg/L
Barium (Ba)	EG020A-T		0.018 mg/L
Boron (B)	EG020A-T		3.07 mg/L
Cadmium (Cd)	EG020A-T		0.0061 mg/L
Calcium (Ca)	ED093T-UL		306 mg/L
Chromium (Cr)	EG020A-T		0.006 mg/L
Copper (Cu)	EG020A-T		0.002 mg/L
Iron (Fe)	EG020A-F	7.59 mg/L	
Lead (Pb)	EG020A-T		0.004 mg/L
Magnesium (Mg)	ED093T-UL		339 mg/L
Manganese (Mn)	EG020A-F	7.01 mg/L	
Molybdenum (Mo)	EG020A-T		<0.001 mg/L
Nickel (Ni)	EG020A-T		0.865 mg/L
Potassium (K)	ED093T-UL		174 mg/L
Selenium (Se)	EG094B-T		0.0029 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		1490 mg/L
Vanadium (V)	EG020A-F	<0.01 mg/L	
Vanadium (V)	EG020A-T		<0.01 mg/L

* NATA accreditation does not cover the performance of this service



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Authorised by Thanh Hoang Le
 Senior Chemist

Final - Report Number: 2169154
ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Nikki Tomlinson

Sample Number MPW018606
Date Sampled 27-Sep-2017 13:25
Date Received 6-Oct-2017
Date Completed 10-Oct-2017
Date Authorised 13-Oct-2017

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Groundwater Bore MPGM4

Source: MP **Customer Sampling Point:** 015 **Sampling Code:** D10 **Sample Frequency:** Month

Testing Laboratory: ALS Environmental

Zinc (Zn) EG020A-T 1.18 mg/L

Anions	Test Method	Filtered
Fluoride (F)	ED009-X	<0.200 mg/L
Chloride (Cl)	ED009-X	926 mg/L
Sulfate (SO4)	ED009-X	5600 mg/L

ED009x: Particular samples required dilution prior to extraction due to matrix interferences. LOR values have been adjusted accordingly.

Alkalinity Test Method: ED037-P **Total**
 Total Alkalinity (CaCO3) 82 mg/L

Physical Test Method: EA015H **Total**
 Total Dissolved Solids @ 180°C 7360 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1724588. Report Date: 9-Oct-2017

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Authorised by Thanh Hoang Le
 Senior Chemist

Final - Report Number: 2169154
ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Nikki Tomlinson

Sample Number MPW018607
Date Sampled 28-Sep-2017 12:18
Date Received 6-Oct-2017
Date Completed 10-Oct-2017
Date Authorised 13-Oct-2017

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Groundwater Bore MPGM4

Source: MP **Customer Sampling Point:** 222 **Sampling Code:** D17 **Sample Frequency:** Month

Testing Laboratory: Mount Piper
Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	28.1 m
Bore Volume Pumped	*Analysis in Field	32 L
Recharge Bore Level	*Analysis in Field	28.1 m
pH	CA12125	6.05
Conductivity	CA12125	3420 µS/cm

Testing Laboratory: ALS Environmental
Water

Cations - Metals	Test Method	Filtered	Total
Mercury (Hg)	EG035T-LL		<0.00004 mg/L
Aluminium (Al)	EG020A-T		0.10 mg/L
Arsenic (As)	EG020A-T		0.002 mg/L
Barium (Ba)	EG020A-T		0.018 mg/L
Boron (B)	EG020A-T		0.25 mg/L
Cadmium (Cd)	EG020A-T		<0.0001 mg/L
Calcium (Ca)	ED093T-UL		231 mg/L
Chromium (Cr)	EG020A-T		0.016 mg/L
Copper (Cu)	EG020A-T		<0.001 mg/L
Iron (Fe)	EG020A-F	20.5 mg/L	
Lead (Pb)	EG020A-T		<0.001 mg/L
Magnesium (Mg)	ED093T-UL		135 mg/L
Manganese (Mn)	EG020A-F	3.99 mg/L	
Molybdenum (Mo)	EG020A-T		<0.001 mg/L
Nickel (Ni)	EG020A-T		0.113 mg/L
Potassium (K)	ED093T-UL		23.3 mg/L
Selenium (Se)	EG094B-T		<0.0002 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		338 mg/L
Vanadium (V)	EG020A-F	<0.01 mg/L	
Vanadium (V)	EG020A-T		<0.01 mg/L

* NATA accreditation does not cover the performance of this service



Accreditation Number 1099
 Accredited for compliance with ISO/IEC 17025 - Testing.

Authorised by Thanh Hoang Le
 Senior Chemist

Final - Report Number: 2169154
ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Nikki Tomlinson

Sample Number MPW018607
Date Sampled 28-Sep-2017 12:18
Date Received 6-Oct-2017
Date Completed 10-Oct-2017
Date Authorised 13-Oct-2017

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Groundwater Bore MPGM4

Source: MP **Customer Sampling Point:** 222 **Sampling Code:** D17 **Sample Frequency:** Month

Testing Laboratory: ALS Environmental

Zinc (Zn)	EG020A-T	0.088 mg/L
-----------	----------	------------

Anions Test Method: ED009-X	Filtered	
Fluoride (F)	0.053 mg/L	
Chloride (Cl)	220 mg/L	
Sulfate (SO4)	1640 mg/L	

Alkalinity Test Method: ED037-P		Total
Total Alkalinity (CaCO3)		91 mg/L

Physical Test Method: EA015H		Total
Total Dissolved Solids @ 180°C		2810 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1724588. Report Date: 9-Oct-2017

* NATA accreditation does not cover the performance of this service



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Authorised by Thanh Hoang Le
 Senior Chemist

Final - Report Number: 2169154
ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Nikki Tomlinson

Sample Number MPW018608
Date Sampled 28-Sep-2017 12:50
Date Received 6-Oct-2017
Date Completed 10-Oct-2017
Date Authorised 13-Oct-2017

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Groundwater Bore MPGM4

Source: MP **Customer Sampling Point:** 220 **Sampling Code:** D15 **Sample Frequency:** Month

Testing Laboratory: Mount Piper
Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	25.2 m
Bore Volume Pumped	*Analysis in Field	32 L
Recharge Bore Level	*Analysis in Field	25.2 m
pH	CA12125	5.55
Conductivity	CA12125	4700 µS/cm

Testing Laboratory: ALS Environmental
Water

Cations - Metals	Test Method	Filtered	Total
Mercury (Hg)	EG035T-LL		<0.00004 mg/L
Aluminium (Al)	EG020A-T		0.34 mg/L
Arsenic (As)	EG020A-T		0.005 mg/L
Barium (Ba)	EG020A-T		0.014 mg/L
Boron (B)	EG020A-T		0.31 mg/L
Cadmium (Cd)	EG020A-T		0.0004 mg/L
Calcium (Ca)	ED093T-UL		230 mg/L
Chromium (Cr)	EG020A-T		0.048 mg/L
Copper (Cu)	EG020A-T		0.003 mg/L
Iron (Fe)	EG020A-F	11.5 mg/L	
Lead (Pb)	EG020A-T		0.003 mg/L
Magnesium (Mg)	ED093T-UL		119 mg/L
Manganese (Mn)	EG020A-F	2.80 mg/L	
Molybdenum (Mo)	EG020A-T		0.001 mg/L
Nickel (Ni)	EG020A-T		0.522 mg/L
Potassium (K)	ED093T-UL		44.0 mg/L
Selenium (Se)	EG094B-T		0.0004 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		670 mg/L
Vanadium (V)	EG020A-F	<0.01 mg/L	
Vanadium (V)	EG020A-T		<0.01 mg/L

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ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Nikki Tomlinson

Sample Number MPW018608
Date Sampled 28-Sep-2017 12:50
Date Received 6-Oct-2017
Date Completed 10-Oct-2017
Date Authorised 13-Oct-2017

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Groundwater Bore MPGM4

Source: MP **Customer Sampling Point:** 220 **Sampling Code:** D15 **Sample Frequency:** Month

Testing Laboratory: ALS Environmental

Zinc (Zn) EG020A-T 0.994 mg/L

Anions Test Method: ED009-X

	Filtered
Fluoride (F)	0.042 mg/L
Chloride (Cl)	311 mg/L
Sulfate (SO4)	2380 mg/L

Alkalinity Test Method: ED037-P

	Total
Total Alkalinity (CaCO3)	62 mg/L

Physical Test Method: EA015H

	Total
Total Dissolved Solids @ 180°C	3790 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1724588. Report Date: 9-Oct-2017

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Final - Report Number: 2169154

ENERGY AUSTRALIA C/- MT PIPER POWER

BOULDER ROAD

PORTLAND NSW 2847 AUSTRALIA

Sold To: 0500082301 **Ship To:** 0500082301

Representative: Clive Stacey

Sampled By: Nikki Tomlinson

Sample Number

MPW018609

Date Sampled

28-Sep-2017 13:00

Date Received

29-Sep-2017

Date Completed

29-Sep-2017

Date Authorised

29-Sep-2017

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Groundwater Bore MPGM4

Source: MP

Customer Sampling Point: 221

Sampling Code: D16

Sample Frequency: Month

Testing Laboratory: Mount Piper

Water

Field Analysis Test Method: Analysis in Field
Instrument in Bore

Total

N Tomlinson

Authorised by Nikki Tomlinson
Senior Chemist

Final - Report Number: 2169154

ENERGY AUSTRALIA C/- MT PIPER POWER

BOULDER ROAD

PORTLAND NSW 2847 AUSTRALIA

Sold To: 0500082301 **Ship To:** 0500082301

Representative: Clive Stacey

Sampled By: Nikki Tomlinson

Sample Number

MPW018610

Date Sampled

27-Sep-2017 11:40

Date Received

29-Sep-2017

Date Completed

29-Sep-2017

Date Authorised

29-Sep-2017

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: MP Ash - D10 - SW3-D

Source: MP

Customer Sampling Point: 256

Sampling Code: SW3-D

Sample Frequency: Ad-Hoc

Testing Laboratory: Mount Piper

Water

Field Analysis **Test Method:** Analysis in Field
Volume Not Extractable

Total

•System out of service.

N Tomlinson

Authorised by Nikki Tomlinson
Senior Chemist

Final - Report Number: 2169154
ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Nikki Tomlinson

Sample Number MPW018611
Date Sampled 27-Sep-2017 10:40
Date Received 6-Oct-2017
Date Completed 10-Oct-2017
Date Authorised 13-Oct-2017

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: MP Ash - D10 - B5

Source: MP **Customer Sampling Point:** 250 **Sampling Code:** B5 **Sample Frequency:** Ad-Hoc

Testing Laboratory: Mount Piper
 Water

Field Analysis	Test Method: CA12125	Total
pH		5.81
Conductivity		41730 µS/cm

Testing Laboratory: ALS Environmental
 Water

Cations - Metals	Test Method	Filtered	Total
Mercury (Hg)	EG035T-LL		0.00004 mg/L
Aluminium (Al)	EG020A-T		46.9 mg/L
Arsenic (As)	EG020A-T		0.025 mg/L
Barium (Ba)	EG020A-T		0.222 mg/L
Boron (B)	EG020A-T		14.9 mg/L
Cadmium (Cd)	EG020A-T		0.102 mg/L
Calcium (Ca)	ED093T-UL		443 mg/L
Chromium (Cr)	EG020A-T		0.033 mg/L
Copper (Cu)	EG020A-T		0.151 mg/L
Iron (Fe)	EG020A-F	3.57 mg/L	
Lead (Pb)	EG020A-T		0.052 mg/L
Magnesium (Mg)	ED093T-UL		1290 mg/L
Manganese (Mn)	EG020A-F	10.8 mg/L	
Molybdenum (Mo)	EG020A-T		6.98 mg/L
Nickel (Ni)	EG020A-T		1.91 mg/L
Potassium (K)	ED093T-UL		1230 mg/L
Selenium (Se)	EG094B-T		0.0603 mg/L
Silver (Ag)	EG020B-T		<0.010 mg/L
Sodium (Na)	ED093T-UL		10100 mg/L
Vanadium (V)	EG020A-F	<0.10 mg/L	
Vanadium (V)	EG020A-T		<0.10 mg/L
Zinc (Zn)	EG020A-T		1.66 mg/L

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Final - Report Number: 2169154
ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Nikki Tomlinson

Sample Number MPW018611
Date Sampled 27-Sep-2017 10:40
Date Received 6-Oct-2017
Date Completed 10-Oct-2017
Date Authorised 13-Oct-2017

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: MP Ash - D10 - B5

Source: MP **Customer Sampling Point:** 250 **Sampling Code:** B5 **Sample Frequency:** Ad-Hoc

Testing Laboratory: ALS Environmental

Anions	Test Method	Filtered
Fluoride (F)	ED009-X	<2.00 mg/L
Chloride (Cl)	ED009-X	3340 mg/L
Sulfate (SO4)	ED009-X	29100 mg/L

ED009x: Particular samples required dilution prior to extraction due to matrix interferences. LOR values have been adjusted accordingly.

Alkalinity Test Method: ED037-P **Total**
 Total Alkalinity (CaCO3) 51 mg/L

Physical Test Method: EA015H **Total**
 Total Dissolved Solids @ 180°C 45400 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1724588. Report Date: 9-Oct-2017

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Authorised by Thanh Hoang Le
 Senior Chemist

Final - Report Number: 2169154
ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Nikki Tomlinson

Sample Number MPW018612
Date Sampled 27-Sep-2017 10:50
Date Received 6-Oct-2017
Date Completed 10-Oct-2017
Date Authorised 13-Oct-2017

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: MP Ash - D10 - B5-1

Source: MP **Customer Sampling Point:** 251 **Sampling Code:** B5-1 **Sample Frequency:** Ad-Hoc

Testing Laboratory: Mount Piper

Water

Field Analysis	Test Method: CA12125	Total
pH		5.51
Conductivity		49050 µS/cm

Testing Laboratory: ALS Environmental

Water

Cations - Metals	Test Method	Filtered	Total
Mercury (Hg)	EG035T-LL		0.00006 mg/L
Aluminium (Al)	EG020A-T		22.1 mg/L
Arsenic (As)	EG020A-T		0.022 mg/L
Barium (Ba)	EG020A-T		0.161 mg/L
Boron (B)	EG020A-T		8.87 mg/L
Cadmium (Cd)	EG020A-T		0.0794 mg/L
Calcium (Ca)	ED093T-UL		443 mg/L
Chromium (Cr)	EG020A-T		0.026 mg/L
Copper (Cu)	EG020A-T		0.045 mg/L
Iron (Fe)	EG020A-F	1.01 mg/L	
Lead (Pb)	EG020A-T		0.038 mg/L
Magnesium (Mg)	ED093T-UL		1850 mg/L
Manganese (Mn)	EG020A-F	48.8 mg/L	
Molybdenum (Mo)	EG020A-T		0.028 mg/L
Nickel (Ni)	EG020A-T		2.29 mg/L
Potassium (K)	ED093T-UL		1270 mg/L
Selenium (Se)	EG094B-T		0.111 mg/L
Silver (Ag)	EG020B-T		<0.010 mg/L
Sodium (Na)	ED093T-UL		12700 mg/L
Vanadium (V)	EG020A-F	<0.10 mg/L	
Vanadium (V)	EG020A-T		<0.10 mg/L
Zinc (Zn)	EG020A-T		3.74 mg/L

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 Senior Chemist

Final - Report Number: 2169154
ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Nikki Tomlinson

Sample Number MPW018612
Date Sampled 27-Sep-2017 10:50
Date Received 6-Oct-2017
Date Completed 10-Oct-2017
Date Authorised 13-Oct-2017

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: MP Ash - D10 - B5-1

Source: MP **Customer Sampling Point:** 251 **Sampling Code:** B5-1 **Sample Frequency:** Ad-Hoc

Testing Laboratory: ALS Environmental

Anions	Test Method	Filtered
Fluoride (F)	ED009-X	<2.00 mg/L
Chloride (Cl)	ED009-X	3530 mg/L
Sulfate (SO4)	ED009-X	30300 mg/L

ED009x: Particular samples required dilution prior to extraction due to matrix interferences. LOR values have been adjusted accordingly.

Alkalinity Test Method: ED037-P **Total**
 Total Alkalinity (CaCO3) 131 mg/L

Physical Test Method: EA015H **Total**
 Total Dissolved Solids @ 180°C 61200 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1724588. Report Date: 9-Oct-2017

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Authorised by Thanh Hoang Le
 Senior Chemist

Final - Report Number: 2189696

ENERGY AUSTRALIA C/- MT PIPER POWER

BOULDER ROAD

PORTLAND NSW 2847 AUSTRALIA

Sold To: 0500082301 **Ship To:** 0500082301

Representative: Clive Stacey

Sampled By: Allan Bowcher

Sample Number

MPW018987

Date Sampled

26-Oct-2017 08:20

Date Received

26-Oct-2017

Date Completed

8-Nov-2017

Date Authorised

8-Nov-2017

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Groundwater Bore MPGM4

Source: MP

Customer Sampling Point: 014

Sampling Code: D9

Sample Frequency: Month

Testing Laboratory: Mount Piper

Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	2.0 m
Bore Volume Pumped	*Analysis in Field	2 L
Recharge Bore Level	*Analysis in Field	2.0 m
pH	CA12125	5.76
Conductivity	CA12125	2800 µS/cm

Testing Laboratory: ALS Environmental

Water

Cations - Metals	Test Method	Filtered	Total
Mercury (Hg)	EG035T-LL		<0.00004 mg/L
Aluminium (Al)	EG020A-T		0.01 mg/L
Arsenic (As)	EG020A-T		<0.001 mg/L
Barium (Ba)	EG020A-T		0.035 mg/L
Boron (B)	EG020A-T		0.73 mg/L
Cadmium (Cd)	EG020A-T		<0.0001 mg/L
Calcium (Ca)	ED093T-UL		206 mg/L
Chromium (Cr)	EG020A-T		<0.001 mg/L
Copper (Cu)	EG020A-T		<0.001 mg/L
Iron (Fe)	EG020A-F	6.34 mg/L	
Lead (Pb)	EG020A-T		<0.001 mg/L
Magnesium (Mg)	ED093T-UL		181 mg/L
Manganese (Mn)	EG020A-F	9.69 mg/L	
Molybdenum (Mo)	EG020A-T		0.004 mg/L
Nickel (Ni)	EG020A-T		0.372 mg/L
Potassium (K)	ED093T-UL		15.4 mg/L
Selenium (Se)	EG094B-T		<0.0002 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		167 mg/L
Vanadium (V)	EG020A-F	<0.01 mg/L	
Vanadium (V)	EG020A-T		<0.01 mg/L

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 Senior Chemist

Final - Report Number: 2189696

ENERGY AUSTRALIA C/- MT PIPER POWER

BOULDER ROAD

PORTLAND NSW 2847 AUSTRALIA

Sold To: 0500082301 **Ship To:** 0500082301

Representative: Clive Stacey

Sampled By: Allan Bowcher

Sample Number

MPW018987

Date Sampled

26-Oct-2017 08:20

Date Received

26-Oct-2017

Date Completed

8-Nov-2017

Date Authorised

8-Nov-2017

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Groundwater Bore MPGM4

Source: MP

Customer Sampling Point: 014

Sampling Code: D9

Sample Frequency: Month

Testing Laboratory: ALS Environmental

Zinc (Zn)	EG020A-T	0.103 mg/L
Anions	Test Method	Filtered
Fluoride (F)	ED009-X	<0.100 mg/L
Chloride (Cl)	ED009-X	164 mg/L
Sulfate (SO4)	ED009-X	1270 mg/L

ED009x: samples ES1726912-1 and 3 required dilution due to matrix interferences. LOR values have been adjusted accordingly.

Alkalinity Test Method: ED037-P	Total
Total Alkalinity (CaCO3)	89 mg/L

Physical Test Method: EA015H	Total
Total Dissolved Solids @ 180°C	2420 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1726912. Report Date: 2-Nov-2017

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 Senior Chemist

Final - Report Number: 2189696
ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Allan Bowcher

Sample Number MPW018988
Date Sampled 25-Oct-2017 08:52
Date Received 26-Oct-2017
Date Completed 3-Nov-2017
Date Authorised 8-Nov-2017

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Stream Gauge

Source: MP **Customer Sampling Point:** 003 **Sampling Code:** WX22 **Sample Frequency:** Month

Testing Laboratory: Mount Piper
 Water

Field Analysis	Test Method	Total
Discharge Flowing	*Analysis in Field	Flow
Appearance	*Analysis in Field	Clear
pH	CA12125	7.34
Conductivity	CA12125	374 µS/cm
Temperature	CA12125	13.5 °C
Dissolved Oxygen (O2)	*Analysis in Field	10.0 mg/L



field photo

Testing Laboratory: ALS Environmental
 Water

Cations - Metals	Test Method	Filtered	Total
Mercury (Hg)	EG035T-LL		<0.00004 mg/L
Aluminium (Al)	EG020A-F	<0.01 mg/L	
Aluminium (Al)	EG020A-T		0.18 mg/L

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 Senior Chemist

Final - Report Number: 2189696

ENERGY AUSTRALIA C/- MT PIPER POWER

BOULDER ROAD

PORTLAND NSW 2847 AUSTRALIA

Sold To: 0500082301 **Ship To:** 0500082301

Representative: Clive Stacey

Sampled By: Allan Bowcher

Sample Number

MPW018988

Date Sampled

25-Oct-2017 08:52

Date Received

26-Oct-2017

Date Completed

3-Nov-2017

Date Authorised

8-Nov-2017

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Stream Gauge

Source: MP

Customer Sampling Point: 003

Sampling Code: WX22

Sample Frequency: Month

Testing Laboratory: ALS Environmental

Arsenic (As)	EG020A-T	<0.001 mg/L
Barium (Ba)	EG020A-T	0.016 mg/L
Boron (B)	EG020A-T	0.16 mg/L
Cadmium (Cd)	EG020A-T	<0.0001 mg/L
Calcium (Ca)	ED093T-UL	24.9 mg/L
Chromium (Cr)	EG020A-T	<0.001 mg/L
Copper (Cu)	EG020A-F	<0.001 mg/L
Copper (Cu)	EG020A-T	<0.001 mg/L
Iron (Fe)	EG094B-F	0.064 mg/L
Iron (Fe)	EG094B-T	0.354 mg/L
Lead (Pb)	EG020A-T	<0.001 mg/L
Magnesium (Mg)	ED093T-UL	14.7 mg/L
Manganese (Mn)	EG020A-F	0.132 mg/L
Manganese (Mn)	EG020A-T	0.141 mg/L
Molybdenum (Mo)	EG020A-T	0.002 mg/L
Nickel (Ni)	EG020A-T	0.006 mg/L
Potassium (K)	ED093T-UL	5.06 mg/L
Selenium (Se)	EG094B-T	<0.0002 mg/L
Silver (Ag)	EG020B-T	<0.001 mg/L
Sodium (Na)	ED093T-UL	27.2 mg/L
Strontium (Sr)	EG020B-T	0.098 mg/L
Vanadium (V)	EG020A-F	<0.01 mg/L
Vanadium (V)	EG020A-T	<0.01 mg/L
Zinc (Zn)	EG020A-F	0.007 mg/L
Zinc (Zn)	EG020A-T	0.009 mg/L

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 Senior Chemist

Final - Report Number: 2189696
ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Allan Bowcher

Sample Number MPW018988
Date Sampled 25-Oct-2017 08:52
Date Received 26-Oct-2017
Date Completed 3-Nov-2017
Date Authorised 8-Nov-2017

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Stream Gauge

Source: MP **Customer Sampling Point:** 003 **Sampling Code:** WX22 **Sample Frequency:** Month

Testing Laboratory: ALS Environmental

Anions	Test Method	Filtered
Fluoride (F)	ED009-X	0.120 mg/L
Chloride (Cl)	ED009-X	18.0 mg/L
Sulfate (SO4)	ED009-X	75.3 mg/L
Nitrate (N)	EK058G	<0.01 mg/L
Nitrite (N)	EK057G	<0.01 mg/L
Nitrate and Nitrite (N)	EK059G	<0.01 mg/L

Alkalinity	Test Method: ED037-P	Total
Total Alkalinity (CaCO3)		82 mg/L
Phenolphthalein Alkalinity (CaCO3)		<1 mg/L
Bicarbonate (CaCO3)		82 mg/L

Phosphate	Test Method: EK067G	Total
Total Phosphorus (P)		<0.01 mg/L

Physical	Test Method	Total
Total Dissolved Solids @ 180°C	EA015H	255 mg/L
Turbidity	EA045	9.5 NTU

Other	Test Method	Total
Nitrogen (N)	EK062G	0.2 mg/L
Nitrogen (N) - Kjeldahl	EK061G	0.2 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1726912. Report Date: 2-Nov-2017

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 Senior Chemist

Final - Report Number: 2189696

ENERGY AUSTRALIA C/- MT PIPER POWER

BOULDER ROAD

PORTLAND NSW 2847 AUSTRALIA

Sold To: 0500082301 **Ship To:** 0500082301

Representative: Clive Stacey

Sampled By: Allan Bowcher

Sample Number

MPW018989

Date Sampled

25-Oct-2017 09:30

Date Received

26-Oct-2017

Date Completed

8-Nov-2017

Date Authorised

8-Nov-2017

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Groundwater Bore MPGM4

Source: MP

Customer Sampling Point: 006

Sampling Code: D1

Sample Frequency: Month

Testing Laboratory: Mount Piper

Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	2.9 m
Bore Volume Pumped	*Analysis in Field	122 L
Recharge Bore Level	*Analysis in Field	3.5 m
pH	CA12125	5.85
Conductivity	CA12125	5670 µS/cm

Testing Laboratory: ALS Environmental

Water

Cations - Metals	Test Method	Filtered	Total
Mercury (Hg)	EG035T-LL		<0.00004 mg/L
Aluminium (Al)	EG020A-T		0.05 mg/L
Arsenic (As)	EG020A-T		0.011 mg/L
Barium (Ba)	EG020A-T		0.036 mg/L
Boron (B)	EG020A-T		2.17 mg/L
Cadmium (Cd)	EG020A-T		<0.0001 mg/L
Calcium (Ca)	ED093T-UL		412 mg/L
Chromium (Cr)	EG020A-T		0.002 mg/L
Copper (Cu)	EG020A-T		<0.001 mg/L
Iron (Fe)	EG020A-F	26.1 mg/L	
Lead (Pb)	EG020A-T		<0.001 mg/L
Magnesium (Mg)	ED093T-UL		315 mg/L
Manganese (Mn)	EG020A-F	17.8 mg/L	
Molybdenum (Mo)	EG020A-T		0.001 mg/L
Nickel (Ni)	EG020A-T		1.22 mg/L
Potassium (K)	ED093T-UL		40.6 mg/L
Selenium (Se)	EG094B-T		<0.0002 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		484 mg/L
Vanadium (V)	EG020A-F	<0.01 mg/L	
Vanadium (V)	EG020A-T		<0.01 mg/L

* NATA accreditation does not cover the performance of this service



Accreditation Number 1099
 Accredited for compliance with ISO/IEC 17025 - Testing.

Authorised by Thanh Hoang Le
 Senior Chemist

Final - Report Number: 2189696

ENERGY AUSTRALIA C/- MT PIPER POWER

BOULDER ROAD

PORTLAND NSW 2847 AUSTRALIA

Sold To: 0500082301 **Ship To:** 0500082301

Representative: Clive Stacey

Sampled By: Allan Bowcher

Sample Number

MPW018989

Date Sampled

25-Oct-2017 09:30

Date Received

26-Oct-2017

Date Completed

8-Nov-2017

Date Authorised

8-Nov-2017

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Groundwater Bore MPGM4

Source: MP

Customer Sampling Point: 006

Sampling Code: D1

Sample Frequency: Month

Testing Laboratory: ALS Environmental

Zinc (Zn)	EG020A-T	0.142 mg/L
Anions	Test Method	Filtered
Fluoride (F)	ED009-X	<0.200 mg/L
Chloride (Cl)	ED009-X	607 mg/L
Sulfate (SO4)	ED009-X	2370 mg/L

ED009x: samples ES1726912-1 and 3 required dilution due to matrix interferences. LOR values have been adjusted accordingly.

Alkalinity Test Method: ED037-P	Total
Total Alkalinity (CaCO3)	185 mg/L

Physical Test Method: EA015H	Total
Total Dissolved Solids @ 180°C	5170 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1726912. Report Date: 2-Nov-2017

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Authorised by Thanh Hoang Le
 Senior Chemist

Final - Report Number: 2189696

ENERGY AUSTRALIA C/- MT PIPER POWER

BOULDER ROAD

PORTLAND NSW 2847 AUSTRALIA

Sold To: 0500082301 **Ship To:** 0500082301

Representative: Clive Stacey

Sampled By: Allan Bowcher

Sample Number

MPW018990

Date Sampled

26-Oct-2017 08:02

Date Received

26-Oct-2017

Date Completed

3-Nov-2017

Date Authorised

8-Nov-2017

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Groundwater Bore MPGM4

Source: MP

Customer Sampling Point: 013

Sampling Code: D8

Sample Frequency: Month

Testing Laboratory: Mount Piper

Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	2.1 m
Bore Volume Pumped	*Analysis in Field	54 L
Recharge Bore Level	*Analysis in Field	2.2 m
pH	CA12125	5.55
Conductivity	CA12125	204 µS/cm

Testing Laboratory: ALS Environmental

Water

Cations - Metals	Test Method	Filtered	Total
Mercury (Hg)	EG035T-LL		<0.00004 mg/L
Aluminium (Al)	EG020A-T		1.03 mg/L
Arsenic (As)	EG020A-T		<0.001 mg/L
Barium (Ba)	EG020A-T		0.023 mg/L
Boron (B)	EG020A-T		0.20 mg/L
Cadmium (Cd)	EG020A-T		<0.0001 mg/L
Calcium (Ca)	ED093T-UL		14.0 mg/L
Chromium (Cr)	EG020A-T		<0.001 mg/L
Copper (Cu)	EG020A-T		0.001 mg/L
Iron (Fe)	EG094B-F	0.375 mg/L	
Lead (Pb)	EG020A-T		<0.001 mg/L
Magnesium (Mg)	ED093T-UL		9.98 mg/L
Manganese (Mn)	EG020A-F	0.036 mg/L	
Molybdenum (Mo)	EG020A-T		<0.001 mg/L
Nickel (Ni)	EG020A-T		0.018 mg/L
Potassium (K)	ED093T-UL		1.93 mg/L
Selenium (Se)	EG094B-T		<0.0002 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		6.78 mg/L
Vanadium (V)	EG020A-F	<0.01 mg/L	
Vanadium (V)	EG020A-T		<0.01 mg/L

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 Senior Chemist

Final - Report Number: 2189696

ENERGY AUSTRALIA C/- MT PIPER POWER

BOULDER ROAD

PORTLAND NSW 2847 AUSTRALIA

Sold To: 0500082301 **Ship To:** 0500082301

Representative: Clive Stacey

Sampled By: Allan Bowcher

Sample Number

MPW018990

Date Sampled

26-Oct-2017 08:02

Date Received

26-Oct-2017

Date Completed

3-Nov-2017

Date Authorised

8-Nov-2017

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Groundwater Bore MPGM4

Source: MP

Customer Sampling Point: 013

Sampling Code: D8

Sample Frequency: Month

Testing Laboratory: ALS Environmental

Zinc (Zn)	EG020A-T	0.035 mg/L
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Anions Test Method: ED009-X

	Filtered
Fluoride (F)	0.020 mg/L
Chloride (Cl)	3.40 mg/L
Sulfate (SO4)	70.8 mg/L

Alkalinity Test Method: ED037-P

Total Alkalinity (CaCO3)	Total
	8 mg/L

Physical Test Method: EA015H

Total Dissolved Solids @ 180°C	Total
	181 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1726912. Report Date: 2-Nov-2017

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Authorised by Thanh Hoang Le
 Senior Chemist

Final - Report Number: 2189696

ENERGY AUSTRALIA C/- MT PIPER POWER

BOULDER ROAD

PORTLAND NSW 2847 AUSTRALIA

Sold To: 0500082301 **Ship To:** 0500082301

Representative: Clive Stacey

Sampled By: Allan Bowcher

Sample Number

MPW018991

Date Sampled

25-Oct-2017 13:50

Date Received

26-Oct-2017

Date Completed

26-Oct-2017

Date Authorised

27-Oct-2017

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: MP Ash - D10 - D21

Source: MP

Customer Sampling Point: 253

Sampling Code: D21

Sample Frequency:

ADDITIONAL_MONTH

Testing Laboratory: Mount Piper

Water

Field Analysis
Dry

Test Method: Analysis in Field

Total

N Tomlinson

Authorised by Nikki Tomlinson
Senior Chemist

Final - Report Number: 2189696

ENERGY AUSTRALIA C/- MT PIPER POWER

BOULDER ROAD

PORTLAND NSW 2847 AUSTRALIA

Sold To: 0500082301 **Ship To:** 0500082301

Representative: Clive Stacey

Sampled By: Allan Bowcher

Sample Number

MPW018992

Date Sampled

25-Oct-2017 13:40

Date Received

26-Oct-2017

Date Completed

8-Nov-2017

Date Authorised

8-Nov-2017

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: MP Ash - D10 - D23

Source: MP

Customer Sampling Point: 254

Sampling Code: D23

Sample Frequency:

ADDITIONAL_MONTH

Testing Laboratory: Mount Piper

Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	24.5 m
Bore Volume Pumped	*Analysis in Field	51 L
Recharge Bore Level	*Analysis in Field	24.5 m
pH	CA12125	5.81
Conductivity	CA12125	4260 µS/cm

Testing Laboratory: ALS Environmental

Water

Cations - Metals	Test Method	Filtered	Total
Mercury (Hg)	EG035T-LL		<0.00004 mg/L
Aluminium (Al)	EG020A-T		0.29 mg/L
Arsenic (As)	EG020A-T		0.001 mg/L
Barium (Ba)	EG020A-T		0.018 mg/L
Boron (B)	EG020A-T		0.54 mg/L
Cadmium (Cd)	EG020A-T		0.0003 mg/L
Calcium (Ca)	ED093T-UL		188 mg/L
Chromium (Cr)	EG020A-T		0.012 mg/L
Copper (Cu)	EG020A-T		<0.001 mg/L
Iron (Fe)	EG020A-F	7.06 mg/L	
Lead (Pb)	EG020A-T		0.002 mg/L
Magnesium (Mg)	ED093T-UL		110 mg/L
Manganese (Mn)	EG020A-F	2.22 mg/L	
Molybdenum (Mo)	EG020A-T		0.002 mg/L
Nickel (Ni)	EG020A-T		0.339 mg/L
Potassium (K)	ED093T-UL		42.5 mg/L
Selenium (Se)	EG094B-T		0.0006 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		595 mg/L
Vanadium (V)	EG020A-F	<0.01 mg/L	

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Authorised by Thanh Hoang Le
 Senior Chemist

Final - Report Number: 2189696

ENERGY AUSTRALIA C/- MT PIPER POWER

BOULDER ROAD

PORTLAND NSW 2847 AUSTRALIA

Sold To: 0500082301 **Ship To:** 0500082301

Representative: Clive Stacey

Sampled By: Allan Bowcher

Sample Number

MPW018992

Date Sampled

25-Oct-2017 13:40

Date Received

26-Oct-2017

Date Completed

8-Nov-2017

Date Authorised

8-Nov-2017

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: MP Ash - D10 - D23

Source: MP

Customer Sampling Point: 254

Sampling Code: D23

Sample Frequency:

ADDITIONAL_MONTH

Testing Laboratory: ALS Environmental

Vanadium (V)	EG020A-T	<0.01 mg/L
Zinc (Zn)	EG020A-T	0.364 mg/L

Anions Test Method: ED009-X

Filtered

Fluoride (F)	0.143 mg/L
Chloride (Cl)	268 mg/L
Sulfate (SO4)	1900 mg/L

Alkalinity Test Method: ED037-P

Total

Total Alkalinity (CaCO3)	121 mg/L
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Physical Test Method: EA015H

Total

Total Dissolved Solids @ 180°C	3460 mg/L
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Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1726912. Report Date: 2-Nov-2017

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Accreditation Number 1099
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Authorised by Thanh Hoang Le
 Senior Chemist

Final - Report Number: 2189696

ENERGY AUSTRALIA C/- MT PIPER POWER

BOULDER ROAD

PORTLAND NSW 2847 AUSTRALIA

Sold To: 0500082301 **Ship To:** 0500082301

Representative: Clive Stacey

Sampled By: Allan Bowcher

Sample Number

MPW018993

Date Sampled

26-Oct-2017 10:27

Date Received

26-Oct-2017

Date Completed

3-Nov-2017

Date Authorised

8-Nov-2017

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Groundwater Bore MPGM4

Source: MP

Customer Sampling Point: 223

Sampling Code: D18

Sample Frequency: Month

Testing Laboratory: Mount Piper

Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	24.5 m
Bore Volume Pumped	*Analysis in Field	44 L
Recharge Bore Level	*Analysis in Field	38.4 m
pH	CA12125	6.89
Conductivity	CA12125	800 µS/cm

Testing Laboratory: ALS Environmental

Water

Cations - Metals	Test Method	Filtered	Total
Mercury (Hg)	EG035T-LL		<0.00004 mg/L
Aluminium (Al)	EG020A-T		0.11 mg/L
Arsenic (As)	EG020A-T		<0.001 mg/L
Barium (Ba)	EG020A-T		0.433 mg/L
Boron (B)	EG020A-T		0.14 mg/L
Cadmium (Cd)	EG020A-T		<0.0001 mg/L
Calcium (Ca)	ED093T-UL		76.7 mg/L
Chromium (Cr)	EG020A-T		<0.001 mg/L
Copper (Cu)	EG020A-T		<0.001 mg/L
Iron (Fe)	EG094B-F	0.006 mg/L	
Lead (Pb)	EG020A-T		<0.001 mg/L
Magnesium (Mg)	ED093T-UL		31.5 mg/L
Manganese (Mn)	EG020A-F	0.108 mg/L	
Molybdenum (Mo)	EG020A-T		0.010 mg/L
Nickel (Ni)	EG020A-T		0.009 mg/L
Potassium (K)	ED093T-UL		18.4 mg/L
Selenium (Se)	EG094B-T		0.0003 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		41.9 mg/L
Vanadium (V)	EG020A-F	<0.01 mg/L	
Vanadium (V)	EG020A-T		<0.01 mg/L

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Accreditation Number 1099
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Authorised by Thanh Hoang Le
 Senior Chemist

Final - Report Number: 2189696
ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Allan Bowcher

Sample Number MPW018993
Date Sampled 26-Oct-2017 10:27
Date Received 26-Oct-2017
Date Completed 3-Nov-2017
Date Authorised 8-Nov-2017

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Groundwater Bore MPGM4

Source: MP **Customer Sampling Point:** 223 **Sampling Code:** D18 **Sample Frequency:** Month

Testing Laboratory: ALS Environmental

Zinc (Zn)	EG020A-T	0.043 mg/L
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Anions Test Method: ED009-X	Filtered	
Fluoride (F)		0.498 mg/L
Chloride (Cl)		15.4 mg/L
Sulfate (SO4)		83.2 mg/L

Alkalinity Test Method: ED037-P		Total
Total Alkalinity (CaCO3)		363 mg/L

Physical Test Method: EA015H		Total
Total Dissolved Solids @ 180°C		495 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1726912. Report Date: 2-Nov-2017

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Accreditation Number 1099
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Authorised by Thanh Hoang Le
 Senior Chemist

Customer Analytical Services

Mount Piper Power Station 350 Boulder Road Portland 2847 NSW

Email: customeranalyticalservices@nalco.com



Final - Report Number: 2189696

ENERGY AUSTRALIA C/- MT PIPER POWER

BOULDER ROAD

PORTLAND NSW 2847 AUSTRALIA

Sold To: 0500082301 **Ship To:** 0500082301

Representative: Clive Stacey

Sampled By: Allan Bowcher

Sample Number

MPW018994

Date Sampled

25-Oct-2017 12:05

Date Received

26-Oct-2017

Date Completed

26-Oct-2017

Date Authorised

27-Oct-2017

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: MP Ash - D10 - SW3-S

Source: MP

Customer Sampling Point: 257

Sampling Code: SW3-S

Sample Frequency:

ADDITIONAL_MONTH

Testing Laboratory: Mount Piper

Water

Field Analysis Test Method: Analysis in Field

Total

Initial Bore Level

17.0 m

insufficient volume to sample

Authorised by Nikki Tomlinson
Senior Chemist

Final - Report Number: 2189696

ENERGY AUSTRALIA C/- MT PIPER POWER

BOULDER ROAD

PORTLAND NSW 2847 AUSTRALIA

Sold To: 0500082301 **Ship To:** 0500082301

Representative: Clive Stacey

Sampled By: Allan Bowcher

Sample Number

MPW018995

Date Sampled

25-Oct-2017 12:07

Date Received

26-Oct-2017

Date Completed

26-Oct-2017

Date Authorised

27-Oct-2017

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: MP Ash - D10 - SW3-D

Source: MP

Customer Sampling Point: 256

Sampling Code: SW3-D

Sample Frequency:

ADDITIONAL_MONTH

Testing Laboratory: Mount Piper

Water

Field Analysis Test Method: Analysis in Field

Total

Initial Bore Level

25.3 m

insufficient volume to sample

N Tomlinson

Authorised by Nikki Tomlinson
Senior Chemist

Final - Report Number: 2189696
ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Allan Bowcher

Sample Number MPW018996
Date Sampled 26-Oct-2017 09:37
Date Received 26-Oct-2017
Date Completed 8-Nov-2017
Date Authorised 8-Nov-2017

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: MP Ash - D10 - B5

Source: MP **Customer Sampling Point:** 250 **Sampling Code:** B5 **Sample Frequency:** ADDITIONAL_MONTH

Testing Laboratory: Mount Piper
Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	36.3 m
Bore Volume Pumped	*Analysis in Field	1.8 L
Recharge Bore Level	*Analysis in Field	36.4 m
pH	CA12125	6.07
Conductivity	CA12125	46760 µS/cm

Testing Laboratory: ALS Environmental
Water

Cations - Metals	Test Method	Filtered	Total
Mercury (Hg)	EG035T-LL		<0.00004 mg/L
Aluminium (Al)	EG020A-T		0.54 mg/L
Arsenic (As)	EG020A-T		0.016 mg/L
Barium (Ba)	EG020A-T		0.043 mg/L
Boron (B)	EG020A-T		12.1 mg/L
Cadmium (Cd)	EG020A-T		0.123 mg/L
Calcium (Ca)	ED093T-UL		496 mg/L
Chromium (Cr)	EG020A-T		<0.010 mg/L
Copper (Cu)	EG020A-T		0.073 mg/L
Iron (Fe)	EG020A-F	1.16 mg/L	
Lead (Pb)	EG020A-T		<0.010 mg/L
Magnesium (Mg)	ED093T-UL		1780 mg/L
Manganese (Mn)	EG020A-F	14.3 mg/L	
Molybdenum (Mo)	EG020A-T		4.17 mg/L
Nickel (Ni)	EG020A-T		1.26 mg/L
Potassium (K)	ED093T-UL		1340 mg/L
Selenium (Se)	EG094B-T		0.0565 mg/L
Silver (Ag)	EG020B-T		<0.010 mg/L
Sodium (Na)	ED093T-UL		12800 mg/L
Vanadium (V)	EG020A-F	<0.10 mg/L	

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 Senior Chemist

Final - Report Number: 2189696

ENERGY AUSTRALIA C/- MT PIPER POWER

BOULDER ROAD

PORTLAND NSW 2847 AUSTRALIA

Sold To: 0500082301 **Ship To:** 0500082301

Representative: Clive Stacey

Sampled By: Allan Bowcher

Sample Number

MPW018996

Date Sampled

26-Oct-2017 09:37

Date Received

26-Oct-2017

Date Completed

8-Nov-2017

Date Authorised

8-Nov-2017

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: MP Ash - D10 - B5

Source: MP

Customer Sampling Point: 250

Sampling Code: B5

Sample Frequency:

ADDITIONAL_MONTH

Testing Laboratory: ALS Environmental

Vanadium (V)	EG020A-T	<0.10 mg/L
Zinc (Zn)	EG020A-T	2.68 mg/L

Anions Test Method: ED009-X

Filtered

Fluoride (F)	0.646 mg/L
Chloride (Cl)	3680 mg/L
Sulfate (SO4)	32200 mg/L

Alkalinity Test Method: ED037-P

Total

Total Alkalinity (CaCO3)	77 mg/L
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Physical Test Method: EA015H

Total

Total Dissolved Solids @ 180°C	55600 mg/L
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Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1726912. Report Date: 2-Nov-2017

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Accreditation Number 1099
 Accredited for compliance with ISO/IEC 17025 - Testing.

Authorised by Thanh Hoang Le
 Senior Chemist

Final - Report Number: 2189696
ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Allan Bowcher

Sample Number MPW018997
Date Sampled 25-Oct-2017 10:55
Date Received 26-Oct-2017
Date Completed 8-Nov-2017
Date Authorised 8-Nov-2017

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: MP Ash - D10 - B5-1

Source: MP **Customer Sampling Point:** 251 **Sampling Code:** B5-1 **Sample Frequency:** ADDITIONAL_MONTH

Testing Laboratory: Mount Piper
Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	35.2 m
Bore Volume Pumped	*Analysis in Field	11 L
Recharge Bore Level	*Analysis in Field	34.9 m
pH	CA12125	5.44
Conductivity	CA12125	46000 µS/cm

Testing Laboratory: ALS Environmental
Water

Cations - Metals	Test Method	Filtered	Total
Mercury (Hg)	EG035T-LL		<0.00004 mg/L
Aluminium (Al)	EG020A-T		2.14 mg/L
Arsenic (As)	EG020A-T		<0.010 mg/L
Barium (Ba)	EG020A-T		0.049 mg/L
Boron (B)	EG020A-T		11.0 mg/L
Cadmium (Cd)	EG020A-T		0.0775 mg/L
Calcium (Ca)	ED093T-UL		502 mg/L
Chromium (Cr)	EG020A-T		<0.010 mg/L
Copper (Cu)	EG020A-T		<0.010 mg/L
Iron (Fe)	EG020A-F	0.53 mg/L	
Lead (Pb)	EG020A-T		<0.010 mg/L
Magnesium (Mg)	ED093T-UL		1810 mg/L
Manganese (Mn)	EG020A-F	45.3 mg/L	
Molybdenum (Mo)	EG020A-T		0.072 mg/L
Nickel (Ni)	EG020A-T		2.21 mg/L
Potassium (K)	ED093T-UL		1210 mg/L
Selenium (Se)	EG094B-T		0.142 mg/L
Silver (Ag)	EG020B-T		<0.010 mg/L
Sodium (Na)	ED093T-UL		13200 mg/L
Vanadium (V)	EG020A-F	<0.10 mg/L	

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Authorised by Thanh Hoang Le
 Senior Chemist

Final - Report Number: 2189696
ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Allan Bowcher

Sample Number MPW018997
Date Sampled 25-Oct-2017 10:55
Date Received 26-Oct-2017
Date Completed 8-Nov-2017
Date Authorised 8-Nov-2017

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: MP Ash - D10 - B5-1

Source: MP **Customer Sampling Point:** 251 **Sampling Code:** B5-1 **Sample Frequency:** ADDITIONAL_MONTH

Testing Laboratory: ALS Environmental

Vanadium (V)	EG020A-T	<0.10 mg/L
Zinc (Zn)	EG020A-T	3.65 mg/L

Anions	Test Method: ED009-X	Filtered
Fluoride (F)		2.57 mg/L
Chloride (Cl)		3730 mg/L
Sulfate (SO4)		29000 mg/L

Alkalinity	Test Method: ED037-P	Total
Total Alkalinity (CaCO3)		116 mg/L

Physical	Test Method: EA015H	Total
Total Dissolved Solids @ 180°C		46300 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1726912. Report Date: 2-Nov-2017

* NATA accreditation does not cover the performance of this service



Accreditation Number 1099
 Accredited for compliance with ISO/IEC 17025 - Testing.

Authorised by Thanh Hoang Le
 Senior Chemist

Final - Report Number: 2189696
ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Allan Bowcher

Sample Number MPW018998
Date Sampled 26-Oct-2017 10:05
Date Received 26-Oct-2017
Date Completed 8-Nov-2017
Date Authorised 8-Nov-2017

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: MP Ash - D10 - NA5

Source: MP **Customer Sampling Point:** 255 **Sampling Code:** NA5 **Sample Frequency:** ADDITIONAL_MONTH

Testing Laboratory: Mount Piper

Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	25.2 m
Bore Volume Pumped	*Analysis in Field	11 L
Recharge Bore Level	*Analysis in Field	25.2 m
pH	CA12125	5.84
Conductivity	CA12125	5510 µS/cm

Testing Laboratory: ALS Environmental

Water

Cations - Metals	Test Method	Filtered	Total
Mercury (Hg)	EG035T-LL		<0.00004 mg/L
Aluminium (Al)	EG020A-T		2.04 mg/L
Arsenic (As)	EG020A-T		<0.001 mg/L
Barium (Ba)	EG020A-T		0.042 mg/L
Boron (B)	EG020A-T		10.1 mg/L
Cadmium (Cd)	EG020A-T		0.0202 mg/L
Calcium (Ca)	ED093T-UL		395 mg/L
Chromium (Cr)	EG020A-T		0.550 mg/L
Copper (Cu)	EG020A-T		0.016 mg/L
Iron (Fe)	EG020A-F	1.62 mg/L	
Lead (Pb)	EG020A-T		0.002 mg/L
Magnesium (Mg)	ED093T-UL		169 mg/L
Manganese (Mn)	EG020A-F	15.2 mg/L	
Molybdenum (Mo)	EG020A-T		0.047 mg/L
Nickel (Ni)	EG020A-T		1.12 mg/L
Potassium (K)	ED093T-UL		141 mg/L
Selenium (Se)	EG094B-T		0.0309 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		640 mg/L
Vanadium (V)	EG020A-F	<0.01 mg/L	

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 Senior Chemist

Final - Report Number: 2189696

ENERGY AUSTRALIA C/- MT PIPER POWER

BOULDER ROAD

PORTLAND NSW 2847 AUSTRALIA

Sold To: 0500082301 **Ship To:** 0500082301

Representative: Clive Stacey

Sampled By: Allan Bowcher

Sample Number

MPW018998

Date Sampled

26-Oct-2017 10:05

Date Received

26-Oct-2017

Date Completed

8-Nov-2017

Date Authorised

8-Nov-2017

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: MP Ash - D10 - NA5

Source: MP

Customer Sampling Point: 255

Sampling Code: NA5

Sample Frequency:

ADDITIONAL_MONTH

Testing Laboratory: ALS Environmental

Vanadium (V)	EG020A-T	<0.01 mg/L
Zinc (Zn)	EG020A-T	1.26 mg/L

Anions Test Method: ED009-X

	Filtered
Fluoride (F)	4.08 mg/L
Chloride (Cl)	241 mg/L
Sulfate (SO4)	2950 mg/L

Alkalinity Test Method: ED037-P

Total Alkalinity (CaCO3)	Total 99 mg/L
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Physical Test Method: EA015H

Total Dissolved Solids @ 180°C	Total 4970 mg/L
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Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1726912. Report Date: 2-Nov-2017

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Authorised by Thanh Hoang Le
 Senior Chemist

Final - Report Number: 2189696
ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Allan Bowcher

Sample Number MPW018999
Date Sampled 25-Oct-2017 15:20
Date Received 26-Oct-2017
Date Completed 8-Nov-2017
Date Authorised 8-Nov-2017

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: MP Ash - D10 - D20

Source: MP **Customer Sampling Point:** 252 **Sampling Code:** D20 **Sample Frequency:** ADDITIONAL_MONTH

Testing Laboratory: Mount Piper
Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	17.3 m
Bore Volume Pumped	*Analysis in Field	16 L
Recharge Bore Level	*Analysis in Field	17.3 m
pH	CA12125	6.06
Conductivity	CA12125	3860 µS/cm

Testing Laboratory: ALS Environmental
Water

Cations - Metals	Test Method	Filtered	Total
Mercury (Hg)	EG035T-LL		<0.00004 mg/L
Aluminium (Al)	EG020A-T		2.96 mg/L
Arsenic (As)	EG020A-T		0.006 mg/L
Barium (Ba)	EG020A-T		0.070 mg/L
Boron (B)	EG020A-T		1.72 mg/L
Cadmium (Cd)	EG020A-T		0.0026 mg/L
Calcium (Ca)	ED093T-UL		303 mg/L
Chromium (Cr)	EG020A-T		0.061 mg/L
Copper (Cu)	EG020A-T		0.012 mg/L
Iron (Fe)	EG020A-F	0.96 mg/L	
Lead (Pb)	EG020A-T		0.009 mg/L
Magnesium (Mg)	ED093T-UL		367 mg/L
Manganese (Mn)	EG020A-F	22.5 mg/L	
Molybdenum (Mo)	EG020A-T		0.008 mg/L
Nickel (Ni)	EG020A-T		0.575 mg/L
Potassium (K)	ED093T-UL		23.6 mg/L
Selenium (Se)	EG094B-T		0.0006 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		163 mg/L
Vanadium (V)	EG020A-F	<0.01 mg/L	

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Authorised by Thanh Hoang Le
 Senior Chemist

Final - Report Number: 2189696

ENERGY AUSTRALIA C/- MT PIPER POWER

BOULDER ROAD

PORTLAND NSW 2847 AUSTRALIA

Sold To: 0500082301 **Ship To:** 0500082301

Representative: Clive Stacey

Sampled By: Allan Bowcher

Sample Number

MPW018999

Date Sampled

25-Oct-2017 15:20

Date Received

26-Oct-2017

Date Completed

8-Nov-2017

Date Authorised

8-Nov-2017

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: MP Ash - D10 - D20

Source: MP

Customer Sampling Point: 252

Sampling Code: D20

Sample Frequency:

ADDITIONAL_MONTH

Testing Laboratory: ALS Environmental

Vanadium (V)	EG020A-T	<0.01 mg/L
Zinc (Zn)	EG020A-T	0.273 mg/L

Anions Test Method: ED009-X

Filtered

Fluoride (F)	0.236 mg/L
Chloride (Cl)	122 mg/L
Sulfate (SO4)	2260 mg/L

Alkalinity Test Method: ED037-P

Total

Total Alkalinity (CaCO3)	393 mg/L
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Physical Test Method: EA015H

Total

Total Dissolved Solids @ 180°C	3460 mg/L
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Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1726912. Report Date: 2-Nov-2017

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 Senior Chemist

Final - Report Number: 2189696

ENERGY AUSTRALIA C/- MT PIPER POWER

BOULDER ROAD

PORTLAND NSW 2847 AUSTRALIA

Sold To: 0500082301 **Ship To:** 0500082301

Representative: Clive Stacey

Sampled By: Allan Bowcher

Sample Number

MPW019000

Date Sampled

25-Oct-2017 14:05

Date Received

26-Oct-2017

Date Completed

3-Nov-2017

Date Authorised

8-Nov-2017

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Groundwater Bore MPGM4

Source: MP

Customer Sampling Point: 224

Sampling Code: D19

Sample Frequency: Month

Testing Laboratory: Mount Piper

Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	9.7 m
Bore Volume Pumped	*Analysis in Field	14 L
Recharge Bore Level	*Analysis in Field	9.7 m
pH	CA12125	5.84
Conductivity	CA12125	6770 µS/cm

Testing Laboratory: ALS Environmental

Water

Cations - Metals	Test Method	Filtered	Total
Mercury (Hg)	EG035T-LL		<0.00004 mg/L
Aluminium (Al)	EG020A-T		0.40 mg/L
Arsenic (As)	EG020A-T		0.003 mg/L
Barium (Ba)	EG020A-T		0.019 mg/L
Boron (B)	EG020A-T		3.37 mg/L
Cadmium (Cd)	EG020A-T		0.0001 mg/L
Calcium (Ca)	ED093T-UL		319 mg/L
Chromium (Cr)	EG020A-T		0.023 mg/L
Copper (Cu)	EG020A-T		0.002 mg/L
Iron (Fe)	EG094B-F	34.8 mg/L	
Lead (Pb)	EG020A-T		0.007 mg/L
Magnesium (Mg)	ED093T-UL		283 mg/L
Manganese (Mn)	EG020A-F	14.1 mg/L	
Molybdenum (Mo)	EG020A-T		0.004 mg/L
Nickel (Ni)	EG020A-T		1.10 mg/L
Potassium (K)	ED093T-UL		75.8 mg/L
Selenium (Se)	EG094B-T		0.0008 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		946 mg/L
Vanadium (V)	EG020A-F	<0.01 mg/L	
Vanadium (V)	EG020A-T		<0.01 mg/L

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 Senior Chemist

Final - Report Number: 2189696

ENERGY AUSTRALIA C/- MT PIPER POWER

BOULDER ROAD

PORTLAND NSW 2847 AUSTRALIA

Sold To: 0500082301 **Ship To:** 0500082301

Representative: Clive Stacey

Sampled By: Allan Bowcher

Sample Number

MPW019000

Date Sampled

25-Oct-2017 14:05

Date Received

26-Oct-2017

Date Completed

3-Nov-2017

Date Authorised

8-Nov-2017

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Groundwater Bore MPGM4

Source: MP

Customer Sampling Point: 224

Sampling Code: D19

Sample Frequency: Month

Testing Laboratory: ALS Environmental

Zinc (Zn)	EG020A-T	0.448 mg/L
Anions Test Method: ED009-X		
Fluoride (F)		Filtered 0.151 mg/L
Chloride (Cl)		506 mg/L
Sulfate (SO4)		3160 mg/L
Alkalinity Test Method: ED037-P		
Total Alkalinity (CaCO3)		Total 157 mg/L
Physical Test Method: EA015H		
Total Dissolved Solids @ 180°C		Total 4900 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1726912. Report Date: 2-Nov-2017

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 Senior Chemist

Final - Report Number: 2189696

ENERGY AUSTRALIA C/- MT PIPER POWER

BOULDER ROAD

PORTLAND NSW 2847 AUSTRALIA

Sold To: 0500082301 **Ship To:** 0500082301

Representative: Clive Stacey

Sampled By: Allan Bowcher

Sample Number

MPW019001

Date Sampled

26-Oct-2017 08:55

Date Received

26-Oct-2017

Date Completed

8-Nov-2017

Date Authorised

8-Nov-2017

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Groundwater Bore MPGM4

Source: MP

Customer Sampling Point: 008

Sampling Code: D3

Sample Frequency: Month

Testing Laboratory: Mount Piper

Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	7.6 m
Bore Volume Pumped	*Analysis in Field	204 L
Recharge Bore Level	*Analysis in Field	10.3 m
pH	CA12125	6.00
Conductivity	CA12125	900 µS/cm

Testing Laboratory: ALS Environmental

Water

Cations - Metals	Test Method	Filtered	Total
Mercury (Hg)	EG035T-LL		<0.00004 mg/L
Aluminium (Al)	EG020A-T		0.03 mg/L
Arsenic (As)	EG020A-T		<0.001 mg/L
Barium (Ba)	EG020A-T		0.022 mg/L
Boron (B)	EG020A-T		0.13 mg/L
Cadmium (Cd)	EG020A-T		<0.0001 mg/L
Calcium (Ca)	ED093T-UL		76.7 mg/L
Chromium (Cr)	EG020A-T		<0.001 mg/L
Copper (Cu)	EG020A-T		<0.001 mg/L
Iron (Fe)	EG020A-F	4.43 mg/L	
Lead (Pb)	EG020A-T		<0.001 mg/L
Magnesium (Mg)	ED093T-UL		42.8 mg/L
Manganese (Mn)	EG020A-F	0.819 mg/L	
Molybdenum (Mo)	EG020A-T		0.001 mg/L
Nickel (Ni)	EG020A-T		0.004 mg/L
Potassium (K)	ED093T-UL		8.80 mg/L
Selenium (Se)	EG094B-T		<0.0002 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		37.3 mg/L
Vanadium (V)	EG020A-F	<0.01 mg/L	
Vanadium (V)	EG020A-T		<0.01 mg/L

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Authorised by Thanh Hoang Le
 Senior Chemist

Final - Report Number: 2189696

ENERGY AUSTRALIA C/- MT PIPER POWER

BOULDER ROAD

PORTLAND NSW 2847 AUSTRALIA

Sold To: 0500082301 **Ship To:** 0500082301

Representative: Clive Stacey

Sampled By: Allan Bowcher

Sample Number

MPW019001

Date Sampled

26-Oct-2017 08:55

Date Received

26-Oct-2017

Date Completed

8-Nov-2017

Date Authorised

8-Nov-2017

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Groundwater Bore MPGM4

Source: MP

Customer Sampling Point: 008

Sampling Code: D3

Sample Frequency: Month

Testing Laboratory: ALS Environmental

Zinc (Zn)	EG020A-T	0.011 mg/L
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Anions Test Method: ED009-X

	Filtered
Fluoride (F)	0.053 mg/L
Chloride (Cl)	29.6 mg/L
Sulfate (SO4)	316 mg/L

Alkalinity Test Method: ED037-P

Total Alkalinity (CaCO3)	Total
	132 mg/L

Physical Test Method: EA015H

Total Dissolved Solids @ 180°C	Total
	538 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1726912. Report Date: 2-Nov-2017

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Authorised by Thanh Hoang Le
 Senior Chemist

Final - Report Number: 2189696
ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Allan Bowcher

Sample Number MPW019002
Date Sampled 25-Oct-2017 11:57
Date Received 26-Oct-2017
Date Completed 8-Nov-2017
Date Authorised 8-Nov-2017

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Groundwater Bore MPGM4

Source: MP **Customer Sampling Point:** 016 **Sampling Code:** D11 **Sample Frequency:** Month

Testing Laboratory: Mount Piper
Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	26.3 m
Bore Volume Pumped	*Analysis in Field	131 L
Recharge Bore Level	*Analysis in Field	26.3 m
pH	CA12125	6.11
Conductivity	CA12125	9820 µS/cm

Testing Laboratory: ALS Environmental
Water

Cations - Metals	Test Method	Filtered	Total
Mercury (Hg)	EG035T-LL		<0.00004 mg/L
Aluminium (Al)	EG020A-T		<0.01 mg/L
Arsenic (As)	EG020A-T		0.011 mg/L
Barium (Ba)	EG020A-T		0.020 mg/L
Boron (B)	EG020A-T		3.29 mg/L
Cadmium (Cd)	EG020A-T		<0.0001 mg/L
Calcium (Ca)	ED093T-UL		643 mg/L
Chromium (Cr)	EG020A-T		0.002 mg/L
Copper (Cu)	EG020A-T		<0.001 mg/L
Iron (Fe)	EG020A-F	35.9 mg/L	
Lead (Pb)	EG020A-T		<0.001 mg/L
Magnesium (Mg)	ED093T-UL		440 mg/L
Manganese (Mn)	EG020A-F	17.8 mg/L	
Molybdenum (Mo)	EG020A-T		0.001 mg/L
Nickel (Ni)	EG020A-T		1.08 mg/L
Potassium (K)	ED093T-UL		112 mg/L
Selenium (Se)	EG094B-T		0.0002 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		1500 mg/L
Vanadium (V)	EG020A-F	<0.01 mg/L	
Vanadium (V)	EG020A-T		<0.01 mg/L

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Authorised by Thanh Hoang Le
 Senior Chemist

Final - Report Number: 2189696

ENERGY AUSTRALIA C/- MT PIPER POWER

BOULDER ROAD

PORTLAND NSW 2847 AUSTRALIA

Sold To: 0500082301 **Ship To:** 0500082301

Representative: Clive Stacey

Sampled By: Allan Bowcher

Sample Number

MPW019002

Date Sampled

25-Oct-2017 11:57

Date Received

26-Oct-2017

Date Completed

8-Nov-2017

Date Authorised

8-Nov-2017

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Groundwater Bore MPGM4

Source: MP

Customer Sampling Point: 016

Sampling Code: D11

Sample Frequency: Month

Testing Laboratory: ALS Environmental

Zinc (Zn)	EG020A-T	0.178 mg/L
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Anions Test Method: ED009-X

Fluoride (F)	Filtered	0.096 mg/L
Chloride (Cl)		950 mg/L
Sulfate (SO4)		4850 mg/L

Alkalinity Test Method: ED037-P

Total Alkalinity (CaCO3)	Total
	194 mg/L

Physical Test Method: EA015H

Total Dissolved Solids @ 180°C	Total
	9290 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1726912. Report Date: 2-Nov-2017

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Authorised by Thanh Hoang Le
 Senior Chemist

Final - Report Number: 2189696

ENERGY AUSTRALIA C/- MT PIPER POWER

BOULDER ROAD

PORTLAND NSW 2847 AUSTRALIA

Sold To: 0500082301 **Ship To:** 0500082301

Representative: Clive Stacey

Sampled By: Allan Bowcher

Sample Number

MPW019003

Date Sampled

25-Oct-2017 15:00

Date Received

26-Oct-2017

Date Completed

8-Nov-2017

Date Authorised

8-Nov-2017

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Groundwater Bore MPGM4

Source: MP

Customer Sampling Point: 015

Sampling Code: D10

Sample Frequency: Month

Testing Laboratory: Mount Piper

Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	14.8 m
Bore Volume Pumped	*Analysis in Field	156 L
Recharge Bore Level	*Analysis in Field	14.8 m
pH	CA12125	5.52
Conductivity	CA12125	10370 µS/cm

Testing Laboratory: ALS Environmental

Water

Cations - Metals	Test Method	Filtered	Total
Mercury (Hg)	EG035T-LL		<0.00004 mg/L
Aluminium (Al)	EG020A-T		0.10 mg/L
Arsenic (As)	EG020A-T		<0.001 mg/L
Barium (Ba)	EG020A-T		0.017 mg/L
Boron (B)	EG020A-T		4.54 mg/L
Cadmium (Cd)	EG020A-T		0.0086 mg/L
Calcium (Ca)	ED093T-UL		349 mg/L
Chromium (Cr)	EG020A-T		<0.001 mg/L
Copper (Cu)	EG020A-T		<0.001 mg/L
Iron (Fe)	EG020A-F	1.86 mg/L	
Lead (Pb)	EG020A-T		0.004 mg/L
Magnesium (Mg)	ED093T-UL		389 mg/L
Manganese (Mn)	EG020A-F	8.48 mg/L	
Molybdenum (Mo)	EG020A-T		0.001 mg/L
Nickel (Ni)	EG020A-T		1.03 mg/L
Potassium (K)	ED093T-UL		228 mg/L
Selenium (Se)	EG094B-T		0.0041 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		1880 mg/L
Vanadium (V)	EG020A-F	<0.01 mg/L	
Vanadium (V)	EG020A-T		<0.01 mg/L

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Authorised by Thanh Hoang Le
 Senior Chemist

Final - Report Number: 2189696
ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Allan Bowcher

Sample Number MPW019003
Date Sampled 25-Oct-2017 15:00
Date Received 26-Oct-2017
Date Completed 8-Nov-2017
Date Authorised 8-Nov-2017

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Groundwater Bore MPGM4

Source: MP **Customer Sampling Point:** 015 **Sampling Code:** D10 **Sample Frequency:** Month

Testing Laboratory: ALS Environmental

Zinc (Zn)	EG020A-T	1.14 mg/L
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Anions Test Method: ED009-X	Filtered	
Fluoride (F)	0.590 mg/L	
Chloride (Cl)	906 mg/L	
Sulfate (SO4)	5140 mg/L	

Alkalinity Test Method: ED037-P		Total
Total Alkalinity (CaCO3)		92 mg/L

Physical Test Method: EA015H		Total
Total Dissolved Solids @ 180°C		9200 mg/L

TDS by method EA-015 may bias high for various samples due to the presence of fine particulate matter, which may pass through the prescribed GF/C paper.

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1726912. Report Date: 2-Nov-2017

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Authorised by Thanh Hoang Le
 Senior Chemist

Final - Report Number: 2189696

ENERGY AUSTRALIA C/- MT PIPER POWER

BOULDER ROAD

PORTLAND NSW 2847 AUSTRALIA

Sold To: 0500082301 **Ship To:** 0500082301

Representative: Clive Stacey

Sampled By: Allan Bowcher

Sample Number

MPW019004

Date Sampled

26-Oct-2017 11:20

Date Received

26-Oct-2017

Date Completed

8-Nov-2017

Date Authorised

8-Nov-2017

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Groundwater Bore MPGM4

Source: MP

Customer Sampling Point: 222

Sampling Code: D17

Sample Frequency: Month

Testing Laboratory: Mount Piper

Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	28.1 m
Bore Volume Pumped	*Analysis in Field	33 L
Recharge Bore Level	*Analysis in Field	28.0 m
pH	CA12125	6.01
Conductivity	CA12125	3360 µS/cm

Testing Laboratory: ALS Environmental

Water

Cations - Metals	Test Method	Filtered	Total
Mercury (Hg)	EG035T-LL		<0.00004 mg/L
Aluminium (Al)	EG020A-T		0.14 mg/L
Arsenic (As)	EG020A-T		0.002 mg/L
Barium (Ba)	EG020A-T		0.021 mg/L
Boron (B)	EG020A-T		0.18 mg/L
Cadmium (Cd)	EG020A-T		<0.0001 mg/L
Calcium (Ca)	ED093T-UL		223 mg/L
Chromium (Cr)	EG020A-T		0.013 mg/L
Copper (Cu)	EG020A-T		0.003 mg/L
Iron (Fe)	EG020A-F	7.21 mg/L	
Lead (Pb)	EG020A-T		<0.001 mg/L
Magnesium (Mg)	ED093T-UL		137 mg/L
Manganese (Mn)	EG020A-F	3.49 mg/L	
Molybdenum (Mo)	EG020A-T		0.001 mg/L
Nickel (Ni)	EG020A-T		0.106 mg/L
Potassium (K)	ED093T-UL		20.1 mg/L
Selenium (Se)	EG094B-T		<0.0002 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		339 mg/L
Vanadium (V)	EG020A-F	<0.01 mg/L	
Vanadium (V)	EG020A-T		<0.01 mg/L

* NATA accreditation does not cover the performance of this service



Accreditation Number 1099
 Accredited for compliance with ISO/IEC 17025 - Testing.

Authorised by Thanh Hoang Le
 Senior Chemist

Final - Report Number: 2189696
ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Allan Bowcher

Sample Number MPW019004
Date Sampled 26-Oct-2017 11:20
Date Received 26-Oct-2017
Date Completed 8-Nov-2017
Date Authorised 8-Nov-2017

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Groundwater Bore MPGM4

Source: MP **Customer Sampling Point:** 222 **Sampling Code:** D17 **Sample Frequency:** Month

Testing Laboratory: ALS Environmental

Zinc (Zn)	EG020A-T	0.095 mg/L
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Anions Test Method: ED009-X	Filtered	
Fluoride (F)	0.089 mg/L	
Chloride (Cl)	218 mg/L	
Sulfate (SO4)	1580 mg/L	

Alkalinity Test Method: ED037-P		Total
Total Alkalinity (CaCO3)		112 mg/L

Physical Test Method: EA015H		Total
Total Dissolved Solids @ 180°C		2740 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1726912. Report Date: 2-Nov-2017

* NATA accreditation does not cover the performance of this service



Accreditation Number 1099
 Accredited for compliance with ISO/IEC 17025 - Testing.

Authorised by Thanh Hoang Le
 Senior Chemist

Final - Report Number: 2189696

ENERGY AUSTRALIA C/- MT PIPER POWER

BOULDER ROAD

PORTLAND NSW 2847 AUSTRALIA

Sold To: 0500082301 **Ship To:** 0500082301

Representative: Clive Stacey

Sampled By: Allan Bowcher

Sample Number

MPW019005

Date Sampled

26-Oct-2017 11:50

Date Received

26-Oct-2017

Date Completed

8-Nov-2017

Date Authorised

8-Nov-2017

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Groundwater Bore MPGM4

Source: MP

Customer Sampling Point: 220

Sampling Code: D15

Sample Frequency: Month

Testing Laboratory: Mount Piper

Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	25.1 m
Bore Volume Pumped	*Analysis in Field	33 L
Recharge Bore Level	*Analysis in Field	25.1 m
pH	CA12125	5.43
Conductivity	CA12125	4330 µS/cm

Testing Laboratory: ALS Environmental

Water

Cations - Metals	Test Method	Filtered	Total
Mercury (Hg)	EG035T-LL		<0.00004 mg/L
Aluminium (Al)	EG020A-T		0.86 mg/L
Arsenic (As)	EG020A-T		0.008 mg/L
Barium (Ba)	EG020A-T		0.019 mg/L
Boron (B)	EG020A-T		0.48 mg/L
Cadmium (Cd)	EG020A-T		0.0005 mg/L
Calcium (Ca)	ED093T-UL		222 mg/L
Chromium (Cr)	EG020A-T		0.501 mg/L
Copper (Cu)	EG020A-T		0.017 mg/L
Iron (Fe)	EG020A-F	11.5 mg/L	
Lead (Pb)	EG020A-T		0.007 mg/L
Magnesium (Mg)	ED093T-UL		116 mg/L
Manganese (Mn)	EG020A-F	2.53 mg/L	
Molybdenum (Mo)	EG020A-T		0.016 mg/L
Nickel (Ni)	EG020A-T		0.895 mg/L
Potassium (K)	ED093T-UL		37.2 mg/L
Selenium (Se)	EG094B-T		0.0007 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		624 mg/L
Vanadium (V)	EG020A-F	<0.01 mg/L	
Vanadium (V)	EG020A-T		<0.01 mg/L

* NATA accreditation does not cover the performance of this service



Accreditation Number 1099
 Accredited for compliance with ISO/IEC 17025 - Testing.

Authorised by Thanh Hoang Le
 Senior Chemist

Final - Report Number: 2189696

ENERGY AUSTRALIA C/- MT PIPER POWER

BOULDER ROAD

PORTLAND NSW 2847 AUSTRALIA

Sold To: 0500082301 **Ship To:** 0500082301

Representative: Clive Stacey

Sampled By: Allan Bowcher

Sample Number

MPW019005

Date Sampled

26-Oct-2017 11:50

Date Received

26-Oct-2017

Date Completed

8-Nov-2017

Date Authorised

8-Nov-2017

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Groundwater Bore MPGM4

Source: MP

Customer Sampling Point: 220

Sampling Code: D15

Sample Frequency: Month

Testing Laboratory: ALS Environmental

Zinc (Zn)	EG020A-T	1.25 mg/L
-----------	----------	-----------

Anions Test Method: ED009-X

	Filtered
Fluoride (F)	0.055 mg/L
Chloride (Cl)	265 mg/L
Sulfate (SO4)	2100 mg/L

Alkalinity Test Method: ED037-P

Total Alkalinity (CaCO3)	Total 51 mg/L
--------------------------	-------------------------

Physical Test Method: EA015H

Total Dissolved Solids @ 180°C	Total 3580 mg/L
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Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1726912. Report Date: 2-Nov-2017

* NATA accreditation does not cover the performance of this service



Accreditation Number 1099
 Accredited for compliance with ISO/IEC 17025 - Testing.

Authorised by Thanh Hoang Le
 Senior Chemist

Final - Report Number: 2189696
ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Allan Bowcher

Sample Number MPW019006
Date Sampled 26-Oct-2017 12:55
Date Received 26-Oct-2017
Date Completed 3-Nov-2017
Date Authorised 8-Nov-2017

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Groundwater Bore MPGM4

Source: MP **Customer Sampling Point:** 221 **Sampling Code:** D16 **Sample Frequency:** Month

Testing Laboratory: Mount Piper
Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	13.1 m
Bore Volume Pumped	*Analysis in Field	138 L
Recharge Bore Level	*Analysis in Field	13.1 m
pH	CA12125	6.56
Conductivity	CA12125	1080 µS/cm

Testing Laboratory: ALS Environmental
Water

Cations - Metals	Test Method	Filtered	Total
Mercury (Hg)	EG035T-LL		<0.00004 mg/L
Aluminium (Al)	EG020A-T		0.05 mg/L
Arsenic (As)	EG020A-T		<0.001 mg/L
Barium (Ba)	EG020A-T		0.017 mg/L
Boron (B)	EG020A-T		0.16 mg/L
Cadmium (Cd)	EG020A-T		<0.0001 mg/L
Calcium (Ca)	ED093T-UL		134 mg/L
Chromium (Cr)	EG020A-T		0.020 mg/L
Copper (Cu)	EG020A-T		0.018 mg/L
Iron (Fe)	EG094B-F	1.29 mg/L	
Lead (Pb)	EG020A-T		<0.001 mg/L
Magnesium (Mg)	ED093T-UL		48.8 mg/L
Manganese (Mn)	EG020A-F	0.038 mg/L	
Molybdenum (Mo)	EG020A-T		0.002 mg/L
Nickel (Ni)	EG020A-T		0.010 mg/L
Potassium (K)	ED093T-UL		19.8 mg/L
Selenium (Se)	EG094B-T		<0.0002 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		20.3 mg/L
Vanadium (V)	EG020A-F	<0.01 mg/L	
Vanadium (V)	EG020A-T		<0.01 mg/L

* NATA accreditation does not cover the performance of this service



Accreditation Number 1099
 Accredited for compliance with ISO/IEC 17025 - Testing.

Authorised by Thanh Hoang Le
 Senior Chemist

Final - Report Number: 2189696
ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Allan Bowcher

Sample Number MPW019006
Date Sampled 26-Oct-2017 12:55
Date Received 26-Oct-2017
Date Completed 3-Nov-2017
Date Authorised 8-Nov-2017

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Groundwater Bore MPGM4

Source: MP **Customer Sampling Point:** 221 **Sampling Code:** D16 **Sample Frequency:** Month

Testing Laboratory: ALS Environmental

Zinc (Zn)	EG020A-T	0.014 mg/L
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Anions Test Method: ED009-X	Filtered	
Fluoride (F)	0.266 mg/L	
Chloride (Cl)	22.3 mg/L	
Sulfate (SO4)	289 mg/L	

Alkalinity Test Method: ED037-P		Total
Total Alkalinity (CaCO3)		322 mg/L

Physical Test Method: EA015H		Total
Total Dissolved Solids @ 180°C		686 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1726912. Report Date: 2-Nov-2017

* NATA accreditation does not cover the performance of this service



Accreditation Number 1099
 Accredited for compliance with ISO/IEC 17025 - Testing.

Authorised by Thanh Hoang Le
 Senior Chemist

Final - Report Number: 2189696

ENERGY AUSTRALIA C/- MT PIPER POWER

BOULDER ROAD

PORTLAND NSW 2847 AUSTRALIA

Sold To: 0500082301 **Ship To:** 0500082301

Representative: Clive Stacey

Sampled By: Allan Bowcher

Sample Number

MPW019007

Date Sampled

25-Oct-2017 12:07

Date Received

26-Oct-2017

Date Completed

26-Oct-2017

Date Authorised

27-Oct-2017

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: MP Ash - D10 - SW3-D

Source: MP

Customer Sampling Point: 256

Sampling Code: SW3-D

Sample Frequency: Ad-Hoc

Testing Laboratory: Mount Piper

Water

Field Analysis **Test Method:** Analysis in Field
insufficient volume to sample

Total

•System out of service.

N Tomlinson

Authorised by Nikki Tomlinson
Senior Chemist

Final - Report Number: 2189696
ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Allan Bowcher

Sample Number MPW019008
Date Sampled 25-Oct-2017 10:25
Date Received 26-Oct-2017
Date Completed 8-Nov-2017
Date Authorised 8-Nov-2017

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: MP Ash - D10 - B5

Source: MP **Customer Sampling Point:** 250 **Sampling Code:** B5 **Sample Frequency:** Ad-Hoc

Testing Laboratory: Mount Piper

Water

Field Analysis	Test Method: CA12125	Total
pH		5.92
Conductivity		45950 µS/cm

Testing Laboratory: ALS Environmental

Water

Cations - Metals	Test Method	Filtered	Total
Mercury (Hg)	EG035T-LL		<0.00004 mg/L
Aluminium (Al)	EG020A-T		0.58 mg/L
Arsenic (As)	EG020A-T		0.020 mg/L
Barium (Ba)	EG020A-T		0.038 mg/L
Boron (B)	EG020A-T		11.9 mg/L
Cadmium (Cd)	EG020A-T		0.0993 mg/L
Calcium (Ca)	ED093T-UL		524 mg/L
Chromium (Cr)	EG020A-T		<0.010 mg/L
Copper (Cu)	EG020A-T		0.103 mg/L
Iron (Fe)	EG020A-F	1.88 mg/L	
Lead (Pb)	EG020A-T		<0.010 mg/L
Magnesium (Mg)	ED093T-UL		1770 mg/L
Manganese (Mn)	EG020A-F	15.2 mg/L	
Molybdenum (Mo)	EG020A-T		5.73 mg/L
Nickel (Ni)	EG020A-T		1.46 mg/L
Potassium (K)	ED093T-UL		1380 mg/L
Selenium (Se)	EG094B-T		0.0536 mg/L
Silver (Ag)	EG020B-T		<0.010 mg/L
Sodium (Na)	ED093T-UL		13400 mg/L
Vanadium (V)	EG020A-F	<0.10 mg/L	
Vanadium (V)	EG020A-T		<0.10 mg/L
Zinc (Zn)	EG020A-T		1.59 mg/L

* NATA accreditation does not cover the performance of this service



Accreditation Number 1099
 Accredited for compliance with ISO/IEC 17025 - Testing.

Authorised by Thanh Hoang Le
 Senior Chemist

Final - Report Number: 2189696
ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Allan Bowcher

Sample Number MPW019008
Date Sampled 25-Oct-2017 10:25
Date Received 26-Oct-2017
Date Completed 8-Nov-2017
Date Authorised 8-Nov-2017

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: MP Ash - D10 - B5

Source: MP **Customer Sampling Point:** 250 **Sampling Code:** B5 **Sample Frequency:** Ad-Hoc

Testing Laboratory: ALS Environmental

Anions	Test Method: ED009-X	Filtered	
Fluoride (F)		0.948 mg/L	
Chloride (Cl)		3630 mg/L	
Sulfate (SO4)		28300 mg/L	
Alkalinity	Test Method: ED037-P		Total
Total Alkalinity (CaCO3)			54 mg/L
Physical	Test Method: EA015H		Total
Total Dissolved Solids @ 180°C			56800 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1726912. Report Date: 2-Nov-2017

* NATA accreditation does not cover the performance of this service



Accreditation Number 1099
 Accredited for compliance with ISO/IEC 17025 - Testing.

Authorised by Thanh Hoang Le
 Senior Chemist

Final - Report Number: 2189696
ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Allan Bowcher

Sample Number MPW019009
Date Sampled 25-Oct-2017 10:50
Date Received 26-Oct-2017
Date Completed 8-Nov-2017
Date Authorised 8-Nov-2017

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: MP Ash - D10 - B5-1

Source: MP **Customer Sampling Point:** 251 **Sampling Code:** B5-1 **Sample Frequency:** Ad-Hoc

Testing Laboratory: Mount Piper

Water

Field Analysis	Test Method: CA12125	Total
pH		5.41
Conductivity		46800 µS/cm

Testing Laboratory: ALS Environmental

Water

Cations - Metals	Test Method	Filtered	Total
Mercury (Hg)	EG035T-LL		<0.00004 mg/L
Aluminium (Al)	EG020A-T		3.15 mg/L
Arsenic (As)	EG020A-T		<0.010 mg/L
Barium (Ba)	EG020A-T		0.054 mg/L
Boron (B)	EG020A-T		10.1 mg/L
Cadmium (Cd)	EG020A-T		0.0850 mg/L
Calcium (Ca)	ED093T-UL		487 mg/L
Chromium (Cr)	EG020A-T		<0.010 mg/L
Copper (Cu)	EG020A-T		0.023 mg/L
Iron (Fe)	EG020A-F	0.67 mg/L	
Lead (Pb)	EG020A-T		<0.010 mg/L
Magnesium (Mg)	ED093T-UL		1830 mg/L
Manganese (Mn)	EG020A-F	55.1 mg/L	
Molybdenum (Mo)	EG020A-T		0.066 mg/L
Nickel (Ni)	EG020A-T		2.56 mg/L
Potassium (K)	ED093T-UL		1150 mg/L
Selenium (Se)	EG094B-T		0.111 mg/L
Silver (Ag)	EG020B-T		<0.010 mg/L
Sodium (Na)	ED093T-UL		12900 mg/L
Vanadium (V)	EG020A-F	<0.10 mg/L	
Vanadium (V)	EG020A-T		<0.10 mg/L
Zinc (Zn)	EG020A-T		3.82 mg/L

* NATA accreditation does not cover the performance of this service



Accreditation Number 1099
 Accredited for compliance with ISO/IEC 17025 - Testing.

Authorised by Thanh Hoang Le
 Senior Chemist

Final - Report Number: 2189696

ENERGY AUSTRALIA C/- MT PIPER POWER

BOULDER ROAD

PORTLAND NSW 2847 AUSTRALIA

Sold To: 0500082301 **Ship To:** 0500082301

Representative: Clive Stacey

Sampled By: Allan Bowcher

Sample Number

MPW019009

Date Sampled

25-Oct-2017 10:50

Date Received

26-Oct-2017

Date Completed

8-Nov-2017

Date Authorised

8-Nov-2017

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: MP Ash - D10 - B5-1

Source: MP

Customer Sampling Point: 251

Sampling Code: B5-1

Sample Frequency: Ad-Hoc

Testing Laboratory: ALS Environmental

Anions Test Method: ED009-X

	Filtered
Fluoride (F)	1.98 mg/L
Chloride (Cl)	3780 mg/L
Sulfate (SO4)	30800 mg/L

Alkalinity Test Method: ED037-P

Total Alkalinity (CaCO3) **Total** 110 mg/L

Physical Test Method: EA015H

Total Dissolved Solids @ 180°C **Total** 59000 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1726912. Report Date: 2-Nov-2017

* NATA accreditation does not cover the performance of this service



Accreditation Number 1099
Accredited for compliance with ISO/IEC 17025 - Testing.

A handwritten signature in black ink, appearing to read 'Thanh Hoang Le'.

Authorised by Thanh Hoang Le
Senior Chemist

Final - Report Number: 2207898
ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Allan Bowcher

Sample Number MPW019387
Date Sampled 23-Nov-2017 08:25
Date Received 24-Nov-2017
Date Completed 5-Dec-2017
Date Authorised 5-Dec-2017

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Groundwater Bore MPGM4

Source: MP **Customer Sampling Point:** 014 **Sampling Code:** D9 **Sample Frequency:** Month

Testing Laboratory: Mount Piper
Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	2.1 m
Bore Volume Pumped	*Analysis in Field	2 L
Recharge Bore Level	*Analysis in Field	2.1 m
pH	CA12125	5.77
Conductivity	CA12125	2670 µS/cm

Testing Laboratory: ALS Environmental
Water

Cations - Metals	Test Method	Filtered	Total
Mercury (Hg)	EG035T-LL		<0.00004 mg/L
Aluminium (Al)	EG020A-T		0.04 mg/L
Arsenic (As)	EG020A-T		<0.001 mg/L
Barium (Ba)	EG020A-T		0.031 mg/L
Boron (B)	EG020A-T		0.61 mg/L
Cadmium (Cd)	EG020A-T		<0.0001 mg/L
Calcium (Ca)	ED093T-UL		190 mg/L
Chromium (Cr)	EG020A-T		<0.001 mg/L
Copper (Cu)	EG020A-T		<0.001 mg/L
Iron (Fe)	EG020A-F	18.4 mg/L	
Lead (Pb)	EG020A-T		<0.001 mg/L
Magnesium (Mg)	ED093T-UL		177 mg/L
Manganese (Mn)	EG020A-F	11.4 mg/L	
Molybdenum (Mo)	EG020A-T		0.002 mg/L
Nickel (Ni)	EG020A-T		0.324 mg/L
Potassium (K)	ED093T-UL		15.3 mg/L
Selenium (Se)	EG094B-T		<0.0002 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		174 mg/L
Vanadium (V)	EG020A-F	<0.01 mg/L	
Vanadium (V)	EG020A-T		<0.01 mg/L

* NATA accreditation does not cover the performance of this service



Accreditation Number 1099
 Accredited for compliance with ISO/IEC 17025.

Authorised by Thanh Hoang Le
 Senior Chemist

Final - Report Number: 2207898
ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Allan Bowcher

Sample Number MPW019387
Date Sampled 23-Nov-2017 08:25
Date Received 24-Nov-2017
Date Completed 5-Dec-2017
Date Authorised 5-Dec-2017

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Groundwater Bore MPGM4

Source: MP **Customer Sampling Point:** 014 **Sampling Code:** D9 **Sample Frequency:** Month

Testing Laboratory: ALS Environmental

Zinc (Zn) EG020A-T 0.1 mg/L

Anions Test Method: ED009-X

	Filtered
Fluoride (F)	<0.100 mg/L
Chloride (Cl)	140 mg/L
Sulfate (SO4)	1330 mg/L

Alkalinity Test Method: ED037-P

	Total
Total Alkalinity (CaCO3)	102 mg/L

Physical Test Method: EA015H

	Total
Total Dissolved Solids @ 180°C	2140 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1729612. Report Date: 30-Nov-2017

* NATA accreditation does not cover the performance of this service



Accreditation Number 1099
 Accredited for compliance with ISO/IEC 17025.

Authorised by Thanh Hoang Le
 Senior Chemist

Customer Analytical Services

Mount Piper Power Station 350 Boulder Road Portland 2847 NSW

Email: customeranalyticalservices@nalco.com

NALCO Water
An Ecolab Company

Final - Report Number: 2207898

ENERGY AUSTRALIA C/- MT PIPER POWER

BOULDER ROAD

PORTLAND NSW 2847 AUSTRALIA

Sold To: 0500082301 **Ship To:** 0500082301

Representative: Clive Stacey

Sampled By: Allan Bowcher

Sample Number

MPW019388

Date Sampled

22-Nov-2017 08:40

Date Received

24-Nov-2017

Date Completed

5-Dec-2017

Date Authorised

5-Dec-2017

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Stream Gauge

Source: MP

Customer Sampling Point: 003

Sampling Code: WX22

Sample Frequency: Month

Testing Laboratory: Mount Piper

Water

Field Analysis	Test Method	Total
Discharge Flowing	*Analysis in Field	Flow
Appearance	*Analysis in Field	Clear
pH	CA12125	7.49
Conductivity	CA12125	575 µS/cm
Temperature	CA12125	15.2 °C
Dissolved Oxygen (O2)	*Analysis in Field	9.4 mg/L



field photo

Testing Laboratory: ALS Environmental

Water

Cations - Metals	Test Method	Filtered	Total
Mercury (Hg)	EG035T-LL		<0.00004 mg/L
Aluminium (Al)	EG020A-F	<0.01 mg/L	
Aluminium (Al)	EG020A-T		0.05 mg/L

* NATA accreditation does not cover the performance of this service



Accreditation Number 1099

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Authorised by Thanh Hoang Le
Senior Chemist

Final - Report Number: 2207898
ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Allan Bowcher

Sample Number MPW019388
Date Sampled 22-Nov-2017 08:40
Date Received 24-Nov-2017
Date Completed 5-Dec-2017
Date Authorised 5-Dec-2017

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Stream Gauge

Source: MP **Customer Sampling Point:** 003 **Sampling Code:** WX22 **Sample Frequency:** Month

Testing Laboratory: ALS Environmental

Arsenic (As)	EG020A-T	<0.001 mg/L
Barium (Ba)	EG020A-T	0.018 mg/L
Boron (B)	EG020A-T	0.08 mg/L
Cadmium (Cd)	EG020A-T	<0.0001 mg/L
Calcium (Ca)	ED093T-UL	38.1 mg/L
Chromium (Cr)	EG020A-T	<0.001 mg/L
Copper (Cu)	EG020A-F	<0.001 mg/L
Copper (Cu)	EG020A-T	<0.001 mg/L
Iron (Fe)	EG094B-F	0.073 mg/L
Iron (Fe)	EG094B-T	0.206 mg/L
Lead (Pb)	EG020A-T	<0.001 mg/L
Magnesium (Mg)	ED093T-UL	23.5 mg/L
Manganese (Mn)	EG020A-F	0.166 mg/L
Manganese (Mn)	EG020A-T	0.177 mg/L
Molybdenum (Mo)	EG020A-T	<0.001 mg/L
Nickel (Ni)	EG020A-T	0.01 mg/L
Potassium (K)	ED093T-UL	4.67 mg/L
Selenium (Se)	EG094B-T	<0.0002 mg/L
Silver (Ag)	EG020B-T	<0.001 mg/L
Sodium (Na)	ED093T-UL	37.5 mg/L
Strontium (Sr)	EG020B-T	0.141 mg/L
Vanadium (V)	EG020A-F	<0.01 mg/L
Vanadium (V)	EG020A-T	<0.01 mg/L
Zinc (Zn)	EG020A-F	<0.005 mg/L
Zinc (Zn)	EG020A-T	<0.005 mg/L

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 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Allan Bowcher

Sample Number MPW019388
Date Sampled 22-Nov-2017 08:40
Date Received 24-Nov-2017
Date Completed 5-Dec-2017
Date Authorised 5-Dec-2017

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Stream Gauge

Source: MP **Customer Sampling Point:** 003 **Sampling Code:** WX22 **Sample Frequency:** Month

Testing Laboratory: ALS Environmental

Anions	Test Method	Filtered
Fluoride (F)	ED009-X	0.119 mg/L
Chloride (Cl)	ED009-X	32.4 mg/L
Sulfate (SO4)	ED009-X	134 mg/L
Nitrate (N)	EK058G	<0.01 mg/L
Nitrite (N)	EK057G	<0.01 mg/L
Nitrate and Nitrite (N)	EK059G	<0.01 mg/L

Alkalinity	Test Method: ED037-P	Total
Total Alkalinity (CaCO3)		108 mg/L
Phenolphthalein Alkalinity (CaCO3)		<1 mg/L
Bicarbonate (CaCO3)		108 mg/L

Phosphate	Test Method: EK067G	Total
Total Phosphorus (P)		<0.01 mg/L

Physical	Test Method	Total
Total Dissolved Solids @ 180°C	EA015H	306 mg/L
Turbidity	EA045	1.9 NTU

Other	Test Method	Total
Nitrogen (N)	EK062G	0.2 mg/L
Nitrogen (N) - Kjeldahl	EK061G	0.2 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1729612. Report Date: 30-Nov-2017

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 Senior Chemist

Final - Report Number: 2207898
ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Allan Bowcher

Sample Number MPW019389
Date Sampled 22-Nov-2017 09:10
Date Received 24-Nov-2017
Date Completed 5-Dec-2017
Date Authorised 5-Dec-2017

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Groundwater Bore MPGM4

Source: MP **Customer Sampling Point:** 006 **Sampling Code:** D1 **Sample Frequency:** Month

Testing Laboratory: Mount Piper
Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	2.9 m
Bore Volume Pumped	*Analysis in Field	122 L
Recharge Bore Level	*Analysis in Field	3.6 m
pH	CA12125	5.88
Conductivity	CA12125	5580 µS/cm

Testing Laboratory: ALS Environmental
Water

Cations - Metals	Test Method	Filtered	Total
Mercury (Hg)	EG035T-LL		<0.00004 mg/L
Aluminium (Al)	EG020A-T		0.31 mg/L
Arsenic (As)	EG020A-T		0.008 mg/L
Barium (Ba)	EG020A-T		0.036 mg/L
Boron (B)	EG020A-T		2.06 mg/L
Cadmium (Cd)	EG020A-T		<0.0001 mg/L
Calcium (Ca)	ED093T-UL		412 mg/L
Chromium (Cr)	EG020A-T		<0.001 mg/L
Copper (Cu)	EG020A-T		<0.001 mg/L
Iron (Fe)	EG020A-F	50 mg/L	
Lead (Pb)	EG020A-T		<0.001 mg/L
Magnesium (Mg)	ED093T-UL		308 mg/L
Manganese (Mn)	EG020A-F	19.6 mg/L	
Molybdenum (Mo)	EG020A-T		<0.001 mg/L
Nickel (Ni)	EG020A-T		1.09 mg/L
Potassium (K)	ED093T-UL		37.9 mg/L
Selenium (Se)	EG094B-T		0.0002 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		524 mg/L
Vanadium (V)	EG020A-F	<0.01 mg/L	
Vanadium (V)	EG020A-T		<0.01 mg/L

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ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Allan Bowcher

Sample Number MPW019389
Date Sampled 22-Nov-2017 09:10
Date Received 24-Nov-2017
Date Completed 5-Dec-2017
Date Authorised 5-Dec-2017

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Groundwater Bore MPGM4

Source: MP **Customer Sampling Point:** 006 **Sampling Code:** D1 **Sample Frequency:** Month

Testing Laboratory: ALS Environmental

Zinc (Zn)	EG020A-T	0.116 mg/L
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Anions Test Method: ED009-X	Filtered	
Fluoride (F)	<0.200 mg/L	
Chloride (Cl)	601 mg/L	
Sulfate (SO4)	2490 mg/L	

Alkalinity Test Method: ED037-P		Total
Total Alkalinity (CaCO3)		175 mg/L

Physical Test Method: EA015H		Total
Total Dissolved Solids @ 180°C		4970 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1729612. Report Date: 30-Nov-2017

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 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Allan Bowcher

Sample Number MPW019390
Date Sampled 23-Nov-2017 08:05
Date Received 24-Nov-2017
Date Completed 5-Dec-2017
Date Authorised 5-Dec-2017

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Groundwater Bore MPGM4

Source: MP **Customer Sampling Point:** 013 **Sampling Code:** D8 **Sample Frequency:** Month

Testing Laboratory: Mount Piper
Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	2.4 m
Bore Volume Pumped	*Analysis in Field	44 L
Recharge Bore Level	*Analysis in Field	2.4 m
pH	CA12125	5.18
Conductivity	CA12125	344 µS/cm

Testing Laboratory: ALS Environmental
Water

Cations - Metals	Test Method	Filtered	Total
Mercury (Hg)	EG035T-LL		<0.00004 mg/L
Aluminium (Al)	EG020A-T		0.28 mg/L
Arsenic (As)	EG020A-T		<0.001 mg/L
Barium (Ba)	EG020A-T		0.034 mg/L
Boron (B)	EG020A-T		<0.05 mg/L
Cadmium (Cd)	EG020A-T		<0.0001 mg/L
Calcium (Ca)	ED093T-UL		22.7 mg/L
Chromium (Cr)	EG020A-T		<0.001 mg/L
Copper (Cu)	EG020A-T		<0.001 mg/L
Iron (Fe)	EG094B-F	0.039 mg/L	
Lead (Pb)	EG020A-T		<0.001 mg/L
Magnesium (Mg)	ED093T-UL		18 mg/L
Manganese (Mn)	EG020A-F	0.152 mg/L	
Molybdenum (Mo)	EG020A-T		<0.001 mg/L
Nickel (Ni)	EG020A-T		0.037 mg/L
Potassium (K)	ED093T-UL		2.27 mg/L
Selenium (Se)	EG094B-T		<0.0002 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		10 mg/L
Vanadium (V)	EG020A-F	<0.01 mg/L	
Vanadium (V)	EG020A-T		<0.01 mg/L

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Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Allan Bowcher

Sample Number MPW019390
Date Sampled 23-Nov-2017 08:05
Date Received 24-Nov-2017
Date Completed 5-Dec-2017
Date Authorised 5-Dec-2017

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Groundwater Bore MPGM4

Source: MP **Customer Sampling Point:** 013 **Sampling Code:** D8 **Sample Frequency:** Month

Testing Laboratory: ALS Environmental

Zinc (Zn) EG020A-T 0.058 mg/L

Anions Test Method: ED009-X

	Filtered
Fluoride (F)	0.016 mg/L
Chloride (Cl)	6.22 mg/L
Sulfate (SO4)	131 mg/L

Alkalinity Test Method: ED037-P

	Total
Total Alkalinity (CaCO3)	8 mg/L

Physical Test Method: EA015H

	Total
Total Dissolved Solids @ 180°C	364 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1729612. Report Date: 30-Nov-2017

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PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Allan Bowcher

Sample Number MPW019391
Date Sampled 22-Nov-2017 14:45
Date Received 23-Nov-2017
Date Completed 23-Nov-2017
Date Authorised 24-Nov-2017

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: MP Ash - D10 - D21

Source: MP

Customer Sampling Point: 253

Sampling Code: D21

Sample Frequency:
ADDITIONAL_MONTH

Testing Laboratory: Mount Piper

Water

Field Analysis Test Method: Analysis in Field
Dry

Total

Allan Bowcher

Authorised by Allan Bowcher
Chemist

Final - Report Number: 2207898
ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Allan Bowcher

Sample Number MPW019392
Date Sampled 22-Nov-2017 14:40
Date Received 24-Nov-2017
Date Completed 5-Dec-2017
Date Authorised 5-Dec-2017

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: MP Ash - D10 - D23

Source: MP **Customer Sampling Point:** 254 **Sampling Code:** D23 **Sample Frequency:** ADDITIONAL_MONTH

Testing Laboratory: Mount Piper

Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	24.7 m
Bore Volume Pumped	*Analysis in Field	50 L
Recharge Bore Level	*Analysis in Field	24.7 m
pH	CA12125	5.69
Conductivity	CA12125	4130 µS/cm

Testing Laboratory: ALS Environmental

Water

Cations - Metals	Test Method	Filtered	Total
Mercury (Hg)	EG035T-LL		<0.00004 mg/L
Aluminium (Al)	EG020A-T		0.21 mg/L
Arsenic (As)	EG020A-T		0.001 mg/L
Barium (Ba)	EG020A-T		0.016 mg/L
Boron (B)	EG020A-T		0.56 mg/L
Cadmium (Cd)	EG020A-T		0.0003 mg/L
Calcium (Ca)	ED093T-UL		197 mg/L
Chromium (Cr)	EG020A-T		<0.001 mg/L
Copper (Cu)	EG020A-T		<0.001 mg/L
Iron (Fe)	EG020A-F	14.6 mg/L	
Lead (Pb)	EG020A-T		0.002 mg/L
Magnesium (Mg)	ED093T-UL		116 mg/L
Manganese (Mn)	EG020A-F	2.81 mg/L	
Molybdenum (Mo)	EG020A-T		<0.001 mg/L
Nickel (Ni)	EG020A-T		0.353 mg/L
Potassium (K)	ED093T-UL		48.2 mg/L
Selenium (Se)	EG094B-T		0.0003 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		660 mg/L
Vanadium (V)	EG020A-F	<0.01 mg/L	

* NATA accreditation does not cover the performance of this service



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 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Allan Bowcher

Sample Number MPW019392
Date Sampled 22-Nov-2017 14:40
Date Received 24-Nov-2017
Date Completed 5-Dec-2017
Date Authorised 5-Dec-2017

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: MP Ash - D10 - D23

Source: MP **Customer Sampling Point:** 254 **Sampling Code:** D23 **Sample Frequency:** ADDITIONAL_MONTH

Testing Laboratory: ALS Environmental

Vanadium (V)	EG020A-T	<0.01 mg/L
Zinc (Zn)	EG020A-T	0.433 mg/L

Anions Test Method: ED009-X	Filtered
Fluoride (F)	0.164 mg/L
Chloride (Cl)	251 mg/L
Sulfate (SO4)	1940 mg/L

Alkalinity Test Method: ED037-P	Total
Total Alkalinity (CaCO3)	97 mg/L

Physical Test Method: EA015H	Total
Total Dissolved Solids @ 180°C	3240 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1729612. Report Date: 30-Nov-2017

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 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Allan Bowcher

Sample Number MPW019393
Date Sampled 23-Nov-2017 10:15
Date Received 24-Nov-2017
Date Completed 5-Dec-2017
Date Authorised 5-Dec-2017

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Groundwater Bore MPGM4

Source: MP **Customer Sampling Point:** 223 **Sampling Code:** D18 **Sample Frequency:** Month

Testing Laboratory: Mount Piper
Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	24.8 m
Bore Volume Pumped	*Analysis in Field	37 L
Recharge Bore Level	*Analysis in Field	37.0 m
pH	CA12125	6.73
Conductivity	CA12125	850 µS/cm

Testing Laboratory: ALS Environmental
Water

Cations - Metals	Test Method	Filtered	Total
Mercury (Hg)	EG035T-LL		<0.00004 mg/L
Aluminium (Al)	EG020A-T		0.11 mg/L
Arsenic (As)	EG020A-T		0.001 mg/L
Barium (Ba)	EG020A-T		0.477 mg/L
Boron (B)	EG020A-T		0.1 mg/L
Cadmium (Cd)	EG020A-T		0.002 mg/L
Calcium (Ca)	ED093T-UL		79.8 mg/L
Chromium (Cr)	EG020A-T		<0.001 mg/L
Copper (Cu)	EG020A-T		<0.001 mg/L
Iron (Fe)	EG094B-F	0.006 mg/L	
Lead (Pb)	EG020A-T		<0.001 mg/L
Magnesium (Mg)	ED093T-UL		33.6 mg/L
Manganese (Mn)	EG020A-F	0.186 mg/L	
Molybdenum (Mo)	EG020A-T		0.008 mg/L
Nickel (Ni)	EG020A-T		0.008 mg/L
Potassium (K)	ED093T-UL		19.5 mg/L
Selenium (Se)	EG094B-T		0.0004 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		39.2 mg/L
Vanadium (V)	EG020A-F	<0.01 mg/L	
Vanadium (V)	EG020A-T		<0.01 mg/L

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 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Allan Bowcher

Sample Number MPW019393
Date Sampled 23-Nov-2017 10:15
Date Received 24-Nov-2017
Date Completed 5-Dec-2017
Date Authorised 5-Dec-2017

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Groundwater Bore MPGM4

Source: MP **Customer Sampling Point:** 223 **Sampling Code:** D18 **Sample Frequency:** Month

Testing Laboratory: ALS Environmental

Zinc (Zn) EG020A-T 0.049 mg/L

Anions Test Method: ED009-X

	Filtered
Fluoride (F)	0.488 mg/L
Chloride (Cl)	16.1 mg/L
Sulfate (SO4)	86.5 mg/L

Alkalinity Test Method: ED037-P

	Total
Total Alkalinity (CaCO3)	383 mg/L

Physical Test Method: EA015H

	Total
Total Dissolved Solids @ 180°C	515 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1729612. Report Date: 30-Nov-2017

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ENERGY AUSTRALIA C/- MT PIPER POWER
BOULDER ROAD
PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Allan Bowcher

Sample Number MPW019394
Date Sampled 22-Nov-2017 12:25
Date Received 23-Nov-2017
Date Completed 23-Nov-2017
Date Authorised 24-Nov-2017

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: MP Ash - D10 - SW3-S

Source: MP

Customer Sampling Point: 257

Sampling Code: SW3-S

Sample Frequency:
ADDITIONAL_MONTH

Testing Laboratory: Mount Piper

Water

Field Analysis Test Method: Analysis in Field
Initial Bore Level

Total
17.0 m

insufficient volume to sample

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Chemist

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BOULDER ROAD
PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Allan Bowcher

Sample Number MPW019395
Date Sampled 22-Nov-2017 12:30
Date Received 23-Nov-2017
Date Completed 23-Nov-2017
Date Authorised 24-Nov-2017

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: MP Ash - D10 - SW3-D

Source: MP

Customer Sampling Point: 256

Sampling Code: SW3-D

Sample Frequency:
ADDITIONAL_MONTH

Testing Laboratory: Mount Piper

Water

Field Analysis Test Method: Analysis in Field
Initial Bore Level

Total
25.3 m

insufficient volume to sample

Allan Bowcher

Authorised by Allan Bowcher
Chemist

Final - Report Number: 2207898
ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Allan Bowcher

Sample Number MPW019396
Date Sampled 23-Nov-2017 09:55
Date Received 24-Nov-2017
Date Completed 5-Dec-2017
Date Authorised 5-Dec-2017

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: MP Ash - D10 - B5

Source: MP **Customer Sampling Point:** 250 **Sampling Code:** B5 **Sample Frequency:** ADDITIONAL_MONTH

Testing Laboratory: Mount Piper
Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	36.4 m
Bore Volume Pumped	*Analysis in Field	1.5 L
Recharge Bore Level	*Analysis in Field	36.4 m
pH	CA12125	6.03
Conductivity	CA12125	48030 µS/cm

Testing Laboratory: ALS Environmental
Water

Cations - Metals	Test Method	Filtered	Total
Mercury (Hg)	EG035T-LL		<0.00004 mg/L
Aluminium (Al)	EG020A-T		0.81 mg/L
Arsenic (As)	EG020A-T		<0.010 mg/L
Barium (Ba)	EG020A-T		0.05 mg/L
Boron (B)	EG020A-T		14.8 mg/L
Cadmium (Cd)	EG020A-T		0.142 mg/L
Calcium (Ca)	ED093T-UL		489 mg/L
Chromium (Cr)	EG020A-T		<0.010 mg/L
Copper (Cu)	EG020A-T		0.039 mg/L
Iron (Fe)	EG020A-F	1.28 mg/L	
Lead (Pb)	EG020A-T		<0.010 mg/L
Magnesium (Mg)	ED093T-UL		1910 mg/L
Manganese (Mn)	EG020A-F	14.9 mg/L	
Molybdenum (Mo)	EG020A-T		3.48 mg/L
Nickel (Ni)	EG020A-T		1.36 mg/L
Potassium (K)	ED093T-UL		1260 mg/L
Selenium (Se)	EG094B-T		0.0545 mg/L
Silver (Ag)	EG020B-T		<0.010 mg/L
Sodium (Na)	ED093T-UL		13800 mg/L
Vanadium (V)	EG020A-F	<0.10 mg/L	

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Final - Report Number: 2207898
ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Allan Bowcher

Sample Number MPW019396
Date Sampled 23-Nov-2017 09:55
Date Received 24-Nov-2017
Date Completed 5-Dec-2017
Date Authorised 5-Dec-2017

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: MP Ash - D10 - B5

Source: MP **Customer Sampling Point:** 250 **Sampling Code:** B5 **Sample Frequency:** ADDITIONAL_MONTH

Testing Laboratory: ALS Environmental

Vanadium (V)	EG020A-T	<0.10 mg/L
Zinc (Zn)	EG020A-T	3.72 mg/L

Anions	Test Method: ED009-X	Filtered
Fluoride (F)		<2.00 mg/L
Chloride (Cl)		3990 mg/L
Sulfate (SO4)		31600 mg/L

Alkalinity	Test Method: ED037-P	Total
Total Alkalinity (CaCO3)		82 mg/L

Physical	Test Method: EA015H	Total
Total Dissolved Solids @ 180°C		51200 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1729612. Report Date: 30-Nov-2017

* NATA accreditation does not cover the performance of this service



Accreditation Number 1099
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Authorised by Thanh Hoang Le
 Senior Chemist

Final - Report Number: 2207898
ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Allan Bowcher

Sample Number MPW019397
Date Sampled 22-Nov-2017 12:05
Date Received 24-Nov-2017
Date Completed 5-Dec-2017
Date Authorised 5-Dec-2017

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: MP Ash - D10 - B5-1

Source: MP **Customer Sampling Point:** 251 **Sampling Code:** B5-1 **Sample Frequency:** ADDITIONAL_MONTH

Testing Laboratory: Mount Piper
Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	35.3 m
Bore Volume Pumped	*Analysis in Field	10 L
Recharge Bore Level	*Analysis in Field	35.3 m
pH	CA12125	5.43
Conductivity	CA12125	46280 µS/cm

Testing Laboratory: ALS Environmental
Water

Cations - Metals	Test Method	Filtered	Total
Mercury (Hg)	EG035T-LL		<0.00004 mg/L
Aluminium (Al)	EG020A-T		2.36 mg/L
Arsenic (As)	EG020A-T		<0.010 mg/L
Barium (Ba)	EG020A-T		0.046 mg/L
Boron (B)	EG020A-T		10.8 mg/L
Cadmium (Cd)	EG020A-T		0.0766 mg/L
Calcium (Ca)	ED093T-UL		499 mg/L
Chromium (Cr)	EG020A-T		<0.010 mg/L
Copper (Cu)	EG020A-T		<0.010 mg/L
Iron (Fe)	EG020A-F	0.52 mg/L	
Lead (Pb)	EG020A-T		<0.010 mg/L
Magnesium (Mg)	ED093T-UL		1870 mg/L
Manganese (Mn)	EG020A-F	42.8 mg/L	
Molybdenum (Mo)	EG020A-T		<0.010 mg/L
Nickel (Ni)	EG020A-T		2.13 mg/L
Potassium (K)	ED093T-UL		1140 mg/L
Selenium (Se)	EG094B-T		0.148 mg/L
Silver (Ag)	EG020B-T		<0.010 mg/L
Sodium (Na)	ED093T-UL		14600 mg/L
Vanadium (V)	EG020A-F	<0.10 mg/L	

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 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Allan Bowcher

Sample Number MPW019397
Date Sampled 22-Nov-2017 12:05
Date Received 24-Nov-2017
Date Completed 5-Dec-2017
Date Authorised 5-Dec-2017

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: MP Ash - D10 - B5-1

Source: MP **Customer Sampling Point:** 251 **Sampling Code:** B5-1 **Sample Frequency:** ADDITIONAL_MONTH

Testing Laboratory: ALS Environmental

Vanadium (V)	EG020A-T	<0.10 mg/L
Zinc (Zn)	EG020A-T	3.7 mg/L

Anions	Test Method: ED009-X	Filtered
Fluoride (F)		2.58 mg/L
Chloride (Cl)		3520 mg/L
Sulfate (SO4)		31000 mg/L

Alkalinity	Test Method: ED037-P	Total
Total Alkalinity (CaCO3)		115 mg/L

Physical	Test Method: EA015H	Total
Total Dissolved Solids @ 180°C		52800 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1729612. Report Date: 30-Nov-2017

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ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Allan Bowcher

Sample Number MPW019398
Date Sampled 22-Nov-2017 10:20
Date Received 24-Nov-2017
Date Completed 5-Dec-2017
Date Authorised 5-Dec-2017

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: MP Ash - D10 - NA5

Source: MP **Customer Sampling Point:** 255 **Sampling Code:** NA5 **Sample Frequency:** ADDITIONAL_MONTH

Testing Laboratory: Mount Piper
Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	25.2 m
Bore Volume Pumped	*Analysis in Field	11 L
Recharge Bore Level	*Analysis in Field	25.2 m
pH	CA12125	5.75
Conductivity	CA12125	5420 µS/cm

Testing Laboratory: ALS Environmental
Water

Cations - Metals	Test Method	Filtered	Total
Mercury (Hg)	EG035T-LL		<0.00004 mg/L
Aluminium (Al)	EG020A-T		2.02 mg/L
Arsenic (As)	EG020A-T		0.001 mg/L
Barium (Ba)	EG020A-T		0.036 mg/L
Boron (B)	EG020A-T		9.89 mg/L
Cadmium (Cd)	EG020A-T		0.0175 mg/L
Calcium (Ca)	ED093T-UL		387 mg/L
Chromium (Cr)	EG020A-T		0.279 mg/L
Copper (Cu)	EG020A-T		0.011 mg/L
Iron (Fe)	EG020A-F	0.89 mg/L	
Lead (Pb)	EG020A-T		0.002 mg/L
Magnesium (Mg)	ED093T-UL		151 mg/L
Manganese (Mn)	EG020A-F	15.1 mg/L	
Molybdenum (Mo)	EG020A-T		0.038 mg/L
Nickel (Ni)	EG020A-T		0.898 mg/L
Potassium (K)	ED093T-UL		148 mg/L
Selenium (Se)	EG094B-T		0.0457 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		686 mg/L
Vanadium (V)	EG020A-F	<0.01 mg/L	

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Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Allan Bowcher

Sample Number MPW019398
Date Sampled 22-Nov-2017 10:20
Date Received 24-Nov-2017
Date Completed 5-Dec-2017
Date Authorised 5-Dec-2017

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: MP Ash - D10 - NA5

Source: MP **Customer Sampling Point:** 255 **Sampling Code:** NA5 **Sample Frequency:** ADDITIONAL_MONTH

Testing Laboratory: ALS Environmental

Vanadium (V)	EG020A-T	<0.01 mg/L
Zinc (Zn)	EG020A-T	1.13 mg/L

Anions Test Method: ED009-X	Filtered
Fluoride (F)	3.84 mg/L
Chloride (Cl)	223 mg/L
Sulfate (SO4)	3050 mg/L

Alkalinity Test Method: ED037-P	Total
Total Alkalinity (CaCO3)	100 mg/L

Physical Test Method: EA015H	Total
Total Dissolved Solids @ 180°C	4770 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1729612. Report Date: 30-Nov-2017

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ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Allan Bowcher

Sample Number MPW019399
Date Sampled 22-Nov-2017 15:25
Date Received 24-Nov-2017
Date Completed 5-Dec-2017
Date Authorised 5-Dec-2017

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: MP Ash - D10 - D20

Source: MP **Customer Sampling Point:** 252 **Sampling Code:** D20 **Sample Frequency:** ADDITIONAL_MONTH

Testing Laboratory: Mount Piper
Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	17.4 m
Bore Volume Pumped	*Analysis in Field	16 L
Recharge Bore Level	*Analysis in Field	17.4 m
pH	CA12125	5.96
Conductivity	CA12125	3930 µS/cm

Testing Laboratory: ALS Environmental
Water

Cations - Metals	Test Method	Filtered	Total
Mercury (Hg)	EG035T-LL		<0.00004 mg/L
Aluminium (Al)	EG020A-T		1.77 mg/L
Arsenic (As)	EG020A-T		0.004 mg/L
Barium (Ba)	EG020A-T		0.059 mg/L
Boron (B)	EG020A-T		1.35 mg/L
Cadmium (Cd)	EG020A-T		0.0021 mg/L
Calcium (Ca)	ED093T-UL		305 mg/L
Chromium (Cr)	EG020A-T		0.007 mg/L
Copper (Cu)	EG020A-T		0.01 mg/L
Iron (Fe)	EG020A-F	1.2 mg/L	
Lead (Pb)	EG020A-T		0.006 mg/L
Magnesium (Mg)	ED093T-UL		361 mg/L
Manganese (Mn)	EG020A-F	27.3 mg/L	
Molybdenum (Mo)	EG020A-T		<0.001 mg/L
Nickel (Ni)	EG020A-T		0.538 mg/L
Potassium (K)	ED093T-UL		21.2 mg/L
Selenium (Se)	EG094B-T		0.0003 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		171 mg/L
Vanadium (V)	EG020A-F	<0.01 mg/L	

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 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Allan Bowcher

Sample Number MPW019399
Date Sampled 22-Nov-2017 15:25
Date Received 24-Nov-2017
Date Completed 5-Dec-2017
Date Authorised 5-Dec-2017

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: MP Ash - D10 - D20

Source: MP **Customer Sampling Point:** 252 **Sampling Code:** D20 **Sample Frequency:** ADDITIONAL_MONTH

Testing Laboratory: ALS Environmental

Vanadium (V)	EG020A-T	<0.01 mg/L
Zinc (Zn)	EG020A-T	0.253 mg/L

Anions	Test Method: ED009-X	Filtered
Fluoride (F)		0.181 mg/L
Chloride (Cl)		121 mg/L
Sulfate (SO4)		2310 mg/L

Alkalinity	Test Method: ED037-P	Total
Total Alkalinity (CaCO3)		386 mg/L

Physical	Test Method: EA015H	Total
Total Dissolved Solids @ 180°C		3370 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1729612. Report Date: 30-Nov-2017

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ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Allan Bowcher

Sample Number MPW019400
Date Sampled 22-Nov-2017 15:02
Date Received 24-Nov-2017
Date Completed 5-Dec-2017
Date Authorised 5-Dec-2017

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Groundwater Bore MPGM4

Source: MP **Customer Sampling Point:** 224 **Sampling Code:** D19 **Sample Frequency:** Month

Testing Laboratory: Mount Piper
Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	9.0 m
Bore Volume Pumped	*Analysis in Field	18 L
Recharge Bore Level	*Analysis in Field	9.0 m
pH	CA12125	5.53
Conductivity	CA12125	4620 µS/cm

Testing Laboratory: ALS Environmental
Water

Cations - Metals	Test Method	Filtered	Total
Mercury (Hg)	EG035T-LL		<0.00004 mg/L
Aluminium (Al)	EG020A-T		0.06 mg/L
Arsenic (As)	EG020A-T		<0.001 mg/L
Barium (Ba)	EG020A-T		0.018 mg/L
Boron (B)	EG020A-T		1.64 mg/L
Cadmium (Cd)	EG020A-T		0.0006 mg/L
Calcium (Ca)	ED093T-UL		255 mg/L
Chromium (Cr)	EG020A-T		<0.001 mg/L
Copper (Cu)	EG020A-T		0.002 mg/L
Iron (Fe)	EG094B-F	0.067 mg/L	
Lead (Pb)	EG020A-T		<0.001 mg/L
Magnesium (Mg)	ED093T-UL		195 mg/L
Manganese (Mn)	EG020A-F	1.29 mg/L	
Molybdenum (Mo)	EG020A-T		<0.001 mg/L
Nickel (Ni)	EG020A-T		0.506 mg/L
Potassium (K)	ED093T-UL		39.2 mg/L
Selenium (Se)	EG094B-T		0.0014 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		589 mg/L
Vanadium (V)	EG020A-F	<0.01 mg/L	
Vanadium (V)	EG020A-T		<0.01 mg/L

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 Senior Chemist

Final - Report Number: 2207898
ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Allan Bowcher

Sample Number MPW019400
Date Sampled 22-Nov-2017 15:02
Date Received 24-Nov-2017
Date Completed 5-Dec-2017
Date Authorised 5-Dec-2017

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Groundwater Bore MPGM4

Source: MP **Customer Sampling Point:** 224 **Sampling Code:** D19 **Sample Frequency:** Month

Testing Laboratory: ALS Environmental

Zinc (Zn)	EG020A-T	0.602 mg/L
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Anions Test Method: ED009-X	Filtered	
Fluoride (F)	<0.200 mg/L	
Chloride (Cl)	346 mg/L	
Sulfate (SO4)	2290 mg/L	

Alkalinity Test Method: ED037-P	Total	
Total Alkalinity (CaCO3)	46 mg/L	

Physical Test Method: EA015H	Total	
Total Dissolved Solids @ 180°C	3930 mg/L	

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1729612. Report Date: 30-Nov-2017

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 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Allan Bowcher

Sample Number MPW019401
Date Sampled 23-Nov-2017 09:10
Date Received 24-Nov-2017
Date Completed 5-Dec-2017
Date Authorised 5-Dec-2017

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Groundwater Bore MPGM4

Source: MP **Customer Sampling Point:** 008 **Sampling Code:** D3 **Sample Frequency:** Month

Testing Laboratory: Mount Piper
Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	7.7 m
Bore Volume Pumped	*Analysis in Field	201 L
Recharge Bore Level	*Analysis in Field	10.5 m
pH	CA12125	5.98
Conductivity	CA12125	930 µS/cm

Testing Laboratory: ALS Environmental
Water

Cations - Metals	Test Method	Filtered	Total
Mercury (Hg)	EG035T-LL		<0.00004 mg/L
Aluminium (Al)	EG020A-T		0.04 mg/L
Arsenic (As)	EG020A-T		<0.001 mg/L
Barium (Ba)	EG020A-T		0.02 mg/L
Boron (B)	EG020A-T		0.06 mg/L
Cadmium (Cd)	EG020A-T		<0.0001 mg/L
Calcium (Ca)	ED093T-UL		75.6 mg/L
Chromium (Cr)	EG020A-T		<0.001 mg/L
Copper (Cu)	EG020A-T		<0.001 mg/L
Iron (Fe)	EG020A-F	12.8 mg/L	
Lead (Pb)	EG020A-T		<0.001 mg/L
Magnesium (Mg)	ED093T-UL		44.1 mg/L
Manganese (Mn)	EG020A-F	0.742 mg/L	
Molybdenum (Mo)	EG020A-T		<0.001 mg/L
Nickel (Ni)	EG020A-T		0.002 mg/L
Potassium (K)	ED093T-UL		8.29 mg/L
Selenium (Se)	EG094B-T		<0.0002 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		34.4 mg/L
Vanadium (V)	EG020A-F	<0.01 mg/L	
Vanadium (V)	EG020A-T		<0.01 mg/L

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 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Allan Bowcher

Sample Number MPW019401
Date Sampled 23-Nov-2017 09:10
Date Received 24-Nov-2017
Date Completed 5-Dec-2017
Date Authorised 5-Dec-2017

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Groundwater Bore MPGM4

Source: MP **Customer Sampling Point:** 008 **Sampling Code:** D3 **Sample Frequency:** Month

Testing Laboratory: ALS Environmental

Zinc (Zn) EG020A-T <0.005 mg/L

Anions Test Method: ED009-X

	Filtered
Fluoride (F)	<0.200 mg/L
Chloride (Cl)	30.5 mg/L
Sulfate (SO4)	314 mg/L

Alkalinity Test Method: ED037-P

	Total
Total Alkalinity (CaCO3)	136 mg/L

Physical Test Method: EA015H

	Total
Total Dissolved Solids @ 180°C	458 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1729612. Report Date: 30-Nov-2017

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 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Allan Bowcher

Sample Number MPW019402
Date Sampled 22-Nov-2017 11:25
Date Received 24-Nov-2017
Date Completed 5-Dec-2017
Date Authorised 5-Dec-2017

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Groundwater Bore MPGM4

Source: MP **Customer Sampling Point:** 016 **Sampling Code:** D11 **Sample Frequency:** Month

Testing Laboratory: Mount Piper
Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	26.4 m
Bore Volume Pumped	*Analysis in Field	129 L
Recharge Bore Level	*Analysis in Field	26.3 m
pH	CA12125	6.11
Conductivity	CA12125	9970 µS/cm

Testing Laboratory: ALS Environmental
Water

Cations - Metals	Test Method	Filtered	Total
Mercury (Hg)	EG035T-LL		<0.00004 mg/L
Aluminium (Al)	EG020A-T		<0.01 mg/L
Arsenic (As)	EG020A-T		0.011 mg/L
Barium (Ba)	EG020A-T		0.018 mg/L
Boron (B)	EG020A-T		2.94 mg/L
Cadmium (Cd)	EG020A-T		<0.0001 mg/L
Calcium (Ca)	ED093T-UL		582 mg/L
Chromium (Cr)	EG020A-T		<0.001 mg/L
Copper (Cu)	EG020A-T		<0.001 mg/L
Iron (Fe)	EG020A-F	109 mg/L	
Lead (Pb)	EG020A-T		<0.001 mg/L
Magnesium (Mg)	ED093T-UL		408 mg/L
Manganese (Mn)	EG020A-F	21 mg/L	
Molybdenum (Mo)	EG020A-T		<0.001 mg/L
Nickel (Ni)	EG020A-T		0.979 mg/L
Potassium (K)	ED093T-UL		91.5 mg/L
Selenium (Se)	EG094B-T		<0.0002 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		1370 mg/L
Vanadium (V)	EG020A-F	<0.01 mg/L	
Vanadium (V)	EG020A-T		<0.01 mg/L

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 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Allan Bowcher

Sample Number MPW019402
Date Sampled 22-Nov-2017 11:25
Date Received 24-Nov-2017
Date Completed 5-Dec-2017
Date Authorised 5-Dec-2017

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Groundwater Bore MPGM4

Source: MP **Customer Sampling Point:** 016 **Sampling Code:** D11 **Sample Frequency:** Month

Testing Laboratory: ALS Environmental

Zinc (Zn)	EG020A-T	0.151 mg/L
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Anions Test Method: ED009-X	Filtered	
Fluoride (F)	<0.500 mg/L	
Chloride (Cl)	933 mg/L	
Sulfate (SO4)	4900 mg/L	

Alkalinity Test Method: ED037-P	Total	
Total Alkalinity (CaCO3)		162 mg/L

Physical Test Method: EA015H	Total	
Total Dissolved Solids @ 180°C		5670 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1729612. Report Date: 30-Nov-2017

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 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Allan Bowcher

Sample Number MPW019403
Date Sampled 22-Nov-2017 14:05
Date Received 24-Nov-2017
Date Completed 5-Dec-2017
Date Authorised 5-Dec-2017

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Groundwater Bore MPGM4

Source: MP **Customer Sampling Point:** 015 **Sampling Code:** D10 **Sample Frequency:** Month

Testing Laboratory: Mount Piper
Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	15.0 m
Bore Volume Pumped	*Analysis in Field	153 L
Recharge Bore Level	*Analysis in Field	15.0 m
pH	CA12125	5.51
Conductivity	CA12125	10570 µS/cm

Testing Laboratory: ALS Environmental
Water

Cations - Metals	Test Method	Filtered	Total
Mercury (Hg)	EG035T-LL		<0.00004 mg/L
Aluminium (Al)	EG020A-T		0.08 mg/L
Arsenic (As)	EG020A-T		<0.001 mg/L
Barium (Ba)	EG020A-T		0.016 mg/L
Boron (B)	EG020A-T		4.05 mg/L
Cadmium (Cd)	EG020A-T		0.0071 mg/L
Calcium (Ca)	ED093T-UL		327 mg/L
Chromium (Cr)	EG020A-T		<0.001 mg/L
Copper (Cu)	EG020A-T		<0.001 mg/L
Iron (Fe)	EG020A-F	3.43 mg/L	
Lead (Pb)	EG020A-T		0.005 mg/L
Magnesium (Mg)	ED093T-UL		378 mg/L
Manganese (Mn)	EG020A-F	8.97 mg/L	
Molybdenum (Mo)	EG020A-T		<0.001 mg/L
Nickel (Ni)	EG020A-T		0.989 mg/L
Potassium (K)	ED093T-UL		193 mg/L
Selenium (Se)	EG094B-T		0.0039 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		1740 mg/L
Vanadium (V)	EG020A-F	<0.01 mg/L	
Vanadium (V)	EG020A-T		<0.01 mg/L

* NATA accreditation does not cover the performance of this service



Accreditation Number 1099
 Accredited for compliance with ISO/IEC 17025.

Authorised by Thanh Hoang Le
 Senior Chemist

Final - Report Number: 2207898
ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Allan Bowcher

Sample Number MPW019403
Date Sampled 22-Nov-2017 14:05
Date Received 24-Nov-2017
Date Completed 5-Dec-2017
Date Authorised 5-Dec-2017

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Groundwater Bore MPGM4

Source: MP **Customer Sampling Point:** 015 **Sampling Code:** D10 **Sample Frequency:** Month

Testing Laboratory: ALS Environmental

Zinc (Zn) EG020A-T 1.03 mg/L

Anions Test Method: ED009-X

	Filtered
Fluoride (F)	0.399 mg/L
Chloride (Cl)	852 mg/L
Sulfate (SO4)	4900 mg/L

Alkalinity Test Method: ED037-P

	Total
Total Alkalinity (CaCO3)	95 mg/L

Physical Test Method: EA015H

	Total
Total Dissolved Solids @ 180°C	6880 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1729612. Report Date: 30-Nov-2017

* NATA accreditation does not cover the performance of this service



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 Senior Chemist

Final - Report Number: 2207898
ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Allan Bowcher

Sample Number MPW019404
Date Sampled 23-Nov-2017 11:25
Date Received 24-Nov-2017
Date Completed 5-Dec-2017
Date Authorised 5-Dec-2017

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Groundwater Bore MPGM4

Source: MP **Customer Sampling Point:** 222 **Sampling Code:** D17 **Sample Frequency:** Month

Testing Laboratory: Mount Piper
Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	27.9 m
Bore Volume Pumped	*Analysis in Field	33 L
Recharge Bore Level	*Analysis in Field	27.9 m
pH	CA12125	5.98
Conductivity	CA12125	3450 µS/cm

Testing Laboratory: ALS Environmental
Water

Cations - Metals	Test Method	Filtered	Total
Mercury (Hg)	EG035T-LL		<0.00004 mg/L
Aluminium (Al)	EG020A-T		0.04 mg/L
Arsenic (As)	EG020A-T		0.003 mg/L
Barium (Ba)	EG020A-T		0.018 mg/L
Boron (B)	EG020A-T		0.17 mg/L
Cadmium (Cd)	EG020A-T		<0.0001 mg/L
Calcium (Ca)	ED093T-UL		227 mg/L
Chromium (Cr)	EG020A-T		<0.001 mg/L
Copper (Cu)	EG020A-T		<0.001 mg/L
Iron (Fe)	EG020A-F	30.8 mg/L	
Lead (Pb)	EG020A-T		<0.001 mg/L
Magnesium (Mg)	ED093T-UL		137 mg/L
Manganese (Mn)	EG020A-F	3.34 mg/L	
Molybdenum (Mo)	EG020A-T		<0.001 mg/L
Nickel (Ni)	EG020A-T		0.102 mg/L
Potassium (K)	ED093T-UL		19 mg/L
Selenium (Se)	EG094B-T		<0.0002 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		389 mg/L
Vanadium (V)	EG020A-F	<0.01 mg/L	
Vanadium (V)	EG020A-T		<0.01 mg/L

* NATA accreditation does not cover the performance of this service



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 Senior Chemist

Final - Report Number: 2207898
ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Allan Bowcher

Sample Number MPW019404
Date Sampled 23-Nov-2017 11:25
Date Received 24-Nov-2017
Date Completed 5-Dec-2017
Date Authorised 5-Dec-2017

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Groundwater Bore MPGM4

Source: MP **Customer Sampling Point:** 222 **Sampling Code:** D17 **Sample Frequency:** Month

Testing Laboratory: ALS Environmental

Zinc (Zn) EG020A-T 0.09 mg/L

Anions Test Method: ED009-X

	Filtered
Fluoride (F)	<0.200 mg/L
Chloride (Cl)	218 mg/L
Sulfate (SO4)	1600 mg/L

Alkalinity Test Method: ED037-P

	Total
Total Alkalinity (CaCO3)	108 mg/L

Physical Test Method: EA015H

	Total
Total Dissolved Solids @ 180°C	2810 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1729612. Report Date: 30-Nov-2017

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Accreditation Number 1099
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Authorised by Thanh Hoang Le
 Senior Chemist

Final - Report Number: 2207898
ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Allan Bowcher

Sample Number MPW019405
Date Sampled 23-Nov-2017 11:50
Date Received 24-Nov-2017
Date Completed 5-Dec-2017
Date Authorised 5-Dec-2017

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Groundwater Bore MPGM4

Source: MP **Customer Sampling Point:** 220 **Sampling Code:** D15 **Sample Frequency:** Month

Testing Laboratory: Mount Piper
Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	26.0 m
Bore Volume Pumped	*Analysis in Field	27 L
Recharge Bore Level	*Analysis in Field	26.0 m
pH	CA12125	5.36
Conductivity	CA12125	4020 µS/cm

Testing Laboratory: ALS Environmental
Water

Cations - Metals	Test Method	Filtered	Total
Mercury (Hg)	EG035T-LL		<0.00004 mg/L
Aluminium (Al)	EG020A-T		0.56 mg/L
Arsenic (As)	EG020A-T		0.008 mg/L
Barium (Ba)	EG020A-T		0.016 mg/L
Boron (B)	EG020A-T		0.29 mg/L
Cadmium (Cd)	EG020A-T		0.0005 mg/L
Calcium (Ca)	ED093T-UL		218 mg/L
Chromium (Cr)	EG020A-T		0.005 mg/L
Copper (Cu)	EG020A-T		0.005 mg/L
Iron (Fe)	EG020A-F	15.6 mg/L	
Lead (Pb)	EG020A-T		0.006 mg/L
Magnesium (Mg)	ED093T-UL		107 mg/L
Manganese (Mn)	EG020A-F	2.49 mg/L	
Molybdenum (Mo)	EG020A-T		<0.001 mg/L
Nickel (Ni)	EG020A-T		0.638 mg/L
Potassium (K)	ED093T-UL		33.2 mg/L
Selenium (Se)	EG094B-T		0.0004 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		606 mg/L
Vanadium (V)	EG020A-F	<0.01 mg/L	
Vanadium (V)	EG020A-T		<0.01 mg/L

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 Senior Chemist

Final - Report Number: 2207898
ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Allan Bowcher

Sample Number MPW019405
Date Sampled 23-Nov-2017 11:50
Date Received 24-Nov-2017
Date Completed 5-Dec-2017
Date Authorised 5-Dec-2017

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Groundwater Bore MPGM4

Source: MP **Customer Sampling Point:** 220 **Sampling Code:** D15 **Sample Frequency:** Month

Testing Laboratory: ALS Environmental

Zinc (Zn)	EG020A-T	1.17 mg/L
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Anions Test Method: ED009-X	Filtered	
Fluoride (F)	<0.200 mg/L	
Chloride (Cl)	225 mg/L	
Sulfate (SO4)	1880 mg/L	

Alkalinity Test Method: ED037-P		Total
Total Alkalinity (CaCO3)		48 mg/L

Physical Test Method: EA015H		Total
Total Dissolved Solids @ 180°C		3170 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1729612. Report Date: 30-Nov-2017

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 Senior Chemist

Final - Report Number: 2207898
ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Allan Bowcher

Sample Number MPW019406
Date Sampled 23-Nov-2017 12:40
Date Received 24-Nov-2017
Date Completed 5-Dec-2017
Date Authorised 5-Dec-2017

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Groundwater Bore MPGM4

Source: MP **Customer Sampling Point:** 221 **Sampling Code:** D16 **Sample Frequency:** Month

Testing Laboratory: Mount Piper
Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	13.0 m
Bore Volume Pumped	*Analysis in Field	138 L
Recharge Bore Level	*Analysis in Field	13.0 m
pH	CA12125	6.45
Conductivity	CA12125	1150 µS/cm

Testing Laboratory: ALS Environmental
Water

Cations - Metals	Test Method	Filtered	Total
Mercury (Hg)	EG035T-LL		<0.00004 mg/L
Aluminium (Al)	EG020A-T		<0.01 mg/L
Arsenic (As)	EG020A-T		<0.001 mg/L
Barium (Ba)	EG020A-T		0.015 mg/L
Boron (B)	EG020A-T		0.05 mg/L
Cadmium (Cd)	EG020A-T		<0.0001 mg/L
Calcium (Ca)	ED093T-UL		140 mg/L
Chromium (Cr)	EG020A-T		<0.001 mg/L
Copper (Cu)	EG020A-T		<0.001 mg/L
Iron (Fe)	EG094B-F	1.58 mg/L	
Lead (Pb)	EG020A-T		<0.001 mg/L
Magnesium (Mg)	ED093T-UL		51.4 mg/L
Manganese (Mn)	EG020A-F	0.029 mg/L	
Molybdenum (Mo)	EG020A-T		<0.001 mg/L
Nickel (Ni)	EG020A-T		0.001 mg/L
Potassium (K)	ED093T-UL		21 mg/L
Selenium (Se)	EG094B-T		<0.0002 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		17.9 mg/L
Vanadium (V)	EG020A-F	<0.01 mg/L	
Vanadium (V)	EG020A-T		<0.01 mg/L

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 Senior Chemist

Final - Report Number: 2207898
ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Allan Bowcher

Sample Number MPW019406
Date Sampled 23-Nov-2017 12:40
Date Received 24-Nov-2017
Date Completed 5-Dec-2017
Date Authorised 5-Dec-2017

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Groundwater Bore MPGM4

Source: MP **Customer Sampling Point:** 221 **Sampling Code:** D16 **Sample Frequency:** Month

Testing Laboratory: ALS Environmental

Zinc (Zn)	EG020A-T	<0.005 mg/L
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Anions Test Method: ED009-X	Filtered	
Fluoride (F)		0.237 mg/L
Chloride (Cl)		28.7 mg/L
Sulfate (SO4)		330 mg/L

Alkalinity Test Method: ED037-P	Total	
Total Alkalinity (CaCO3)		300 mg/L

Physical Test Method: EA015H	Total	
Total Dissolved Solids @ 180°C		699 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1729612. Report Date: 30-Nov-2017

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 Senior Chemist

Final - Report Number: 2207898
ENERGY AUSTRALIA C/- MT PIPER POWER
BOULDER ROAD
PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Allan Bowcher

Sample Number MPW019407
Date Sampled 22-Nov-2017 12:31
Date Received 23-Nov-2017
Date Completed 23-Nov-2017
Date Authorised 24-Nov-2017

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: MP Ash - D10 - SW3-D (Purged)

Source: MP **Customer Sampling Point:** 256 **Sampling Code:** SW3-D **Sample Frequency:** Ad-Hoc

Testing Laboratory: Mount Piper
Water

Field Analysis	Test Method: Analysis in Field	Total
Initial Bore Level		25.3 m

insufficient volume to sample

•System out of service.

Allan Bowcher

Authorised by Allan Bowcher
Chemist

Final - Report Number: 2207898
ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Allan Bowcher

Sample Number MPW019408
Date Sampled 22-Nov-2017 11:45
Date Received 24-Nov-2017
Date Completed 5-Dec-2017
Date Authorised 5-Dec-2017

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: MP Ash - D10 - B5 (Purged)

Source: MP **Customer Sampling Point:** 250 **Sampling Code:** B5 **Sample Frequency:** Ad-Hoc

Testing Laboratory: Mount Piper
Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	36.4 m
Bore Volume Pumped	*Analysis in Field	1.5 L
Recharge Bore Level	*Analysis in Field	36.4 m
pH	CA12125	5.85
Conductivity	CA12125	47000 µS/cm

Testing Laboratory: ALS Environmental
Water

Cations - Metals	Test Method	Filtered	Total
Mercury (Hg)	EG035T-LL		<0.00004 mg/L
Aluminium (Al)	EG020A-T		1.88 mg/L
Arsenic (As)	EG020A-T		<0.010 mg/L
Barium (Ba)	EG020A-T		0.045 mg/L
Boron (B)	EG020A-T		15.3 mg/L
Cadmium (Cd)	EG020A-T		0.116 mg/L
Calcium (Ca)	ED093T-UL		574 mg/L
Chromium (Cr)	EG020A-T		<0.010 mg/L
Copper (Cu)	EG020A-T		0.082 mg/L
Iron (Fe)	EG020A-F	1.65 mg/L	
Lead (Pb)	EG020A-T		<0.010 mg/L
Magnesium (Mg)	ED093T-UL		2140 mg/L
Manganese (Mn)	EG020A-F	14.9 mg/L	
Molybdenum (Mo)	EG020A-T		4.66 mg/L
Nickel (Ni)	EG020A-T		1.53 mg/L
Potassium (K)	ED093T-UL		1650 mg/L
Selenium (Se)	EG094B-T		0.0505 mg/L
Silver (Ag)	EG020B-T		<0.010 mg/L
Sodium (Na)	ED093T-UL		17400 mg/L
Vanadium (V)	EG020A-F	<0.10 mg/L	
Vanadium (V)	EG020A-T		<0.10 mg/L

* NATA accreditation does not cover the performance of this service



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Authorised by Thanh Hoang Le
 Senior Chemist

Final - Report Number: 2207898
ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Allan Bowcher

Sample Number MPW019408
Date Sampled 22-Nov-2017 11:45
Date Received 24-Nov-2017
Date Completed 5-Dec-2017
Date Authorised 5-Dec-2017

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: MP Ash - D10 - B5 (Purged)

Source: MP **Customer Sampling Point:** 250 **Sampling Code:** B5 **Sample Frequency:** Ad-Hoc

Testing Laboratory: ALS Environmental

Zinc (Zn)	EG020A-T	2.35 mg/L
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Anions Test Method: ED009-X	Filtered
Fluoride (F)	<2.00 mg/L
Chloride (Cl)	3710 mg/L
Sulfate (SO4)	30800 mg/L

Alkalinity Test Method: ED037-P	Total
Total Alkalinity (CaCO3)	56 mg/L

Physical Test Method: EA015H	Total
Total Dissolved Solids @ 180°C	33500 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1729612. Report Date: 30-Nov-2017

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Accreditation Number 1099
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Authorised by Thanh Hoang Le
 Senior Chemist

Final - Report Number: 2207898
ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Allan Bowcher

Sample Number MPW019409
Date Sampled 22-Nov-2017 12:00
Date Received 24-Nov-2017
Date Completed 5-Dec-2017
Date Authorised 5-Dec-2017

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: MP Ash - D10 - B5-1 (Purged)

Source: MP **Customer Sampling Point:** 251 **Sampling Code:** B5-1 **Sample Frequency:** Ad-Hoc

Testing Laboratory: Mount Piper

Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	35.3 m
Bore Volume Pumped	*Analysis in Field	10 L
Recharge Bore Level	*Analysis in Field	35.3 m
pH	CA12125	5.38
Conductivity	CA12125	46390 µS/cm

Testing Laboratory: ALS Environmental

Water

Cations - Metals	Test Method	Filtered	Total
Mercury (Hg)	EG035T-LL		<0.00004 mg/L
Aluminium (Al)	EG020A-T		3.68 mg/L
Arsenic (As)	EG020A-T		<0.010 mg/L
Barium (Ba)	EG020A-T		0.052 mg/L
Boron (B)	EG020A-T		10.6 mg/L
Cadmium (Cd)	EG020A-T		0.0811 mg/L
Calcium (Ca)	ED093T-UL		498 mg/L
Chromium (Cr)	EG020A-T		<0.010 mg/L
Copper (Cu)	EG020A-T		<0.010 mg/L
Iron (Fe)	EG020A-F	0.7 mg/L	
Lead (Pb)	EG020A-T		<0.010 mg/L
Magnesium (Mg)	ED093T-UL		1910 mg/L
Manganese (Mn)	EG020A-F	46.5 mg/L	
Molybdenum (Mo)	EG020A-T		<0.010 mg/L
Nickel (Ni)	EG020A-T		2.22 mg/L
Potassium (K)	ED093T-UL		1020 mg/L
Selenium (Se)	EG094B-T		0.132 mg/L
Silver (Ag)	EG020B-T		<0.010 mg/L
Sodium (Na)	ED093T-UL		14200 mg/L
Vanadium (V)	EG020A-F	<0.10 mg/L	
Vanadium (V)	EG020A-T		<0.10 mg/L

* NATA accreditation does not cover the performance of this service



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 Senior Chemist

Final - Report Number: 2207898
ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Allan Bowcher

Sample Number MPW019409
Date Sampled 22-Nov-2017 12:00
Date Received 24-Nov-2017
Date Completed 5-Dec-2017
Date Authorised 5-Dec-2017

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: MP Ash - D10 - B5-1 (Purged)

Source: MP **Customer Sampling Point:** 251 **Sampling Code:** B5-1 **Sample Frequency:** Ad-Hoc

Testing Laboratory: ALS Environmental

Zinc (Zn)	EG020A-T	3.64 mg/L
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Anions Test Method: ED009-X	Filtered
Fluoride (F)	2.15 mg/L
Chloride (Cl)	3560 mg/L
Sulfate (SO4)	30900 mg/L

Alkalinity Test Method: ED037-P	Total
Total Alkalinity (CaCO3)	113 mg/L

Physical Test Method: EA015H	Total
Total Dissolved Solids @ 180°C	40800 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1729612. Report Date: 30-Nov-2017

* NATA accreditation does not cover the performance of this service



Accreditation Number 1099
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Authorised by Thanh Hoang Le
 Senior Chemist

Final - Report Number: 2224874
ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Allan Bowcher

Sample Number MPW019652
Date Sampled 14-Dec-2017 08:10
Date Received 15-Dec-2017
Date Completed 27-Dec-2017
Date Authorised 27-Dec-2017

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Groundwater Bore MPGM4

Source: MP **Customer Sampling Point:** 014 **Sampling Code:** D9 **Sample Frequency:** Month

Testing Laboratory: Mount Piper
Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	2.0 m
Bore Volume Pumped	*Analysis in Field	2 L
Recharge Bore Level	*Analysis in Field	1.9 m
pH	CA12125	5.90
Conductivity	CA12125	2960 µS/cm

Testing Laboratory: ALS Environmental
Water

Cations - Metals	Test Method	Filtered	Total
Mercury (Hg)	EG035T-LL		<0.00004 mg/L
Aluminium (Al)	EG020A-T		0.08 mg/L
Arsenic (As)	EG020A-T		<0.001 mg/L
Barium (Ba)	EG020A-T		0.043 mg/L
Boron (B)	EG020A-T		0.90 mg/L
Cadmium (Cd)	EG020A-T		0.0001 mg/L
Calcium (Ca)	ED093T-UL		218 mg/L
Chromium (Cr)	EG020A-T		<0.001 mg/L
Copper (Cu)	EG020A-T		<0.001 mg/L
Iron (Fe)	EG020A-F	19.3 mg/L	
Lead (Pb)	EG020A-T		<0.001 mg/L
Magnesium (Mg)	ED093T-UL		208 mg/L
Manganese (Mn)	EG020A-F	13.3 mg/L	
Molybdenum (Mo)	EG020A-T		0.001 mg/L
Nickel (Ni)	EG020A-T		0.436 mg/L
Potassium (K)	ED093T-UL		15.2 mg/L
Selenium (Se)	EG094B-T		<0.0002 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		191 mg/L
Vanadium (V)	EG020A-F	<0.01 mg/L	
Vanadium (V)	EG020A-T		<0.01 mg/L

* NATA accreditation does not cover the performance of this service



Accreditation Number 1099
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Authorised by Thanh Hoang Le
 Senior Chemist

Final - Report Number: 2224874
ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Allan Bowcher

Sample Number MPW019652
Date Sampled 14-Dec-2017 08:10
Date Received 15-Dec-2017
Date Completed 27-Dec-2017
Date Authorised 27-Dec-2017

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Groundwater Bore MPGM4

Source: MP **Customer Sampling Point:** 014 **Sampling Code:** D9 **Sample Frequency:** Month

Testing Laboratory: ALS Environmental

Zinc (Zn)	EG020A-T	0.164 mg/L
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Anions Test Method: ED009-X	Filtered	
Fluoride (F)	0.060 mg/L	
Chloride (Cl)	150 mg/L	
Sulfate (SO4)	1520 mg/L	

Alkalinity Test Method: ED037-P		Total
Total Alkalinity (CaCO3)		117 mg/L

Physical Test Method: EA015H		Total
Total Dissolved Solids @ 180°C		2230 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1731948. Report Date: 22-Dec-2017

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ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Allan Bowcher

Sample Number MPW019653
Date Sampled 13-Dec-2017 08:40
Date Received 15-Dec-2017
Date Completed 27-Dec-2017
Date Authorised 27-Dec-2017

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Stream Gauge

Source: MP **Customer Sampling Point:** 003 **Sampling Code:** WX22 **Sample Frequency:** Month

Testing Laboratory: Mount Piper
 Water

Field Analysis	Test Method	Total
Discharge Flowing	*Analysis in Field	Flow
Appearance	*Analysis in Field	Slightly Turbid
pH	CA12125	7.08
Conductivity	CA12125	424 µS/cm
Temperature	CA12125	17.0 °C
Dissolved Oxygen (O2)	*Analysis in Field	7.1 mg/L



field photo

Testing Laboratory: ALS Environmental
 Water

Cations - Metals	Test Method	Filtered	Total
Mercury (Hg)	EG035T-LL		<0.00004 mg/L
Aluminium (Al)	EG020A-F	0.01 mg/L	
Aluminium (Al)	EG020A-T		0.30 mg/L

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ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Allan Bowcher

Sample Number MPW019653
Date Sampled 13-Dec-2017 08:40
Date Received 15-Dec-2017
Date Completed 27-Dec-2017
Date Authorised 27-Dec-2017

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Stream Gauge

Source: MP **Customer Sampling Point:** 003 **Sampling Code:** WX22 **Sample Frequency:** Month

Testing Laboratory: ALS Environmental

Arsenic (As)	EG020A-T	<0.001 mg/L
Barium (Ba)	EG020A-T	0.018 mg/L
Boron (B)	EG020A-T	0.07 mg/L
Cadmium (Cd)	EG020A-T	<0.0001 mg/L
Calcium (Ca)	ED093T-UL	28.9 mg/L
Chromium (Cr)	EG020A-T	<0.001 mg/L
Copper (Cu)	EG020A-F	<0.001 mg/L
Copper (Cu)	EG020A-T	0.001 mg/L
Iron (Fe)	EG094B-F	0.102 mg/L
Iron (Fe)	EG094B-T	0.714 mg/L
Lead (Pb)	EG020A-T	<0.001 mg/L
Magnesium (Mg)	ED093T-UL	19.2 mg/L
Manganese (Mn)	EG020A-F	0.506 mg/L
Manganese (Mn)	EG020A-T	0.582 mg/L
Molybdenum (Mo)	EG020A-T	<0.001 mg/L
Nickel (Ni)	EG020A-T	0.022 mg/L
Potassium (K)	ED093T-UL	3.01 mg/L
Selenium (Se)	EG094B-T	<0.0002 mg/L
Silver (Ag)	EG020B-T	<0.001 mg/L
Sodium (Na)	ED093T-UL	25.8 mg/L
Strontium (Sr)	EG020B-T	0.140 mg/L
Vanadium (V)	EG020A-F	<0.01 mg/L
Vanadium (V)	EG020A-T	<0.01 mg/L
Zinc (Zn)	EG020A-F	0.010 mg/L
Zinc (Zn)	EG020A-T	0.018 mg/L

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 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Allan Bowcher

Sample Number MPW019653
Date Sampled 13-Dec-2017 08:40
Date Received 15-Dec-2017
Date Completed 27-Dec-2017
Date Authorised 27-Dec-2017

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Stream Gauge

Source: MP **Customer Sampling Point:** 003 **Sampling Code:** WX22 **Sample Frequency:** Month

Testing Laboratory: ALS Environmental

Anions	Test Method	Filtered
Fluoride (F)	ED009-X	0.158 mg/L
Chloride (Cl)	ED009-X	14.6 mg/L
Sulfate (SO4)	ED009-X	86.3 mg/L
Nitrate (N)	EK058G	0.02 mg/L
Nitrite (N)	EK057G	<0.01 mg/L
Nitrate and Nitrite (N)	EK059G	0.02 mg/L

Alkalinity	Test Method: ED037-P	Total
Total Alkalinity (CaCO3)		88 mg/L
Phenolphthalein Alkalinity (CaCO3)		<1 mg/L
Bicarbonate (CaCO3)		88 mg/L

Phosphate	Test Method: EK067G	Total
Total Phosphorus (P)		<0.01 mg/L

Physical	Test Method	Total
Total Dissolved Solids @ 180°C	EA015H	368 mg/L
Turbidity	EA045	14.7 NTU

Other	Test Method	Total
Nitrogen (N)	EK062G	0.2 mg/L
Nitrogen (N) - Kjeldahl	EK061G	0.2 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1731948. Report Date: 22-Dec-2017

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 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Allan Bowcher

Sample Number MPW019654
Date Sampled 13-Dec-2017 09:15
Date Received 15-Dec-2017
Date Completed 27-Dec-2017
Date Authorised 27-Dec-2017

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Groundwater Bore MPGM4

Source: MP **Customer Sampling Point:** 006 **Sampling Code:** D1 **Sample Frequency:** Month

Testing Laboratory: Mount Piper
Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	2.8 m
Bore Volume Pumped	*Analysis in Field	123 L
Recharge Bore Level	*Analysis in Field	3.3 m
pH	CA12125	5.89
Conductivity	CA12125	5500 µS/cm

Testing Laboratory: ALS Environmental
Water

Cations - Metals	Test Method	Filtered	Total
Mercury (Hg)	EG035T-LL		<0.00004 mg/L
Aluminium (Al)	EG020A-T		0.14 mg/L
Arsenic (As)	EG020A-T		0.008 mg/L
Barium (Ba)	EG020A-T		0.037 mg/L
Boron (B)	EG020A-T		2.26 mg/L
Cadmium (Cd)	EG020A-T		<0.0001 mg/L
Calcium (Ca)	ED093T-UL		419 mg/L
Chromium (Cr)	EG020A-T		<0.001 mg/L
Copper (Cu)	EG020A-T		<0.001 mg/L
Iron (Fe)	EG020A-F	65.4 mg/L	
Lead (Pb)	EG020A-T		<0.001 mg/L
Magnesium (Mg)	ED093T-UL		310 mg/L
Manganese (Mn)	EG020A-F	19.0 mg/L	
Molybdenum (Mo)	EG020A-T		<0.001 mg/L
Nickel (Ni)	EG020A-T		1.33 mg/L
Potassium (K)	ED093T-UL		34.9 mg/L
Selenium (Se)	EG094B-T		<0.0002 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		531 mg/L
Vanadium (V)	EG020A-F	<0.01 mg/L	
Vanadium (V)	EG020A-T		<0.01 mg/L

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 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Allan Bowcher

Sample Number MPW019654
Date Sampled 13-Dec-2017 09:15
Date Received 15-Dec-2017
Date Completed 27-Dec-2017
Date Authorised 27-Dec-2017

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Groundwater Bore MPGM4

Source: MP **Customer Sampling Point:** 006 **Sampling Code:** D1 **Sample Frequency:** Month

Testing Laboratory: ALS Environmental

Zinc (Zn)	EG020A-T	0.136 mg/L
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Anions Test Method: ED009-X	Filtered	
Fluoride (F)	0.054 mg/L	
Chloride (Cl)	653 mg/L	
Sulfate (SO4)	2540 mg/L	

Alkalinity Test Method: ED037-P		Total
Total Alkalinity (CaCO3)		145 mg/L

Physical Test Method: EA015H		Total
Total Dissolved Solids @ 180°C		5040 mg/L

TDS by method EA-015 may bias high for various samples due to the presence of fine particulate matter, which may pass through the prescribed GF/C paper.

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1731948. Report Date: 22-Dec-2017

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 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Allan Bowcher

Sample Number MPW019655
Date Sampled 14-Dec-2017 09:05
Date Received 15-Dec-2017
Date Completed 27-Dec-2017
Date Authorised 27-Dec-2017

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Groundwater Bore MPGM4

Source: MP **Customer Sampling Point:** 013 **Sampling Code:** D8 **Sample Frequency:** Month

Testing Laboratory: Mount Piper

Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	2.3 m
Bore Volume Pumped	*Analysis in Field	47 L
Recharge Bore Level	*Analysis in Field	2.3 m
pH	CA12125	5.36
Conductivity	CA12125	278 µS/cm

Testing Laboratory: ALS Environmental

Water

Cations - Metals	Test Method	Filtered	Total
Mercury (Hg)	EG035T-LL		<0.00004 mg/L
Aluminium (Al)	EG020A-T		0.28 mg/L
Arsenic (As)	EG020A-T		<0.001 mg/L
Barium (Ba)	EG020A-T		0.029 mg/L
Boron (B)	EG020A-T		<0.05 mg/L
Cadmium (Cd)	EG020A-T		<0.0001 mg/L
Calcium (Ca)	ED093T-UL		17.6 mg/L
Chromium (Cr)	EG020A-T		<0.001 mg/L
Copper (Cu)	EG020A-T		<0.001 mg/L
Iron (Fe)	EG094B-F	0.049 mg/L	
Lead (Pb)	EG020A-T		<0.001 mg/L
Magnesium (Mg)	ED093T-UL		14.4 mg/L
Manganese (Mn)	EG020A-F	0.108 mg/L	
Molybdenum (Mo)	EG020A-T		<0.001 mg/L
Nickel (Ni)	EG020A-T		0.029 mg/L
Potassium (K)	ED093T-UL		2.23 mg/L
Selenium (Se)	EG094B-T		<0.0002 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		9.99 mg/L
Vanadium (V)	EG020A-F	<0.01 mg/L	
Vanadium (V)	EG020A-T		<0.01 mg/L

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 Senior Chemist

Final - Report Number: 2224874
ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Allan Bowcher

Sample Number MPW019655
Date Sampled 14-Dec-2017 09:05
Date Received 15-Dec-2017
Date Completed 27-Dec-2017
Date Authorised 27-Dec-2017

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Groundwater Bore MPGM4

Source: MP **Customer Sampling Point:** 013 **Sampling Code:** D8 **Sample Frequency:** Month

Testing Laboratory: ALS Environmental

Zinc (Zn) EG020A-T 0.042 mg/L

Anions Test Method: ED009-X

	Filtered
Fluoride (F)	0.015 mg/L
Chloride (Cl)	4.10 mg/L
Sulfate (SO4)	94.2 mg/L

Alkalinity Test Method: ED037-P

Total Alkalinity (CaCO3)	Total 8 mg/L
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Physical Test Method: EA015H

Total Dissolved Solids @ 180°C	Total 246 mg/L
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Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1731948. Report Date: 22-Dec-2017

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 Senior Chemist

Customer Analytical Services

Mount Piper Power Station 350 Boulder Road Portland 2847 NSW

Email: customeranalyticalservices@nalco.com



Final - Report Number: 2224874

ENERGY AUSTRALIA C/- MT PIPER POWER

BOULDER ROAD

PORTLAND NSW 2847 AUSTRALIA

Sold To: 0500082301 **Ship To:** 0500082301

Representative: Clive Stacey

Sampled By: Allan Bowcher

Sample Number

MPW019656

Date Sampled

13-Dec-2017 14:45

Date Received

15-Dec-2017

Date Completed

15-Dec-2017

Date Authorised

15-Dec-2017

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: MP Ash - D10 - D21

Source: MP

Customer Sampling Point: 253

Sampling Code: D21

Sample Frequency:

ADDITIONAL_MONTH

Testing Laboratory: Mount Piper

Water

Field Analysis **Test Method:** Analysis in Field
Dry

Total

Allan Bowcher

Authorised by Allan Bowcher
Chemist

Final - Report Number: 2224874
ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Allan Bowcher

Sample Number MPW019657
Date Sampled 13-Dec-2017 14:40
Date Received 15-Dec-2017
Date Completed 27-Dec-2017
Date Authorised 27-Dec-2017

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: MP Ash - D10 - D23

Source: MP **Customer Sampling Point:** 254 **Sampling Code:** D23 **Sample Frequency:** ADDITIONAL_MONTH

Testing Laboratory: Mount Piper
Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	24.7 m
Bore Volume Pumped	*Analysis in Field	50 L
Recharge Bore Level	*Analysis in Field	24.7 m
pH	CA12125	5.93
Conductivity	CA12125	3430 µS/cm

Testing Laboratory: ALS Environmental
Water

Cations - Metals	Test Method	Filtered	Total
Mercury (Hg)	EG035T-LL		<0.00004 mg/L
Aluminium (Al)	EG020A-T		0.39 mg/L
Arsenic (As)	EG020A-T		0.001 mg/L
Barium (Ba)	EG020A-T		0.019 mg/L
Boron (B)	EG020A-T		0.49 mg/L
Cadmium (Cd)	EG020A-T		0.0003 mg/L
Calcium (Ca)	ED093T-UL		172 mg/L
Chromium (Cr)	EG020A-T		<0.001 mg/L
Copper (Cu)	EG020A-T		0.001 mg/L
Iron (Fe)	EG020A-F	10.9 mg/L	
Lead (Pb)	EG020A-T		0.002 mg/L
Magnesium (Mg)	ED093T-UL		101 mg/L
Manganese (Mn)	EG020A-F	2.39 mg/L	
Molybdenum (Mo)	EG020A-T		<0.001 mg/L
Nickel (Ni)	EG020A-T		0.353 mg/L
Potassium (K)	ED093T-UL		37.5 mg/L
Selenium (Se)	EG094B-T		<0.0002 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		525 mg/L
Vanadium (V)	EG020A-F	<0.01 mg/L	

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 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Allan Bowcher

Sample Number MPW019657
Date Sampled 13-Dec-2017 14:40
Date Received 15-Dec-2017
Date Completed 27-Dec-2017
Date Authorised 27-Dec-2017

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: MP Ash - D10 - D23

Source: MP **Customer Sampling Point:** 254 **Sampling Code:** D23 **Sample Frequency:** ADDITIONAL_MONTH

Testing Laboratory: ALS Environmental

Vanadium (V)	EG020A-T	<0.01 mg/L
Zinc (Zn)	EG020A-T	0.403 mg/L

Anions	Test Method: ED009-X	Filtered
Fluoride (F)		0.207 mg/L
Chloride (Cl)		192 mg/L
Sulfate (SO4)		1580 mg/L

Alkalinity	Test Method: ED037-P	Total
Total Alkalinity (CaCO3)		154 mg/L

Physical	Test Method: EA015H	Total
Total Dissolved Solids @ 180°C		2360 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1731948. Report Date: 22-Dec-2017

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 Senior Chemist

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 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Allan Bowcher

Sample Number MPW019658
Date Sampled 14-Dec-2017 11:10
Date Received 15-Dec-2017
Date Completed 27-Dec-2017
Date Authorised 27-Dec-2017

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Groundwater Bore MPGM4

Source: MP **Customer Sampling Point:** 223 **Sampling Code:** D18 **Sample Frequency:** Month

Testing Laboratory: Mount Piper
Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	25.6 m
Bore Volume Pumped	*Analysis in Field	23 L
Recharge Bore Level	*Analysis in Field	32.6 m
pH	CA12125	6.70
Conductivity	CA12125	840 µS/cm

Testing Laboratory: ALS Environmental
Water

Cations - Metals	Test Method	Filtered	Total
Mercury (Hg)	EG035T-LL		<0.00004 mg/L
Aluminium (Al)	EG020A-T		0.12 mg/L
Arsenic (As)	EG020A-T		0.002 mg/L
Barium (Ba)	EG020A-T		0.457 mg/L
Boron (B)	EG020A-T		0.06 mg/L
Cadmium (Cd)	EG020A-T		<0.0001 mg/L
Calcium (Ca)	ED093T-UL		79.0 mg/L
Chromium (Cr)	EG020A-T		<0.001 mg/L
Copper (Cu)	EG020A-T		<0.001 mg/L
Iron (Fe)	EG094B-F	0.033 mg/L	
Lead (Pb)	EG020A-T		<0.001 mg/L
Magnesium (Mg)	ED093T-UL		35.3 mg/L
Manganese (Mn)	EG020A-F	0.228 mg/L	
Molybdenum (Mo)	EG020A-T		0.003 mg/L
Nickel (Ni)	EG020A-T		0.005 mg/L
Potassium (K)	ED093T-UL		19.0 mg/L
Selenium (Se)	EG094B-T		0.0003 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		42.5 mg/L
Vanadium (V)	EG020A-F	<0.01 mg/L	
Vanadium (V)	EG020A-T		<0.01 mg/L

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 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Allan Bowcher

Sample Number MPW019658
Date Sampled 14-Dec-2017 11:10
Date Received 15-Dec-2017
Date Completed 27-Dec-2017
Date Authorised 27-Dec-2017

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Groundwater Bore MPGM4

Source: MP **Customer Sampling Point:** 223 **Sampling Code:** D18 **Sample Frequency:** Month

Testing Laboratory: ALS Environmental

Zinc (Zn) EG020A-T 0.035 mg/L

Anions Test Method: ED009-X

	Filtered
Fluoride (F)	0.480 mg/L
Chloride (Cl)	16.7 mg/L
Sulfate (SO4)	81.5 mg/L

Alkalinity Test Method: ED037-P

	Total
Total Alkalinity (CaCO3)	308 mg/L

Physical Test Method: EA015H

	Total
Total Dissolved Solids @ 180°C	526 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1731948. Report Date: 22-Dec-2017

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 Senior Chemist

Final - Report Number: 2224874
ENERGY AUSTRALIA C/- MT PIPER POWER
BOULDER ROAD
PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Allan Bowcher

Sample Number MPW019659
Date Sampled 13-Dec-2017 13:20
Date Received 15-Dec-2017
Date Completed 15-Dec-2017
Date Authorised 15-Dec-2017

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: MP Ash - D10 - SW3-S

Source: MP

Customer Sampling Point: 257

Sampling Code: SW3-S

Sample Frequency:
ADDITIONAL_MONTH

Testing Laboratory: Mount Piper

Water

Field Analysis Test Method: Analysis in Field
Initial Bore Level

Total
17.0 m

insufficient volume to sample

Allan Bowcher

Authorised by Allan Bowcher
Chemist

Final - Report Number: 2224874
ENERGY AUSTRALIA C/- MT PIPER POWER
BOULDER ROAD
PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Allan Bowcher

Sample Number MPW019660
Date Sampled 13-Dec-2017 13:26
Date Received 15-Dec-2017
Date Completed 15-Dec-2017
Date Authorised 15-Dec-2017

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: MP Ash - D10 - SW3-D

Source: MP

Customer Sampling Point: 256

Sampling Code: SW3-D

Sample Frequency:
ADDITIONAL_MONTH

Testing Laboratory: Mount Piper

Water

Field Analysis Test Method: Analysis in Field
Dry

Total

Allan Bowcher

Authorised by Allan Bowcher
Chemist

Final - Report Number: 2224874
ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Allan Bowcher

Sample Number MPW019661
Date Sampled 14-Dec-2017 09:45
Date Received 15-Dec-2017
Date Completed 27-Dec-2017
Date Authorised 27-Dec-2017

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: MP Ash - D10 - B5

Source: MP **Customer Sampling Point:** 250 **Sampling Code:** B5 **Sample Frequency:** ADDITIONAL_MONTH

Testing Laboratory: Mount Piper
Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	36.5 m
Bore Volume Pumped	*Analysis in Field	1 L
Recharge Bore Level	*Analysis in Field	36.4 m
pH	CA12125	6.13
Conductivity	CA12125	47740 µS/cm

Testing Laboratory: ALS Environmental
Water

Cations - Metals	Test Method	Filtered	Total
Mercury (Hg)	EG035T-LL		<0.00004 mg/L
Aluminium (Al)	EG020A-T		0.91 mg/L
Arsenic (As)	EG020A-T		<0.010 mg/L
Barium (Ba)	EG020A-T		0.047 mg/L
Boron (B)	EG020A-T		14.6 mg/L
Cadmium (Cd)	EG020A-T		0.165 mg/L
Calcium (Ca)	ED093T-UL		504 mg/L
Chromium (Cr)	EG020A-T		<0.010 mg/L
Copper (Cu)	EG020A-T		0.051 mg/L
Iron (Fe)	EG020A-F	0.42 mg/L	
Lead (Pb)	EG020A-T		<0.010 mg/L
Magnesium (Mg)	ED093T-UL		2000 mg/L
Manganese (Mn)	EG020A-F	16.8 mg/L	
Molybdenum (Mo)	EG020A-T		2.79 mg/L
Nickel (Ni)	EG020A-T		1.31 mg/L
Potassium (K)	ED093T-UL		1530 mg/L
Selenium (Se)	EG094B-T		0.0756 mg/L
Silver (Ag)	EG020B-T		<0.010 mg/L
Sodium (Na)	ED093T-UL		15300 mg/L
Vanadium (V)	EG020A-F	<0.10 mg/L	

* NATA accreditation does not cover the performance of this service



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 Senior Chemist

Final - Report Number: 2224874
ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Allan Bowcher

Sample Number MPW019661
Date Sampled 14-Dec-2017 09:45
Date Received 15-Dec-2017
Date Completed 27-Dec-2017
Date Authorised 27-Dec-2017

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: MP Ash - D10 - B5

Source: MP **Customer Sampling Point:** 250 **Sampling Code:** B5 **Sample Frequency:** ADDITIONAL_MONTH

Testing Laboratory: ALS Environmental

Vanadium (V)	EG020A-T	<0.10 mg/L
Zinc (Zn)	EG020A-T	4.03 mg/L

Anions Test Method: ED009-X	Filtered
Fluoride (F)	<10.0 mg/L
Chloride (Cl)	4260 mg/L
Sulfate (SO4)	30000 mg/L

Alkalinity Test Method: ED037-P	Total
Total Alkalinity (CaCO3)	87 mg/L

Physical Test Method: EA015H	Total
Total Dissolved Solids @ 180°C	56100 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1731948. Report Date: 22-Dec-2017

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Final - Report Number: 2224874
ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Allan Bowcher

Sample Number MPW019662
Date Sampled 14-Dec-2017 09:55
Date Received 15-Dec-2017
Date Completed 27-Dec-2017
Date Authorised 27-Dec-2017

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: MP Ash - D10 - B5-1

Source: MP **Customer Sampling Point:** 251 **Sampling Code:** B5-1 **Sample Frequency:** ADDITIONAL_MONTH

Testing Laboratory: Mount Piper
Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	35.4 m
Bore Volume Pumped	*Analysis in Field	10 L
Recharge Bore Level	*Analysis in Field	35.3 m
pH	CA12125	5.48
Conductivity	CA12125	47600 µS/cm

Testing Laboratory: ALS Environmental
Water

Cations - Metals	Test Method	Filtered	Total
Mercury (Hg)	EG035T-LL		<0.00004 mg/L
Aluminium (Al)	EG020A-T		3.47 mg/L
Arsenic (As)	EG020A-T		<0.010 mg/L
Barium (Ba)	EG020A-T		0.053 mg/L
Boron (B)	EG020A-T		10.9 mg/L
Cadmium (Cd)	EG020A-T		0.0923 mg/L
Calcium (Ca)	ED093T-UL		500 mg/L
Chromium (Cr)	EG020A-T		<0.010 mg/L
Copper (Cu)	EG020A-T		<0.010 mg/L
Iron (Fe)	EG020A-F	1.73 mg/L	
Lead (Pb)	EG020A-T		<0.010 mg/L
Magnesium (Mg)	ED093T-UL		1940 mg/L
Manganese (Mn)	EG020A-F	49.0 mg/L	
Molybdenum (Mo)	EG020A-T		0.101 mg/L
Nickel (Ni)	EG020A-T		2.40 mg/L
Potassium (K)	ED093T-UL		1280 mg/L
Selenium (Se)	EG094B-T		0.202 mg/L
Silver (Ag)	EG020B-T		<0.010 mg/L
Sodium (Na)	ED093T-UL		16000 mg/L
Vanadium (V)	EG020A-F	<0.10 mg/L	

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 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Allan Bowcher

Sample Number MPW019662
Date Sampled 14-Dec-2017 09:55
Date Received 15-Dec-2017
Date Completed 27-Dec-2017
Date Authorised 27-Dec-2017

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: MP Ash - D10 - B5-1

Source: MP **Customer Sampling Point:** 251 **Sampling Code:** B5-1 **Sample Frequency:** ADDITIONAL_MONTH

Testing Laboratory: ALS Environmental

Vanadium (V)	EG020A-T	<0.10 mg/L
Zinc (Zn)	EG020A-T	3.89 mg/L

Anions Test Method: ED009-X	Filtered
Fluoride (F)	<10.0 mg/L
Chloride (Cl)	3920 mg/L
Sulfate (SO4)	31400 mg/L

Alkalinity Test Method: ED037-P	Total
Total Alkalinity (CaCO3)	102 mg/L

Physical Test Method: EA015H	Total
Total Dissolved Solids @ 180°C	55000 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1731948. Report Date: 22-Dec-2017

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 Senior Chemist

Final - Report Number: 2224874
ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Allan Bowcher

Sample Number MPW019663
Date Sampled 13-Dec-2017 10:35
Date Received 15-Dec-2017
Date Completed 27-Dec-2017
Date Authorised 27-Dec-2017

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: MP Ash - D10 - NA5

Source: MP **Customer Sampling Point:** 255 **Sampling Code:** NA5 **Sample Frequency:** ADDITIONAL_MONTH

Testing Laboratory: Mount Piper
Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	25.2 m
Bore Volume Pumped	*Analysis in Field	11 L
Recharge Bore Level	*Analysis in Field	25.2 m
pH	CA12125	5.81
Conductivity	CA12125	5290 µS/cm

Testing Laboratory: ALS Environmental
Water

Cations - Metals	Test Method	Filtered	Total
Mercury (Hg)	EG035T-LL		<0.00004 mg/L
Aluminium (Al)	EG020A-T		1.63 mg/L
Arsenic (As)	EG020A-T		<0.001 mg/L
Barium (Ba)	EG020A-T		0.031 mg/L
Boron (B)	EG020A-T		9.91 mg/L
Cadmium (Cd)	EG020A-T		0.0154 mg/L
Calcium (Ca)	ED093T-UL		389 mg/L
Chromium (Cr)	EG020A-T		0.134 mg/L
Copper (Cu)	EG020A-T		0.007 mg/L
Iron (Fe)	EG020A-F	0.57 mg/L	
Lead (Pb)	EG020A-T		0.001 mg/L
Magnesium (Mg)	ED093T-UL		144 mg/L
Manganese (Mn)	EG020A-F	11.0 mg/L	
Molybdenum (Mo)	EG020A-T		0.056 mg/L
Nickel (Ni)	EG020A-T		0.804 mg/L
Potassium (K)	ED093T-UL		136 mg/L
Selenium (Se)	EG094B-T		0.0417 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		701 mg/L
Vanadium (V)	EG020A-F	<0.01 mg/L	

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 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Allan Bowcher

Sample Number MPW019663
Date Sampled 13-Dec-2017 10:35
Date Received 15-Dec-2017
Date Completed 27-Dec-2017
Date Authorised 27-Dec-2017

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: MP Ash - D10 - NA5

Source: MP **Customer Sampling Point:** 255 **Sampling Code:** NA5 **Sample Frequency:** ADDITIONAL_MONTH

Testing Laboratory: ALS Environmental

Vanadium (V)	EG020A-T	<0.01 mg/L
Zinc (Zn)	EG020A-T	1.08 mg/L

Anions Test Method: ED009-X	Filtered
Fluoride (F)	3.78 mg/L
Chloride (Cl)	205 mg/L
Sulfate (SO4)	2960 mg/L

Alkalinity Test Method: ED037-P	Total
Total Alkalinity (CaCO3)	97 mg/L

Physical Test Method: EA015H	Total
Total Dissolved Solids @ 180°C	4160 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1731948. Report Date: 22-Dec-2017

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Final - Report Number: 2224874
ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Allan Bowcher

Sample Number MPW019664
Date Sampled 13-Dec-2017 15:30
Date Received 15-Dec-2017
Date Completed 27-Dec-2017
Date Authorised 27-Dec-2017

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: MP Ash - D10 - D20

Source: MP **Customer Sampling Point:** 252 **Sampling Code:** D20 **Sample Frequency:** ADDITIONAL_MONTH

Testing Laboratory: Mount Piper
Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	17.3 m
Bore Volume Pumped	*Analysis in Field	16 L
Recharge Bore Level	*Analysis in Field	17.3 m
pH	CA12125	6.03
Conductivity	CA12125	3900 µS/cm

Testing Laboratory: ALS Environmental
Water

Cations - Metals	Test Method	Filtered	Total
Mercury (Hg)	EG035T-LL		<0.00004 mg/L
Aluminium (Al)	EG020A-T		2.55 mg/L
Arsenic (As)	EG020A-T		0.006 mg/L
Barium (Ba)	EG020A-T		0.065 mg/L
Boron (B)	EG020A-T		1.18 mg/L
Cadmium (Cd)	EG020A-T		0.0022 mg/L
Calcium (Ca)	ED093T-UL		312 mg/L
Chromium (Cr)	EG020A-T		0.008 mg/L
Copper (Cu)	EG020A-T		0.014 mg/L
Iron (Fe)	EG020A-F	0.98 mg/L	
Lead (Pb)	EG020A-T		0.010 mg/L
Magnesium (Mg)	ED093T-UL		375 mg/L
Manganese (Mn)	EG020A-F	22.1 mg/L	
Molybdenum (Mo)	EG020A-T		<0.001 mg/L
Nickel (Ni)	EG020A-T		0.536 mg/L
Potassium (K)	ED093T-UL		19.8 mg/L
Selenium (Se)	EG094B-T		0.0003 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		168 mg/L
Vanadium (V)	EG020A-F	<0.01 mg/L	

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Final - Report Number: 2224874
ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Allan Bowcher

Sample Number MPW019664
Date Sampled 13-Dec-2017 15:30
Date Received 15-Dec-2017
Date Completed 27-Dec-2017
Date Authorised 27-Dec-2017

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: MP Ash - D10 - D20

Source: MP **Customer Sampling Point:** 252 **Sampling Code:** D20 **Sample Frequency:** ADDITIONAL_MONTH

Testing Laboratory: ALS Environmental

Vanadium (V)	EG020A-T	<0.01 mg/L
Zinc (Zn)	EG020A-T	0.260 mg/L

Anions Test Method: ED009-X	Filtered
Fluoride (F)	0.144 mg/L
Chloride (Cl)	117 mg/L
Sulfate (SO4)	2750 mg/L

Alkalinity Test Method: ED037-P	Total
Total Alkalinity (CaCO3)	344 mg/L

Physical Test Method: EA015H	Total
Total Dissolved Solids @ 180°C	3440 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1731948. Report Date: 22-Dec-2017

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Final - Report Number: 2224874
ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Allan Bowcher

Sample Number MPW019665
Date Sampled 13-Dec-2017 15:10
Date Received 15-Dec-2017
Date Completed 27-Dec-2017
Date Authorised 27-Dec-2017

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Groundwater Bore MPGM4

Source: MP **Customer Sampling Point:** 224 **Sampling Code:** D19 **Sample Frequency:** Month

Testing Laboratory: Mount Piper
Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	8.5 m
Bore Volume Pumped	*Analysis in Field	21 L
Recharge Bore Level	*Analysis in Field	8.5 m
pH	CA12125	5.36
Conductivity	CA12125	3600 µS/cm

Testing Laboratory: ALS Environmental
Water

Cations - Metals	Test Method	Filtered	Total
Mercury (Hg)	EG035T-LL		<0.00004 mg/L
Aluminium (Al)	EG020A-T		0.07 mg/L
Arsenic (As)	EG020A-T		<0.001 mg/L
Barium (Ba)	EG020A-T		0.018 mg/L
Boron (B)	EG020A-T		1.44 mg/L
Cadmium (Cd)	EG020A-T		0.0006 mg/L
Calcium (Ca)	ED093T-UL		186 mg/L
Chromium (Cr)	EG020A-T		0.003 mg/L
Copper (Cu)	EG020A-T		0.003 mg/L
Iron (Fe)	EG094B-F	0.042 mg/L	
Lead (Pb)	EG020A-T		0.001 mg/L
Magnesium (Mg)	ED093T-UL		145 mg/L
Manganese (Mn)	EG020A-F	0.578 mg/L	
Molybdenum (Mo)	EG020A-T		<0.001 mg/L
Nickel (Ni)	EG020A-T		0.328 mg/L
Potassium (K)	ED093T-UL		34.2 mg/L
Selenium (Se)	EG094B-T		0.0050 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		504 mg/L
Vanadium (V)	EG020A-F	<0.01 mg/L	
Vanadium (V)	EG020A-T		<0.01 mg/L

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 Senior Chemist

Final - Report Number: 2224874
ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Allan Bowcher

Sample Number MPW019665
Date Sampled 13-Dec-2017 15:10
Date Received 15-Dec-2017
Date Completed 27-Dec-2017
Date Authorised 27-Dec-2017

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Groundwater Bore MPGM4

Source: MP **Customer Sampling Point:** 224 **Sampling Code:** D19 **Sample Frequency:** Month

Testing Laboratory: ALS Environmental

Zinc (Zn)	EG020A-T	0.618 mg/L
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Anions Test Method: ED009-X	Filtered	
Fluoride (F)	0.034 mg/L	
Chloride (Cl)	247 mg/L	
Sulfate (SO4)	1620 mg/L	

Alkalinity Test Method: ED037-P		Total
Total Alkalinity (CaCO3)		32 mg/L

Physical Test Method: EA015H		Total
Total Dissolved Solids @ 180°C		2700 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1731948. Report Date: 22-Dec-2017

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 Senior Chemist

Final - Report Number: 2224874
ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Allan Bowcher

Sample Number MPW019666
Date Sampled 14-Dec-2017 08:45
Date Received 15-Dec-2017
Date Completed 27-Dec-2017
Date Authorised 27-Dec-2017

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Groundwater Bore MPGM4

Source: MP **Customer Sampling Point:** 008 **Sampling Code:** D3 **Sample Frequency:** Month

Testing Laboratory: Mount Piper

Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	7.7 m
Bore Volume Pumped	*Analysis in Field	201 L
Recharge Bore Level	*Analysis in Field	10.5 m
pH	CA12125	6.04
Conductivity	CA12125	920 µS/cm

Testing Laboratory: ALS Environmental

Water

Cations - Metals	Test Method	Filtered	Total
Mercury (Hg)	EG035T-LL		<0.00004 mg/L
Aluminium (Al)	EG020A-T		0.08 mg/L
Arsenic (As)	EG020A-T		<0.001 mg/L
Barium (Ba)	EG020A-T		0.030 mg/L
Boron (B)	EG020A-T		<0.05 mg/L
Cadmium (Cd)	EG020A-T		<0.0001 mg/L
Calcium (Ca)	ED093T-UL		76.7 mg/L
Chromium (Cr)	EG020A-T		<0.001 mg/L
Copper (Cu)	EG020A-T		<0.001 mg/L
Iron (Fe)	EG020A-F	9.30 mg/L	
Lead (Pb)	EG020A-T		<0.001 mg/L
Magnesium (Mg)	ED093T-UL		46.0 mg/L
Manganese (Mn)	EG020A-F	0.691 mg/L	
Molybdenum (Mo)	EG020A-T		<0.001 mg/L
Nickel (Ni)	EG020A-T		0.005 mg/L
Potassium (K)	ED093T-UL		8.09 mg/L
Selenium (Se)	EG094B-T		<0.0002 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		31.6 mg/L
Vanadium (V)	EG020A-F	<0.01 mg/L	
Vanadium (V)	EG020A-T		<0.01 mg/L

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 Senior Chemist

Final - Report Number: 2224874
ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Allan Bowcher

Sample Number MPW019666
Date Sampled 14-Dec-2017 08:45
Date Received 15-Dec-2017
Date Completed 27-Dec-2017
Date Authorised 27-Dec-2017

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Groundwater Bore MPGM4

Source: MP **Customer Sampling Point:** 008 **Sampling Code:** D3 **Sample Frequency:** Month

Testing Laboratory: ALS Environmental

Zinc (Zn) EG020A-T <0.005 mg/L

Anions Test Method: ED009-X

	Filtered
Fluoride (F)	0.059 mg/L
Chloride (Cl)	26.1 mg/L
Sulfate (SO4)	294 mg/L

Alkalinity Test Method: ED037-P

	Total
Total Alkalinity (CaCO3)	142 mg/L

Physical Test Method: EA015H

	Total
Total Dissolved Solids @ 180°C	673 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1731948. Report Date: 22-Dec-2017

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 Senior Chemist

Final - Report Number: 2224874
ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Allan Bowcher

Sample Number MPW019667
Date Sampled 13-Dec-2017 11:45
Date Received 15-Dec-2017
Date Completed 27-Dec-2017
Date Authorised 27-Dec-2017

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Groundwater Bore MPGM4

Source: MP **Customer Sampling Point:** 016 **Sampling Code:** D11 **Sample Frequency:** Month

Testing Laboratory: Mount Piper
Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	26.4 m
Bore Volume Pumped	*Analysis in Field	129 L
Recharge Bore Level	*Analysis in Field	26.4 m
pH	CA12125	6.17
Conductivity	CA12125	9880 µS/cm

Testing Laboratory: ALS Environmental
Water

Cations - Metals	Test Method	Filtered	Total
Mercury (Hg)	EG035T-LL		<0.00004 mg/L
Aluminium (Al)	EG020A-T		0.02 mg/L
Arsenic (As)	EG020A-T		0.009 mg/L
Barium (Ba)	EG020A-T		0.020 mg/L
Boron (B)	EG020A-T		3.18 mg/L
Cadmium (Cd)	EG020A-T		<0.0001 mg/L
Calcium (Ca)	ED093T-UL		605 mg/L
Chromium (Cr)	EG020A-T		<0.001 mg/L
Copper (Cu)	EG020A-T		<0.001 mg/L
Iron (Fe)	EG020A-F	83.6 mg/L	
Lead (Pb)	EG020A-T		<0.001 mg/L
Magnesium (Mg)	ED093T-UL		415 mg/L
Manganese (Mn)	EG020A-F	17.0 mg/L	
Molybdenum (Mo)	EG020A-T		<0.001 mg/L
Nickel (Ni)	EG020A-T		1.10 mg/L
Potassium (K)	ED093T-UL		87.0 mg/L
Selenium (Se)	EG094B-T		<0.0002 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		1480 mg/L
Vanadium (V)	EG020A-F	<0.01 mg/L	
Vanadium (V)	EG020A-T		<0.01 mg/L

* NATA accreditation does not cover the performance of this service



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Authorised by Thanh Hoang Le
 Senior Chemist

Final - Report Number: 2224874
ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Allan Bowcher

Sample Number MPW019667
Date Sampled 13-Dec-2017 11:45
Date Received 15-Dec-2017
Date Completed 27-Dec-2017
Date Authorised 27-Dec-2017

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Groundwater Bore MPGM4

Source: MP **Customer Sampling Point:** 016 **Sampling Code:** D11 **Sample Frequency:** Month

Testing Laboratory: ALS Environmental

Zinc (Zn)	EG020A-T	0.169 mg/L
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Anions Test Method: ED009-X		Filtered
Fluoride (F)		<1.00 mg/L
Chloride (Cl)		869 mg/L
Sulfate (SO4)		4230 mg/L

Alkalinity Test Method: ED037-P		Total
Total Alkalinity (CaCO3)		151 mg/L

Physical Test Method: EA015H		Total
Total Dissolved Solids @ 180°C		9410 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1731948. Report Date: 22-Dec-2017

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 Senior Chemist

Final - Report Number: 2224874
ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Allan Bowcher

Sample Number MPW019668
Date Sampled 14-Dec-2017 10:50
Date Received 15-Dec-2017
Date Completed 27-Dec-2017
Date Authorised 27-Dec-2017

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Groundwater Bore MPGM4

Source: MP **Customer Sampling Point:** 015 **Sampling Code:** D10 **Sample Frequency:** Month

Testing Laboratory: Mount Piper
Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	14.9 m
Bore Volume Pumped	*Analysis in Field	155 L
Recharge Bore Level	*Analysis in Field	14.9 m
pH	CA12125	5.59
Conductivity	CA12125	10870 µS/cm

Testing Laboratory: ALS Environmental
Water

Cations - Metals	Test Method	Filtered	Total
Mercury (Hg)	EG035T-LL		<0.00004 mg/L
Aluminium (Al)	EG020A-T		0.18 mg/L
Arsenic (As)	EG020A-T		0.002 mg/L
Barium (Ba)	EG020A-T		0.020 mg/L
Boron (B)	EG020A-T		5.32 mg/L
Cadmium (Cd)	EG020A-T		0.0097 mg/L
Calcium (Ca)	ED093T-UL		339 mg/L
Chromium (Cr)	EG020A-T		<0.001 mg/L
Copper (Cu)	EG020A-T		0.001 mg/L
Iron (Fe)	EG020A-F	2.55 mg/L	
Lead (Pb)	EG020A-T		0.007 mg/L
Magnesium (Mg)	ED093T-UL		402 mg/L
Manganese (Mn)	EG020A-F	8.71 mg/L	
Molybdenum (Mo)	EG020A-T		<0.001 mg/L
Nickel (Ni)	EG020A-T		1.34 mg/L
Potassium (K)	ED093T-UL		209 mg/L
Selenium (Se)	EG094B-T		0.0043 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		1980 mg/L
Vanadium (V)	EG020A-F	<0.01 mg/L	
Vanadium (V)	EG020A-T		<0.01 mg/L

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 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Allan Bowcher

Sample Number MPW019668
Date Sampled 14-Dec-2017 10:50
Date Received 15-Dec-2017
Date Completed 27-Dec-2017
Date Authorised 27-Dec-2017

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Groundwater Bore MPGM4

Source: MP **Customer Sampling Point:** 015 **Sampling Code:** D10 **Sample Frequency:** Month

Testing Laboratory: ALS Environmental

Zinc (Zn) EG020A-T 1.42 mg/L

Anions Test Method: ED009-X

	Filtered
Fluoride (F)	<1.00 mg/L
Chloride (Cl)	876 mg/L
Sulfate (SO4)	4700 mg/L

Alkalinity Test Method: ED037-P

	Total
Total Alkalinity (CaCO3)	84 mg/L

Physical Test Method: EA015H

	Total
Total Dissolved Solids @ 180°C	9760 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1731948. Report Date: 22-Dec-2017

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ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Allan Bowcher

Sample Number MPW019669
Date Sampled 14-Dec-2017 11:40
Date Received 15-Dec-2017
Date Completed 27-Dec-2017
Date Authorised 27-Dec-2017

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Groundwater Bore MPGM4

Source: MP **Customer Sampling Point:** 222 **Sampling Code:** D17 **Sample Frequency:** Month

Testing Laboratory: Mount Piper

Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	27.6 m
Bore Volume Pumped	*Analysis in Field	35 L
Recharge Bore Level	*Analysis in Field	27.6 m
pH	CA12125	6.09
Conductivity	CA12125	3430 µS/cm

Testing Laboratory: ALS Environmental

Water

Cations - Metals	Test Method	Filtered	Total
Mercury (Hg)	EG035T-LL		<0.00004 mg/L
Aluminium (Al)	EG020A-T		0.05 mg/L
Arsenic (As)	EG020A-T		0.004 mg/L
Barium (Ba)	EG020A-T		0.025 mg/L
Boron (B)	EG020A-T		0.17 mg/L
Cadmium (Cd)	EG020A-T		<0.0001 mg/L
Calcium (Ca)	ED093T-UL		230 mg/L
Chromium (Cr)	EG020A-T		<0.001 mg/L
Copper (Cu)	EG020A-T		<0.001 mg/L
Iron (Fe)	EG020A-F	18.8 mg/L	
Lead (Pb)	EG020A-T		<0.001 mg/L
Magnesium (Mg)	ED093T-UL		144 mg/L
Manganese (Mn)	EG020A-F	3.06 mg/L	
Molybdenum (Mo)	EG020A-T		<0.001 mg/L
Nickel (Ni)	EG020A-T		0.141 mg/L
Potassium (K)	ED093T-UL		17.8 mg/L
Selenium (Se)	EG094B-T		<0.0002 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		400 mg/L
Vanadium (V)	EG020A-F	<0.01 mg/L	
Vanadium (V)	EG020A-T		<0.01 mg/L

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Final - Report Number: 2224874
ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Allan Bowcher

Sample Number MPW019669
Date Sampled 14-Dec-2017 11:40
Date Received 15-Dec-2017
Date Completed 27-Dec-2017
Date Authorised 27-Dec-2017

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Groundwater Bore MPGM4

Source: MP **Customer Sampling Point:** 222 **Sampling Code:** D17 **Sample Frequency:** Month

Testing Laboratory: ALS Environmental

Zinc (Zn) EG020A-T 0.120 mg/L

Anions Test Method: ED009-X

	Filtered
Fluoride (F)	0.058 mg/L
Chloride (Cl)	215 mg/L
Sulfate (SO4)	1690 mg/L

Alkalinity Test Method: ED037-P

Total Alkalinity (CaCO3)	Total 102 mg/L
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Physical Test Method: EA015H

Total Dissolved Solids @ 180°C	Total 2730 mg/L
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Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1731948. Report Date: 22-Dec-2017

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ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Allan Bowcher

Sample Number MPW019670
Date Sampled 14-Dec-2017 12:10
Date Received 15-Dec-2017
Date Completed 27-Dec-2017
Date Authorised 27-Dec-2017

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Groundwater Bore MPGM4

Source: MP **Customer Sampling Point:** 220 **Sampling Code:** D15 **Sample Frequency:** Month

Testing Laboratory: Mount Piper
Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	25.6 m
Bore Volume Pumped	*Analysis in Field	29 L
Recharge Bore Level	*Analysis in Field	25.6 m
pH	CA12125	5.39
Conductivity	CA12125	3980 µS/cm

Testing Laboratory: ALS Environmental
Water

Cations - Metals	Test Method	Filtered	Total
Mercury (Hg)	EG035T-LL		<0.00004 mg/L
Aluminium (Al)	EG020A-T		0.75 mg/L
Arsenic (As)	EG020A-T		0.009 mg/L
Barium (Ba)	EG020A-T		0.015 mg/L
Boron (B)	EG020A-T		0.27 mg/L
Cadmium (Cd)	EG020A-T		0.0004 mg/L
Calcium (Ca)	ED093T-UL		206 mg/L
Chromium (Cr)	EG020A-T		0.002 mg/L
Copper (Cu)	EG020A-T		0.006 mg/L
Iron (Fe)	EG020A-F	14.7 mg/L	
Lead (Pb)	EG020A-T		0.007 mg/L
Magnesium (Mg)	ED093T-UL		107 mg/L
Manganese (Mn)	EG020A-F	2.16 mg/L	
Molybdenum (Mo)	EG020A-T		<0.001 mg/L
Nickel (Ni)	EG020A-T		0.669 mg/L
Potassium (K)	ED093T-UL		31.9 mg/L
Selenium (Se)	EG094B-T		0.0004 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		634 mg/L
Vanadium (V)	EG020A-F	<0.01 mg/L	
Vanadium (V)	EG020A-T		<0.01 mg/L

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Final - Report Number: 2224874
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 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Allan Bowcher

Sample Number MPW019670
Date Sampled 14-Dec-2017 12:10
Date Received 15-Dec-2017
Date Completed 27-Dec-2017
Date Authorised 27-Dec-2017

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Groundwater Bore MPGM4

Source: MP **Customer Sampling Point:** 220 **Sampling Code:** D15 **Sample Frequency:** Month

Testing Laboratory: ALS Environmental

Zinc (Zn)	EG020A-T	1.26 mg/L
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Anions Test Method: ED009-X	Filtered
Fluoride (F)	0.028 mg/L
Chloride (Cl)	220 mg/L
Sulfate (SO4)	2200 mg/L

Alkalinity Test Method: ED037-P	Total
Total Alkalinity (CaCO3)	39 mg/L

Physical Test Method: EA015H	Total
Total Dissolved Solids @ 180°C	2580 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1731948. Report Date: 22-Dec-2017

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Final - Report Number: 2224874
ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Allan Bowcher

Sample Number MPW019671
Date Sampled 14-Dec-2017 12:55
Date Received 15-Dec-2017
Date Completed 27-Dec-2017
Date Authorised 27-Dec-2017

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Groundwater Bore MPGM4

Source: MP **Customer Sampling Point:** 221 **Sampling Code:** D16 **Sample Frequency:** Month

Testing Laboratory: Mount Piper
Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	12.7 m
Bore Volume Pumped	*Analysis in Field	140 L
Recharge Bore Level	*Analysis in Field	12.8 m
pH	CA12125	6.52
Conductivity	CA12125	1200 µS/cm

Testing Laboratory: ALS Environmental
Water

Cations - Metals	Test Method	Filtered	Total
Mercury (Hg)	EG035T-LL		<0.00004 mg/L
Aluminium (Al)	EG020A-T		0.01 mg/L
Arsenic (As)	EG020A-T		<0.001 mg/L
Barium (Ba)	EG020A-T		0.016 mg/L
Boron (B)	EG020A-T		<0.05 mg/L
Cadmium (Cd)	EG020A-T		<0.0001 mg/L
Calcium (Ca)	ED093T-UL		148 mg/L
Chromium (Cr)	EG020A-T		0.002 mg/L
Copper (Cu)	EG020A-T		<0.001 mg/L
Iron (Fe)	EG094B-F	1.48 mg/L	
Lead (Pb)	EG020A-T		<0.001 mg/L
Magnesium (Mg)	ED093T-UL		56.0 mg/L
Manganese (Mn)	EG020A-F	0.032 mg/L	
Molybdenum (Mo)	EG020A-T		<0.001 mg/L
Nickel (Ni)	EG020A-T		0.003 mg/L
Potassium (K)	ED093T-UL		18.9 mg/L
Selenium (Se)	EG094B-T		<0.0002 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		17.1 mg/L
Vanadium (V)	EG020A-F	<0.01 mg/L	
Vanadium (V)	EG020A-T		<0.01 mg/L

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 Senior Chemist

Final - Report Number: 2224874
ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Allan Bowcher

Sample Number MPW019671
Date Sampled 14-Dec-2017 12:55
Date Received 15-Dec-2017
Date Completed 27-Dec-2017
Date Authorised 27-Dec-2017

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Groundwater Bore MPGM4

Source: MP **Customer Sampling Point:** 221 **Sampling Code:** D16 **Sample Frequency:** Month

Testing Laboratory: ALS Environmental

Zinc (Zn) EG020A-T 0.006 mg/L

Anions Test Method: ED009-X

	Filtered
Fluoride (F)	0.227 mg/L
Chloride (Cl)	31.2 mg/L
Sulfate (SO4)	351 mg/L

Alkalinity Test Method: ED037-P

	Total
Total Alkalinity (CaCO3)	254 mg/L

Physical Test Method: EA015H

	Total
Total Dissolved Solids @ 180°C	870 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1731948. Report Date: 22-Dec-2017

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 Senior Chemist

Final - Report Number: 2224874
ENERGY AUSTRALIA C/- MT PIPER POWER
BOULDER ROAD
PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Allan Bowcher

Sample Number MPW019672
Date Sampled 13-Dec-2017 13:25
Date Received 15-Dec-2017
Date Completed 15-Dec-2017
Date Authorised 15-Dec-2017

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: MP Ash - D10 - SW3-D (Purged)

Source: MP

Customer Sampling Point: 256

Sampling Code: SW3-D

Sample Frequency: Ad-Hoc

Testing Laboratory: Mount Piper
Water

Field Analysis
Dry

Test Method: Analysis in Field

Total

•System out of service.

Allan Bowcher

Authorised by Allan Bowcher
Chemist

Final - Report Number: 2224874
ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Allan Bowcher

Sample Number MPW019673
Date Sampled 13-Dec-2017 12:12
Date Received 15-Dec-2017
Date Completed 27-Dec-2017
Date Authorised 27-Dec-2017

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: MP Ash - D10 - B5 (Purged)

Source: MP **Customer Sampling Point:** 250 **Sampling Code:** B5 **Sample Frequency:** Ad-Hoc

Testing Laboratory: Mount Piper
Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	36.5 m
Bore Volume Pumped	*Analysis in Field	1 L
Recharge Bore Level	*Analysis in Field	36.4 m
pH	CA12125	5.88
Conductivity	CA12125	47320 µS/cm

Testing Laboratory: ALS Environmental
Water

Cations - Metals	Test Method	Filtered	Total
Mercury (Hg)	EG035T-LL		<0.00004 mg/L
Aluminium (Al)	EG020A-T		0.69 mg/L
Arsenic (As)	EG020A-T		<0.010 mg/L
Barium (Ba)	EG020A-T		0.058 mg/L
Boron (B)	EG020A-T		16.2 mg/L
Cadmium (Cd)	EG020A-T		0.138 mg/L
Calcium (Ca)	ED093T-UL		490 mg/L
Chromium (Cr)	EG020A-T		<0.010 mg/L
Copper (Cu)	EG020A-T		0.089 mg/L
Iron (Fe)	EG020A-F	1.46 mg/L	
Lead (Pb)	EG020A-T		<0.010 mg/L
Magnesium (Mg)	ED093T-UL		1860 mg/L
Manganese (Mn)	EG020A-F	15.8 mg/L	
Molybdenum (Mo)	EG020A-T		3.83 mg/L
Nickel (Ni)	EG020A-T		1.49 mg/L
Potassium (K)	ED093T-UL		1490 mg/L
Selenium (Se)	EG094B-T		0.0603 mg/L
Silver (Ag)	EG020B-T		<0.010 mg/L
Sodium (Na)	ED093T-UL		15200 mg/L
Vanadium (V)	EG020A-F	<0.10 mg/L	
Vanadium (V)	EG020A-T		<0.10 mg/L

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 Senior Chemist

Final - Report Number: 2224874
ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Allan Bowcher

Sample Number MPW019673
Date Sampled 13-Dec-2017 12:12
Date Received 15-Dec-2017
Date Completed 27-Dec-2017
Date Authorised 27-Dec-2017

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: MP Ash - D10 - B5 (Purged)

Source: MP **Customer Sampling Point:** 250 **Sampling Code:** B5 **Sample Frequency:** Ad-Hoc

Testing Laboratory: ALS Environmental

Zinc (Zn)	EG020A-T	2.65 mg/L
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Anions Test Method: ED009-X		Filtered
Fluoride (F)		<10.0 mg/L
Chloride (Cl)		3950 mg/L
Sulfate (SO4)		30400 mg/L

Alkalinity Test Method: ED037-P		Total
Total Alkalinity (CaCO3)		72 mg/L

Physical Test Method: EA015H		Total
Total Dissolved Solids @ 180°C		55500 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1731948. Report Date: 22-Dec-2017

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 Senior Chemist

Final - Report Number: 2224874
ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Allan Bowcher

Sample Number MPW019674
Date Sampled 13-Dec-2017 12:50
Date Received 15-Dec-2017
Date Completed 27-Dec-2017
Date Authorised 27-Dec-2017

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: MP Ash - D10 - B5-1 (Purged)

Source: MP **Customer Sampling Point:** 251 **Sampling Code:** B5-1 **Sample Frequency:** Ad-Hoc

Testing Laboratory: Mount Piper
Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	35.4 m
Bore Volume Pumped	*Analysis in Field	10 L
Recharge Bore Level	*Analysis in Field	35.3 m
pH	CA12125	5.72
Conductivity	CA12125	47170 µS/cm

Testing Laboratory: ALS Environmental
Water

Cations - Metals	Test Method	Filtered	Total
Mercury (Hg)	EG035T-LL		<0.00004 mg/L
Aluminium (Al)	EG020A-T		11.5 mg/L
Arsenic (As)	EG020A-T		0.011 mg/L
Barium (Ba)	EG020A-T		0.104 mg/L
Boron (B)	EG020A-T		10.6 mg/L
Cadmium (Cd)	EG020A-T		0.0901 mg/L
Calcium (Ca)	ED093T-UL		502 mg/L
Chromium (Cr)	EG020A-T		0.015 mg/L
Copper (Cu)	EG020A-T		0.017 mg/L
Iron (Fe)	EG020A-F	<0.10 mg/L	
Lead (Pb)	EG020A-T		0.012 mg/L
Magnesium (Mg)	ED093T-UL		1960 mg/L
Manganese (Mn)	EG020A-F	49.6 mg/L	
Molybdenum (Mo)	EG020A-T		0.156 mg/L
Nickel (Ni)	EG020A-T		2.40 mg/L
Potassium (K)	ED093T-UL		1290 mg/L
Selenium (Se)	EG094B-T		0.179 mg/L
Silver (Ag)	EG020B-T		<0.010 mg/L
Sodium (Na)	ED093T-UL		16000 mg/L
Vanadium (V)	EG020A-F	<0.10 mg/L	
Vanadium (V)	EG020A-T		<0.10 mg/L

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Accreditation Number 1099
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Authorised by Thanh Hoang Le
 Senior Chemist

Final - Report Number: 2224874
ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Allan Bowcher

Sample Number MPW019674
Date Sampled 13-Dec-2017 12:50
Date Received 15-Dec-2017
Date Completed 27-Dec-2017
Date Authorised 27-Dec-2017

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: MP Ash - D10 - B5-1 (Purged)

Source: MP **Customer Sampling Point:** 251 **Sampling Code:** B5-1 **Sample Frequency:** Ad-Hoc

Testing Laboratory: ALS Environmental

Zinc (Zn) EG020A-T 3.73 mg/L

Anions Test Method: ED009-X

	Filtered
Fluoride (F)	15.6 mg/L
Chloride (Cl)	4070 mg/L
Sulfate (SO4)	32200 mg/L

Alkalinity Test Method: ED037-P

	Total
Total Alkalinity (CaCO3)	196 mg/L

Physical Test Method: EA015H

	Total
Total Dissolved Solids @ 180°C	55200 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1731948. Report Date: 22-Dec-2017

* NATA accreditation does not cover the performance of this service



Accreditation Number 1099
 Accredited for compliance with ISO/IEC 17025.

Authorised by Thanh Hoang Le
 Senior Chemist

Customer Analytical Services

Mount Piper Power Station 350 Boulder Road Portland 2847 NSW

Email: customeranalyticalservices@nalco.com

NALCO Water
An Ecolab Company

Amended - Report Number: 2257648

Replaces previous report number: 2255576 6-Feb-2018 17:46

ENERGY AUSTRALIA C/- MT PIPER POWER

BOULDER ROAD

PORTLAND NSW 2847 AUSTRALIA

Sold To: 0500082301 Ship To: 0500082301

Representative: Clive Stacey

Sampled By: Allan Bowcher

Sample Number

MPW020202

Date Sampled

25-Jan-2018 08:20

Date Received

25-Jan-2018

Date Completed

5-Feb-2018

Date Authorised

7-Feb-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Groundwater Bore MPGM4

Source: MP

Customer Sampling Point: 014

Sampling Code: D9

Sample Frequency: Month

Testing Laboratory: Mount Piper

Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	2.0 m
Bore Volume Pumped	*Analysis in Field	3 L
Recharge Bore Level	*Analysis in Field	2.0 m
pH	CA12125	5.99
Conductivity	CA12125	3210 µS/cm

Testing Laboratory: ALS Environmental

Water

Cations - Metals	Test Method	Filtered	Total
Mercury (Hg)	EG035T-LL		0.00005 mg/L
Aluminium (Al)	EG020A-T		0.03 mg/L
Arsenic (As)	EG020A-T		<0.001 mg/L
Barium (Ba)	EG020A-T		0.031 mg/L
Boron (B)	EG020A-T		0.70 mg/L
Cadmium (Cd)	EG020A-T		<0.0001 mg/L
Calcium (Ca)	ED093T-UL		260 mg/L
Chromium (Cr)	EG020A-T		<0.001 mg/L
Copper (Cu)	EG020A-T		<0.001 mg/L
Iron (Fe)	EG020A-F	8.91 mg/L	
Lead (Pb)	EG020A-T		<0.001 mg/L
Magnesium (Mg)	ED093T-UL		234 mg/L
Manganese (Mn)	EG020A-F	13.6 mg/L	
Molybdenum (Mo)	EG020A-T		0.003 mg/L
Nickel (Ni)	EG020A-T		0.352 mg/L
Potassium (K)	ED093T-UL		20.6 mg/L
Selenium (Se)	EG094B-T		<0.0002 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		205 mg/L
Vanadium (V)	EG020A-F	<0.01 mg/L	

* NATA accreditation does not cover the performance of this service



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Senior Chemist

Amended - Report Number: 2257648

Replaces previous report number: 2255576 6-Feb-2018 17:46

ENERGY AUSTRALIA C/- MT PIPER POWER

BOULDER ROAD

PORTLAND NSW 2847 AUSTRALIA

Sold To: 0500082301 **Ship To:** 0500082301

Representative: Clive Stacey

Sampled By: Allan Bowcher

Sample Number	MPW020202
Date Sampled	25-Jan-2018 08:20
Date Received	25-Jan-2018
Date Completed	5-Feb-2018
Date Authorised	7-Feb-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Groundwater Bore MPM4

Source: MP **Customer Sampling Point:** 014 **Sampling Code:** D9 **Sample Frequency:** Month

Testing Laboratory: ALS Environmental

Vanadium (V)	EG020A-T	<0.01 mg/L
Zinc (Zn)	EG020A-T	0.131 mg/L

Anions Test Method: ED009-X	Filtered
Fluoride (F)	<0.200 mg/L
Chloride (Cl)	157 mg/L
Sulfate (SO4)	1680 mg/L

Alkalinity Test Method: ED037-P	Total
Total Alkalinity (CaCO3)	117 mg/L

Physical Test Method: EA015H	Total
Total Dissolved Solids @ 180°C	2340 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1803177. Report Date: 2-Feb-2018

* NATA accreditation does not cover the performance of this service



Accreditation Number 1099
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Authorised by Thanh Hoang Le
 Senior Chemist

Customer Analytical Services

Mount Piper Power Station 350 Boulder Road Portland 2847 NSW

Email: customeranalyticalservices@nalco.com

Amended - Report Number: 2257648

Replaces previous report number: 2255576 6-Feb-2018 17:46

ENERGY AUSTRALIA C/- MT PIPER POWER

BOULDER ROAD

PORTLAND NSW 2847 AUSTRALIA

Sold To: 0500082301 **Ship To:** 0500082301

Representative: Clive Stacey

Sampled By: Allan Bowcher

Sample Number

MPW020203

Date Sampled

24-Jan-2018 08:30

Date Received

25-Jan-2018

Date Completed

5-Feb-2018

Date Authorised

7-Feb-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Stream Gauge

Source: MP

Customer Sampling Point: 003

Sampling Code: WX22

Sample Frequency: Month

Testing Laboratory: Mount Piper

Water

Field Analysis	Test Method	Total
Discharge Flowing	*Analysis in Field	No Flow
Appearance	*Analysis in Field	Clear
pH	CA12125	6.94
Conductivity	CA12125	2070 μ S/cm
Temperature	CA12125	18.7 $^{\circ}$ C
Dissolved Oxygen (O2)	*Analysis in Field	7.9 mg/L



field photo

Testing Laboratory: ALS Environmental

Water

Cations - Metals	Test Method	Filtered	Total
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* NATA accreditation does not cover the performance of this service



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Senior Chemist

Customer Analytical Services

Mount Piper Power Station 350 Boulder Road Portland 2847 NSW

Email: customeranalyticalservices@nalco.com

NALCO Water
An Ecolab Company

Amended - Report Number: 2257648

Replaces previous report number: 2255576 6-Feb-2018 17:46

ENERGY AUSTRALIA C/- MT PIPER POWER

BOULDER ROAD

PORTLAND NSW 2847 AUSTRALIA

Sold To: 0500082301 **Ship To:** 0500082301

Representative: Clive Stacey

Sampled By: Allan Bowcher

Sample Number

MPW020203

Date Sampled

24-Jan-2018 08:30

Date Received

25-Jan-2018

Date Completed

5-Feb-2018

Date Authorised

7-Feb-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Stream Gauge

Source: MP

Customer Sampling Point: 003

Sampling Code: WX22

Sample Frequency: Month

Testing Laboratory: ALS Environmental

Mercury (Hg)	EG035T-LL	<0.00004 mg/L
Aluminium (Al)	EG020A-F	0.02 mg/L
Aluminium (Al)	EG020A-T	0.04 mg/L
Arsenic (As)	EG020A-T	<0.001 mg/L
Barium (Ba)	EG020A-T	0.043 mg/L
Boron (B)	EG020A-T	0.23 mg/L
Cadmium (Cd)	EG020A-T	<0.0001 mg/L
Calcium (Ca)	ED093T-UL	140 mg/L
Chromium (Cr)	EG020A-T	<0.001 mg/L
Copper (Cu)	EG020A-F	<0.001 mg/L
Copper (Cu)	EG020A-T	<0.001 mg/L
Iron (Fe)	EG094B-F	0.090 mg/L
Iron (Fe)	EG094B-T	0.618 mg/L
Lead (Pb)	EG020A-T	<0.001 mg/L
Magnesium (Mg)	ED093T-UL	116 mg/L
Manganese (Mn)	EG020A-F	1.45 mg/L
Manganese (Mn)	EG020A-T	1.45 mg/L
Molybdenum (Mo)	EG020A-T	<0.001 mg/L
Nickel (Ni)	EG020A-T	0.115 mg/L
Potassium (K)	ED093T-UL	11.5 mg/L
Selenium (Se)	EG094B-T	<0.0002 mg/L
Silver (Ag)	EG020B-T	<0.001 mg/L
Sodium (Na)	ED093T-UL	182 mg/L
Strontium (Sr)	EG020B-T	0.594 mg/L
Vanadium (V)	EG020A-F	<0.01 mg/L
Vanadium (V)	EG020A-T	<0.01 mg/L
Zinc (Zn)	EG020A-F	0.060 mg/L
Zinc (Zn)	EG020A-T	0.080 mg/L

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Senior Chemist

Amended - Report Number: 2257648

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ENERGY AUSTRALIA C/- MT PIPER POWER

BOULDER ROAD

PORTLAND NSW 2847 AUSTRALIA

Sold To: 0500082301 **Ship To:** 0500082301

Representative: Clive Stacey

Sampled By: Allan Bowcher

Sample Number	MPW020203
Date Sampled	24-Jan-2018 08:30
Date Received	25-Jan-2018
Date Completed	5-Feb-2018
Date Authorised	7-Feb-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Stream Gauge

Source: MP

Customer Sampling Point: 003

Sampling Code: WX22

Sample Frequency: Month

Testing Laboratory: ALS Environmental

Anions	Test Method	Filtered
Fluoride (F)	ED009-X	<0.100 mg/L
Chloride (Cl)	ED009-X	128 mg/L
Sulfate (SO4)	ED009-X	983 mg/L
Nitrate (N)	EK058G	<0.01 mg/L
Nitrite (N)	EK057G	<0.01 mg/L
Nitrate and Nitrite (N)	EK059G	<0.01 mg/L

Alkalinity	Test Method: ED037-P	Total
Total Alkalinity (CaCO3)		46 mg/L
Phenolphthalein Alkalinity (CaCO3)		<1 mg/L
Bicarbonate (CaCO3)		46 mg/L

Phosphate	Test Method: EK067G	Total
Total Phosphorus (P)		<0.01 mg/L

Physical	Test Method	Total
Total Dissolved Solids @ 180°C	EA015H	1380 mg/L
Turbidity	EA045	1.9 NTU

Other	Test Method	Total
Nitrogen (N)	EK062G	0.1 mg/L
Nitrogen (N) - Kjeldahl	EK061G	0.1 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1803177. Report Date: 2-Feb-2018

* NATA accreditation does not cover the performance of this service



Accreditation Number 1099
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Authorised by Thanh Hoang Le
 Senior Chemist

Customer Analytical Services

Mount Piper Power Station 350 Boulder Road Portland 2847 NSW

Email: customeranalyticalservices@nalco.com

NALCO Water
An Ecolab Company

Amended - Report Number: 2257648

Replaces previous report number: 2255576 6-Feb-2018 17:46

ENERGY AUSTRALIA C/- MT PIPER POWER

BOULDER ROAD

PORTLAND NSW 2847 AUSTRALIA

Sold To: 0500082301 Ship To: 0500082301

Representative: Clive Stacey

Sampled By: Allan Bowcher

Sample Number

MPW020204

Date Sampled

24-Jan-2018 09:00

Date Received

25-Jan-2018

Date Completed

5-Feb-2018

Date Authorised

7-Feb-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Groundwater Bore MPGM4

Source: MP

Customer Sampling Point: 006

Sampling Code: D1

Sample Frequency: Month

Testing Laboratory: Mount Piper

Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	2.8 m
Bore Volume Pumped	*Analysis in Field	123 L
Recharge Bore Level	*Analysis in Field	3.5 m
pH	CA12125	5.91
Conductivity	CA12125	5540 µS/cm

Testing Laboratory: ALS Environmental

Water

Cations - Metals	Test Method	Filtered	Total
Mercury (Hg)	EG035T-LL		<0.00004 mg/L
Aluminium (Al)	EG020A-T		0.15 mg/L
Arsenic (As)	EG020A-T		0.009 mg/L
Barium (Ba)	EG020A-T		0.030 mg/L
Boron (B)	EG020A-T		1.69 mg/L
Cadmium (Cd)	EG020A-T		<0.0001 mg/L
Calcium (Ca)	ED093T-UL		436 mg/L
Chromium (Cr)	EG020A-T		<0.001 mg/L
Copper (Cu)	EG020A-T		<0.001 mg/L
Iron (Fe)	EG020A-F	19.2 mg/L	
Lead (Pb)	EG020A-T		<0.001 mg/L
Magnesium (Mg)	ED093T-UL		325 mg/L
Manganese (Mn)	EG020A-F	18.2 mg/L	
Molybdenum (Mo)	EG020A-T		<0.001 mg/L
Nickel (Ni)	EG020A-T		1.14 mg/L
Potassium (K)	ED093T-UL		49.0 mg/L
Selenium (Se)	EG094B-T		<0.0002 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		523 mg/L
Vanadium (V)	EG020A-F	<0.01 mg/L	

* NATA accreditation does not cover the performance of this service



Accreditation Number 1099

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Authorised by Thanh Hoang Le
Senior Chemist

Amended - Report Number: 2257648

Replaces previous report number: 2255576 6-Feb-2018 17:46

ENERGY AUSTRALIA C/- MT PIPER POWER

BOULDER ROAD

PORTLAND NSW 2847 AUSTRALIA

Sold To: 0500082301 **Ship To:** 0500082301

Representative: Clive Stacey

Sampled By: Allan Bowcher

Sample Number MPW020204
Date Sampled 24-Jan-2018 09:00
Date Received 25-Jan-2018
Date Completed 5-Feb-2018
Date Authorised 7-Feb-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Groundwater Bore MPM4

Source: MP

Customer Sampling Point: 006

Sampling Code: D1

Sample Frequency: Month

Testing Laboratory: ALS Environmental

Vanadium (V)	EG020A-T	<0.01 mg/L
Zinc (Zn)	EG020A-T	0.119 mg/L

Anions Test Method: ED009-X

	Filtered
Fluoride (F)	<0.500 mg/L
Chloride (Cl)	564 mg/L
Sulfate (SO4)	2670 mg/L

Alkalinity Test Method: ED037-P

Total Alkalinity (CaCO3)	Total 141 mg/L
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Physical Test Method: EA015H

Total Dissolved Solids @ 180°C	Total 4830 mg/L
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Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1803177. Report Date: 2-Feb-2018

* NATA accreditation does not cover the performance of this service



Accreditation Number 1099
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Authorised by Thanh Hoang Le
 Senior Chemist

Amended - Report Number: 2257648

Replaces previous report number: 2255576 6-Feb-2018 17:46

ENERGY AUSTRALIA C/- MT PIPER POWER

BOULDER ROAD

PORTLAND NSW 2847 AUSTRALIA

Sold To: 0500082301 **Ship To:** 0500082301

Representative: Clive Stacey

Sampled By: Allan Bowcher

Sample Number	MPW020205
Date Sampled	25-Jan-2018 08:00
Date Received	25-Jan-2018
Date Completed	9-Feb-2018
Date Authorised	9-Feb-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Groundwater Bore MPGM4

Source: MP **Customer Sampling Point:** 013 **Sampling Code:** D8 **Sample Frequency:** Month

Testing Laboratory: Mount Piper

Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	2.5 m
Bore Volume Pumped	*Analysis in Field	45 L
Recharge Bore Level	*Analysis in Field	2.5 m
pH	CA12125	5.28
Conductivity	CA12125	563 µS/cm

Testing Laboratory: ALS Environmental

Water

Cations - Metals	Test Method	Filtered	Total
Mercury (Hg)	EG035T-LL		<0.00004 mg/L
Aluminium (Al)	EG020A-T		0.08 mg/L
Arsenic (As)	EG020A-T		<0.001 mg/L
Barium (Ba)	EG020A-T		0.038 mg/L
Boron (B)	EG020A-T		0.08 mg/L
Cadmium (Cd)	EG020A-T		<0.0001 mg/L
Calcium (Ca)	ED093T-UL		40.0 mg/L
Chromium (Cr)	EG020A-T		<0.001 mg/L
Copper (Cu)	EG020A-T		<0.001 mg/L
Iron (Fe)	EG094B-F	0.352 mg/L	
Lead (Pb)	EG020A-T		<0.001 mg/L
Magnesium (Mg)	ED093T-UL		30.0 mg/L
Manganese (Mn)	EG020A-F	0.755 mg/L	
Molybdenum (Mo)	EG020A-T		<0.001 mg/L
Nickel (Ni)	EG020A-T		0.074 mg/L
Potassium (K)	ED093T-UL		3.77 mg/L
Selenium (Se)	EG094B-T		<0.0002 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		26.2 mg/L
Vanadium (V)	EG020A-F	<0.01 mg/L	

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Authorised by Thanh Hoang Le
 Senior Chemist

Amended - Report Number: 2257648

Replaces previous report number: 2255576 6-Feb-2018 17:46

ENERGY AUSTRALIA C/- MT PIPER POWER

BOULDER ROAD

PORTLAND NSW 2847 AUSTRALIA

Sold To: 0500082301 **Ship To:** 0500082301

Representative: Clive Stacey

Sampled By: Allan Bowcher

Sample Number	MPW020205
Date Sampled	25-Jan-2018 08:00
Date Received	25-Jan-2018
Date Completed	9-Feb-2018
Date Authorised	9-Feb-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Groundwater Bore MPM4

Source: MP

Customer Sampling Point: 013

Sampling Code: D8

Sample Frequency: Month

Testing Laboratory: ALS Environmental

Vanadium (V)	EG020A-T	<0.01 mg/L
Zinc (Zn)	EG020A-T	0.092 mg/L

Anions Test Method: ED009-X

Fluoride (F)	Filtered	
	<0.050 mg/L	
Chloride (Cl)	20.2 mg/L	
Sulfate (SO4)	255 mg/L	

Alkalinity Test Method: ED037-P

Total Alkalinity (CaCO3)	Total	
	10 mg/L	

Physical Test Method: EA015H

Total Dissolved Solids @ 180°C	Total	
	376 mg/L	

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1803177. Report Date: 2-Feb-2018

* NATA accreditation does not cover the performance of this service



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Authorised by Thanh Hoang Le
 Senior Chemist

Amended - Report Number: 2257648

Replaces previous report number: 2255576 6-Feb-2018 17:46

ENERGY AUSTRALIA C/- MT PIPER POWER

BOULDER ROAD

PORTLAND NSW 2847 AUSTRALIA

Sold To: 0500082301 **Ship To:** 0500082301

Representative: Clive Stacey

Sampled By: Allan Bowcher

Sample Number	MPW020206
Date Sampled	24-Jan-2018 13:15
Date Received	25-Jan-2018
Date Completed	25-Jan-2018
Date Authorised	25-Jan-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: MP Ash - D10 - D21

Source: MP

Customer Sampling Point: 253

Sampling Code: D21

Sample Frequency:

ADDITIONAL_MONTH

Testing Laboratory: Mount Piper

Water

Field Analysis **Test Method:** Analysis in Field
Dry

Total

Allan Bowcher

Authorised by Allan Bowcher
Chemist

Amended - Report Number: 2257648

Replaces previous report number: 2255576 6-Feb-2018 17:46

ENERGY AUSTRALIA C/- MT PIPER POWER

BOULDER ROAD

PORTLAND NSW 2847 AUSTRALIA

Sold To: 0500082301 **Ship To:** 0500082301

Representative: Clive Stacey

Sampled By: Allan Bowcher

Sample Number

MPW020207

Date Sampled

24-Jan-2018 13:05

Date Received

25-Jan-2018

Date Completed

5-Feb-2018

Date Authorised

7-Feb-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: MP Ash - D10 - D23

Source: MP

Customer Sampling Point: 254

Sampling Code: D23

Sample Frequency:

ADDITIONAL_MONTH

Testing Laboratory: Mount Piper

Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	24.8 m
Bore Volume Pumped	*Analysis in Field	49 L
Recharge Bore Level	*Analysis in Field	24.7 m
pH	CA12125	5.63
Conductivity	CA12125	3660 µS/cm

Testing Laboratory: ALS Environmental

Water

Cations - Metals	Test Method	Filtered	Total
Mercury (Hg)	EG035T-LL		<0.00004 mg/L
Aluminium (Al)	EG020A-T		0.23 mg/L
Arsenic (As)	EG020A-T		<0.001 mg/L
Barium (Ba)	EG020A-T		0.014 mg/L
Boron (B)	EG020A-T		0.39 mg/L
Cadmium (Cd)	EG020A-T		0.0002 mg/L
Calcium (Ca)	ED093T-UL		214 mg/L
Chromium (Cr)	EG020A-T		<0.001 mg/L
Copper (Cu)	EG020A-T		<0.001 mg/L
Iron (Fe)	EG020A-F	15.2 mg/L	
Lead (Pb)	EG020A-T		0.002 mg/L
Magnesium (Mg)	ED093T-UL		113 mg/L
Manganese (Mn)	EG020A-F	2.35 mg/L	
Molybdenum (Mo)	EG020A-T		<0.001 mg/L
Nickel (Ni)	EG020A-T		0.409 mg/L
Potassium (K)	ED093T-UL		52.5 mg/L
Selenium (Se)	EG094B-T		0.0002 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		515 mg/L

* NATA accreditation does not cover the performance of this service



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Authorised by Thanh Hoang Le
 Senior Chemist

Amended - Report Number: 2257648

Replaces previous report number: 2255576 6-Feb-2018 17:46

ENERGY AUSTRALIA C/- MT PIPER POWER

BOULDER ROAD

PORTLAND NSW 2847 AUSTRALIA

Sold To: 0500082301 **Ship To:** 0500082301

Representative: Clive Stacey

Sampled By: Allan Bowcher

Sample Number

MPW020207

Date Sampled

24-Jan-2018 13:05

Date Received

25-Jan-2018

Date Completed

5-Feb-2018

Date Authorised

7-Feb-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: MP Ash - D10 - D23

Source: MP

Customer Sampling Point: 254

Sampling Code: D23

Sample Frequency:

ADDITIONAL_MONTH

Testing Laboratory: ALS Environmental

Vanadium (V)	EG020A-F	<0.01 mg/L	
Vanadium (V)	EG020A-T		<0.01 mg/L
Zinc (Zn)	EG020A-T		0.593 mg/L

Anions Test Method: ED009-X

	Filtered	
Fluoride (F)	<0.200 mg/L	
Chloride (Cl)	196 mg/L	
Sulfate (SO4)	1840 mg/L	

Alkalinity Test Method: ED037-P

Total Alkalinity (CaCO3)	Total
	76 mg/L

Physical Test Method: EA015H

Total Dissolved Solids @ 180°C	Total
	2520 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1803177. Report Date: 2-Feb-2018

* NATA accreditation does not cover the performance of this service



Accreditation Number 1099
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Authorised by Thanh Hoang Le
 Senior Chemist

Customer Analytical Services

Mount Piper Power Station 350 Boulder Road Portland 2847 NSW

Email: customeranalyticalservices@nalco.com

NALCO Water
An Ecolab Company

Amended - Report Number: 2257648

Replaces previous report number: 2255576 6-Feb-2018 17:46

ENERGY AUSTRALIA C/- MT PIPER POWER

BOULDER ROAD

PORTLAND NSW 2847 AUSTRALIA

Sold To: 0500082301 **Ship To:** 0500082301

Representative: Clive Stacey

Sampled By: Allan Bowcher

Sample Number

MPW020208

Date Sampled

25-Jan-2018 09:45

Date Received

25-Jan-2018

Date Completed

5-Feb-2018

Date Authorised

7-Feb-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Groundwater Bore MPGM4

Source: MP

Customer Sampling Point: 223

Sampling Code: D18

Sample Frequency: Month

Testing Laboratory: Mount Piper

Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	23.6 m
Bore Volume Pumped	*Analysis in Field	40 L
Recharge Bore Level	*Analysis in Field	36.4 m
pH	CA12125	6.65
Conductivity	CA12125	760 µS/cm

Testing Laboratory: ALS Environmental

Water

Cations - Metals	Test Method	Filtered	Total
Mercury (Hg)	EG035T-LL		<0.00004 mg/L
Aluminium (Al)	EG020A-T		0.04 mg/L
Arsenic (As)	EG020A-T		0.002 mg/L
Barium (Ba)	EG020A-T		0.490 mg/L
Boron (B)	EG020A-T		0.06 mg/L
Cadmium (Cd)	EG020A-T		0.0003 mg/L
Calcium (Ca)	ED093T-UL		83.2 mg/L
Chromium (Cr)	EG020A-T		<0.001 mg/L
Copper (Cu)	EG020A-T		<0.001 mg/L
Iron (Fe)	EG094B-F	0.014 mg/L	
Lead (Pb)	EG020A-T		<0.001 mg/L
Magnesium (Mg)	ED093T-UL		32.2 mg/L
Manganese (Mn)	EG020A-F	0.125 mg/L	
Molybdenum (Mo)	EG020A-T		0.006 mg/L
Nickel (Ni)	EG020A-T		0.007 mg/L
Potassium (K)	ED093T-UL		20.2 mg/L
Selenium (Se)	EG094B-T		0.0003 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		33.1 mg/L
Vanadium (V)	EG020A-F	<0.01 mg/L	

* NATA accreditation does not cover the performance of this service



Accreditation Number 1099
Accredited for compliance with ISO/IEC 17025.

Authorised by Thanh Hoang Le
Senior Chemist

Amended - Report Number: 2257648

Replaces previous report number: 2255576 6-Feb-2018 17:46

ENERGY AUSTRALIA C/- MT PIPER POWER

BOULDER ROAD

PORTLAND NSW 2847 AUSTRALIA

Sold To: 0500082301 **Ship To:** 0500082301

Representative: Clive Stacey

Sampled By: Allan Bowcher

Sample Number

MPW020208

Date Sampled

25-Jan-2018 09:45

Date Received

25-Jan-2018

Date Completed

5-Feb-2018

Date Authorised

7-Feb-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Groundwater Bore MPMG4

Source: MP

Customer Sampling Point: 223

Sampling Code: D18

Sample Frequency: Month

Testing Laboratory: ALS Environmental

Vanadium (V)	EG020A-T	<0.01 mg/L
Zinc (Zn)	EG020A-T	0.044 mg/L

Anions Test Method: ED009-X

	Filtered
Fluoride (F)	0.448 mg/L
Chloride (Cl)	12.9 mg/L
Sulfate (SO4)	68.7 mg/L

Alkalinity Test Method: ED037-P

Total Alkalinity (CaCO3)	Total 370 mg/L
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Physical Test Method: EA015H

Total Dissolved Solids @ 180°C	Total 412 mg/L
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Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1803177. Report Date: 2-Feb-2018

* NATA accreditation does not cover the performance of this service



Accreditation Number 1099
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Authorised by Thanh Hoang Le
 Senior Chemist

Customer Analytical Services

Mount Piper Power Station 350 Boulder Road Portland 2847 NSW

Email: customeranalyticalservices@nalco.com



Amended - Report Number: 2257648

Replaces previous report number: 2255576 6-Feb-2018 17:46

ENERGY AUSTRALIA C/- MT PIPER POWER

BOULDER ROAD

PORTLAND NSW 2847 AUSTRALIA

Sold To: 0500082301 **Ship To:** 0500082301

Representative: Clive Stacey

Sampled By: Allan Bowcher

Sample Number

MPW020209

Date Sampled

24-Jan-2018 10:25

Date Received

25-Jan-2018

Date Completed

25-Jan-2018

Date Authorised

25-Jan-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: MP Ash - D10 - SW3-S

Source: MP

Customer Sampling Point: 257

Sampling Code: SW3-S

Sample Frequency:

ADDITIONAL_MONTH

Testing Laboratory: Mount Piper

Water

Field Analysis Test Method: Analysis in Field
insufficient volume to sample

Total

Allan Bowcher

Authorised by Allan Bowcher
Chemist

Customer Analytical Services

Mount Piper Power Station 350 Boulder Road Portland 2847 NSW

Email: customeranalyticalservices@nalco.com



Amended - Report Number: 2257648

Replaces previous report number: 2255576 6-Feb-2018 17:46

ENERGY AUSTRALIA C/- MT PIPER POWER

BOULDER ROAD

PORTLAND NSW 2847 AUSTRALIA

Sold To: 0500082301 **Ship To:** 0500082301

Representative: Clive Stacey

Sampled By: Allan Bowcher

Sample Number	MPW020210
Date Sampled	24-Jan-2018 10:30
Date Received	25-Jan-2018
Date Completed	25-Jan-2018
Date Authorised	25-Jan-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: MP Ash - D10 - SW3-D

Source: MP

Customer Sampling Point: 256

Sampling Code: SW3-D

Sample Frequency:
ADDITIONAL_MONTH

Testing Laboratory: Mount Piper

Water

Field Analysis **Test Method:** Analysis in Field
Dry

Total

Allan Bowcher

Authorised by Allan Bowcher
Chemist

Amended - Report Number: 2257648

Replaces previous report number: 2255576 6-Feb-2018 17:46

ENERGY AUSTRALIA C/- MT PIPER POWER

BOULDER ROAD

PORTLAND NSW 2847 AUSTRALIA

Sold To: 0500082301 **Ship To:** 0500082301

Representative: Clive Stacey

Sampled By: Allan Bowcher

Sample Number

MPW020211

Date Sampled

25-Jan-2018 09:30

Date Received

25-Jan-2018

Date Completed

5-Feb-2018

Date Authorised

7-Feb-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: MP Ash - D10 - B5

Source: MP

Customer Sampling Point: 250

Sampling Code: B5

Sample Frequency:

ADDITIONAL_MONTH

Testing Laboratory: Mount Piper

Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	36.4 m
Bore Volume Pumped	*Analysis in Field	1 L
Recharge Bore Level	*Analysis in Field	36.4 m
pH	CA12125	6.14
Conductivity	CA12125	48520 µS/cm

Testing Laboratory: ALS Environmental

Water

Cations - Metals	Test Method	Filtered	Total
Mercury (Hg)	EG035T-LL		<0.00004 mg/L
Aluminium (Al)	EG020A-T		0.35 mg/L
Arsenic (As)	EG020A-T		0.010 mg/L
Barium (Ba)	EG020A-T		0.039 mg/L
Boron (B)	EG020A-T		13.9 mg/L
Cadmium (Cd)	EG020A-T		0.161 mg/L
Calcium (Ca)	ED093T-UL		571 mg/L
Chromium (Cr)	EG020A-T		<0.010 mg/L
Copper (Cu)	EG020A-T		0.044 mg/L
Iron (Fe)	EG020A-F	0.58 mg/L	
Lead (Pb)	EG020A-T		<0.010 mg/L
Magnesium (Mg)	ED093T-UL		2220 mg/L
Manganese (Mn)	EG020A-F	14.4 mg/L	
Molybdenum (Mo)	EG020A-T		2.17 mg/L
Nickel (Ni)	EG020A-T		1.32 mg/L
Potassium (K)	ED093T-UL		1840 mg/L
Selenium (Se)	EG094B-T		0.0823 mg/L
Silver (Ag)	EG020B-T		<0.010 mg/L
Sodium (Na)	ED093T-UL		15600 mg/L

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Authorised by Thanh Hoang Le
 Senior Chemist

Amended - Report Number: 2257648

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ENERGY AUSTRALIA C/- MT PIPER POWER

BOULDER ROAD

PORTLAND NSW 2847 AUSTRALIA

Sold To: 0500082301 **Ship To:** 0500082301

Representative: Clive Stacey

Sampled By: Allan Bowcher

Sample Number	MPW020211
Date Sampled	25-Jan-2018 09:30
Date Received	25-Jan-2018
Date Completed	5-Feb-2018
Date Authorised	7-Feb-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: MP Ash - D10 - B5

Source: MP

Customer Sampling Point: 250

Sampling Code: B5

Sample Frequency:
 ADDITIONAL_MONTH

Testing Laboratory: ALS Environmental

Vanadium (V)	EG020A-F	<0.10 mg/L	
Vanadium (V)	EG020A-T		<0.10 mg/L
Zinc (Zn)	EG020A-T		4.14 mg/L

Anions Test Method: ED009-X

	Filtered	
Fluoride (F)	<5.00 mg/L	
Chloride (Cl)	3460 mg/L	
Sulfate (SO4)	28700 mg/L	

Alkalinity Test Method: ED037-P

Total Alkalinity (CaCO3)	Total
	80 mg/L

Physical Test Method: EA015H

Total Dissolved Solids @ 180°C	Total
	54800 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1803177. Report Date: 2-Feb-2018

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Amended - Report Number: 2257648

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ENERGY AUSTRALIA C/- MT PIPER POWER

BOULDER ROAD

PORTLAND NSW 2847 AUSTRALIA

Sold To: 0500082301 **Ship To:** 0500082301

Representative: Clive Stacey

Sampled By: Allan Bowcher

Sample Number

MPW020212

Date Sampled

24-Jan-2018 11:25

Date Received

25-Jan-2018

Date Completed

5-Feb-2018

Date Authorised

7-Feb-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: MP Ash - D10 - B5-1

Source: MP

Customer Sampling Point: 251

Sampling Code: B5-1

Sample Frequency:

ADDITIONAL_MONTH

Testing Laboratory: Mount Piper

Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	35.4 m
Bore Volume Pumped	*Analysis in Field	10 L
Recharge Bore Level	*Analysis in Field	35.4 m
pH	CA12125	5.51
Conductivity	CA12125	45640 µS/cm

Testing Laboratory: ALS Environmental

Water

Cations - Metals	Test Method	Filtered	Total
Mercury (Hg)	EG035T-LL		<0.00004 mg/L
Aluminium (Al)	EG020A-T		2.45 mg/L
Arsenic (As)	EG020A-T		<0.010 mg/L
Barium (Ba)	EG020A-T		0.045 mg/L
Boron (B)	EG020A-T		10.4 mg/L
Cadmium (Cd)	EG020A-T		0.0701 mg/L
Calcium (Ca)	ED093T-UL		521 mg/L
Chromium (Cr)	EG020A-T		<0.010 mg/L
Copper (Cu)	EG020A-T		<0.010 mg/L
Iron (Fe)	EG020A-F	0.36 mg/L	
Lead (Pb)	EG020A-T		<0.010 mg/L
Magnesium (Mg)	ED093T-UL		1830 mg/L
Manganese (Mn)	EG020A-F	38.3 mg/L	
Molybdenum (Mo)	EG020A-T		<0.010 mg/L
Nickel (Ni)	EG020A-T		2.01 mg/L
Potassium (K)	ED093T-UL		1630 mg/L
Selenium (Se)	EG094B-T		0.190 mg/L
Silver (Ag)	EG020B-T		<0.010 mg/L
Sodium (Na)	ED093T-UL		14200 mg/L

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ENERGY AUSTRALIA C/- MT PIPER POWER

BOULDER ROAD

PORTLAND NSW 2847 AUSTRALIA

Sold To: 0500082301 **Ship To:** 0500082301

Representative: Clive Stacey

Sampled By: Allan Bowcher

Sample Number

MPW020212

Date Sampled

24-Jan-2018 11:25

Date Received

25-Jan-2018

Date Completed

5-Feb-2018

Date Authorised

7-Feb-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: MP Ash - D10 - B5-1

Source: MP

Customer Sampling Point: 251

Sampling Code: B5-1

Sample Frequency:

ADDITIONAL_MONTH

Testing Laboratory: ALS Environmental

Vanadium (V)	EG020A-F	<0.10 mg/L	
Vanadium (V)	EG020A-T		<0.10 mg/L
Zinc (Zn)	EG020A-T		3.32 mg/L

Anions Test Method: ED009-X

	Filtered	
Fluoride (F)	<5.00 mg/L	
Chloride (Cl)	2790 mg/L	
Sulfate (SO4)	26300 mg/L	

Alkalinity Test Method: ED037-P

Total Alkalinity (CaCO3)	Total
	117 mg/L

Physical Test Method: EA015H

Total Dissolved Solids @ 180°C	Total
	51100 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1803177. Report Date: 2-Feb-2018

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Amended - Report Number: 2257648

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ENERGY AUSTRALIA C/- MT PIPER POWER

BOULDER ROAD

PORTLAND NSW 2847 AUSTRALIA

Sold To: 0500082301 **Ship To:** 0500082301

Representative: Clive Stacey

Sampled By: Allan Bowcher

Sample Number MPW020213
Date Sampled 24-Jan-2018 10:15
Date Received 25-Jan-2018
Date Completed 5-Feb-2018
Date Authorised 7-Feb-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: MP Ash - D10 - NA5

Source: MP

Customer Sampling Point: 255

Sampling Code: NA5

Sample Frequency:
 ADDITIONAL_MONTH

Testing Laboratory: Mount Piper

Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	25.2 m
Bore Volume Pumped	*Analysis in Field	11 L
Recharge Bore Level	*Analysis in Field	25.2 m
pH	CA12125	5.87
Conductivity	CA12125	5090 µS/cm

Testing Laboratory: ALS Environmental

Water

Cations - Metals	Test Method	Filtered	Total
Mercury (Hg)	EG035T-LL		<0.00004 mg/L
Aluminium (Al)	EG020A-T		0.97 mg/L
Arsenic (As)	EG020A-T		<0.001 mg/L
Barium (Ba)	EG020A-T		0.028 mg/L
Boron (B)	EG020A-T		8.15 mg/L
Cadmium (Cd)	EG020A-T		0.0116 mg/L
Calcium (Ca)	ED093T-UL		405 mg/L
Chromium (Cr)	EG020A-T		0.002 mg/L
Copper (Cu)	EG020A-T		0.002 mg/L
Iron (Fe)	EG020A-F	0.19 mg/L	
Lead (Pb)	EG020A-T		<0.001 mg/L
Magnesium (Mg)	ED093T-UL		134 mg/L
Manganese (Mn)	EG020A-F	7.15 mg/L	
Molybdenum (Mo)	EG020A-T		0.121 mg/L
Nickel (Ni)	EG020A-T		0.489 mg/L
Potassium (K)	ED093T-UL		164 mg/L
Selenium (Se)	EG094B-T		0.0260 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		684 mg/L

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Amended - Report Number: 2257648

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ENERGY AUSTRALIA C/- MT PIPER POWER

BOULDER ROAD

PORTLAND NSW 2847 AUSTRALIA

Sold To: 0500082301 **Ship To:** 0500082301

Representative: Clive Stacey

Sampled By: Allan Bowcher

Sample Number	MPW020213
Date Sampled	24-Jan-2018 10:15
Date Received	25-Jan-2018
Date Completed	5-Feb-2018
Date Authorised	7-Feb-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: MP Ash - D10 - NA5

Source: MP

Customer Sampling Point: 255

Sampling Code: NA5

Sample Frequency:
 ADDITIONAL_MONTH

Testing Laboratory: ALS Environmental

Vanadium (V)	EG020A-F	<0.01 mg/L	
Vanadium (V)	EG020A-T		<0.01 mg/L
Zinc (Zn)	EG020A-T		0.767 mg/L

Anions Test Method: ED009-X

	Filtered	
Fluoride (F)	2.50 mg/L	
Chloride (Cl)	152 mg/L	
Sulfate (SO4)	2490 mg/L	

Alkalinity Test Method: ED037-P

Total Alkalinity (CaCO3)	Total
	114 mg/L

Physical Test Method: EA015H

Total Dissolved Solids @ 180°C	Total
	4080 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1803177. Report Date: 2-Feb-2018

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ENERGY AUSTRALIA C/- MT PIPER POWER

BOULDER ROAD

PORTLAND NSW 2847 AUSTRALIA

Sold To: 0500082301 **Ship To:** 0500082301

Representative: Clive Stacey

Sampled By: Allan Bowcher

Sample Number

MPW020214

Date Sampled

24-Jan-2018 15:30

Date Received

25-Jan-2018

Date Completed

5-Feb-2018

Date Authorised

7-Feb-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: MP Ash - D10 - D20

Source: MP

Customer Sampling Point: 252

Sampling Code: D20

Sample Frequency:

ADDITIONAL_MONTH

Testing Laboratory: Mount Piper

Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	17.4 m
Bore Volume Pumped	*Analysis in Field	16 L
Recharge Bore Level	*Analysis in Field	17.4 m
pH	CA12125	6.04
Conductivity	CA12125	3980 µS/cm

Testing Laboratory: ALS Environmental

Water

Cations - Metals	Test Method	Filtered	Total
Mercury (Hg)	EG035T-LL		<0.00004 mg/L
Aluminium (Al)	EG020A-T		1.35 mg/L
Arsenic (As)	EG020A-T		0.004 mg/L
Barium (Ba)	EG020A-T		0.049 mg/L
Boron (B)	EG020A-T		1.39 mg/L
Cadmium (Cd)	EG020A-T		0.0018 mg/L
Calcium (Ca)	ED093T-UL		336 mg/L
Chromium (Cr)	EG020A-T		0.004 mg/L
Copper (Cu)	EG020A-T		0.008 mg/L
Iron (Fe)	EG020A-F	0.68 mg/L	
Lead (Pb)	EG020A-T		0.006 mg/L
Magnesium (Mg)	ED093T-UL		391 mg/L
Manganese (Mn)	EG020A-F	23.5 mg/L	
Molybdenum (Mo)	EG020A-T		0.007 mg/L
Nickel (Ni)	EG020A-T		0.584 mg/L
Potassium (K)	ED093T-UL		28.5 mg/L
Selenium (Se)	EG094B-T		0.0004 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		187 mg/L

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 Senior Chemist

Amended - Report Number: 2257648

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ENERGY AUSTRALIA C/- MT PIPER POWER

BOULDER ROAD

PORTLAND NSW 2847 AUSTRALIA

Sold To: 0500082301 **Ship To:** 0500082301

Representative: Clive Stacey

Sampled By: Allan Bowcher

Sample Number MPW020214
Date Sampled 24-Jan-2018 15:30
Date Received 25-Jan-2018
Date Completed 5-Feb-2018
Date Authorised 7-Feb-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: MP Ash - D10 - D20

Source: MP

Customer Sampling Point: 252

Sampling Code: D20

Sample Frequency:
 ADDITIONAL_MONTH

Testing Laboratory: ALS Environmental

Vanadium (V)	EG020A-F	<0.01 mg/L	
Vanadium (V)	EG020A-T		<0.01 mg/L
Zinc (Zn)	EG020A-T		0.283 mg/L

Anions Test Method: ED009-X

		Filtered	
Fluoride (F)		<0.200 mg/L	
Chloride (Cl)		115 mg/L	
Sulfate (SO4)		2390 mg/L	

Alkalinity Test Method: ED037-P

Total Alkalinity (CaCO3)			Total
			376 mg/L

Physical Test Method: EA015H

Total Dissolved Solids @ 180°C			Total
			3300 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1803177. Report Date: 2-Feb-2018

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Authorised by Thanh Hoang Le
 Senior Chemist

Customer Analytical Services

Mount Piper Power Station 350 Boulder Road Portland 2847 NSW

Email: customeranalyticalservices@nalco.com

NALCO Water
An Ecolab Company

Amended - Report Number: 2257648

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ENERGY AUSTRALIA C/- MT PIPER POWER

BOULDER ROAD

PORTLAND NSW 2847 AUSTRALIA

Sold To: 0500082301 **Ship To:** 0500082301

Representative: Clive Stacey

Sampled By: Allan Bowcher

Sample Number

MPW020215

Date Sampled

24-Jan-2018 15:10

Date Received

25-Jan-2018

Date Completed

5-Feb-2018

Date Authorised

7-Feb-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Groundwater Bore MPGM4

Source: MP

Customer Sampling Point: 224

Sampling Code: D19

Sample Frequency: Month

Testing Laboratory: Mount Piper

Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	8.8 m
Bore Volume Pumped	*Analysis in Field	19 L
Recharge Bore Level	*Analysis in Field	8.8 m
pH	CA12125	5.37
Conductivity	CA12125	2350 µS/cm

Testing Laboratory: ALS Environmental

Water

Cations - Metals	Test Method	Filtered	Total
Mercury (Hg)	EG035T-LL		<0.00004 mg/L
Aluminium (Al)	EG020A-T		0.03 mg/L
Arsenic (As)	EG020A-T		<0.001 mg/L
Barium (Ba)	EG020A-T		0.011 mg/L
Boron (B)	EG020A-T		0.95 mg/L
Cadmium (Cd)	EG020A-T		0.0003 mg/L
Calcium (Ca)	ED093T-UL		112 mg/L
Chromium (Cr)	EG020A-T		0.005 mg/L
Copper (Cu)	EG020A-T		<0.001 mg/L
Iron (Fe)	EG094B-F	0.083 mg/L	
Lead (Pb)	EG020A-T		<0.001 mg/L
Magnesium (Mg)	ED093T-UL		78.3 mg/L
Manganese (Mn)	EG020A-F	0.302 mg/L	
Molybdenum (Mo)	EG020A-T		0.003 mg/L
Nickel (Ni)	EG020A-T		0.174 mg/L
Potassium (K)	ED093T-UL		31.3 mg/L
Selenium (Se)	EG094B-T		0.0048 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		307 mg/L
Vanadium (V)	EG020A-F	<0.01 mg/L	

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Senior Chemist

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ENERGY AUSTRALIA C/- MT PIPER POWER

BOULDER ROAD

PORTLAND NSW 2847 AUSTRALIA

Sold To: 0500082301 **Ship To:** 0500082301

Representative: Clive Stacey

Sampled By: Allan Bowcher

Sample Number	MPW020215
Date Sampled	24-Jan-2018 15:10
Date Received	25-Jan-2018
Date Completed	5-Feb-2018
Date Authorised	7-Feb-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Groundwater Bore MPM4

Source: MP

Customer Sampling Point: 224

Sampling Code: D19

Sample Frequency: Month

Testing Laboratory: ALS Environmental

Vanadium (V)	EG020A-T	<0.01 mg/L
Zinc (Zn)	EG020A-T	0.360 mg/L

Anions Test Method: ED009-X

Fluoride (F)	Filtered	<0.100 mg/L
Chloride (Cl)		137 mg/L
Sulfate (SO4)		1060 mg/L

Alkalinity Test Method: ED037-P

Total Alkalinity (CaCO3)	Total	26 mg/L
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Physical Test Method: EA015H

Total Dissolved Solids @ 180°C	Total	1700 mg/L
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Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1803177. Report Date: 2-Feb-2018

* NATA accreditation does not cover the performance of this service



Accreditation Number 1099
 Accredited for compliance with ISO/IEC 17025.

Authorised by Thanh Hoang Le
 Senior Chemist

Customer Analytical Services

Mount Piper Power Station 350 Boulder Road Portland 2847 NSW

Email: customeranalyticalservices@nalco.com

NALCO Water
An Ecolab Company

Amended - Report Number: 2257648

Replaces previous report number: 2255576 6-Feb-2018 17:46

ENERGY AUSTRALIA C/- MT PIPER POWER

BOULDER ROAD

PORTLAND NSW 2847 AUSTRALIA

Sold To: 0500082301 Ship To: 0500082301

Representative: Clive Stacey

Sampled By: Allan Bowcher

Sample Number

MPW020216

Date Sampled

25-Jan-2018 08:55

Date Received

25-Jan-2018

Date Completed

5-Feb-2018

Date Authorised

7-Feb-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Groundwater Bore MPGM4

Source: MP

Customer Sampling Point: 008

Sampling Code: D3

Sample Frequency: Month

Testing Laboratory: Mount Piper

Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	7.8 m
Bore Volume Pumped	*Analysis in Field	199 L
Recharge Bore Level	*Analysis in Field	11.1 m
pH	CA12125	6.10
Conductivity	CA12125	890 µS/cm

Testing Laboratory: ALS Environmental

Water

Cations - Metals	Test Method	Filtered	Total
Mercury (Hg)	EG035T-LL		<0.00004 mg/L
Aluminium (Al)	EG020A-T		0.02 mg/L
Arsenic (As)	EG020A-T		<0.001 mg/L
Barium (Ba)	EG020A-T		0.021 mg/L
Boron (B)	EG020A-T		<0.05 mg/L
Cadmium (Cd)	EG020A-T		<0.0001 mg/L
Calcium (Ca)	ED093T-UL		81.0 mg/L
Chromium (Cr)	EG020A-T		<0.001 mg/L
Copper (Cu)	EG020A-T		<0.001 mg/L
Iron (Fe)	EG020A-F	4.03 mg/L	
Lead (Pb)	EG020A-T		<0.001 mg/L
Magnesium (Mg)	ED093T-UL		44.6 mg/L
Manganese (Mn)	EG020A-F	0.704 mg/L	
Molybdenum (Mo)	EG020A-T		0.002 mg/L
Nickel (Ni)	EG020A-T		0.002 mg/L
Potassium (K)	ED093T-UL		9.64 mg/L
Selenium (Se)	EG094B-T		<0.0002 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		35.3 mg/L
Vanadium (V)	EG020A-F	<0.01 mg/L	

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ENERGY AUSTRALIA C/- MT PIPER POWER

BOULDER ROAD

PORTLAND NSW 2847 AUSTRALIA

Sold To: 0500082301 **Ship To:** 0500082301

Representative: Clive Stacey

Sampled By: Allan Bowcher

Sample Number MPW020216
Date Sampled 25-Jan-2018 08:55
Date Received 25-Jan-2018
Date Completed 5-Feb-2018
Date Authorised 7-Feb-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Groundwater Bore MPM4

Source: MP

Customer Sampling Point: 008

Sampling Code: D3

Sample Frequency: Month

Testing Laboratory: ALS Environmental

Vanadium (V)	EG020A-T	<0.01 mg/L
Zinc (Zn)	EG020A-T	<0.005 mg/L

Anions Test Method: ED009-X

	Filtered
Fluoride (F)	0.055 mg/L
Chloride (Cl)	31.0 mg/L
Sulfate (SO4)	316 mg/L

Alkalinity Test Method: ED037-P

Total Alkalinity (CaCO3)	Total 123 mg/L
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Physical Test Method: EA015H

Total Dissolved Solids @ 180°C	Total 530 mg/L
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Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1803177. Report Date: 2-Feb-2018

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 Senior Chemist

Customer Analytical Services

Mount Piper Power Station 350 Boulder Road Portland 2847 NSW

Email: customeranalyticalservices@nalco.com



Amended - Report Number: 2257648

Replaces previous report number: 2255576 6-Feb-2018 17:46

ENERGY AUSTRALIA C/- MT PIPER POWER

BOULDER ROAD

PORTLAND NSW 2847 AUSTRALIA

Sold To: 0500082301 **Ship To:** 0500082301

Representative: Clive Stacey

Sampled By: Allan Bowcher

Sample Number

MPW020217

Date Sampled

24-Jan-2018 12:35

Date Received

25-Jan-2018

Date Completed

5-Feb-2018

Date Authorised

7-Feb-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Groundwater Bore MPGM4

Source: MP

Customer Sampling Point: 016

Sampling Code: D11

Sample Frequency: Month

Testing Laboratory: Mount Piper

Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	26.4 m
Bore Volume Pumped	*Analysis in Field	129 L
Recharge Bore Level	*Analysis in Field	26.3 m
pH	CA12125	6.14
Conductivity	CA12125	9930 µS/cm

Testing Laboratory: ALS Environmental

Water

Cations - Metals	Test Method	Filtered	Total
Mercury (Hg)	EG035T-LL		<0.00004 mg/L
Aluminium (Al)	EG020A-T		<0.01 mg/L
Arsenic (As)	EG020A-T		0.007 mg/L
Barium (Ba)	EG020A-T		0.016 mg/L
Boron (B)	EG020A-T		2.19 mg/L
Cadmium (Cd)	EG020A-T		<0.0001 mg/L
Calcium (Ca)	ED093T-UL		630 mg/L
Chromium (Cr)	EG020A-T		<0.001 mg/L
Copper (Cu)	EG020A-T		<0.001 mg/L
Iron (Fe)	EG020A-F	29.3 mg/L	
Lead (Pb)	EG020A-T		<0.001 mg/L
Magnesium (Mg)	ED093T-UL		448 mg/L
Manganese (Mn)	EG020A-F	18.1 mg/L	
Molybdenum (Mo)	EG020A-T		0.001 mg/L
Nickel (Ni)	EG020A-T		0.964 mg/L
Potassium (K)	ED093T-UL		131 mg/L
Selenium (Se)	EG094B-T		0.0002 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		1400 mg/L
Vanadium (V)	EG020A-F	<0.01 mg/L	

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ENERGY AUSTRALIA C/- MT PIPER POWER

BOULDER ROAD

PORTLAND NSW 2847 AUSTRALIA

Sold To: 0500082301 **Ship To:** 0500082301

Representative: Clive Stacey

Sampled By: Allan Bowcher

Sample Number	MPW020217
Date Sampled	24-Jan-2018 12:35
Date Received	25-Jan-2018
Date Completed	5-Feb-2018
Date Authorised	7-Feb-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Groundwater Bore MPMG4

Source: MP **Customer Sampling Point:** 016 **Sampling Code:** D11 **Sample Frequency:** Month

Testing Laboratory: ALS Environmental

Vanadium (V)	EG020A-T	<0.01 mg/L
Zinc (Zn)	EG020A-T	0.117 mg/L

Anions Test Method: ED009-X	Filtered
Fluoride (F)	<0.500 mg/L
Chloride (Cl)	788 mg/L
Sulfate (SO4)	4470 mg/L

Alkalinity Test Method: ED037-P	Total
Total Alkalinity (CaCO3)	140 mg/L

Physical Test Method: EA015H	Total
Total Dissolved Solids @ 180°C	9060 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1803177. Report Date: 2-Feb-2018

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NALCO Water
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ENERGY AUSTRALIA C/- MT PIPER POWER

BOULDER ROAD

PORTLAND NSW 2847 AUSTRALIA

Sold To: 0500082301 Ship To: 0500082301

Representative: Clive Stacey

Sampled By: Allan Bowcher

Sample Number

MPW020218

Date Sampled

24-Jan-2018 14:50

Date Received

25-Jan-2018

Date Completed

5-Feb-2018

Date Authorised

7-Feb-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Groundwater Bore MPGM4

Source: MP

Customer Sampling Point: 015

Sampling Code: D10

Sample Frequency: Month

Testing Laboratory: Mount Piper

Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	15.0 m
Bore Volume Pumped	*Analysis in Field	153 L
Recharge Bore Level	*Analysis in Field	15.0 m
pH	CA12125	5.55
Conductivity	CA12125	11230 µS/cm

Testing Laboratory: ALS Environmental

Water

Cations - Metals	Test Method	Filtered	Total
Mercury (Hg)	EG035T-LL		<0.00004 mg/L
Aluminium (Al)	EG020A-T		0.08 mg/L
Arsenic (As)	EG020A-T		<0.001 mg/L
Barium (Ba)	EG020A-T		0.016 mg/L
Boron (B)	EG020A-T		3.47 mg/L
Cadmium (Cd)	EG020A-T		0.0078 mg/L
Calcium (Ca)	ED093T-UL		364 mg/L
Chromium (Cr)	EG020A-T		<0.001 mg/L
Copper (Cu)	EG020A-T		<0.001 mg/L
Iron (Fe)	EG020A-F	1.34 mg/L	
Lead (Pb)	EG020A-T		0.005 mg/L
Magnesium (Mg)	ED093T-UL		442 mg/L
Manganese (Mn)	EG020A-F	9.27 mg/L	
Molybdenum (Mo)	EG020A-T		<0.001 mg/L
Nickel (Ni)	EG020A-T		1.16 mg/L
Potassium (K)	ED093T-UL		235 mg/L
Selenium (Se)	EG094B-T		0.0042 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		1930 mg/L
Vanadium (V)	EG020A-F	<0.01 mg/L	

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ENERGY AUSTRALIA C/- MT PIPER POWER

BOULDER ROAD

PORTLAND NSW 2847 AUSTRALIA

Sold To: 0500082301 **Ship To:** 0500082301

Representative: Clive Stacey

Sampled By: Allan Bowcher

Sample Number	MPW020218
Date Sampled	24-Jan-2018 14:50
Date Received	25-Jan-2018
Date Completed	5-Feb-2018
Date Authorised	7-Feb-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Groundwater Bore MPMG4

Source: MP

Customer Sampling Point: 015

Sampling Code: D10

Sample Frequency: Month

Testing Laboratory: ALS Environmental

Vanadium (V)	EG020A-T	<0.01 mg/L
Zinc (Zn)	EG020A-T	1.12 mg/L

Anions Test Method: ED009-X

Fluoride (F)	Filtered 0.511 mg/L
Chloride (Cl)	908 mg/L
Sulfate (SO4)	5630 mg/L

Alkalinity Test Method: ED037-P

Total Alkalinity (CaCO3)	Total 94 mg/L
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Physical Test Method: EA015H

Total Dissolved Solids @ 180°C	Total 8340 mg/L
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Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1803177. Report Date: 2-Feb-2018

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Customer Analytical Services

Mount Piper Power Station 350 Boulder Road Portland 2847 NSW

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Amended - Report Number: 2257648

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ENERGY AUSTRALIA C/- MT PIPER POWER

BOULDER ROAD

PORTLAND NSW 2847 AUSTRALIA

Sold To: 0500082301 **Ship To:** 0500082301

Representative: Clive Stacey

Sampled By: Allan Bowcher

Sample Number	MPW020219
Date Sampled	25-Jan-2018 10:25
Date Received	25-Jan-2018
Date Completed	5-Feb-2018
Date Authorised	7-Feb-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Groundwater Bore MPGM4

Source: MP **Customer Sampling Point:** 222 **Sampling Code:** D17 **Sample Frequency:** Month

Testing Laboratory: Mount Piper

Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	27.7 m
Bore Volume Pumped	*Analysis in Field	35 L
Recharge Bore Level	*Analysis in Field	27.7 m
pH	CA12125	6.09
Conductivity	CA12125	3610 µS/cm

Testing Laboratory: ALS Environmental

Water

Cations - Metals	Test Method	Filtered	Total
Mercury (Hg)	EG035T-LL		<0.00004 mg/L
Aluminium (Al)	EG020A-T		0.10 mg/L
Arsenic (As)	EG020A-T		0.002 mg/L
Barium (Ba)	EG020A-T		0.018 mg/L
Boron (B)	EG020A-T		0.10 mg/L
Cadmium (Cd)	EG020A-T		<0.0001 mg/L
Calcium (Ca)	ED093T-UL		271 mg/L
Chromium (Cr)	EG020A-T		<0.001 mg/L
Copper (Cu)	EG020A-T		<0.001 mg/L
Iron (Fe)	EG020A-F	4.23 mg/L	
Lead (Pb)	EG020A-T		<0.001 mg/L
Magnesium (Mg)	ED093T-UL		159 mg/L
Manganese (Mn)	EG020A-F	3.28 mg/L	
Molybdenum (Mo)	EG020A-T		<0.001 mg/L
Nickel (Ni)	EG020A-T		0.128 mg/L
Potassium (K)	ED093T-UL		24.9 mg/L
Selenium (Se)	EG094B-T		<0.0002 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		405 mg/L
Vanadium (V)	EG020A-F	<0.01 mg/L	

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ENERGY AUSTRALIA C/- MT PIPER POWER

BOULDER ROAD

PORTLAND NSW 2847 AUSTRALIA

Sold To: 0500082301 **Ship To:** 0500082301

Representative: Clive Stacey

Sampled By: Allan Bowcher

Sample Number	MPW020219
Date Sampled	25-Jan-2018 10:25
Date Received	25-Jan-2018
Date Completed	5-Feb-2018
Date Authorised	7-Feb-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Groundwater Bore MPM4

Source: MP

Customer Sampling Point: 222

Sampling Code: D17

Sample Frequency: Month

Testing Laboratory: ALS Environmental

Vanadium (V)	EG020A-T	<0.01 mg/L
Zinc (Zn)	EG020A-T	0.098 mg/L

Anions Test Method: ED009-X

Fluoride (F)	Filtered	
	<0.200 mg/L	
Chloride (Cl)	216 mg/L	
Sulfate (SO4)	1780 mg/L	

Alkalinity Test Method: ED037-P

Total Alkalinity (CaCO3)	Total	
	96 mg/L	

Physical Test Method: EA015H

Total Dissolved Solids @ 180°C	Total	
	2150 mg/L	

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1803177. Report Date: 2-Feb-2018

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Customer Analytical Services

Mount Piper Power Station 350 Boulder Road Portland 2847 NSW

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NALCO Water
An Ecolab Company

Amended - Report Number: 2257648

Replaces previous report number: 2255576 6-Feb-2018 17:46

ENERGY AUSTRALIA C/- MT PIPER POWER

BOULDER ROAD

PORTLAND NSW 2847 AUSTRALIA

Sold To: 0500082301 Ship To: 0500082301

Representative: Clive Stacey

Sampled By: Allan Bowcher

Sample Number	MPW020220
Date Sampled	25-Jan-2018 10:50
Date Received	25-Jan-2018
Date Completed	5-Feb-2018
Date Authorised	7-Feb-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Groundwater Bore MPGM4

Source: MP

Customer Sampling Point: 220

Sampling Code: D15

Sample Frequency: Month

Testing Laboratory: Mount Piper

Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	25.8 m
Bore Volume Pumped	*Analysis in Field	27 L
Recharge Bore Level	*Analysis in Field	25.8 m
pH	CA12125	5.48
Conductivity	CA12125	4110 µS/cm

Testing Laboratory: ALS Environmental

Water

Cations - Metals	Test Method	Filtered	Total
Mercury (Hg)	EG035T-LL		<0.00004 mg/L
Aluminium (Al)	EG020A-T		0.32 mg/L
Arsenic (As)	EG020A-T		0.005 mg/L
Barium (Ba)	EG020A-T		0.013 mg/L
Boron (B)	EG020A-T		0.27 mg/L
Cadmium (Cd)	EG020A-T		0.0004 mg/L
Calcium (Ca)	ED093T-UL		242 mg/L
Chromium (Cr)	EG020A-T		0.001 mg/L
Copper (Cu)	EG020A-T		0.002 mg/L
Iron (Fe)	EG020A-F	13.8 mg/L	
Lead (Pb)	EG020A-T		0.004 mg/L
Magnesium (Mg)	ED093T-UL		116 mg/L
Manganese (Mn)	EG020A-F	2.26 mg/L	
Molybdenum (Mo)	EG020A-T		<0.001 mg/L
Nickel (Ni)	EG020A-T		0.654 mg/L
Potassium (K)	ED093T-UL		43.2 mg/L
Selenium (Se)	EG094B-T		0.0004 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		605 mg/L
Vanadium (V)	EG020A-F	<0.01 mg/L	

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Amended - Report Number: 2257648

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ENERGY AUSTRALIA C/- MT PIPER POWER

BOULDER ROAD

PORTLAND NSW 2847 AUSTRALIA

Sold To: 0500082301 **Ship To:** 0500082301

Representative: Clive Stacey

Sampled By: Allan Bowcher

Sample Number	MPW020220
Date Sampled	25-Jan-2018 10:50
Date Received	25-Jan-2018
Date Completed	5-Feb-2018
Date Authorised	7-Feb-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Groundwater Bore MPMG4

Source: MP **Customer Sampling Point:** 220 **Sampling Code:** D15 **Sample Frequency:** Month

Testing Laboratory: ALS Environmental

Vanadium (V)	EG020A-T	<0.01 mg/L
Zinc (Zn)	EG020A-T	1.15 mg/L

Anions Test Method: ED009-X	Filtered
Fluoride (F)	<0.200 mg/L
Chloride (Cl)	215 mg/L
Sulfate (SO4)	1990 mg/L

Alkalinity Test Method: ED037-P	Total
Total Alkalinity (CaCO3)	50 mg/L

Physical Test Method: EA015H	Total
Total Dissolved Solids @ 180°C	2720 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1803177. Report Date: 2-Feb-2018

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Customer Analytical Services

Mount Piper Power Station 350 Boulder Road Portland 2847 NSW

Email: customeranalyticalservices@nalco.com



Amended - Report Number: 2257648

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ENERGY AUSTRALIA C/- MT PIPER POWER

BOULDER ROAD

PORTLAND NSW 2847 AUSTRALIA

Sold To: 0500082301 **Ship To:** 0500082301

Representative: Clive Stacey

Sampled By: Allan Bowcher

Sample Number

MPW020221

Date Sampled

25-Jan-2018 11:35

Date Received

25-Jan-2018

Date Completed

5-Feb-2018

Date Authorised

7-Feb-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Groundwater Bore MPGM4

Source: MP

Customer Sampling Point: 221

Sampling Code: D16

Sample Frequency: Month

Testing Laboratory: Mount Piper

Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	12.7 m
Bore Volume Pumped	*Analysis in Field	139 L
Recharge Bore Level	*Analysis in Field	12.7 m
pH	CA12125	6.51
Conductivity	CA12125	1330 µS/cm

Testing Laboratory: ALS Environmental

Water

Cations - Metals	Test Method	Filtered	Total
Mercury (Hg)	EG035T-LL		<0.00004 mg/L
Aluminium (Al)	EG020A-T		<0.01 mg/L
Arsenic (As)	EG020A-T		<0.001 mg/L
Barium (Ba)	EG020A-T		0.012 mg/L
Boron (B)	EG020A-T		0.06 mg/L
Cadmium (Cd)	EG020A-T		<0.0001 mg/L
Calcium (Ca)	ED093T-UL		185 mg/L
Chromium (Cr)	EG020A-T		<0.001 mg/L
Copper (Cu)	EG020A-T		<0.001 mg/L
Iron (Fe)	EG094B-F	1.77 mg/L	
Lead (Pb)	EG020A-T		<0.001 mg/L
Magnesium (Mg)	ED093T-UL		63.1 mg/L
Manganese (Mn)	EG020A-F	0.034 mg/L	
Molybdenum (Mo)	EG020A-T		<0.001 mg/L
Nickel (Ni)	EG020A-T		0.004 mg/L
Potassium (K)	ED093T-UL		24.5 mg/L
Selenium (Se)	EG094B-T		<0.0002 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		20.6 mg/L
Vanadium (V)	EG020A-F	<0.01 mg/L	

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ENERGY AUSTRALIA C/- MT PIPER POWER

BOULDER ROAD

PORTLAND NSW 2847 AUSTRALIA

Sold To: 0500082301 **Ship To:** 0500082301

Representative: Clive Stacey

Sampled By: Allan Bowcher

Sample Number	MPW020221
Date Sampled	25-Jan-2018 11:35
Date Received	25-Jan-2018
Date Completed	5-Feb-2018
Date Authorised	7-Feb-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Groundwater Bore MPGM4

Source: MP **Customer Sampling Point:** 221 **Sampling Code:** D16 **Sample Frequency:** Month

Testing Laboratory: ALS Environmental

Vanadium (V)	EG020A-T	<0.01 mg/L
Zinc (Zn)	EG020A-T	<0.005 mg/L

Anions Test Method: ED009-X	Filtered
Fluoride (F)	0.224 mg/L
Chloride (Cl)	43.2 mg/L
Sulfate (SO4)	499 mg/L

Alkalinity Test Method: ED037-P	Total
Total Alkalinity (CaCO3)	259 mg/L

Physical Test Method: EA015H	Total
Total Dissolved Solids @ 180°C	786 mg/L

TDS by method EA-015 may bias high for various samples due to the presence of fine particulate matter, which may pass through the prescribed GF/C paper.

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1803177. Report Date: 2-Feb-2018

* NATA accreditation does not cover the performance of this service



Accreditation Number 1099
 Accredited for compliance with ISO/IEC 17025.

Authorised by Thanh Hoang Le
 Senior Chemist

Customer Analytical Services

Mount Piper Power Station 350 Boulder Road Portland 2847 NSW

Email: customeranalyticalservices@nalco.com



Amended - Report Number: 2257648

Replaces previous report number: 2255576 6-Feb-2018 17:46

ENERGY AUSTRALIA C/- MT PIPER POWER

BOULDER ROAD

PORTLAND NSW 2847 AUSTRALIA

Sold To: 0500082301 **Ship To:** 0500082301

Representative: Clive Stacey

Sampled By: Allan Bowcher

Sample Number

MPW020222

Date Sampled

24-Jan-2018 10:30

Date Received

25-Jan-2018

Date Completed

25-Jan-2018

Date Authorised

25-Jan-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: MP Ash - D10 - SW3-D

Source: MP

Customer Sampling Point: 256

Sampling Code: SW3-D

Sample Frequency: Ad-Hoc

Testing Laboratory: Mount Piper

Water

Field Analysis
Dry

Test Method: Analysis in Field

Total

•System out of service.

Allan Bowcher

Authorised by Allan Bowcher
Chemist

Amended - Report Number: 2257648

Replaces previous report number: 2255576 6-Feb-2018 17:46

ENERGY AUSTRALIA C/- MT PIPER POWER

BOULDER ROAD

PORTLAND NSW 2847 AUSTRALIA

Sold To: 0500082301 **Ship To:** 0500082301

Representative: Clive Stacey

Sampled By: Allan Bowcher

Sample Number	MPW020223
Date Sampled	24-Jan-2018 10:55
Date Received	25-Jan-2018
Date Completed	5-Feb-2018
Date Authorised	7-Feb-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: MP Ash - D10 - B5

Source: MP **Customer Sampling Point:** 250 **Sampling Code:** B5 **Sample Frequency:** Ad-Hoc

Testing Laboratory: Mount Piper

Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	36.4 m
Bore Volume Pumped	*Analysis in Field	1 L
Recharge Bore Level	*Analysis in Field	36.4 m
pH	CA12125	5.90
Conductivity	CA12125	48560 µS/cm

Testing Laboratory: ALS Environmental

Water

Cations - Metals	Test Method	Filtered	Total
Mercury (Hg)	EG035T-LL		<0.00004 mg/L
Aluminium (Al)	EG020A-T		4.73 mg/L
Arsenic (As)	EG020A-T		0.012 mg/L
Barium (Ba)	EG020A-T		0.056 mg/L
Boron (B)	EG020A-T		14.8 mg/L
Cadmium (Cd)	EG020A-T		0.142 mg/L
Calcium (Ca)	ED093T-UL		560 mg/L
Chromium (Cr)	EG020A-T		<0.010 mg/L
Copper (Cu)	EG020A-T		0.096 mg/L
Iron (Fe)	EG020A-F	1.44 mg/L	
Lead (Pb)	EG020A-T		<0.010 mg/L
Magnesium (Mg)	ED093T-UL		2120 mg/L
Manganese (Mn)	EG020A-F	14.9 mg/L	
Molybdenum (Mo)	EG020A-T		2.94 mg/L
Nickel (Ni)	EG020A-T		1.50 mg/L
Potassium (K)	ED093T-UL		1790 mg/L
Selenium (Se)	EG094B-T		0.0714 mg/L
Silver (Ag)	EG020B-T		<0.010 mg/L
Sodium (Na)	ED093T-UL		15500 mg/L
Vanadium (V)	EG020A-F	<0.10 mg/L	

* NATA accreditation does not cover the performance of this service



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Authorised by Thanh Hoang Le
 Senior Chemist

Amended - Report Number: 2257648

Replaces previous report number: 2255576 6-Feb-2018 17:46

ENERGY AUSTRALIA C/- MT PIPER POWER

BOULDER ROAD

PORTLAND NSW 2847 AUSTRALIA

Sold To: 0500082301 **Ship To:** 0500082301

Representative: Clive Stacey

Sampled By: Allan Bowcher

Sample Number	MPW020223
Date Sampled	24-Jan-2018 10:55
Date Received	25-Jan-2018
Date Completed	5-Feb-2018
Date Authorised	7-Feb-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: MP Ash - D10 - B5

Source: MP

Customer Sampling Point: 250

Sampling Code: B5

Sample Frequency: Ad-Hoc

Testing Laboratory: ALS Environmental

Vanadium (V)	EG020A-T	<0.10 mg/L
Zinc (Zn)	EG020A-T	3.08 mg/L

Anions Test Method: ED009-X

Fluoride (F)	Filtered	
	<5.00 mg/L	
Chloride (Cl)	3590 mg/L	
Sulfate (SO4)	31000 mg/L	

Alkalinity Test Method: ED037-P

Total Alkalinity (CaCO3)	Total	
	54 mg/L	

Physical Test Method: EA015H

Total Dissolved Solids @ 180°C	Total	
	55200 mg/L	

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1803177. Report Date: 2-Feb-2018

* NATA accreditation does not cover the performance of this service



Accreditation Number 1099
 Accredited for compliance with ISO/IEC 17025.

Authorised by Thanh Hoang Le
 Senior Chemist

Customer Analytical Services

Mount Piper Power Station 350 Boulder Road Portland 2847 NSW

Email: customeranalyticalservices@nalco.com

NALCO Water
An Ecolab Company

Amended - Report Number: 2257648

Replaces previous report number: 2255576 6-Feb-2018 17:46

ENERGY AUSTRALIA C/- MT PIPER POWER

BOULDER ROAD

PORTLAND NSW 2847 AUSTRALIA

Sold To: 0500082301 Ship To: 0500082301

Representative: Clive Stacey

Sampled By: Allan Bowcher

Sample Number

MPW020224

Date Sampled

24-Jan-2018 11:20

Date Received

25-Jan-2018

Date Completed

5-Feb-2018

Date Authorised

7-Feb-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: MP Ash - D10 - B5-1

Source: MP

Customer Sampling Point: 251

Sampling Code: B5-1

Sample Frequency: Ad-Hoc

Testing Laboratory: Mount Piper

Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	35.4 m
Bore Volume Pumped	*Analysis in Field	10 L
Recharge Bore Level	*Analysis in Field	35.4 m
pH	CA12125	5.42
Conductivity	CA12125	46600 µS/cm

Testing Laboratory: ALS Environmental

Water

Cations - Metals	Test Method	Filtered	Total
Mercury (Hg)	EG035T-LL		<0.00004 mg/L
Aluminium (Al)	EG020A-T		4.13 mg/L
Arsenic (As)	EG020A-T		<0.010 mg/L
Barium (Ba)	EG020A-T		0.059 mg/L
Boron (B)	EG020A-T		10.7 mg/L
Cadmium (Cd)	EG020A-T		0.0761 mg/L
Calcium (Ca)	ED093T-UL		532 mg/L
Chromium (Cr)	EG020A-T		<0.010 mg/L
Copper (Cu)	EG020A-T		<0.010 mg/L
Iron (Fe)	EG020A-F	0.40 mg/L	
Lead (Pb)	EG020A-T		<0.010 mg/L
Magnesium (Mg)	ED093T-UL		1920 mg/L
Manganese (Mn)	EG020A-F	40.3 mg/L	
Molybdenum (Mo)	EG020A-T		<0.010 mg/L
Nickel (Ni)	EG020A-T		2.25 mg/L
Potassium (K)	ED093T-UL		1420 mg/L
Selenium (Se)	EG094B-T		0.204 mg/L
Silver (Ag)	EG020B-T		<0.010 mg/L
Sodium (Na)	ED093T-UL		14500 mg/L
Vanadium (V)	EG020A-F	<0.10 mg/L	

* NATA accreditation does not cover the performance of this service



Accreditation Number 1099

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Authorised by Thanh Hoang Le
Senior Chemist

Amended - Report Number: 2257648

Replaces previous report number: 2255576 6-Feb-2018 17:46

ENERGY AUSTRALIA C/- MT PIPER POWER

BOULDER ROAD

PORTLAND NSW 2847 AUSTRALIA

Sold To: 0500082301 **Ship To:** 0500082301

Representative: Clive Stacey

Sampled By: Allan Bowcher

Sample Number

MPW020224

Date Sampled

24-Jan-2018 11:20

Date Received

25-Jan-2018

Date Completed

5-Feb-2018

Date Authorised

7-Feb-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: MP Ash - D10 - B5-1

Source: MP

Customer Sampling Point: 251

Sampling Code: B5-1

Sample Frequency: Ad-Hoc

Testing Laboratory: ALS Environmental

Vanadium (V)	EG020A-T	<0.10 mg/L
Zinc (Zn)	EG020A-T	3.68 mg/L

Anions Test Method: ED009-X

	Filtered
Fluoride (F)	<5.00 mg/L
Chloride (Cl)	3170 mg/L
Sulfate (SO4)	30000 mg/L

Alkalinity Test Method: ED037-P

Total Alkalinity (CaCO3)	Total 118 mg/L
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Physical Test Method: EA015H

Total Dissolved Solids @ 180°C	Total 51500 mg/L
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Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1803177. Report Date: 2-Feb-2018

* NATA accreditation does not cover the performance of this service



Accreditation Number 1099
 Accredited for compliance with ISO/IEC 17025.

Authorised by Thanh Hoang Le
 Senior Chemist

Final - Report Number: 2281278
ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Nikki Tomlinson

Sample Number MPW020625
Date Sampled 22-Feb-2018 10:05
Date Received 23-Feb-2018
Date Completed 2-Mar-2018
Date Authorised 7-Mar-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Groundwater Bore MPGM4

Source: MP **Customer Sampling Point:** 014 **Sampling Code:** D9 **Sample Frequency:** Month

Testing Laboratory: Mount Piper

Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	2.1 m
Bore Volume Pumped	*Analysis in Field	3 L
Recharge Bore Level	*Analysis in Field	2.1 m
pH	CA12125	5.92
Conductivity	CA12125	3250 µS/cm

Testing Laboratory: ALS Environmental

Water

Cations - Metals	Test Method	Filtered	Total
Mercury (Hg)	EG035T-LL		<0.00004 mg/L
Aluminium (Al)	EG020A-T		0.08 mg/L
Arsenic (As)	EG020A-T		<0.001 mg/L
Barium (Ba)	EG020A-T		0.034 mg/L
Boron (B)	EG020A-T		0.85 mg/L
Cadmium (Cd)	EG020A-T		0.0002 mg/L
Calcium (Ca)	ED093T-UL		250 mg/L
Chromium (Cr)	EG020A-T		<0.001 mg/L
Copper (Cu)	EG020A-T		<0.001 mg/L
Iron (Fe)	EG020A-F	18.3 mg/L	
Lead (Pb)	EG020A-T		<0.001 mg/L
Magnesium (Mg)	ED093T-UL		236 mg/L
Manganese (Mn)	EG020A-F	14.3 mg/L	
Molybdenum (Mo)	EG020A-T		0.005 mg/L
Nickel (Ni)	EG020A-T		0.334 mg/L
Potassium (K)	ED093T-UL		19.4 mg/L
Selenium (Se)	EG094B-T		<0.0002 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		208 mg/L
Vanadium (V)	EG020A-F	<0.01 mg/L	
Vanadium (V)	EG020A-T		<0.01 mg/L

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Authorised by Thanh Hoang Le
 Senior Chemist

Final - Report Number: 2281278
ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Nikki Tomlinson

Sample Number MPW020625
Date Sampled 22-Feb-2018 10:05
Date Received 23-Feb-2018
Date Completed 2-Mar-2018
Date Authorised 7-Mar-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Groundwater Bore MPGM4

Source: MP **Customer Sampling Point:** 014 **Sampling Code:** D9 **Sample Frequency:** Month

Testing Laboratory: ALS Environmental

Zinc (Zn)	EG020A-T	0.139 mg/L
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Anions Test Method: ED009-X	Filtered	
Fluoride (F)		1.20 mg/L
Chloride (Cl)		174 mg/L
Sulfate (SO4)		1800 mg/L

Alkalinity Test Method: ED037-P	Total	
Total Alkalinity (CaCO3)		132 mg/L

Physical Test Method: EA015H	Total	
Total Dissolved Solids @ 180°C		2900 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1805951. Report Date: 2-Mar-2018

* NATA accreditation does not cover the performance of this service



Accreditation Number 1099
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Authorised by Thanh Hoang Le
 Senior Chemist

Final - Report Number: 2281278
ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Nikki Tomlinson

Sample Number MPW020626
Date Sampled 21-Feb-2018 09:10
Date Received 23-Feb-2018
Date Completed 2-Mar-2018
Date Authorised 7-Mar-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Stream Gauge

Source: MP **Customer Sampling Point:** 003 **Sampling Code:** WX22 **Sample Frequency:** Month

Testing Laboratory: Mount Piper
 Water

Field Analysis	Test Method	Total
Discharge Flowing	*Analysis in Field	No Flow
pH	CA12125	6.59
Conductivity	CA12125	2360 µS/cm
Temperature	CA12125	13.5 °C
Dissolved Oxygen (O2)	*Analysis in Field	9.3 mg/L



Field Photo

Testing Laboratory: ALS Environmental
 Water

Cations - Metals	Test Method	Filtered	Total
Mercury (Hg)	EG035T-LL		<0.00004 mg/L
Aluminium (Al)	EG020A-F	<0.01 mg/L	
Aluminium (Al)	EG020A-T		0.05 mg/L
Arsenic (As)	EG020A-T		<0.001 mg/L

* NATA accreditation does not cover the performance of this service



Accreditation Number 1099
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Authorised by Thanh Hoang Le
 Senior Chemist

Final - Report Number: 2281278
ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Nikki Tomlinson

Sample Number MPW020626
Date Sampled 21-Feb-2018 09:10
Date Received 23-Feb-2018
Date Completed 2-Mar-2018
Date Authorised 7-Mar-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Stream Gauge

Source: MP **Customer Sampling Point:** 003 **Sampling Code:** WX22 **Sample Frequency:** Month

Testing Laboratory: ALS Environmental

Barium (Ba)	EG020A-T	0.049 mg/L
Boron (B)	EG020A-T	0.29 mg/L
Cadmium (Cd)	EG020A-T	<0.0001 mg/L
Calcium (Ca)	ED093T-UL	152 mg/L
Chromium (Cr)	EG020A-T	<0.001 mg/L
Copper (Cu)	EG020A-F	<0.001 mg/L
Copper (Cu)	EG020A-T	<0.001 mg/L
Iron (Fe)	EG094B-F	0.137 mg/L
Iron (Fe)	EG094B-T	0.592 mg/L
Lead (Pb)	EG020A-T	<0.001 mg/L
Magnesium (Mg)	ED093T-UL	133 mg/L
Manganese (Mn)	EG020A-F	2.23 mg/L
Manganese (Mn)	EG020A-T	2.14 mg/L
Molybdenum (Mo)	EG020A-T	0.001 mg/L
Nickel (Ni)	EG020A-T	0.136 mg/L
Potassium (K)	ED093T-UL	12.8 mg/L
Selenium (Se)	EG094B-T	<0.0002 mg/L
Silver (Ag)	EG020B-T	<0.001 mg/L
Sodium (Na)	ED093T-UL	213 mg/L
Strontium (Sr)	EG020B-T	0.594 mg/L
Vanadium (V)	EG020A-F	<0.01 mg/L
Vanadium (V)	EG020A-T	<0.01 mg/L
Zinc (Zn)	EG020A-F	0.087 mg/L
Zinc (Zn)	EG020A-T	0.093 mg/L

EG020: It is recognised that total concentration is less than dissolved for Manganese on sample ES1805951 #002.
 However, the difference is within experimental variation of the methods.

* NATA accreditation does not cover the performance of this service



Accreditation Number 1099
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Authorised by Thanh Hoang Le
 Senior Chemist

Final - Report Number: 2281278
ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Nikki Tomlinson

Sample Number MPW020626
Date Sampled 21-Feb-2018 09:10
Date Received 23-Feb-2018
Date Completed 2-Mar-2018
Date Authorised 7-Mar-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Stream Gauge

Source: MP **Customer Sampling Point:** 003 **Sampling Code:** WX22 **Sample Frequency:** Month

Testing Laboratory: ALS Environmental

Anions	Test Method	Filtered
Fluoride (F)	ED009-X	0.133 mg/L
Chloride (Cl)	ED009-X	164 mg/L
Sulfate (SO4)	ED009-X	1130 mg/L
Nitrate (N)	EK058G	<0.01 mg/L
Nitrite (N)	EK057G	<0.01 mg/L
Nitrate and Nitrite (N)	EK059G	<0.01 mg/L

Alkalinity	Test Method: ED037-P	Total
Total Alkalinity (CaCO3)		21 mg/L
Phenolphthalein Alkalinity (CaCO3)		<1 mg/L
Bicarbonate (CaCO3)		21 mg/L

Phosphate	Test Method: EK067G	Total
Total Phosphorus (P)		<0.01 mg/L

Physical	Test Method	Total
Total Dissolved Solids @ 180°C	EA015H	1790 mg/L
Turbidity	EA045	7.6 NTU

Other	Test Method	Total
Nitrogen (N)	EK062G	<0.1 mg/L
Nitrogen (N) - Kjeldahl	EK061G	<0.1 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1805951. Report Date: 2-Mar-2018

* NATA accreditation does not cover the performance of this service



Accreditation Number 1099
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Authorised by Thanh Hoang Le
 Senior Chemist

Final - Report Number: 2281278
ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Nikki Tomlinson

Sample Number MPW020627
Date Sampled 21-Feb-2018 09:40
Date Received 23-Feb-2018
Date Completed 2-Mar-2018
Date Authorised 7-Mar-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Groundwater Bore MPGM4

Source: MP **Customer Sampling Point:** 006 **Sampling Code:** D1 **Sample Frequency:** Month

Testing Laboratory: Mount Piper
Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	2.9 m
Bore Volume Pumped	*Analysis in Field	122 L
Recharge Bore Level	*Analysis in Field	3.5 m
pH	CA12125	5.95
Conductivity	CA12125	5480 µS/cm

Testing Laboratory: ALS Environmental
Water

Cations - Metals	Test Method	Filtered	Total
Mercury (Hg)	EG035T-LL		<0.00004 mg/L
Aluminium (Al)	EG020A-T		0.08 mg/L
Arsenic (As)	EG020A-T		0.008 mg/L
Barium (Ba)	EG020A-T		0.029 mg/L
Boron (B)	EG020A-T		1.92 mg/L
Cadmium (Cd)	EG020A-T		<0.0001 mg/L
Calcium (Ca)	ED093T-UL		432 mg/L
Chromium (Cr)	EG020A-T		<0.001 mg/L
Copper (Cu)	EG020A-T		<0.001 mg/L
Iron (Fe)	EG020A-F	26.2 mg/L	
Lead (Pb)	EG020A-T		<0.001 mg/L
Magnesium (Mg)	ED093T-UL		314 mg/L
Manganese (Mn)	EG020A-F	20.1 mg/L	
Molybdenum (Mo)	EG020A-T		<0.001 mg/L
Nickel (Ni)	EG020A-T		1.04 mg/L
Potassium (K)	ED093T-UL		44.4 mg/L
Selenium (Se)	EG094B-T		<0.0002 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		533 mg/L
Vanadium (V)	EG020A-F	<0.01 mg/L	
Vanadium (V)	EG020A-T		<0.01 mg/L

* NATA accreditation does not cover the performance of this service



Accreditation Number 1099
 Accredited for compliance with ISO/IEC 17025.

Authorised by Thanh Hoang Le
 Senior Chemist

Final - Report Number: 2281278
ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Nikki Tomlinson

Sample Number MPW020627
Date Sampled 21-Feb-2018 09:40
Date Received 23-Feb-2018
Date Completed 2-Mar-2018
Date Authorised 7-Mar-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Groundwater Bore MPGM4

Source: MP **Customer Sampling Point:** 006 **Sampling Code:** D1 **Sample Frequency:** Month

Testing Laboratory: ALS Environmental

Zinc (Zn)	EG020A-T	0.107 mg/L
Anions	Test Method	Filtered
Fluoride (F)	ED009-X	<0.200 mg/L
Chloride (Cl)	ED009-X	596 mg/L
Sulfate (SO4)	ED009-X	2520 mg/L

ED009x: Samples required dilution due to matrix interferences. LOR values for Fluoride have been adjusted accordingly.

Alkalinity Test Method: ED037-P	Total
Total Alkalinity (CaCO3)	154 mg/L

Physical Test Method: EA015H	Total
Total Dissolved Solids @ 180°C	4860 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1805951. Report Date: 2-Mar-2018

* NATA accreditation does not cover the performance of this service



Accreditation Number 1099
 Accredited for compliance with ISO/IEC 17025.

Authorised by Thanh Hoang Le
 Senior Chemist

Final - Report Number: 2281278
ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Nikki Tomlinson

Sample Number MPW020628
Date Sampled 22-Feb-2018 09:40
Date Received 23-Feb-2018
Date Completed 2-Mar-2018
Date Authorised 7-Mar-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Groundwater Bore MPGM4

Source: MP **Customer Sampling Point:** 013 **Sampling Code:** D8 **Sample Frequency:** Month

Testing Laboratory: Mount Piper
Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	2.6 m
Bore Volume Pumped	*Analysis in Field	44 L
Recharge Bore Level	*Analysis in Field	2.6 m
pH	CA12125	5.30
Conductivity	CA12125	410 µS/cm

Testing Laboratory: ALS Environmental
Water

Cations - Metals	Test Method	Filtered	Total
Mercury (Hg)	EG035T-LL		<0.00004 mg/L
Aluminium (Al)	EG020A-T		0.29 mg/L
Arsenic (As)	EG020A-T		<0.001 mg/L
Barium (Ba)	EG020A-T		0.033 mg/L
Boron (B)	EG020A-T		0.14 mg/L
Cadmium (Cd)	EG020A-T		<0.0001 mg/L
Calcium (Ca)	ED093T-UL		27.4 mg/L
Chromium (Cr)	EG020A-T		<0.001 mg/L
Copper (Cu)	EG020A-T		<0.001 mg/L
Iron (Fe)	EG094B-F	0.185 mg/L	
Lead (Pb)	EG020A-T		<0.001 mg/L
Magnesium (Mg)	ED093T-UL		21.4 mg/L
Manganese (Mn)	EG020A-F	0.497 mg/L	
Molybdenum (Mo)	EG020A-T		<0.001 mg/L
Nickel (Ni)	EG020A-T		0.056 mg/L
Potassium (K)	ED093T-UL		3.18 mg/L
Selenium (Se)	EG094B-T		<0.0002 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		17.2 mg/L
Vanadium (V)	EG020A-F	<0.01 mg/L	
Vanadium (V)	EG020A-T		<0.01 mg/L

* NATA accreditation does not cover the performance of this service



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 Senior Chemist

Final - Report Number: 2281278
ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Nikki Tomlinson

Sample Number MPW020628
Date Sampled 22-Feb-2018 09:40
Date Received 23-Feb-2018
Date Completed 2-Mar-2018
Date Authorised 7-Mar-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Groundwater Bore MPGM4

Source: MP **Customer Sampling Point:** 013 **Sampling Code:** D8 **Sample Frequency:** Month

Testing Laboratory: ALS Environmental

Zinc (Zn)	EG020A-T	0.078 mg/L
Anions	Test Method	Filtered
Fluoride (F)	ED009-X	0.021 mg/L
Chloride (Cl)	ED009-X	11.7 mg/L
Sulfate (SO4)	ED009-X	164 mg/L

ED009x: Samples required dilution due to matrix interferences. LOR values for Fluoride have been adjusted accordingly.

Alkalinity Test Method: ED037-P	Total
Total Alkalinity (CaCO3)	10 mg/L

Physical Test Method: EA015H	Total
Total Dissolved Solids @ 180°C	303 mg/L

TDS by method EA-015 may bias high for various samples due to the presence of fine particulate matter, which may pass through the prescribed GF/C paper.

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1805951. Report Date: 2-Mar-2018

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BOULDER ROAD
PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Nikki Tomlinson

Sample Number MPW020629
Date Sampled 21-Feb-2018 10:50
Date Received 23-Feb-2018
Date Completed 23-Feb-2018
Date Authorised 23-Feb-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: MP Ash - D10 - D21

Source: MP

Customer Sampling Point: 253

Sampling Code: D21

Sample Frequency:
ADDITIONAL_MONTH

Testing Laboratory: Mount Piper

Water

Field Analysis Test Method: Analysis in Field
Dry

Total

N Tomlinson

Authorised by Nikki Tomlinson
Senior Chemist

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 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Nikki Tomlinson

Sample Number MPW020630
Date Sampled 21-Feb-2018 10:55
Date Received 23-Feb-2018
Date Completed 2-Mar-2018
Date Authorised 7-Mar-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: MP Ash - D10 - D23

Source: MP **Customer Sampling Point:** 254 **Sampling Code:** D23 **Sample Frequency:** ADDITIONAL_MONTH

Testing Laboratory: Mount Piper
Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	24.5 m
Bore Volume Pumped	*Analysis in Field	51 L
Recharge Bore Level	*Analysis in Field	24.5 m
pH	CA12125	5.72
Conductivity	CA12125	3450 µS/cm

Testing Laboratory: ALS Environmental
Water

Cations - Metals	Test Method	Filtered	Total
Mercury (Hg)	EG035T-LL		<0.00004 mg/L
Aluminium (Al)	EG020A-T		0.54 mg/L
Arsenic (As)	EG020A-T		<0.001 mg/L
Barium (Ba)	EG020A-T		0.016 mg/L
Boron (B)	EG020A-T		0.30 mg/L
Cadmium (Cd)	EG020A-T		0.0003 mg/L
Calcium (Ca)	ED093T-UL		214 mg/L
Chromium (Cr)	EG020A-T		<0.001 mg/L
Copper (Cu)	EG020A-T		0.002 mg/L
Iron (Fe)	EG020A-F	20.1 mg/L	
Lead (Pb)	EG020A-T		0.001 mg/L
Magnesium (Mg)	ED093T-UL		105 mg/L
Manganese (Mn)	EG020A-F	2.10 mg/L	
Molybdenum (Mo)	EG020A-T		<0.001 mg/L
Nickel (Ni)	EG020A-T		0.444 mg/L
Potassium (K)	ED093T-UL		38.9 mg/L
Selenium (Se)	EG094B-T		<0.0002 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		470 mg/L
Vanadium (V)	EG020A-F	<0.01 mg/L	

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Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Nikki Tomlinson

Sample Number MPW020630
Date Sampled 21-Feb-2018 10:55
Date Received 23-Feb-2018
Date Completed 2-Mar-2018
Date Authorised 7-Mar-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: MP Ash - D10 - D23

Source: MP **Customer Sampling Point:** 254 **Sampling Code:** D23 **Sample Frequency:** ADDITIONAL_MONTH

Testing Laboratory: ALS Environmental

Vanadium (V)	EG020A-T	<0.01 mg/L
Zinc (Zn)	EG020A-T	0.733 mg/L

Anions	Test Method	Filtered
Fluoride (F)	ED009-X	<0.200 mg/L
Chloride (Cl)	ED009-X	191 mg/L
Sulfate (SO4)	ED009-X	1670 mg/L

ED009x: Samples required dilution due to matrix interferences. LOR values for Fluoride have been adjusted accordingly.

Alkalinity Test Method: ED037-P	Total
Total Alkalinity (CaCO3)	92 mg/L

Physical Test Method: EA015H	Total
Total Dissolved Solids @ 180°C	2690 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1805951. Report Date: 2-Mar-2018

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 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Nikki Tomlinson

Sample Number MPW020631
Date Sampled 22-Feb-2018 11:25
Date Received 23-Feb-2018
Date Completed 2-Mar-2018
Date Authorised 7-Mar-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Groundwater Bore MPGM4

Source: MP **Customer Sampling Point:** 223 **Sampling Code:** D18 **Sample Frequency:** Month

Testing Laboratory: Mount Piper
Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	24.4 m
Bore Volume Pumped	*Analysis in Field	39 L
Recharge Bore Level	*Analysis in Field	31.1 m
pH	CA12125	6.64
Conductivity	CA12125	730 µS/cm

Testing Laboratory: ALS Environmental
Water

Cations - Metals	Test Method	Filtered	Total
Mercury (Hg)	EG035T-LL		<0.00004 mg/L
Aluminium (Al)	EG020A-T		0.17 mg/L
Arsenic (As)	EG020A-T		0.001 mg/L
Barium (Ba)	EG020A-T		0.570 mg/L
Boron (B)	EG020A-T		0.08 mg/L
Cadmium (Cd)	EG020A-T		0.0001 mg/L
Calcium (Ca)	ED093T-UL		78.5 mg/L
Chromium (Cr)	EG020A-T		<0.001 mg/L
Copper (Cu)	EG020A-T		0.002 mg/L
Iron (Fe)	EG094B-F	0.024 mg/L	
Lead (Pb)	EG020A-T		<0.001 mg/L
Magnesium (Mg)	ED093T-UL		31.7 mg/L
Manganese (Mn)	EG020A-F	0.126 mg/L	
Molybdenum (Mo)	EG020A-T		0.003 mg/L
Nickel (Ni)	EG020A-T		0.008 mg/L
Potassium (K)	ED093T-UL		19.0 mg/L
Selenium (Se)	EG094B-T		<0.0002 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		31.3 mg/L
Vanadium (V)	EG020A-F	<0.01 mg/L	
Vanadium (V)	EG020A-T		<0.01 mg/L

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 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Nikki Tomlinson

Sample Number MPW020631
Date Sampled 22-Feb-2018 11:25
Date Received 23-Feb-2018
Date Completed 2-Mar-2018
Date Authorised 7-Mar-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Groundwater Bore MPGM4

Source: MP **Customer Sampling Point:** 223 **Sampling Code:** D18 **Sample Frequency:** Month

Testing Laboratory: ALS Environmental

Zinc (Zn)	EG020A-T	0.060 mg/L
Anions	Test Method	Filtered
Fluoride (F)	ED009-X	0.453 mg/L
Chloride (Cl)	ED009-X	11.7 mg/L
Sulfate (SO4)	ED009-X	45.6 mg/L

ED009x: Samples required dilution due to matrix interferences. LOR values for Fluoride have been adjusted accordingly.

Alkalinity Test Method: ED037-P	Total
Total Alkalinity (CaCO3)	366 mg/L

Physical Test Method: EA015H	Total
Total Dissolved Solids @ 180°C	406 mg/L

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Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Nikki Tomlinson

Sample Number MPW020632
Date Sampled 21-Feb-2018 11:05
Date Received 23-Feb-2018
Date Completed 23-Feb-2018
Date Authorised 23-Feb-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: MP Ash - D10 - SW3-S

Source: MP

Customer Sampling Point: 257

Sampling Code: SW3-S

Sample Frequency:
ADDITIONAL_MONTH

Testing Laboratory: Mount Piper

Water

Field Analysis Test Method: Analysis in Field
Initial Bore Level

Total
16.9 m

Insufficient Volume to Sample

N Tomlinson

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Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Nikki Tomlinson

Sample Number MPW020633
Date Sampled 21-Feb-2018 11:00
Date Received 23-Feb-2018
Date Completed 23-Feb-2018
Date Authorised 23-Feb-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: MP Ash - D10 - SW3-D

Source: MP

Customer Sampling Point: 256

Sampling Code: SW3-D

Sample Frequency:
ADDITIONAL_MONTH

Testing Laboratory: Mount Piper

Water

Field Analysis Test Method: Analysis in Field
Initial Bore Level

Total
25.2 m

Insufficient Volume to Sample

N Tomlinson

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Senior Chemist

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 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Nikki Tomlinson

Sample Number MPW020634
Date Sampled 22-Feb-2018 11:05
Date Received 23-Feb-2018
Date Completed 2-Mar-2018
Date Authorised 7-Mar-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: MP Ash - D10 - B5

Source: MP **Customer Sampling Point:** 250 **Sampling Code:** B5 **Sample Frequency:** ADDITIONAL_MONTH

Testing Laboratory: Mount Piper
Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	36.5 m
Bore Volume Pumped	*Analysis in Field	1.5 L
Recharge Bore Level	*Analysis in Field	36.5 m
pH	CA12125	6.25
Conductivity	CA12125	48150 µS/cm

Testing Laboratory: ALS Environmental
Water

Cations - Metals	Test Method	Filtered	Total
Mercury (Hg)	EG035T-LL		<0.00004 mg/L
Aluminium (Al)	EG020A-T		23.4 mg/L
Arsenic (As)	EG020A-T		0.022 mg/L
Barium (Ba)	EG020A-T		0.135 mg/L
Boron (B)	EG020A-T		12.7 mg/L
Cadmium (Cd)	EG020A-T		0.166 mg/L
Calcium (Ca)	ED093T-UL		501 mg/L
Chromium (Cr)	EG020A-T		0.020 mg/L
Copper (Cu)	EG020A-T		0.070 mg/L
Iron (Fe)	EG020A-F	0.37 mg/L	
Lead (Pb)	EG020A-T		0.032 mg/L
Magnesium (Mg)	ED093T-UL		1950 mg/L
Manganese (Mn)	EG020A-F	13.9 mg/L	
Molybdenum (Mo)	EG020A-T		1.91 mg/L
Nickel (Ni)	EG020A-T		1.28 mg/L
Potassium (K)	ED093T-UL		1520 mg/L
Selenium (Se)	EG094B-T		0.0922 mg/L
Silver (Ag)	EG020B-T		<0.010 mg/L
Sodium (Na)	ED093T-UL		13600 mg/L
Vanadium (V)	EG020A-F	<0.10 mg/L	

* NATA accreditation does not cover the performance of this service



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 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Nikki Tomlinson

Sample Number MPW020634
Date Sampled 22-Feb-2018 11:05
Date Received 23-Feb-2018
Date Completed 2-Mar-2018
Date Authorised 7-Mar-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: MP Ash - D10 - B5

Source: MP **Customer Sampling Point:** 250 **Sampling Code:** B5 **Sample Frequency:** ADDITIONAL_MONTH

Testing Laboratory: ALS Environmental

Vanadium (V)	EG020A-T	<0.10 mg/L
Zinc (Zn)	EG020A-T	4.74 mg/L

Anions	Test Method	Filtered
Fluoride (F)	ED009-X	<2.00 mg/L
Chloride (Cl)	ED009-X	4200 mg/L
Sulfate (SO4)	ED009-X	30600 mg/L

ED009x: Samples required dilution due to matrix interferences. LOR values for Fluoride have been adjusted accordingly.

Alkalinity Test Method: ED037-P	Total
Total Alkalinity (CaCO3)	84 mg/L

Physical Test Method: EA015H	Total
Total Dissolved Solids @ 180°C	54100 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1805951. Report Date: 2-Mar-2018

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 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Nikki Tomlinson

Sample Number MPW020635
Date Sampled 21-Feb-2018 15:30
Date Received 23-Feb-2018
Date Completed 2-Mar-2018
Date Authorised 7-Mar-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: MP Ash - D10 - B5-1

Source: MP **Customer Sampling Point:** 251 **Sampling Code:** B5-1 **Sample Frequency:** ADDITIONAL_MONTH

Testing Laboratory: Mount Piper
Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	35.4 m
Bore Volume Pumped	*Analysis in Field	10 L
Recharge Bore Level	*Analysis in Field	35.4 m
pH	CA12125	5.53
Conductivity	CA12125	45040 µS/cm

Testing Laboratory: ALS Environmental
Water

Cations - Metals	Test Method	Filtered	Total
Mercury (Hg)	EG035T-LL		<0.00004 mg/L
Aluminium (Al)	EG020A-T		6.07 mg/L
Arsenic (As)	EG020A-T		<0.010 mg/L
Barium (Ba)	EG020A-T		0.063 mg/L
Boron (B)	EG020A-T		9.56 mg/L
Cadmium (Cd)	EG020A-T		0.0705 mg/L
Calcium (Ca)	ED093T-UL		473 mg/L
Chromium (Cr)	EG020A-T		0.057 mg/L
Copper (Cu)	EG020A-T		<0.010 mg/L
Iron (Fe)	EG020A-F	0.31 mg/L	
Lead (Pb)	EG020A-T		<0.010 mg/L
Magnesium (Mg)	ED093T-UL		1660 mg/L
Manganese (Mn)	EG020A-F	37.5 mg/L	
Molybdenum (Mo)	EG020A-T		<0.010 mg/L
Nickel (Ni)	EG020A-T		2.10 mg/L
Potassium (K)	ED093T-UL		1200 mg/L
Selenium (Se)	EG094B-T		0.182 mg/L
Silver (Ag)	EG020B-T		<0.010 mg/L
Sodium (Na)	ED093T-UL		12700 mg/L
Vanadium (V)	EG020A-F	<0.10 mg/L	

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 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Nikki Tomlinson

Sample Number MPW020635
Date Sampled 21-Feb-2018 15:30
Date Received 23-Feb-2018
Date Completed 2-Mar-2018
Date Authorised 7-Mar-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: MP Ash - D10 - B5-1

Source: MP **Customer Sampling Point:** 251 **Sampling Code:** B5-1 **Sample Frequency:** ADDITIONAL_MONTH

Testing Laboratory: ALS Environmental

Vanadium (V)	EG020A-T	<0.10 mg/L
Zinc (Zn)	EG020A-T	3.44 mg/L

Anions	Test Method	Filtered
Fluoride (F)	ED009-X	2.27 mg/L
Chloride (Cl)	ED009-X	3640 mg/L
Sulfate (SO4)	ED009-X	32100 mg/L

ED009x: Samples required dilution due to matrix interferences. LOR values for Fluoride have been adjusted accordingly.

Alkalinity Test Method: ED037-P	Total
Total Alkalinity (CaCO3)	120 mg/L

Physical Test Method: EA015H	Total
Total Dissolved Solids @ 180°C	50200 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1805951. Report Date: 2-Mar-2018

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Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Nikki Tomlinson

Sample Number MPW020636
Date Sampled 21-Feb-2018 13:15
Date Received 23-Feb-2018
Date Completed 2-Mar-2018
Date Authorised 7-Mar-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: MP Ash - D10 - NA5

Source: MP **Customer Sampling Point:** 255 **Sampling Code:** NA5 **Sample Frequency:** ADDITIONAL_MONTH

Testing Laboratory: Mount Piper
Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	25.4 m
Bore Volume Pumped	*Analysis in Field	10 L
Recharge Bore Level	*Analysis in Field	25.2 m
pH	CA12125	5.89
Conductivity	CA12125	4870 µS/cm

Testing Laboratory: ALS Environmental
Water

Cations - Metals	Test Method	Filtered	Total
Mercury (Hg)	EG035T-LL		<0.00004 mg/L
Aluminium (Al)	EG020A-T		1.22 mg/L
Arsenic (As)	EG020A-T		<0.001 mg/L
Barium (Ba)	EG020A-T		0.036 mg/L
Boron (B)	EG020A-T		7.36 mg/L
Cadmium (Cd)	EG020A-T		0.0104 mg/L
Calcium (Ca)	ED093T-UL		387 mg/L
Chromium (Cr)	EG020A-T		0.002 mg/L
Copper (Cu)	EG020A-T		0.002 mg/L
Iron (Fe)	EG020A-F	0.53 mg/L	
Lead (Pb)	EG020A-T		<0.001 mg/L
Magnesium (Mg)	ED093T-UL		117 mg/L
Manganese (Mn)	EG020A-F	6.11 mg/L	
Molybdenum (Mo)	EG020A-T		0.234 mg/L
Nickel (Ni)	EG020A-T		0.419 mg/L
Potassium (K)	ED093T-UL		135 mg/L
Selenium (Se)	EG094B-T		0.0206 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		623 mg/L
Vanadium (V)	EG020A-F	<0.01 mg/L	

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Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Nikki Tomlinson

Sample Number MPW020636
Date Sampled 21-Feb-2018 13:15
Date Received 23-Feb-2018
Date Completed 2-Mar-2018
Date Authorised 7-Mar-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: MP Ash - D10 - NA5

Source: MP **Customer Sampling Point:** 255 **Sampling Code:** NA5 **Sample Frequency:** ADDITIONAL_MONTH

Testing Laboratory: ALS Environmental

Vanadium (V)	EG020A-T	<0.01 mg/L
Zinc (Zn)	EG020A-T	0.680 mg/L

Anions Test Method: ED009-X	Filtered
Fluoride (F)	2.92 mg/L
Chloride (Cl)	142 mg/L
Sulfate (SO4)	2550 mg/L

Alkalinity Test Method: ED037-P	Total
Total Alkalinity (CaCO3)	124 mg/L

Physical Test Method: EA015H	Total
Total Dissolved Solids @ 180°C	4310 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1805951. Report Date: 2-Mar-2018

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Authorised by Thanh Hoang Le
 Senior Chemist

Final - Report Number: 2281278
ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Nikki Tomlinson

Sample Number MPW020637
Date Sampled 21-Feb-2018 14:35
Date Received 23-Feb-2018
Date Completed 2-Mar-2018
Date Authorised 7-Mar-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: MP Ash - D10 - D20

Source: MP **Customer Sampling Point:** 252 **Sampling Code:** D20 **Sample Frequency:** ADDITIONAL_MONTH

Testing Laboratory: Mount Piper
Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	17.4 m
Bore Volume Pumped	*Analysis in Field	16 L
Recharge Bore Level	*Analysis in Field	17.4 m
pH	CA12125	6.08
Conductivity	CA12125	3910 µS/cm

Testing Laboratory: ALS Environmental
Water

Cations - Metals	Test Method	Filtered	Total
Mercury (Hg)	EG035T-LL		<0.00004 mg/L
Aluminium (Al)	EG020A-T		3.27 mg/L
Arsenic (As)	EG020A-T		0.006 mg/L
Barium (Ba)	EG020A-T		0.078 mg/L
Boron (B)	EG020A-T		1.86 mg/L
Cadmium (Cd)	EG020A-T		0.0026 mg/L
Calcium (Ca)	ED093T-UL		324 mg/L
Chromium (Cr)	EG020A-T		0.064 mg/L
Copper (Cu)	EG020A-T		0.015 mg/L
Iron (Fe)	EG020A-F	1.46 mg/L	
Lead (Pb)	EG020A-T		0.010 mg/L
Magnesium (Mg)	ED093T-UL		371 mg/L
Manganese (Mn)	EG020A-F	27.3 mg/L	
Molybdenum (Mo)	EG020A-T		0.003 mg/L
Nickel (Ni)	EG020A-T		0.610 mg/L
Potassium (K)	ED093T-UL		26.0 mg/L
Selenium (Se)	EG094B-T		0.0005 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		188 mg/L
Vanadium (V)	EG020A-F	<0.01 mg/L	

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Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Nikki Tomlinson

Sample Number MPW020637
Date Sampled 21-Feb-2018 14:35
Date Received 23-Feb-2018
Date Completed 2-Mar-2018
Date Authorised 7-Mar-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: MP Ash - D10 - D20

Source: MP **Customer Sampling Point:** 252 **Sampling Code:** D20 **Sample Frequency:** ADDITIONAL_MONTH

Testing Laboratory: ALS Environmental

Vanadium (V)	EG020A-T	<0.01 mg/L
Zinc (Zn)	EG020A-T	0.314 mg/L

Anions Test Method: ED009-X	Filtered
Fluoride (F)	0.179 mg/L
Chloride (Cl)	121 mg/L
Sulfate (SO4)	2260 mg/L

Alkalinity Test Method: ED037-P	Total
Total Alkalinity (CaCO3)	367 mg/L

Physical Test Method: EA015H	Total
Total Dissolved Solids @ 180°C	3760 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1805951. Report Date: 2-Mar-2018

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Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Nikki Tomlinson

Sample Number MPW020638
Date Sampled 21-Feb-2018 14:50
Date Received 23-Feb-2018
Date Completed 2-Mar-2018
Date Authorised 7-Mar-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Groundwater Bore MPGM4

Source: MP **Customer Sampling Point:** 224 **Sampling Code:** D19 **Sample Frequency:** Month

Testing Laboratory: Mount Piper
Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	9.2 m
Bore Volume Pumped	*Analysis in Field	17 L
Recharge Bore Level	*Analysis in Field	9.2 m
pH	CA12125	5.52
Conductivity	CA12125	3280 µS/cm

Testing Laboratory: ALS Environmental
Water

Cations - Metals	Test Method	Filtered	Total
Mercury (Hg)	EG035T-LL		<0.00004 mg/L
Aluminium (Al)	EG020A-T		0.08 mg/L
Arsenic (As)	EG020A-T		<0.001 mg/L
Barium (Ba)	EG020A-T		0.012 mg/L
Boron (B)	EG020A-T		1.44 mg/L
Cadmium (Cd)	EG020A-T		0.0004 mg/L
Calcium (Ca)	ED093T-UL		168 mg/L
Chromium (Cr)	EG020A-T		0.026 mg/L
Copper (Cu)	EG020A-T		0.002 mg/L
Iron (Fe)	EG094B-F	0.140 mg/L	
Lead (Pb)	EG020A-T		<0.001 mg/L
Magnesium (Mg)	ED093T-UL		126 mg/L
Manganese (Mn)	EG020A-F	0.908 mg/L	
Molybdenum (Mo)	EG020A-T		<0.001 mg/L
Nickel (Ni)	EG020A-T		0.300 mg/L
Potassium (K)	ED093T-UL		38.0 mg/L
Selenium (Se)	EG094B-T		0.0032 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		432 mg/L
Vanadium (V)	EG020A-F	<0.01 mg/L	
Vanadium (V)	EG020A-T		<0.01 mg/L

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Sampled By: Nikki Tomlinson

Sample Number MPW020638
Date Sampled 21-Feb-2018 14:50
Date Received 23-Feb-2018
Date Completed 2-Mar-2018
Date Authorised 7-Mar-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Groundwater Bore MPGM4

Source: MP **Customer Sampling Point:** 224 **Sampling Code:** D19 **Sample Frequency:** Month

Testing Laboratory: ALS Environmental

Zinc (Zn)	EG020A-T	0.421 mg/L
Anions	Test Method	Filtered
Fluoride (F)	ED009-X	<0.200 mg/L
Chloride (Cl)	ED009-X	225 mg/L
Sulfate (SO4)	ED009-X	1520 mg/L

ED009x: Samples required dilution due to matrix interferences. LOR values for Fluoride have been adjusted accordingly.

Alkalinity Test Method: ED037-P	Total
Total Alkalinity (CaCO3)	38 mg/L

Physical Test Method: EA015H	Total
Total Dissolved Solids @ 180°C	2530 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1805951. Report Date: 2-Mar-2018

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Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Nikki Tomlinson

Sample Number MPW020639
Date Sampled 22-Feb-2018 10:35
Date Received 23-Feb-2018
Date Completed 2-Mar-2018
Date Authorised 7-Mar-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Groundwater Bore MPGM4

Source: MP **Customer Sampling Point:** 008 **Sampling Code:** D3 **Sample Frequency:** Month

Testing Laboratory: Mount Piper
Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	7.8 m
Bore Volume Pumped	*Analysis in Field	199 L
Recharge Bore Level	*Analysis in Field	11.0 m
pH	CA12125	6.06
Conductivity	CA12125	970 µS/cm

Testing Laboratory: ALS Environmental
Water

Cations - Metals	Test Method	Filtered	Total
Mercury (Hg)	EG035T-LL		<0.00004 mg/L
Aluminium (Al)	EG020A-T		0.10 mg/L
Arsenic (As)	EG020A-T		<0.001 mg/L
Barium (Ba)	EG020A-T		0.027 mg/L
Boron (B)	EG020A-T		0.14 mg/L
Cadmium (Cd)	EG020A-T		<0.0001 mg/L
Calcium (Ca)	ED093T-UL		85.0 mg/L
Chromium (Cr)	EG020A-T		<0.001 mg/L
Copper (Cu)	EG020A-T		<0.001 mg/L
Iron (Fe)	EG020A-F	10.4 mg/L	
Lead (Pb)	EG020A-T		<0.001 mg/L
Magnesium (Mg)	ED093T-UL		48.8 mg/L
Manganese (Mn)	EG020A-F	0.811 mg/L	
Molybdenum (Mo)	EG020A-T		<0.001 mg/L
Nickel (Ni)	EG020A-T		0.004 mg/L
Potassium (K)	ED093T-UL		9.31 mg/L
Selenium (Se)	EG094B-T		<0.0002 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		38.7 mg/L
Vanadium (V)	EG020A-F	<0.01 mg/L	
Vanadium (V)	EG020A-T		<0.01 mg/L

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Sampled By: Nikki Tomlinson

Sample Number MPW020639
Date Sampled 22-Feb-2018 10:35
Date Received 23-Feb-2018
Date Completed 2-Mar-2018
Date Authorised 7-Mar-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Groundwater Bore MPGM4

Source: MP **Customer Sampling Point:** 008 **Sampling Code:** D3 **Sample Frequency:** Month

Testing Laboratory: ALS Environmental

Zinc (Zn)	EG020A-T	0.007 mg/L
Anions	Test Method	Filtered
Fluoride (F)	ED009-X	<0.100 mg/L
Chloride (Cl)	ED009-X	31.4 mg/L
Sulfate (SO4)	ED009-X	337 mg/L

ED009x: Samples required dilution due to matrix interferences. LOR values for Fluoride have been adjusted accordingly.

Alkalinity Test Method: ED037-P	Total
Total Alkalinity (CaCO3)	121 mg/L

Physical Test Method: EA015H	Total
Total Dissolved Solids @ 180°C	627 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1805951. Report Date: 2-Mar-2018

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Representative: Clive Stacey
Sampled By: Nikki Tomlinson

Sample Number MPW020640
Date Sampled 21-Feb-2018 14:15
Date Received 23-Feb-2018
Date Completed 2-Mar-2018
Date Authorised 7-Mar-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Groundwater Bore MPGM4

Source: MP **Customer Sampling Point:** 016 **Sampling Code:** D11 **Sample Frequency:** Month

Testing Laboratory: Mount Piper
Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	26.2 m
Bore Volume Pumped	*Analysis in Field	132 L
Recharge Bore Level	*Analysis in Field	26.2 m
pH	CA12125	6.20
Conductivity	CA12125	9790 µS/cm

Testing Laboratory: ALS Environmental
Water

Cations - Metals	Test Method	Filtered	Total
Mercury (Hg)	EG035T-LL		<0.00004 mg/L
Aluminium (Al)	EG020A-T		0.01 mg/L
Arsenic (As)	EG020A-T		0.006 mg/L
Barium (Ba)	EG020A-T		0.017 mg/L
Boron (B)	EG020A-T		2.52 mg/L
Cadmium (Cd)	EG020A-T		<0.0001 mg/L
Calcium (Ca)	ED093T-UL		613 mg/L
Chromium (Cr)	EG020A-T		<0.001 mg/L
Copper (Cu)	EG020A-T		<0.001 mg/L
Iron (Fe)	EG020A-F	43.9 mg/L	
Lead (Pb)	EG020A-T		<0.001 mg/L
Magnesium (Mg)	ED093T-UL		423 mg/L
Manganese (Mn)	EG020A-F	19.8 mg/L	
Molybdenum (Mo)	EG020A-T		<0.001 mg/L
Nickel (Ni)	EG020A-T		0.936 mg/L
Potassium (K)	ED093T-UL		114 mg/L
Selenium (Se)	EG094B-T		<0.0002 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		1400 mg/L
Vanadium (V)	EG020A-F	<0.01 mg/L	
Vanadium (V)	EG020A-T		<0.01 mg/L

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Representative: Clive Stacey
Sampled By: Nikki Tomlinson

Sample Number MPW020640
Date Sampled 21-Feb-2018 14:15
Date Received 23-Feb-2018
Date Completed 2-Mar-2018
Date Authorised 7-Mar-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Groundwater Bore MPGM4

Source: MP **Customer Sampling Point:** 016 **Sampling Code:** D11 **Sample Frequency:** Month

Testing Laboratory: ALS Environmental

Zinc (Zn)	EG020A-T	0.115 mg/L
Anions	Test Method	Filtered
Fluoride (F)	ED009-X	<2.00 mg/L
Chloride (Cl)	ED009-X	909 mg/L
Sulfate (SO4)	ED009-X	4820 mg/L

ED009x: Samples required dilution due to matrix interferences. LOR values for Fluoride have been adjusted accordingly.

Alkalinity Test Method: ED037-P	Total
Total Alkalinity (CaCO3)	126 mg/L

Physical Test Method: EA015H	Total
Total Dissolved Solids @ 180°C	8990 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1805951. Report Date: 2-Mar-2018

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 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Nikki Tomlinson

Sample Number MPW020641
Date Sampled 21-Feb-2018 11:55
Date Received 23-Feb-2018
Date Completed 2-Mar-2018
Date Authorised 7-Mar-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Groundwater Bore MPGM4

Source: MP **Customer Sampling Point:** 015 **Sampling Code:** D10 **Sample Frequency:** Month

Testing Laboratory: Mount Piper
Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	14.8 m
Bore Volume Pumped	*Analysis in Field	156 L
Recharge Bore Level	*Analysis in Field	14.8 m
pH	CA12125	5.60
Conductivity	CA12125	9630 µS/cm

Testing Laboratory: ALS Environmental
Water

Cations - Metals	Test Method	Filtered	Total
Mercury (Hg)	EG035T-LL		<0.00004 mg/L
Aluminium (Al)	EG020A-T		0.07 mg/L
Arsenic (As)	EG020A-T		<0.001 mg/L
Barium (Ba)	EG020A-T		0.015 mg/L
Boron (B)	EG020A-T		3.28 mg/L
Cadmium (Cd)	EG020A-T		0.0061 mg/L
Calcium (Ca)	ED093T-UL		315 mg/L
Chromium (Cr)	EG020A-T		<0.001 mg/L
Copper (Cu)	EG020A-T		<0.001 mg/L
Iron (Fe)	EG020A-F	4.59 mg/L	
Lead (Pb)	EG020A-T		0.005 mg/L
Magnesium (Mg)	ED093T-UL		348 mg/L
Manganese (Mn)	EG020A-F	7.29 mg/L	
Molybdenum (Mo)	EG020A-T		<0.001 mg/L
Nickel (Ni)	EG020A-T		0.889 mg/L
Potassium (K)	ED093T-UL		183 mg/L
Selenium (Se)	EG094B-T		0.0028 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		1640 mg/L
Vanadium (V)	EG020A-F	<0.01 mg/L	
Vanadium (V)	EG020A-T		<0.01 mg/L

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Representative: Clive Stacey
Sampled By: Nikki Tomlinson

Sample Number MPW020641
Date Sampled 21-Feb-2018 11:55
Date Received 23-Feb-2018
Date Completed 2-Mar-2018
Date Authorised 7-Mar-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Groundwater Bore MPGM4

Source: MP **Customer Sampling Point:** 015 **Sampling Code:** D10 **Sample Frequency:** Month

Testing Laboratory: ALS Environmental

Zinc (Zn)	EG020A-T	0.943 mg/L
Anions	Test Method	Filtered
Fluoride (F)	ED009-X	<2.00 mg/L
Chloride (Cl)	ED009-X	812 mg/L
Sulfate (SO4)	ED009-X	4860 mg/L

ED009x: Samples required dilution due to matrix interferences. LOR values for Fluoride have been adjusted accordingly.

Alkalinity Test Method: ED037-P	Total
Total Alkalinity (CaCO3)	90 mg/L

Physical Test Method: EA015H	Total
Total Dissolved Solids @ 180°C	8380 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1805951. Report Date: 2-Mar-2018

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 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Nikki Tomlinson

Sample Number MPW020642
Date Sampled 22-Feb-2018 12:00
Date Received 23-Feb-2018
Date Completed 2-Mar-2018
Date Authorised 7-Mar-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Groundwater Bore MPGM4

Source: MP **Customer Sampling Point:** 222 **Sampling Code:** D17 **Sample Frequency:** Month

Testing Laboratory: Mount Piper
Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	27.8 m
Bore Volume Pumped	*Analysis in Field	34 L
Recharge Bore Level	*Analysis in Field	27.8 m
pH	CA12125	6.07
Conductivity	CA12125	3620 µS/cm

Testing Laboratory: ALS Environmental
Water

Cations - Metals	Test Method	Filtered	Total
Mercury (Hg)	EG035T-LL		<0.00004 mg/L
Aluminium (Al)	EG020A-T		0.44 mg/L
Arsenic (As)	EG020A-T		0.002 mg/L
Barium (Ba)	EG020A-T		0.020 mg/L
Boron (B)	EG020A-T		0.30 mg/L
Cadmium (Cd)	EG020A-T		<0.0001 mg/L
Calcium (Ca)	ED093T-UL		265 mg/L
Chromium (Cr)	EG020A-T		0.016 mg/L
Copper (Cu)	EG020A-T		<0.001 mg/L
Iron (Fe)	EG020A-F	12.8 mg/L	
Lead (Pb)	EG020A-T		<0.001 mg/L
Magnesium (Mg)	ED093T-UL		160 mg/L
Manganese (Mn)	EG020A-F	3.66 mg/L	
Molybdenum (Mo)	EG020A-T		<0.001 mg/L
Nickel (Ni)	EG020A-T		0.135 mg/L
Potassium (K)	ED093T-UL		23.0 mg/L
Selenium (Se)	EG094B-T		<0.0002 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		398 mg/L
Vanadium (V)	EG020A-F	<0.01 mg/L	
Vanadium (V)	EG020A-T		<0.01 mg/L

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Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Nikki Tomlinson

Sample Number MPW020642
Date Sampled 22-Feb-2018 12:00
Date Received 23-Feb-2018
Date Completed 2-Mar-2018
Date Authorised 7-Mar-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Groundwater Bore MPGM4

Source: MP **Customer Sampling Point:** 222 **Sampling Code:** D17 **Sample Frequency:** Month

Testing Laboratory: ALS Environmental

Zinc (Zn)	EG020A-T	0.107 mg/L
Anions	Test Method	Filtered
Fluoride (F)	ED009-X	<0.200 mg/L
Chloride (Cl)	ED009-X	231 mg/L
Sulfate (SO4)	ED009-X	1720 mg/L

ED009x: Samples required dilution due to matrix interferences. LOR values for Fluoride have been adjusted accordingly.

Alkalinity Test Method: ED037-P **Total**
 Total Alkalinity (CaCO3) 93 mg/L

Physical Test Method: EA015H **Total**
 Total Dissolved Solids @ 180°C 3160 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1805951. Report Date: 2-Mar-2018

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 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Nikki Tomlinson

Sample Number MPW020643
Date Sampled 22-Feb-2018 12:25
Date Received 23-Feb-2018
Date Completed 2-Mar-2018
Date Authorised 7-Mar-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Groundwater Bore MPGM4

Source: MP **Customer Sampling Point:** 220 **Sampling Code:** D15 **Sample Frequency:** Month

Testing Laboratory: Mount Piper

Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	25.6 m
Bore Volume Pumped	*Analysis in Field	29 L
Recharge Bore Level	*Analysis in Field	25.5 m
pH	CA12125	5.36
Conductivity	CA12125	4110 µS/cm

Testing Laboratory: ALS Environmental

Water

Cations - Metals	Test Method	Filtered	Total
Mercury (Hg)	EG035T-LL		<0.00004 mg/L
Aluminium (Al)	EG020A-T		1.22 mg/L
Arsenic (As)	EG020A-T		0.006 mg/L
Barium (Ba)	EG020A-T		0.018 mg/L
Boron (B)	EG020A-T		0.28 mg/L
Cadmium (Cd)	EG020A-T		0.0005 mg/L
Calcium (Ca)	ED093T-UL		223 mg/L
Chromium (Cr)	EG020A-T		0.046 mg/L
Copper (Cu)	EG020A-T		0.351 mg/L
Iron (Fe)	EG020A-F	20.0 mg/L	
Lead (Pb)	EG020A-T		0.006 mg/L
Magnesium (Mg)	ED093T-UL		110 mg/L
Manganese (Mn)	EG020A-F	2.30 mg/L	
Molybdenum (Mo)	EG020A-T		0.002 mg/L
Nickel (Ni)	EG020A-T		0.705 mg/L
Potassium (K)	ED093T-UL		38.0 mg/L
Selenium (Se)	EG094B-T		0.0006 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		587 mg/L
Vanadium (V)	EG020A-F	<0.01 mg/L	
Vanadium (V)	EG020A-T		<0.01 mg/L

* NATA accreditation does not cover the performance of this service



Accreditation Number 1099
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Authorised by Thanh Hoang Le
 Senior Chemist

Final - Report Number: 2281278
ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Nikki Tomlinson

Sample Number MPW020643
Date Sampled 22-Feb-2018 12:25
Date Received 23-Feb-2018
Date Completed 2-Mar-2018
Date Authorised 7-Mar-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Groundwater Bore MPGM4

Source: MP **Customer Sampling Point:** 220 **Sampling Code:** D15 **Sample Frequency:** Month

Testing Laboratory: ALS Environmental

Zinc (Zn)	EG020A-T	1.22 mg/L
Anions	Test Method	Filtered
Fluoride (F)	ED009-X	<0.200 mg/L
Chloride (Cl)	ED009-X	233 mg/L
Sulfate (SO4)	ED009-X	2020 mg/L

ED009x: Samples required dilution due to matrix interferences. LOR values for Fluoride have been adjusted accordingly.

Alkalinity Test Method: ED037-P **Total**
 Total Alkalinity (CaCO3) 42 mg/L

Physical Test Method: EA015H **Total**
 Total Dissolved Solids @ 180°C 3590 mg/L

TDS by method EA-015 may bias high for sample 16 due to the presence of fine particulate matter, which may pass through the prescribed GF/C paper.

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1805951. Report Date: 2-Mar-2018

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Final - Report Number: 2281278
ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Nikki Tomlinson

Sample Number MPW020644
Date Sampled 22-Feb-2018 13:05
Date Received 23-Feb-2018
Date Completed 2-Mar-2018
Date Authorised 7-Mar-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Groundwater Bore MPGM4

Source: MP **Customer Sampling Point:** 221 **Sampling Code:** D16 **Sample Frequency:** Month

Testing Laboratory: Mount Piper

Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	12.8 m
Bore Volume Pumped	*Analysis in Field	141 L
Recharge Bore Level	*Analysis in Field	12.8 m
pH	CA12125	6.46
Conductivity	CA12125	1350 µS/cm

Testing Laboratory: ALS Environmental

Water

Cations - Metals	Test Method	Filtered	Total
Mercury (Hg)	EG035T-LL		<0.00004 mg/L
Aluminium (Al)	EG020A-T		0.02 mg/L
Arsenic (As)	EG020A-T		<0.001 mg/L
Barium (Ba)	EG020A-T		0.011 mg/L
Boron (B)	EG020A-T		0.08 mg/L
Cadmium (Cd)	EG020A-T		<0.0001 mg/L
Calcium (Ca)	ED093T-UL		179 mg/L
Chromium (Cr)	EG020A-T		0.008 mg/L
Copper (Cu)	EG020A-T		0.002 mg/L
Iron (Fe)	EG094B-F	1.58 mg/L	
Lead (Pb)	EG020A-T		<0.001 mg/L
Magnesium (Mg)	ED093T-UL		63.7 mg/L
Manganese (Mn)	EG020A-F	0.004 mg/L	
Molybdenum (Mo)	EG020A-T		<0.001 mg/L
Nickel (Ni)	EG020A-T		0.011 mg/L
Potassium (K)	ED093T-UL		23.0 mg/L
Selenium (Se)	EG094B-T		<0.0002 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		20.1 mg/L
Vanadium (V)	EG020A-F	<0.01 mg/L	
Vanadium (V)	EG020A-T		<0.01 mg/L

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ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Nikki Tomlinson

Sample Number MPW020644
Date Sampled 22-Feb-2018 13:05
Date Received 23-Feb-2018
Date Completed 2-Mar-2018
Date Authorised 7-Mar-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Groundwater Bore MPGM4

Source: MP **Customer Sampling Point:** 221 **Sampling Code:** D16 **Sample Frequency:** Month

Testing Laboratory: ALS Environmental

Zinc (Zn)	EG020A-T	<0.005 mg/L
Anions	Test Method	Filtered
Fluoride (F)	ED009-X	<0.100 mg/L
Chloride (Cl)	ED009-X	37.4 mg/L
Sulfate (SO4)	ED009-X	458 mg/L

ED009x: Samples required dilution due to matrix interferences. LOR values for Fluoride have been adjusted accordingly.

Alkalinity Test Method: ED037-P	Total
Total Alkalinity (CaCO3)	258 mg/L

Physical Test Method: EA015H	Total
Total Dissolved Solids @ 180°C	1110 mg/L

TDS by method EA-015 may bias high for various samples due to the presence of fine particulate matter, which may pass through the prescribed GF/C paper.

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1805951. Report Date: 2-Mar-2018

* NATA accreditation does not cover the performance of this service



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 Senior Chemist

Final - Report Number: 2281278
ENERGY AUSTRALIA C/- MT PIPER POWER
BOULDER ROAD
PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Nikki Tomlinson

Sample Number MPW020645
Date Sampled 21-Feb-2018 11:00
Date Received 23-Feb-2018
Date Completed 23-Feb-2018
Date Authorised 23-Feb-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: MP Ash - D10 - SW3-D

Source: MP **Customer Sampling Point:** 256 **Sampling Code:** SW3-D **Sample Frequency:** Ad-Hoc

Testing Laboratory: Mount Piper
Water

Field Analysis **Test Method:** Analysis in Field
Insufficient Volume to Sample

Total

•System out of service.

N Tomlinson

Authorised by Nikki Tomlinson
Senior Chemist

Final - Report Number: 2281278
ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Nikki Tomlinson

Sample Number MPW020646
Date Sampled 21-Feb-2018 15:45
Date Received 23-Feb-2018
Date Completed 6-Mar-2018
Date Authorised 7-Mar-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: MP Ash - D10 - B5

Source: MP **Customer Sampling Point:** 250 **Sampling Code:** B5 **Sample Frequency:** Ad-Hoc

Testing Laboratory: Mount Piper
Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	36.5 m
Bore Volume Pumped	*Analysis in Field	1.5 L
Recharge Bore Level	*Analysis in Field	36.5 m
pH	CA12125	6.16
Conductivity	CA12125	48740 µS/cm

Testing Laboratory: ALS Environmental
Water

Cations - Metals	Test Method	Filtered	Total
Mercury (Hg)	EG035T-LL		<0.00004 mg/L
Aluminium (Al)	EG020A-T		11.3 mg/L
Arsenic (As)	EG020A-T		0.016 mg/L
Barium (Ba)	EG020A-T		0.085 mg/L
Boron (B)	EG020A-T		12.3 mg/L
Cadmium (Cd)	EG020A-T		0.137 mg/L
Calcium (Ca)	ED093T-UL		472 mg/L
Chromium (Cr)	EG020A-T		<0.010 mg/L
Copper (Cu)	EG020A-T		0.090 mg/L
Iron (Fe)	EG020A-F	0.80 mg/L	
Lead (Pb)	EG020A-T		0.018 mg/L
Magnesium (Mg)	ED093T-UL		1830 mg/L
Manganese (Mn)	EG020A-F	14.8 mg/L	
Molybdenum (Mo)	EG020A-T		2.33 mg/L
Nickel (Ni)	EG020A-T		1.23 mg/L
Potassium (K)	ED093T-UL		1430 mg/L
Selenium (Se)	EG094B-T		0.0761 mg/L
Silver (Ag)	EG020B-T		<0.010 mg/L
Sodium (Na)	ED093T-UL		13100 mg/L
Vanadium (V)	EG020A-F	<0.10 mg/L	
Vanadium (V)	EG020A-T		<0.10 mg/L

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ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Nikki Tomlinson

Sample Number MPW020646
Date Sampled 21-Feb-2018 15:45
Date Received 23-Feb-2018
Date Completed 6-Mar-2018
Date Authorised 7-Mar-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: MP Ash - D10 - B5

Source: MP **Customer Sampling Point:** 250 **Sampling Code:** B5 **Sample Frequency:** Ad-Hoc

Testing Laboratory: ALS Environmental

Zinc (Zn)	EG020A-T	3.41 mg/L
Anions	Test Method	Filtered
Fluoride (F)	ED009-X	<2.00 mg/L
Chloride (Cl)	ED009-X	4590 mg/L
Sulfate (SO4)	ED009-X	35800 mg/L

ED009x: Samples required dilution due to matrix interferences. LOR values for Fluoride have been adjusted accordingly.

Alkalinity Test Method: ED037-P **Total**
 Total Alkalinity (CaCO3) 60 mg/L

Physical Test Method: EA015H **Total**
 Total Dissolved Solids @ 180°C 55400 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1805951. Report Date: 2-Mar-2018

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Final - Report Number: 2311017
ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Allan Bowcher

Sample Number MPW021029
Date Sampled 22-Mar-2018 08:20
Date Received 22-Mar-2018
Date Completed 4-Apr-2018
Date Authorised 5-Apr-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Groundwater Bore MPGM4

Source: MP **Customer Sampling Point:** 014 **Sampling Code:** D9 **Sample Frequency:** Month

Testing Laboratory: Mount Piper
Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	1.9 m
Bore Volume Pumped	*Analysis in Field	2.2 L
Recharge Bore Level	*Analysis in Field	2.0 m
pH	CA12125	5.93
Conductivity	CA12125	3310 µS/cm

Testing Laboratory: ALS Environmental
Water

Cations - Metals	Test Method	Filtered	Total
Mercury (Hg)	EG035T-LL		<0.00004 mg/L
Aluminium (Al)	EG020A-T		0.08 mg/L
Arsenic (As)	EG020A-T		<0.001 mg/L
Barium (Ba)	EG020A-T		0.034 mg/L
Boron (B)	EG020A-T		0.94 mg/L
Cadmium (Cd)	EG020A-T		0.0003 mg/L
Calcium (Ca)	ED093T-UL		264 mg/L
Chromium (Cr)	EG020A-T		<0.001 mg/L
Copper (Cu)	EG020A-T		0.001 mg/L
Iron (Fe)	EG020A-F	24.3 mg/L	
Lead (Pb)	EG020A-T		<0.001 mg/L
Magnesium (Mg)	ED093T-UL		253 mg/L
Manganese (Mn)	EG020A-F	16.8 mg/L	
Molybdenum (Mo)	EG020A-T		0.002 mg/L
Nickel (Ni)	EG020A-T		0.343 mg/L
Potassium (K)	ED093T-UL		22.6 mg/L
Selenium (Se)	EG094B-T		<0.0002 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		239 mg/L
Vanadium (V)	EG020A-F	<0.01 mg/L	
Vanadium (V)	EG020A-T		<0.01 mg/L

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 Senior Chemist

Final - Report Number: 2311017
ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Allan Bowcher

Sample Number MPW021029
Date Sampled 22-Mar-2018 08:20
Date Received 22-Mar-2018
Date Completed 4-Apr-2018
Date Authorised 5-Apr-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Groundwater Bore MPGM4

Source: MP **Customer Sampling Point:** 014 **Sampling Code:** D9 **Sample Frequency:** Month

Testing Laboratory: ALS Environmental

Zinc (Zn) EG020A-T 0.153 mg/L

Anions Test Method: ED009-X

	Filtered
Fluoride (F)	0.051 mg/L
Chloride (Cl)	177 mg/L
Sulfate (SO4)	1680 mg/L

Alkalinity Test Method: ED037-P

	Total
Total Alkalinity (CaCO3)	145 mg/L

Physical Test Method: EA015H

	Total
Total Dissolved Solids @ 180°C	2840 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1808689. Report Date: 3-Apr-2018

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 Senior Chemist

Final - Report Number: 2311017
ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Allan Bowcher

Sample Number MPW021030
Date Sampled 21-Mar-2018 08:25
Date Received 22-Mar-2018
Date Completed 4-Apr-2018
Date Authorised 5-Apr-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Stream Gauge

Source: MP **Customer Sampling Point:** 003 **Sampling Code:** WX22 **Sample Frequency:** Month

Testing Laboratory: Mount Piper
 Water

Field Analysis	Test Method	Total
Discharge Flowing	*Analysis in Field	Flow
Appearance	*Analysis in Field	Clear
pH	CA12125	6.97
Conductivity	CA12125	546 µS/cm
Temperature	CA12125	15.2 °C
Dissolved Oxygen (O2)	*Analysis in Field	8.3 mg/L



field photo

Testing Laboratory: ALS Environmental
 Water

Cations - Metals	Test Method	Filtered	Total
Mercury (Hg)	EG035T-LL		<0.00004 mg/L
Aluminium (Al)	EG020A-F	0.03 mg/L	
Aluminium (Al)	EG020A-T		0.03 mg/L

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ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Allan Bowcher

Sample Number MPW021030
Date Sampled 21-Mar-2018 08:25
Date Received 22-Mar-2018
Date Completed 4-Apr-2018
Date Authorised 5-Apr-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Stream Gauge

Source: MP **Customer Sampling Point:** 003 **Sampling Code:** WX22 **Sample Frequency:** Month

Testing Laboratory: ALS Environmental

Arsenic (As)	EG020A-T	<0.001 mg/L
Barium (Ba)	EG020A-T	0.021 mg/L
Boron (B)	EG020A-T	0.11 mg/L
Cadmium (Cd)	EG020A-T	<0.0001 mg/L
Calcium (Ca)	ED093T-UL	41.9 mg/L
Chromium (Cr)	EG020A-T	0.009 mg/L
Copper (Cu)	EG020A-F	<0.001 mg/L
Copper (Cu)	EG020A-T	<0.001 mg/L
Iron (Fe)	EG094B-F	0.199 mg/L
Iron (Fe)	EG094B-T	0.415 mg/L
Lead (Pb)	EG020A-T	<0.001 mg/L
Magnesium (Mg)	ED093T-UL	24.8 mg/L
Manganese (Mn)	EG020A-F	0.725 mg/L
Manganese (Mn)	EG020A-T	0.729 mg/L
Molybdenum (Mo)	EG020A-T	<0.001 mg/L
Nickel (Ni)	EG020A-T	0.031 mg/L
Potassium (K)	ED093T-UL	4.92 mg/L
Selenium (Se)	EG094B-T	<0.0002 mg/L
Silver (Ag)	EG020B-T	<0.001 mg/L
Sodium (Na)	ED093T-UL	32.9 mg/L
Strontium (Sr)	EG020B-T	0.148 mg/L
Vanadium (V)	EG020A-F	<0.01 mg/L
Vanadium (V)	EG020A-T	<0.01 mg/L
Zinc (Zn)	EG020A-F	0.010 mg/L
Zinc (Zn)	EG020A-T	0.014 mg/L

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 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Allan Bowcher

Sample Number MPW021030
Date Sampled 21-Mar-2018 08:25
Date Received 22-Mar-2018
Date Completed 4-Apr-2018
Date Authorised 5-Apr-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Stream Gauge

Source: MP **Customer Sampling Point:** 003 **Sampling Code:** WX22 **Sample Frequency:** Month

Testing Laboratory: ALS Environmental

Anions	Test Method	Filtered
Fluoride (F)	ED009-X	0.095 mg/L
Chloride (Cl)	ED009-X	20.4 mg/L
Sulfate (SO4)	ED009-X	186 mg/L
Nitrate (N)	EK058G	<0.01 mg/L
Nitrite (N)	EK057G	<0.01 mg/L
Nitrate and Nitrite (N)	EK059G	<0.01 mg/L

Alkalinity	Test Method: ED037-P	Total
Total Alkalinity (CaCO3)		56 mg/L
Phenolphthalein Alkalinity (CaCO3)		<1 mg/L
Bicarbonate (CaCO3)		56 mg/L

Phosphate	Test Method: EK067G	Total
Total Phosphorus (P)		<0.01 mg/L

Physical	Test Method	Total
Total Dissolved Solids @ 180°C	EA015H	399 mg/L
Turbidity	EA045	2.9 NTU

Other	Test Method	Total
Nitrogen (N)	EK062G	0.4 mg/L
Nitrogen (N) - Kjeldahl	EK061G	0.4 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1808689. Report Date: 3-Apr-2018

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Final - Report Number: 2311017
ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Allan Bowcher

Sample Number MPW021031
Date Sampled 21-Mar-2018 09:00
Date Received 22-Mar-2018
Date Completed 4-Apr-2018
Date Authorised 5-Apr-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Groundwater Bore MPGM4

Source: MP **Customer Sampling Point:** 006 **Sampling Code:** D1 **Sample Frequency:** Month

Testing Laboratory: Mount Piper

Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	2.7 m
Bore Volume Pumped	*Analysis in Field	125 L
Recharge Bore Level	*Analysis in Field	3.3 m
pH	CA12125	5.89
Conductivity	CA12125	5510 µS/cm

Testing Laboratory: ALS Environmental

Water

Cations - Metals	Test Method	Filtered	Total
Mercury (Hg)	EG035T-LL		<0.00004 mg/L
Aluminium (Al)	EG020A-T		0.11 mg/L
Arsenic (As)	EG020A-T		0.008 mg/L
Barium (Ba)	EG020A-T		0.032 mg/L
Boron (B)	EG020A-T		1.93 mg/L
Cadmium (Cd)	EG020A-T		<0.0001 mg/L
Calcium (Ca)	ED093T-UL		450 mg/L
Chromium (Cr)	EG020A-T		0.001 mg/L
Copper (Cu)	EG020A-T		<0.001 mg/L
Iron (Fe)	EG020A-F	50.8 mg/L	
Lead (Pb)	EG020A-T		<0.001 mg/L
Magnesium (Mg)	ED093T-UL		334 mg/L
Manganese (Mn)	EG020A-F	20.1 mg/L	
Molybdenum (Mo)	EG020A-T		<0.001 mg/L
Nickel (Ni)	EG020A-T		1.08 mg/L
Potassium (K)	ED093T-UL		44.0 mg/L
Selenium (Se)	EG094B-T		<0.0002 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		583 mg/L
Vanadium (V)	EG020A-F	<0.01 mg/L	
Vanadium (V)	EG020A-T		<0.01 mg/L

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 Senior Chemist

Final - Report Number: 2311017
ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Allan Bowcher

Sample Number MPW021031
Date Sampled 21-Mar-2018 09:00
Date Received 22-Mar-2018
Date Completed 4-Apr-2018
Date Authorised 5-Apr-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Groundwater Bore MPGM4

Source: MP **Customer Sampling Point:** 006 **Sampling Code:** D1 **Sample Frequency:** Month

Testing Laboratory: ALS Environmental

Zinc (Zn)	EG020A-T	0.111 mg/L
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Anions Test Method: ED009-X	Filtered
Fluoride (F)	0.140 mg/L
Chloride (Cl)	628 mg/L
Sulfate (SO4)	2610 mg/L

Alkalinity Test Method: ED037-P	Total
Total Alkalinity (CaCO3)	184 mg/L

Physical Test Method: EA015H	Total
Total Dissolved Solids @ 180°C	4800 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1808689. Report Date: 3-Apr-2018

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 Senior Chemist

Final - Report Number: 2311017
ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Allan Bowcher

Sample Number MPW021032
Date Sampled 22-Mar-2018 08:05
Date Received 22-Mar-2018
Date Completed 4-Apr-2018
Date Authorised 5-Apr-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Groundwater Bore MPGM4

Source: MP **Customer Sampling Point:** 013 **Sampling Code:** D8 **Sample Frequency:** Month

Testing Laboratory: Mount Piper

Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	2.4 m
Bore Volume Pumped	*Analysis in Field	44 L
Recharge Bore Level	*Analysis in Field	2.5 m
pH	CA12125	5.27
Conductivity	CA12125	440 µS/cm

Testing Laboratory: ALS Environmental

Water

Cations - Metals	Test Method	Filtered	Total
Mercury (Hg)	EG035T-LL		<0.00004 mg/L
Aluminium (Al)	EG020A-T		0.11 mg/L
Arsenic (As)	EG020A-T		<0.001 mg/L
Barium (Ba)	EG020A-T		0.042 mg/L
Boron (B)	EG020A-T		0.05 mg/L
Cadmium (Cd)	EG020A-T		<0.0001 mg/L
Calcium (Ca)	ED093T-UL		29.7 mg/L
Chromium (Cr)	EG020A-T		<0.001 mg/L
Copper (Cu)	EG020A-T		<0.001 mg/L
Iron (Fe)	EG094B-F	0.057 mg/L	
Lead (Pb)	EG020A-T		<0.001 mg/L
Magnesium (Mg)	ED093T-UL		23.2 mg/L
Manganese (Mn)	EG020A-F	0.474 mg/L	
Molybdenum (Mo)	EG020A-T		<0.001 mg/L
Nickel (Ni)	EG020A-T		0.053 mg/L
Potassium (K)	ED093T-UL		3.33 mg/L
Selenium (Se)	EG094B-T		<0.0002 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		19.6 mg/L
Vanadium (V)	EG020A-F	<0.01 mg/L	
Vanadium (V)	EG020A-T		<0.01 mg/L

* NATA accreditation does not cover the performance of this service



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Authorised by Thanh Hoang Le
 Senior Chemist

Final - Report Number: 2311017
ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Allan Bowcher

Sample Number MPW021032
Date Sampled 22-Mar-2018 08:05
Date Received 22-Mar-2018
Date Completed 4-Apr-2018
Date Authorised 5-Apr-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Groundwater Bore MPGM4

Source: MP **Customer Sampling Point:** 013 **Sampling Code:** D8 **Sample Frequency:** Month

Testing Laboratory: ALS Environmental

Zinc (Zn) EG020A-T 0.066 mg/L

Anions Test Method: ED009-X

	Filtered
Fluoride (F)	0.018 mg/L
Chloride (Cl)	13.5 mg/L
Sulfate (SO4)	177 mg/L

Alkalinity Test Method: ED037-P

	Total
Total Alkalinity (CaCO3)	11 mg/L

Physical Test Method: EA015H

	Total
Total Dissolved Solids @ 180°C	310 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1808689. Report Date: 3-Apr-2018

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 Senior Chemist

Final - Report Number: 2311017
ENERGY AUSTRALIA C/- MT PIPER POWER
BOULDER ROAD
PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Allan Bowcher

Sample Number MPW021033
Date Sampled 21-Mar-2018 14:45
Date Received 22-Mar-2018
Date Completed 22-Mar-2018
Date Authorised 23-Mar-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: MP Ash - D10 - D21

Source: MP

Customer Sampling Point: 253

Sampling Code: D21

Sample Frequency:
ADDITIONAL_MONTH

Testing Laboratory: Mount Piper

Water

Field Analysis **Test Method:** Analysis in Field
Dry

Total

N Tomlinson

Authorised by Nikki Tomlinson
Senior Chemist

Final - Report Number: 2311017
ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Allan Bowcher

Sample Number MPW021034
Date Sampled 21-Mar-2018 14:55
Date Received 22-Mar-2018
Date Completed 4-Apr-2018
Date Authorised 5-Apr-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: MP Ash - D10 - D23

Source: MP **Customer Sampling Point:** 254 **Sampling Code:** D23 **Sample Frequency:** ADDITIONAL_MONTH

Testing Laboratory: Mount Piper
Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	24.0 m
Bore Volume Pumped	*Analysis in Field	81 L
Recharge Bore Level	*Analysis in Field	24.0 m
pH	CA12125	6.01
Conductivity	CA12125	4440 µS/cm

Testing Laboratory: ALS Environmental
Water

Cations - Metals	Test Method	Filtered	Total
Mercury (Hg)	EG035T-LL		<0.00004 mg/L
Aluminium (Al)	EG020A-T		1.54 mg/L
Arsenic (As)	EG020A-T		0.002 mg/L
Barium (Ba)	EG020A-T		0.030 mg/L
Boron (B)	EG020A-T		0.37 mg/L
Cadmium (Cd)	EG020A-T		0.0003 mg/L
Calcium (Ca)	ED093T-UL		278 mg/L
Chromium (Cr)	EG020A-T		0.009 mg/L
Copper (Cu)	EG020A-T		0.004 mg/L
Iron (Fe)	EG020A-F	3.59 mg/L	
Lead (Pb)	EG020A-T		0.004 mg/L
Magnesium (Mg)	ED093T-UL		153 mg/L
Manganese (Mn)	EG020A-F	2.36 mg/L	
Molybdenum (Mo)	EG020A-T		<0.001 mg/L
Nickel (Ni)	EG020A-T		0.345 mg/L
Potassium (K)	ED093T-UL		46.1 mg/L
Selenium (Se)	EG094B-T		0.0003 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		728 mg/L
Vanadium (V)	EG020A-F	<0.01 mg/L	

* NATA accreditation does not cover the performance of this service



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 Senior Chemist

Final - Report Number: 2311017
ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Allan Bowcher

Sample Number MPW021034
Date Sampled 21-Mar-2018 14:55
Date Received 22-Mar-2018
Date Completed 4-Apr-2018
Date Authorised 5-Apr-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: MP Ash - D10 - D23

Source: MP **Customer Sampling Point:** 254 **Sampling Code:** D23 **Sample Frequency:** ADDITIONAL_MONTH

Testing Laboratory: ALS Environmental

Vanadium (V)	EG020A-T	<0.01 mg/L
Zinc (Zn)	EG020A-T	0.320 mg/L

Anions Test Method: ED009-X	Filtered
Fluoride (F)	0.129 mg/L
Chloride (Cl)	274 mg/L
Sulfate (SO4)	2100 mg/L

Alkalinity Test Method: ED037-P	Total
Total Alkalinity (CaCO3)	183 mg/L

Physical Test Method: EA015H	Total
Total Dissolved Solids @ 180°C	3360 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1808689. Report Date: 3-Apr-2018

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 Senior Chemist

Final - Report Number: 2311017
ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Allan Bowcher

Sample Number MPW021035
Date Sampled 22-Mar-2018 10:10
Date Received 22-Mar-2018
Date Completed 4-Apr-2018
Date Authorised 5-Apr-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Groundwater Bore MPGM4

Source: MP **Customer Sampling Point:** 223 **Sampling Code:** D18 **Sample Frequency:** Month

Testing Laboratory: Mount Piper

Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	23.9 m
Bore Volume Pumped	*Analysis in Field	46 L
Recharge Bore Level	*Analysis in Field	36.6 m
pH	CA12125	6.63
Conductivity	CA12125	800 µS/cm

Testing Laboratory: ALS Environmental

Water

Cations - Metals	Test Method	Filtered	Total
Mercury (Hg)	EG035T-LL		<0.00004 mg/L
Aluminium (Al)	EG020A-T		0.27 mg/L
Arsenic (As)	EG020A-T		0.001 mg/L
Barium (Ba)	EG020A-T		0.508 mg/L
Boron (B)	EG020A-T		0.11 mg/L
Cadmium (Cd)	EG020A-T		0.0002 mg/L
Calcium (Ca)	ED093T-UL		83.7 mg/L
Chromium (Cr)	EG020A-T		0.001 mg/L
Copper (Cu)	EG020A-T		0.002 mg/L
Iron (Fe)	EG094B-F	0.010 mg/L	
Lead (Pb)	EG020A-T		0.001 mg/L
Magnesium (Mg)	ED093T-UL		35.0 mg/L
Manganese (Mn)	EG020A-F	0.139 mg/L	
Molybdenum (Mo)	EG020A-T		0.004 mg/L
Nickel (Ni)	EG020A-T		0.009 mg/L
Potassium (K)	ED093T-UL		23.2 mg/L
Selenium (Se)	EG094B-T		<0.0002 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		39.3 mg/L
Vanadium (V)	EG020A-F	<0.01 mg/L	
Vanadium (V)	EG020A-T		<0.01 mg/L

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 Senior Chemist

Final - Report Number: 2311017
ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Allan Bowcher

Sample Number MPW021035
Date Sampled 22-Mar-2018 10:10
Date Received 22-Mar-2018
Date Completed 4-Apr-2018
Date Authorised 5-Apr-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Groundwater Bore MPGM4

Source: MP **Customer Sampling Point:** 223 **Sampling Code:** D18 **Sample Frequency:** Month

Testing Laboratory: ALS Environmental

Zinc (Zn) EG020A-T 0.062 mg/L

Anions Test Method: ED009-X

	Filtered
Fluoride (F)	0.475 mg/L
Chloride (Cl)	14.9 mg/L
Sulfate (SO4)	69.2 mg/L

Alkalinity Test Method: ED037-P

	Total
Total Alkalinity (CaCO3)	356 mg/L

Physical Test Method: EA015H

	Total
Total Dissolved Solids @ 180°C	492 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1808689. Report Date: 3-Apr-2018

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 Senior Chemist

Final - Report Number: 2311017
ENERGY AUSTRALIA C/- MT PIPER POWER
BOULDER ROAD
PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Allan Bowcher

Sample Number MPW021036
Date Sampled 21-Mar-2018 14:20
Date Received 22-Mar-2018
Date Completed 22-Mar-2018
Date Authorised 23-Mar-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: MP Ash - D10 - SW3-S

Source: MP

Customer Sampling Point: 257

Sampling Code: SW3-S

Sample Frequency:
ADDITIONAL_MONTH

Testing Laboratory: Mount Piper

Water

Field Analysis Test Method: Analysis in Field
Initial Bore Level

Total
17.0 m

insufficient volume to sample

N Tomlinson

Authorised by Nikki Tomlinson
Senior Chemist

Final - Report Number: 2311017
ENERGY AUSTRALIA C/- MT PIPER POWER
BOULDER ROAD
PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Allan Bowcher

Sample Number MPW021037
Date Sampled 21-Mar-2018 14:20
Date Received 22-Mar-2018
Date Completed 22-Mar-2018
Date Authorised 23-Mar-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: MP Ash - D10 - SW3-D

Source: MP

Customer Sampling Point: 256

Sampling Code: SW3-D

Sample Frequency:
ADDITIONAL_MONTH

Testing Laboratory: Mount Piper

Water

Field Analysis Test Method: Analysis in Field
Initial Bore Level

Total
25.3 m

insufficient volume to sample

N Tomlinson

Authorised by Nikki Tomlinson
Senior Chemist

Final - Report Number: 2311017
ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Allan Bowcher

Sample Number MPW021038
Date Sampled 22-Mar-2018 09:50
Date Received 22-Mar-2018
Date Completed 4-Apr-2018
Date Authorised 5-Apr-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: MP Ash - D10 - B5

Source: MP **Customer Sampling Point:** 250 **Sampling Code:** B5 **Sample Frequency:** ADDITIONAL_MONTH

Testing Laboratory: Mount Piper
Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	36.5 m
Bore Volume Pumped	*Analysis in Field	1.2 L
Recharge Bore Level	*Analysis in Field	36.5 m
pH	CA12125	6.35
Conductivity	CA12125	48420 µS/cm

Testing Laboratory: ALS Environmental
Water

Cations - Metals	Test Method	Filtered	Total
Mercury (Hg)	EG035T-LL		<0.00004 mg/L
Aluminium (Al)	EG020A-T		2.27 mg/L
Arsenic (As)	EG020A-T		0.019 mg/L
Barium (Ba)	EG020A-T		0.048 mg/L
Boron (B)	EG020A-T		13.4 mg/L
Cadmium (Cd)	EG020A-T		0.173 mg/L
Calcium (Ca)	ED093T-UL		513 mg/L
Chromium (Cr)	EG020A-T		<0.010 mg/L
Copper (Cu)	EG020A-T		0.040 mg/L
Iron (Fe)	EG020A-F	0.27 mg/L	
Lead (Pb)	EG020A-T		<0.010 mg/L
Magnesium (Mg)	ED093T-UL		1980 mg/L
Manganese (Mn)	EG020A-F	13.4 mg/L	
Molybdenum (Mo)	EG020A-T		1.62 mg/L
Nickel (Ni)	EG020A-T		1.22 mg/L
Potassium (K)	ED093T-UL		1620 mg/L
Selenium (Se)	EG094B-T		0.0850 mg/L
Silver (Ag)	EG020B-T		<0.010 mg/L
Sodium (Na)	ED093T-UL		14600 mg/L
Vanadium (V)	EG020A-F	<0.10 mg/L	

* NATA accreditation does not cover the performance of this service



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Authorised by Thanh Hoang Le
 Senior Chemist

Final - Report Number: 2311017
ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Allan Bowcher

Sample Number MPW021038
Date Sampled 22-Mar-2018 09:50
Date Received 22-Mar-2018
Date Completed 4-Apr-2018
Date Authorised 5-Apr-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: MP Ash - D10 - B5

Source: MP **Customer Sampling Point:** 250 **Sampling Code:** B5 **Sample Frequency:** ADDITIONAL_MONTH

Testing Laboratory: ALS Environmental

Vanadium (V)	EG020A-T	<0.10 mg/L
Zinc (Zn)	EG020A-T	4.83 mg/L

Anions Test Method: ED009-X	Filtered
Fluoride (F)	0.895 mg/L
Chloride (Cl)	4660 mg/L
Sulfate (SO4)	34300 mg/L

Alkalinity Test Method: ED037-P	Total
Total Alkalinity (CaCO3)	81 mg/L

Physical Test Method: EA015H	Total
Total Dissolved Solids @ 180°C	54700 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1808689. Report Date: 3-Apr-2018

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 Senior Chemist

Final - Report Number: 2311017
ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Allan Bowcher

Sample Number MPW021039
Date Sampled 21-Mar-2018 10:20
Date Received 22-Mar-2018
Date Completed 4-Apr-2018
Date Authorised 5-Apr-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: MP Ash - D10 - B5-1

Source: MP **Customer Sampling Point:** 251 **Sampling Code:** B5-1 **Sample Frequency:** ADDITIONAL_MONTH

Testing Laboratory: Mount Piper
Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	35.4 m
Bore Volume Pumped	*Analysis in Field	10 L
Recharge Bore Level	*Analysis in Field	35.3 m
pH	CA12125	5.59
Conductivity	CA12125	42090 µS/cm

Testing Laboratory: ALS Environmental
Water

Cations - Metals	Test Method	Filtered	Total
Mercury (Hg)	EG035T-LL		<0.00004 mg/L
Aluminium (Al)	EG020A-T		2.67 mg/L
Arsenic (As)	EG020A-T		0.012 mg/L
Barium (Ba)	EG020A-T		0.044 mg/L
Boron (B)	EG020A-T		11.0 mg/L
Cadmium (Cd)	EG020A-T		0.0621 mg/L
Calcium (Ca)	ED093T-UL		483 mg/L
Chromium (Cr)	EG020A-T		<0.010 mg/L
Copper (Cu)	EG020A-T		<0.010 mg/L
Iron (Fe)	EG020A-F	0.28 mg/L	
Lead (Pb)	EG020A-T		<0.010 mg/L
Magnesium (Mg)	ED093T-UL		1530 mg/L
Manganese (Mn)	EG020A-F	31.1 mg/L	
Molybdenum (Mo)	EG020A-T		0.023 mg/L
Nickel (Ni)	EG020A-T		2.01 mg/L
Potassium (K)	ED093T-UL		1120 mg/L
Selenium (Se)	EG094B-T		0.197 mg/L
Silver (Ag)	EG020B-T		<0.010 mg/L
Sodium (Na)	ED093T-UL		12700 mg/L
Vanadium (V)	EG020A-F	<0.10 mg/L	

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 Senior Chemist

Final - Report Number: 2311017
ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Allan Bowcher

Sample Number MPW021039
Date Sampled 21-Mar-2018 10:20
Date Received 22-Mar-2018
Date Completed 4-Apr-2018
Date Authorised 5-Apr-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: MP Ash - D10 - B5-1

Source: MP **Customer Sampling Point:** 251 **Sampling Code:** B5-1 **Sample Frequency:** ADDITIONAL_MONTH

Testing Laboratory: ALS Environmental

Vanadium (V)	EG020A-T	<0.10 mg/L
Zinc (Zn)	EG020A-T	2.98 mg/L

Anions	Test Method: ED009-X	Filtered
Fluoride (F)		2.42 mg/L
Chloride (Cl)		3260 mg/L
Sulfate (SO4)		28400 mg/L

Alkalinity	Test Method: ED037-P	Total
Total Alkalinity (CaCO3)		124 mg/L

Physical	Test Method: EA015H	Total
Total Dissolved Solids @ 180°C		46600 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1808689. Report Date: 3-Apr-2018

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 Senior Chemist

Final - Report Number: 2311017
ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Allan Bowcher

Sample Number MPW021040
Date Sampled 21-Mar-2018 11:15
Date Received 22-Mar-2018
Date Completed 4-Apr-2018
Date Authorised 5-Apr-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: MP Ash - D10 - NA5

Source: MP **Customer Sampling Point:** 255 **Sampling Code:** NA5 **Sample Frequency:** ADDITIONAL_MONTH

Testing Laboratory: Mount Piper

Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	25.2 m
Bore Volume Pumped	*Analysis in Field	11 L
Recharge Bore Level	*Analysis in Field	25.2 m
pH	CA12125	5.83
Conductivity	CA12125	4930 µS/cm

Testing Laboratory: ALS Environmental

Water

Cations - Metals	Test Method	Filtered	Total
Mercury (Hg)	EG035T-LL		<0.00004 mg/L
Aluminium (Al)	EG020A-T		0.93 mg/L
Arsenic (As)	EG020A-T		<0.001 mg/L
Barium (Ba)	EG020A-T		0.028 mg/L
Boron (B)	EG020A-T		9.33 mg/L
Cadmium (Cd)	EG020A-T		0.0093 mg/L
Calcium (Ca)	ED093T-UL		375 mg/L
Chromium (Cr)	EG020A-T		0.162 mg/L
Copper (Cu)	EG020A-T		0.005 mg/L
Iron (Fe)	EG020A-F	0.84 mg/L	
Lead (Pb)	EG020A-T		<0.001 mg/L
Magnesium (Mg)	ED093T-UL		117 mg/L
Manganese (Mn)	EG020A-F	8.39 mg/L	
Molybdenum (Mo)	EG020A-T		0.203 mg/L
Nickel (Ni)	EG020A-T		0.527 mg/L
Potassium (K)	ED093T-UL		132 mg/L
Selenium (Se)	EG094B-T		0.0183 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		642 mg/L
Vanadium (V)	EG020A-F	<0.01 mg/L	

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 Senior Chemist

Final - Report Number: 2311017
ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Allan Bowcher

Sample Number MPW021040
Date Sampled 21-Mar-2018 11:15
Date Received 22-Mar-2018
Date Completed 4-Apr-2018
Date Authorised 5-Apr-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: MP Ash - D10 - NA5

Source: MP **Customer Sampling Point:** 255 **Sampling Code:** NA5 **Sample Frequency:** ADDITIONAL_MONTH

Testing Laboratory: ALS Environmental

Vanadium (V)	EG020A-T	<0.01 mg/L
Zinc (Zn)	EG020A-T	0.629 mg/L

Anions Test Method: ED009-X	Filtered
Fluoride (F)	3.09 mg/L
Chloride (Cl)	154 mg/L
Sulfate (SO4)	2680 mg/L

Alkalinity Test Method: ED037-P	Total
Total Alkalinity (CaCO3)	118 mg/L

Physical Test Method: EA015H	Total
Total Dissolved Solids @ 180°C	3890 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1808689. Report Date: 3-Apr-2018

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Authorised by Thanh Hoang Le
 Senior Chemist

Final - Report Number: 2311017
ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Allan Bowcher

Sample Number MPW021041
Date Sampled 21-Mar-2018 15:50
Date Received 22-Mar-2018
Date Completed 4-Apr-2018
Date Authorised 5-Apr-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: MP Ash - D10 - D20

Source: MP **Customer Sampling Point:** 252 **Sampling Code:** D20 **Sample Frequency:** ADDITIONAL_MONTH

Testing Laboratory: Mount Piper
Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	17.3 m
Bore Volume Pumped	*Analysis in Field	16 L
Recharge Bore Level	*Analysis in Field	17.3 m
pH	CA12125	6.04
Conductivity	CA12125	3980 µS/cm

Testing Laboratory: ALS Environmental
Water

Cations - Metals	Test Method	Filtered	Total
Mercury (Hg)	EG035T-LL		<0.00004 mg/L
Aluminium (Al)	EG020A-T		1.42 mg/L
Arsenic (As)	EG020A-T		0.003 mg/L
Barium (Ba)	EG020A-T		0.043 mg/L
Boron (B)	EG020A-T		1.99 mg/L
Cadmium (Cd)	EG020A-T		0.0012 mg/L
Calcium (Ca)	ED093T-UL		342 mg/L
Chromium (Cr)	EG020A-T		0.030 mg/L
Copper (Cu)	EG020A-T		0.006 mg/L
Iron (Fe)	EG020A-F	1.99 mg/L	
Lead (Pb)	EG020A-T		0.005 mg/L
Magnesium (Mg)	ED093T-UL		389 mg/L
Manganese (Mn)	EG020A-F	27.9 mg/L	
Molybdenum (Mo)	EG020A-T		0.003 mg/L
Nickel (Ni)	EG020A-T		0.599 mg/L
Potassium (K)	ED093T-UL		27.8 mg/L
Selenium (Se)	EG094B-T		0.0002 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		213 mg/L
Vanadium (V)	EG020A-F	<0.01 mg/L	

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 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Allan Bowcher

Sample Number MPW021041
Date Sampled 21-Mar-2018 15:50
Date Received 22-Mar-2018
Date Completed 4-Apr-2018
Date Authorised 5-Apr-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: MP Ash - D10 - D20

Source: MP **Customer Sampling Point:** 252 **Sampling Code:** D20 **Sample Frequency:** ADDITIONAL_MONTH

Testing Laboratory: ALS Environmental

Vanadium (V)	EG020A-T	<0.01 mg/L
Zinc (Zn)	EG020A-T	0.297 mg/L

Anions	Test Method: ED009-X	Filtered
Fluoride (F)		0.272 mg/L
Chloride (Cl)		124 mg/L
Sulfate (SO4)		2350 mg/L

Alkalinity	Test Method: ED037-P	Total
Total Alkalinity (CaCO3)		350 mg/L

Physical	Test Method: EA015H	Total
Total Dissolved Solids @ 180°C		3180 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1808689. Report Date: 3-Apr-2018

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ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Allan Bowcher

Sample Number MPW021042
Date Sampled 21-Mar-2018 15:25
Date Received 22-Mar-2018
Date Completed 4-Apr-2018
Date Authorised 5-Apr-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Groundwater Bore MPGM4

Source: MP **Customer Sampling Point:** 224 **Sampling Code:** D19 **Sample Frequency:** Month

Testing Laboratory: Mount Piper
Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	9.5 m
Bore Volume Pumped	*Analysis in Field	18 L
Recharge Bore Level	*Analysis in Field	9.5 m
pH	CA12125	5.95
Conductivity	CA12125	5950 µS/cm

Testing Laboratory: ALS Environmental
Water

Cations - Metals	Test Method	Filtered	Total
Mercury (Hg)	EG035T-LL		<0.00004 mg/L
Aluminium (Al)	EG020A-T		0.16 mg/L
Arsenic (As)	EG020A-T		0.004 mg/L
Barium (Ba)	EG020A-T		0.013 mg/L
Boron (B)	EG020A-T		2.16 mg/L
Cadmium (Cd)	EG020A-T		<0.0001 mg/L
Calcium (Ca)	ED093T-UL		353 mg/L
Chromium (Cr)	EG020A-T		0.034 mg/L
Copper (Cu)	EG020A-T		0.005 mg/L
Iron (Fe)	EG094B-F	23.2 mg/L	
Lead (Pb)	EG020A-T		0.006 mg/L
Magnesium (Mg)	ED093T-UL		285 mg/L
Manganese (Mn)	EG020A-F	14.9 mg/L	
Molybdenum (Mo)	EG020A-T		0.002 mg/L
Nickel (Ni)	EG020A-T		0.979 mg/L
Potassium (K)	ED093T-UL		53.5 mg/L
Selenium (Se)	EG094B-T		<0.0002 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		860 mg/L
Vanadium (V)	EG020A-F	<0.01 mg/L	
Vanadium (V)	EG020A-T		<0.01 mg/L

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 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Allan Bowcher

Sample Number MPW021042
Date Sampled 21-Mar-2018 15:25
Date Received 22-Mar-2018
Date Completed 4-Apr-2018
Date Authorised 5-Apr-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Groundwater Bore MPGM4

Source: MP **Customer Sampling Point:** 224 **Sampling Code:** D19 **Sample Frequency:** Month

Testing Laboratory: ALS Environmental

Zinc (Zn) EG020A-T 0.429 mg/L

Anions Test Method: ED009-X

	Filtered
Fluoride (F)	0.087 mg/L
Chloride (Cl)	468 mg/L
Sulfate (SO4)	3060 mg/L

Alkalinity Test Method: ED037-P

Total Alkalinity (CaCO3)	Total 151 mg/L
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Physical Test Method: EA015H

Total Dissolved Solids @ 180°C	Total 5210 mg/L
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Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1808689. Report Date: 3-Apr-2018

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ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Allan Bowcher

Sample Number MPW021043
Date Sampled 22-Mar-2018 09:10
Date Received 22-Mar-2018
Date Completed 4-Apr-2018
Date Authorised 5-Apr-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Groundwater Bore MPGM4

Source: MP **Customer Sampling Point:** 008 **Sampling Code:** D3 **Sample Frequency:** Month

Testing Laboratory: Mount Piper
Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	7.6 m
Bore Volume Pumped	*Analysis in Field	204 L
Recharge Bore Level	*Analysis in Field	9.7 m
pH	CA12125	6.08
Conductivity	CA12125	910 µS/cm

Testing Laboratory: ALS Environmental
Water

Cations - Metals	Test Method	Filtered	Total
Mercury (Hg)	EG035T-LL		<0.00004 mg/L
Aluminium (Al)	EG020A-T		0.02 mg/L
Arsenic (As)	EG020A-T		<0.001 mg/L
Barium (Ba)	EG020A-T		0.021 mg/L
Boron (B)	EG020A-T		<0.05 mg/L
Cadmium (Cd)	EG020A-T		<0.0001 mg/L
Calcium (Ca)	ED093T-UL		81.8 mg/L
Chromium (Cr)	EG020A-T		<0.001 mg/L
Copper (Cu)	EG020A-T		<0.001 mg/L
Iron (Fe)	EG020A-F	13.6 mg/L	
Lead (Pb)	EG020A-T		<0.001 mg/L
Magnesium (Mg)	ED093T-UL		46.7 mg/L
Manganese (Mn)	EG020A-F	0.752 mg/L	
Molybdenum (Mo)	EG020A-T		<0.001 mg/L
Nickel (Ni)	EG020A-T		0.004 mg/L
Potassium (K)	ED093T-UL		9.48 mg/L
Selenium (Se)	EG094B-T		<0.0002 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		35.8 mg/L
Vanadium (V)	EG020A-F	<0.01 mg/L	
Vanadium (V)	EG020A-T		<0.01 mg/L

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 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Allan Bowcher

Sample Number MPW021043
Date Sampled 22-Mar-2018 09:10
Date Received 22-Mar-2018
Date Completed 4-Apr-2018
Date Authorised 5-Apr-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Groundwater Bore MPGM4

Source: MP **Customer Sampling Point:** 008 **Sampling Code:** D3 **Sample Frequency:** Month

Testing Laboratory: ALS Environmental

Zinc (Zn) EG020A-T <0.005 mg/L

Anions Test Method: ED009-X

	Filtered
Fluoride (F)	0.059 mg/L
Chloride (Cl)	30.8 mg/L
Sulfate (SO4)	320 mg/L

Alkalinity Test Method: ED037-P

	Total
Total Alkalinity (CaCO3)	140 mg/L

Physical Test Method: EA015H

	Total
Total Dissolved Solids @ 180°C	626 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1808689. Report Date: 3-Apr-2018

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 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Allan Bowcher

Sample Number MPW021044
Date Sampled 21-Mar-2018 12:20
Date Received 22-Mar-2018
Date Completed 4-Apr-2018
Date Authorised 5-Apr-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Groundwater Bore MPGM4

Source: MP **Customer Sampling Point:** 016 **Sampling Code:** D11 **Sample Frequency:** Month

Testing Laboratory: Mount Piper
Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	25.7 m
Bore Volume Pumped	*Analysis in Field	140 L
Recharge Bore Level	*Analysis in Field	25.7 m
pH	CA12125	6.15
Conductivity	CA12125	10150 µS/cm

Testing Laboratory: ALS Environmental
Water

Cations - Metals	Test Method	Filtered	Total
Mercury (Hg)	EG035T-LL		<0.00004 mg/L
Aluminium (Al)	EG020A-T		<0.01 mg/L
Arsenic (As)	EG020A-T		0.010 mg/L
Barium (Ba)	EG020A-T		0.016 mg/L
Boron (B)	EG020A-T		2.88 mg/L
Cadmium (Cd)	EG020A-T		<0.0001 mg/L
Calcium (Ca)	ED093T-UL		640 mg/L
Chromium (Cr)	EG020A-T		<0.001 mg/L
Copper (Cu)	EG020A-T		<0.001 mg/L
Iron (Fe)	EG020A-F	104 mg/L	
Lead (Pb)	EG020A-T		<0.001 mg/L
Magnesium (Mg)	ED093T-UL		439 mg/L
Manganese (Mn)	EG020A-F	21.0 mg/L	
Molybdenum (Mo)	EG020A-T		<0.001 mg/L
Nickel (Ni)	EG020A-T		0.985 mg/L
Potassium (K)	ED093T-UL		99.1 mg/L
Selenium (Se)	EG094B-T		<0.0002 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		1500 mg/L
Vanadium (V)	EG020A-F	<0.01 mg/L	
Vanadium (V)	EG020A-T		<0.01 mg/L

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ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Allan Bowcher

Sample Number MPW021044
Date Sampled 21-Mar-2018 12:20
Date Received 22-Mar-2018
Date Completed 4-Apr-2018
Date Authorised 5-Apr-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Groundwater Bore MPGM4

Source: MP **Customer Sampling Point:** 016 **Sampling Code:** D11 **Sample Frequency:** Month

Testing Laboratory: ALS Environmental

Zinc (Zn)	EG020A-T	0.143 mg/L
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Anions Test Method: ED009-X	Filtered	
Fluoride (F)	0.070 mg/L	
Chloride (Cl)	1060 mg/L	
Sulfate (SO4)	5600 mg/L	

Alkalinity Test Method: ED037-P		Total
Total Alkalinity (CaCO3)		196 mg/L

Physical Test Method: EA015H		Total
Total Dissolved Solids @ 180°C		9320 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1808689. Report Date: 3-Apr-2018

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 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Allan Bowcher

Sample Number MPW021045
Date Sampled 21-Mar-2018 13:55
Date Received 22-Mar-2018
Date Completed 4-Apr-2018
Date Authorised 5-Apr-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Groundwater Bore MPGM4

Source: MP **Customer Sampling Point:** 015 **Sampling Code:** D10 **Sample Frequency:** Month

Testing Laboratory: Mount Piper

Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	14.3 m
Bore Volume Pumped	*Analysis in Field	164 L
Recharge Bore Level	*Analysis in Field	14.3 m
pH	CA12125	5.61
Conductivity	CA12125	7560 µS/cm

Testing Laboratory: ALS Environmental

Water

Cations - Metals	Test Method	Filtered	Total
Mercury (Hg)	EG035T-LL		<0.00004 mg/L
Aluminium (Al)	EG020A-T		0.06 mg/L
Arsenic (As)	EG020A-T		<0.001 mg/L
Barium (Ba)	EG020A-T		0.014 mg/L
Boron (B)	EG020A-T		2.34 mg/L
Cadmium (Cd)	EG020A-T		0.0038 mg/L
Calcium (Ca)	ED093T-UL		281 mg/L
Chromium (Cr)	EG020A-T		0.001 mg/L
Copper (Cu)	EG020A-T		<0.001 mg/L
Iron (Fe)	EG020A-F	14.0 mg/L	
Lead (Pb)	EG020A-T		0.003 mg/L
Magnesium (Mg)	ED093T-UL		261 mg/L
Manganese (Mn)	EG020A-F	6.84 mg/L	
Molybdenum (Mo)	EG020A-T		<0.001 mg/L
Nickel (Ni)	EG020A-T		0.697 mg/L
Potassium (K)	ED093T-UL		134 mg/L
Selenium (Se)	EG094B-T		0.0013 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		1280 mg/L
Vanadium (V)	EG020A-F	<0.01 mg/L	
Vanadium (V)	EG020A-T		<0.01 mg/L

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 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Allan Bowcher

Sample Number MPW021045
Date Sampled 21-Mar-2018 13:55
Date Received 22-Mar-2018
Date Completed 4-Apr-2018
Date Authorised 5-Apr-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Groundwater Bore MPGM4

Source: MP **Customer Sampling Point:** 015 **Sampling Code:** D10 **Sample Frequency:** Month

Testing Laboratory: ALS Environmental

Zinc (Zn) EG020A-T 0.880 mg/L

Anions Test Method: ED009-X

	Filtered
Fluoride (F)	0.408 mg/L
Chloride (Cl)	601 mg/L
Sulfate (SO4)	3610 mg/L

Alkalinity Test Method: ED037-P

Total Alkalinity (CaCO3)	Total 88 mg/L
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Physical Test Method: EA015H

Total Dissolved Solids @ 180°C	Total 6310 mg/L
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Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1808689. Report Date: 3-Apr-2018

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 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Allan Bowcher

Sample Number MPW021046
Date Sampled 22-Mar-2018 10:45
Date Received 22-Mar-2018
Date Completed 4-Apr-2018
Date Authorised 5-Apr-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Groundwater Bore MPGM4

Source: MP **Customer Sampling Point:** 222 **Sampling Code:** D17 **Sample Frequency:** Month

Testing Laboratory: Mount Piper
Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	27.7 m
Bore Volume Pumped	*Analysis in Field	35 L
Recharge Bore Level	*Analysis in Field	27.7 m
pH	CA12125	6.12
Conductivity	CA12125	3720 µS/cm

Testing Laboratory: ALS Environmental
Water

Cations - Metals	Test Method	Filtered	Total
Mercury (Hg)	EG035T-LL		<0.00004 mg/L
Aluminium (Al)	EG020A-T		0.05 mg/L
Arsenic (As)	EG020A-T		0.002 mg/L
Barium (Ba)	EG020A-T		0.017 mg/L
Boron (B)	EG020A-T		0.10 mg/L
Cadmium (Cd)	EG020A-T		<0.0001 mg/L
Calcium (Ca)	ED093T-UL		275 mg/L
Chromium (Cr)	EG020A-T		0.001 mg/L
Copper (Cu)	EG020A-T		0.001 mg/L
Iron (Fe)	EG020A-F	32.4 mg/L	
Lead (Pb)	EG020A-T		<0.001 mg/L
Magnesium (Mg)	ED093T-UL		162 mg/L
Manganese (Mn)	EG020A-F	3.43 mg/L	
Molybdenum (Mo)	EG020A-T		<0.001 mg/L
Nickel (Ni)	EG020A-T		0.124 mg/L
Potassium (K)	ED093T-UL		22.1 mg/L
Selenium (Se)	EG094B-T		<0.0002 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		432 mg/L
Vanadium (V)	EG020A-F	<0.01 mg/L	
Vanadium (V)	EG020A-T		<0.01 mg/L

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 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Allan Bowcher

Sample Number MPW021046
Date Sampled 22-Mar-2018 10:45
Date Received 22-Mar-2018
Date Completed 4-Apr-2018
Date Authorised 5-Apr-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Groundwater Bore MPGM4

Source: MP **Customer Sampling Point:** 222 **Sampling Code:** D17 **Sample Frequency:** Month

Testing Laboratory: ALS Environmental

Zinc (Zn) EG020A-T 0.099 mg/L

Anions Test Method: ED009-X

	Filtered
Fluoride (F)	0.093 mg/L
Chloride (Cl)	236 mg/L
Sulfate (SO4)	1750 mg/L

Alkalinity Test Method: ED037-P

	Total
Total Alkalinity (CaCO3)	138 mg/L

Physical Test Method: EA015H

	Total
Total Dissolved Solids @ 180°C	2920 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1808689. Report Date: 3-Apr-2018

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 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Allan Bowcher

Sample Number MPW021047
Date Sampled 22-Mar-2018 12:05
Date Received 22-Mar-2018
Date Completed 4-Apr-2018
Date Authorised 5-Apr-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Groundwater Bore MPGM4

Source: MP **Customer Sampling Point:** 220 **Sampling Code:** D15 **Sample Frequency:** Month

Testing Laboratory: Mount Piper
Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	25.0 m
Bore Volume Pumped	*Analysis in Field	33 L
Recharge Bore Level	*Analysis in Field	25.1 m
pH	CA12125	5.38
Conductivity	CA12125	4020 µS/cm

Testing Laboratory: ALS Environmental
Water

Cations - Metals	Test Method	Filtered	Total
Mercury (Hg)	EG035T-LL		<0.00004 mg/L
Aluminium (Al)	EG020A-T		0.44 mg/L
Arsenic (As)	EG020A-T		0.005 mg/L
Barium (Ba)	EG020A-T		0.015 mg/L
Boron (B)	EG020A-T		0.33 mg/L
Cadmium (Cd)	EG020A-T		0.0004 mg/L
Calcium (Ca)	ED093T-UL		239 mg/L
Chromium (Cr)	EG020A-T		0.026 mg/L
Copper (Cu)	EG020A-T		0.006 mg/L
Iron (Fe)	EG020A-F	20.4 mg/L	
Lead (Pb)	EG020A-T		0.005 mg/L
Magnesium (Mg)	ED093T-UL		114 mg/L
Manganese (Mn)	EG020A-F	2.07 mg/L	
Molybdenum (Mo)	EG020A-T		0.001 mg/L
Nickel (Ni)	EG020A-T		0.695 mg/L
Potassium (K)	ED093T-UL		36.2 mg/L
Selenium (Se)	EG094B-T		0.0004 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		625 mg/L
Vanadium (V)	EG020A-F	<0.01 mg/L	
Vanadium (V)	EG020A-T		<0.01 mg/L

* NATA accreditation does not cover the performance of this service



Accreditation Number 1099
 Accredited for compliance with ISO/IEC 17025.

Authorised by Thanh Hoang Le
 Senior Chemist

Final - Report Number: 2311017
ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Allan Bowcher

Sample Number MPW021047
Date Sampled 22-Mar-2018 12:05
Date Received 22-Mar-2018
Date Completed 4-Apr-2018
Date Authorised 5-Apr-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Groundwater Bore MPGM4

Source: MP **Customer Sampling Point:** 220 **Sampling Code:** D15 **Sample Frequency:** Month

Testing Laboratory: ALS Environmental

Zinc (Zn)	EG020A-T	1.26 mg/L
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Anions Test Method: ED009-X	Filtered
Fluoride (F)	0.021 mg/L
Chloride (Cl)	226 mg/L
Sulfate (SO4)	1990 mg/L

Alkalinity Test Method: ED037-P	Total
Total Alkalinity (CaCO3)	39 mg/L

Physical Test Method: EA015H	Total
Total Dissolved Solids @ 180°C	3120 mg/L

TDS by method EA-015 may bias high for various samples due to the presence of fine particulate matter, which may pass through the prescribed GF/C paper.

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1808689. Report Date: 3-Apr-2018

* NATA accreditation does not cover the performance of this service



Accreditation Number 1099
 Accredited for compliance with ISO/IEC 17025.

Authorised by Thanh Hoang Le
 Senior Chemist

Final - Report Number: 2311017
ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Allan Bowcher

Sample Number MPW021048
Date Sampled 22-Mar-2018 11:35
Date Received 22-Mar-2018
Date Completed 4-Apr-2018
Date Authorised 5-Apr-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Groundwater Bore MPGM4

Source: MP **Customer Sampling Point:** 221 **Sampling Code:** D16 **Sample Frequency:** Month

Testing Laboratory: Mount Piper
Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	12.7 m
Bore Volume Pumped	*Analysis in Field	140 L
Recharge Bore Level	*Analysis in Field	12.7 m
pH	CA12125	6.45
Conductivity	CA12125	1430 µS/cm

Testing Laboratory: ALS Environmental
Water

Cations - Metals	Test Method	Filtered	Total
Mercury (Hg)	EG035T-LL		<0.00004 mg/L
Aluminium (Al)	EG020A-T		<0.01 mg/L
Arsenic (As)	EG020A-T		<0.001 mg/L
Barium (Ba)	EG020A-T		0.012 mg/L
Boron (B)	EG020A-T		0.10 mg/L
Cadmium (Cd)	EG020A-T		<0.0001 mg/L
Calcium (Ca)	ED093T-UL		199 mg/L
Chromium (Cr)	EG020A-T		0.004 mg/L
Copper (Cu)	EG020A-T		<0.001 mg/L
Iron (Fe)	EG094B-F	1.71 mg/L	
Lead (Pb)	EG020A-T		<0.001 mg/L
Magnesium (Mg)	ED093T-UL		69.4 mg/L
Manganese (Mn)	EG020A-F	0.036 mg/L	
Molybdenum (Mo)	EG020A-T		<0.001 mg/L
Nickel (Ni)	EG020A-T		0.007 mg/L
Potassium (K)	ED093T-UL		24.6 mg/L
Selenium (Se)	EG094B-T		<0.0002 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		20.7 mg/L
Vanadium (V)	EG020A-F	<0.01 mg/L	
Vanadium (V)	EG020A-T		<0.01 mg/L

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Authorised by Thanh Hoang Le
 Senior Chemist

Final - Report Number: 2311017
ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Allan Bowcher

Sample Number MPW021048
Date Sampled 22-Mar-2018 11:35
Date Received 22-Mar-2018
Date Completed 4-Apr-2018
Date Authorised 5-Apr-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Groundwater Bore MPGM4

Source: MP **Customer Sampling Point:** 221 **Sampling Code:** D16 **Sample Frequency:** Month

Testing Laboratory: ALS Environmental

Zinc (Zn) EG020A-T <0.005 mg/L

Anions Test Method: ED009-X

	Filtered
Fluoride (F)	0.203 mg/L
Chloride (Cl)	51.3 mg/L
Sulfate (SO4)	519 mg/L

Alkalinity Test Method: ED037-P

	Total
Total Alkalinity (CaCO3)	239 mg/L

Physical Test Method: EA015H

	Total
Total Dissolved Solids @ 180°C	982 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1808689. Report Date: 3-Apr-2018

* NATA accreditation does not cover the performance of this service



Accreditation Number 1099
 Accredited for compliance with ISO/IEC 17025.

Authorised by Thanh Hoang Le
 Senior Chemist

Final - Report Number: 2311017
ENERGY AUSTRALIA C/- MT PIPER POWER
BOULDER ROAD
PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Allan Bowcher

Sample Number MPW021049
Date Sampled 21-Mar-2018 14:20
Date Received 22-Mar-2018
Date Completed 22-Mar-2018
Date Authorised 23-Mar-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: MP Ash - D10 - SW3-D

Source: MP **Customer Sampling Point:** 256 **Sampling Code:** SW3-D **Sample Frequency:** Ad-Hoc

Testing Laboratory: Mount Piper
Water

Field Analysis **Test Method:** Analysis in Field
insufficient volume to sample

Total

•System out of service.

Water

N Tomlinson

Authorised by Nikki Tomlinson
Senior Chemist

Final - Report Number: 2311017
ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Allan Bowcher

Sample Number MPW021050
Date Sampled 21-Mar-2018 10:50
Date Received 22-Mar-2018
Date Completed 4-Apr-2018
Date Authorised 5-Apr-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: MP Ash - D10 - B5

Source: MP **Customer Sampling Point:** 250 **Sampling Code:** B5 **Sample Frequency:** Ad-Hoc

Testing Laboratory: Mount Piper

Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	36.5 m
Bore Volume Pumped	*Analysis in Field	1.2 L
Recharge Bore Level	*Analysis in Field	36.5 m
pH	CA12125	6.13
Conductivity	CA12125	49520 µS/cm

Testing Laboratory: ALS Environmental

Water

Cations - Metals	Test Method	Filtered	Total
Mercury (Hg)	EG035T-LL		<0.00004 mg/L
Aluminium (Al)	EG020A-T		0.46 mg/L
Arsenic (As)	EG020A-T		0.018 mg/L
Barium (Ba)	EG020A-T		0.043 mg/L
Boron (B)	EG020A-T		14.4 mg/L
Cadmium (Cd)	EG020A-T		0.144 mg/L
Calcium (Ca)	ED093T-UL		522 mg/L
Chromium (Cr)	EG020A-T		<0.010 mg/L
Copper (Cu)	EG020A-T		0.078 mg/L
Iron (Fe)	EG020A-F	0.76 mg/L	
Lead (Pb)	EG020A-T		<0.010 mg/L
Magnesium (Mg)	ED093T-UL		2030 mg/L
Manganese (Mn)	EG020A-F	14.4 mg/L	
Molybdenum (Mo)	EG020A-T		2.06 mg/L
Nickel (Ni)	EG020A-T		1.22 mg/L
Potassium (K)	ED093T-UL		1610 mg/L
Selenium (Se)	EG094B-T		0.0762 mg/L
Silver (Ag)	EG020B-T		<0.010 mg/L
Sodium (Na)	ED093T-UL		15300 mg/L
Vanadium (V)	EG020A-F	<0.10 mg/L	
Vanadium (V)	EG020A-T		<0.10 mg/L

* NATA accreditation does not cover the performance of this service



Accreditation Number 1099
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Authorised by Thanh Hoang Le
 Senior Chemist

Final - Report Number: 2311017
ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Allan Bowcher

Sample Number MPW021050
Date Sampled 21-Mar-2018 10:50
Date Received 22-Mar-2018
Date Completed 4-Apr-2018
Date Authorised 5-Apr-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: MP Ash - D10 - B5

Source: MP **Customer Sampling Point:** 250 **Sampling Code:** B5 **Sample Frequency:** Ad-Hoc

Testing Laboratory: ALS Environmental

Zinc (Zn) EG020A-T 3.50 mg/L

Anions Test Method: ED009-X

	Filtered
Fluoride (F)	0.676 mg/L
Chloride (Cl)	4270 mg/L
Sulfate (SO4)	32200 mg/L

Alkalinity Test Method: ED037-P

	Total
Total Alkalinity (CaCO3)	57 mg/L

Physical Test Method: EA015H

	Total
Total Dissolved Solids @ 180°C	55900 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1808689. Report Date: 3-Apr-2018

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Accreditation Number 1099
 Accredited for compliance with ISO/IEC 17025.

Authorised by Thanh Hoang Le
 Senior Chemist

Final - Report Number: 2311017
ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Allan Bowcher

Sample Number MPW021051
Date Sampled 21-Mar-2018 10:15
Date Received 22-Mar-2018
Date Completed 4-Apr-2018
Date Authorised 5-Apr-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: MP Ash - D10 - B5-1

Source: MP **Customer Sampling Point:** 251 **Sampling Code:** B5-1 **Sample Frequency:** Ad-Hoc

Testing Laboratory: Mount Piper
Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	35.4 m
Bore Volume Pumped	*Analysis in Field	10 L
Recharge Bore Level	*Analysis in Field	35.3 m
pH	CA12125	5.55
Conductivity	CA12125	42930 µS/cm

Testing Laboratory: ALS Environmental
Water

Cations - Metals	Test Method	Filtered	Total
Mercury (Hg)	EG035T-LL		<0.00004 mg/L
Aluminium (Al)	EG020A-T		3.85 mg/L
Arsenic (As)	EG020A-T		0.011 mg/L
Barium (Ba)	EG020A-T		0.051 mg/L
Boron (B)	EG020A-T		10.5 mg/L
Cadmium (Cd)	EG020A-T		0.0647 mg/L
Calcium (Ca)	ED093T-UL		484 mg/L
Chromium (Cr)	EG020A-T		0.011 mg/L
Copper (Cu)	EG020A-T		<0.010 mg/L
Iron (Fe)	EG020A-F	0.34 mg/L	
Lead (Pb)	EG020A-T		<0.010 mg/L
Magnesium (Mg)	ED093T-UL		1570 mg/L
Manganese (Mn)	EG020A-F	33.8 mg/L	
Molybdenum (Mo)	EG020A-T		0.027 mg/L
Nickel (Ni)	EG020A-T		2.06 mg/L
Potassium (K)	ED093T-UL		1090 mg/L
Selenium (Se)	EG094B-T		0.201 mg/L
Silver (Ag)	EG020B-T		<0.010 mg/L
Sodium (Na)	ED093T-UL		12800 mg/L
Vanadium (V)	EG020A-F	<0.10 mg/L	
Vanadium (V)	EG020A-T		<0.10 mg/L

* NATA accreditation does not cover the performance of this service



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Authorised by Thanh Hoang Le
 Senior Chemist

Final - Report Number: 2311017
ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Allan Bowcher

Sample Number MPW021051
Date Sampled 21-Mar-2018 10:15
Date Received 22-Mar-2018
Date Completed 4-Apr-2018
Date Authorised 5-Apr-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: MP Ash - D10 - B5-1

Source: MP **Customer Sampling Point:** 251 **Sampling Code:** B5-1 **Sample Frequency:** Ad-Hoc

Testing Laboratory: ALS Environmental

Zinc (Zn)	EG020A-T	3.07 mg/L
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Anions Test Method: ED009-X	Filtered	
Fluoride (F)		2.21 mg/L
Chloride (Cl)		3360 mg/L
Sulfate (SO4)		30600 mg/L

Alkalinity Test Method: ED037-P		Total
Total Alkalinity (CaCO3)		122 mg/L

Physical Test Method: EA015H		Total
Total Dissolved Solids @ 180°C		47600 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1808689. Report Date: 3-Apr-2018

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Accreditation Number 1099
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Authorised by Thanh Hoang Le
 Senior Chemist

Final - Report Number: 2336952
ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Nikki Tomlinson

Sample Number MPW021455
Date Sampled 27-Apr-2018 08:05
Date Received 27-Apr-2018
Date Completed 7-May-2018
Date Authorised 7-May-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Groundwater Bore MPGM4

Source: MP **Customer Sampling Point:** 014 **Sampling Code:** D9 **Sample Frequency:** Month

Testing Laboratory: Mount Piper
Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	2.1 m
Bore Volume Pumped	*Analysis in Field	2.5 L
Recharge Bore Level	*Analysis in Field	2.1 m
pH	CA12125	5.95
Conductivity	CA12125	3230 µS/cm

Testing Laboratory: ALS Environmental
Water

Cations - Metals	Test Method	Filtered	Total
Mercury (Hg)	EG035T-LL		<0.00004 mg/L
Aluminium (Al)	EG020A-T		0.12 mg/L
Arsenic (As)	EG020A-T		0.001 mg/L
Barium (Ba)	EG020A-T		0.032 mg/L
Boron (B)	EG020A-T		0.91 mg/L
Cadmium (Cd)	EG020A-T		<0.0001 mg/L
Calcium (Ca)	ED093T-UL		253 mg/L
Chromium (Cr)	EG020A-T		<0.001 mg/L
Copper (Cu)	EG020A-T		0.002 mg/L
Iron (Fe)	EG020A-F	24.7 mg/L	
Lead (Pb)	EG020A-T		0.001 mg/L
Magnesium (Mg)	ED093T-UL		246 mg/L
Manganese (Mn)	EG020A-F	14.7 mg/L	
Molybdenum (Mo)	EG020A-T		0.001 mg/L
Nickel (Ni)	EG020A-T		0.317 mg/L
Potassium (K)	ED093T-UL		20.4 mg/L
Selenium (Se)	EG094B-T		<0.0002 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		212 mg/L
Vanadium (V)	EG020A-F	<0.01 mg/L	
Vanadium (V)	EG020A-T		<0.01 mg/L

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 Senior Chemist

Final - Report Number: 2336952
ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Nikki Tomlinson

Sample Number MPW021455
Date Sampled 27-Apr-2018 08:05
Date Received 27-Apr-2018
Date Completed 7-May-2018
Date Authorised 7-May-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Groundwater Bore MPGM4

Source: MP **Customer Sampling Point:** 014 **Sampling Code:** D9 **Sample Frequency:** Month

Testing Laboratory: ALS Environmental

Zinc (Zn) EG020A-T 0.129 mg/L

Anions Test Method: ED009-X

	Filtered
Fluoride (F)	0.068 mg/L
Chloride (Cl)	166 mg/L
Sulfate (SO4)	1780 mg/L

Alkalinity Test Method: ED037-P

	Total
Total Alkalinity (CaCO3)	150 mg/L

Physical Test Method: EA015H

	Total
Total Dissolved Solids @ 180°C	2760 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1812068. Report Date: 4-May-2018

* NATA accreditation does not cover the performance of this service



Accreditation Number 1099
 Accredited for compliance with ISO/IEC 17025.

Authorised by Thanh Hoang Le
 Senior Chemist

Final - Report Number: 2336952
ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Nikki Tomlinson

Sample Number MPW021456
Date Sampled 26-Apr-2018 08:45
Date Received 27-Apr-2018
Date Completed 7-May-2018
Date Authorised 7-May-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Stream Gauge

Source: MP **Customer Sampling Point:** 003 **Sampling Code:** WX22 **Sample Frequency:** Month

Testing Laboratory: Mount Piper
 Water

Field Analysis	Test Method	Total
Discharge Flowing	*Analysis in Field	Flow
pH	CA12125	6.76
Conductivity	CA12125	790 µS/cm
Temperature	CA12125	10.5 °C
Dissolved Oxygen (O2)	*Analysis in Field	10.5 mg/L



Field Photo

Testing Laboratory: ALS Environmental
 Water

Cations - Metals	Test Method	Filtered	Total
Mercury (Hg)	EG035T-LL		0.00004 mg/L
Aluminium (Al)	EG020A-F	<0.01 mg/L	
Aluminium (Al)	EG020A-T		<0.01 mg/L
Arsenic (As)	EG020A-T		<0.001 mg/L

* NATA accreditation does not cover the performance of this service



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Authorised by Thanh Hoang Le
 Senior Chemist

Final - Report Number: 2336952
ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Nikki Tomlinson

Sample Number MPW021456
Date Sampled 26-Apr-2018 08:45
Date Received 27-Apr-2018
Date Completed 7-May-2018
Date Authorised 7-May-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Stream Gauge

Source: MP **Customer Sampling Point:** 003 **Sampling Code:** WX22 **Sample Frequency:** Month

Testing Laboratory: ALS Environmental

Barium (Ba)	EG020A-T	0.030 mg/L
Boron (B)	EG020A-T	0.14 mg/L
Cadmium (Cd)	EG020A-T	<0.0001 mg/L
Calcium (Ca)	ED093T-UL	58.2 mg/L
Chromium (Cr)	EG020A-T	<0.001 mg/L
Copper (Cu)	EG020A-F	<0.001 mg/L
Copper (Cu)	EG020A-T	<0.001 mg/L
Iron (Fe)	EG094B-F	0.171 mg/L
Iron (Fe)	EG094B-T	0.365 mg/L
Lead (Pb)	EG020A-T	<0.001 mg/L
Magnesium (Mg)	ED093T-UL	36.5 mg/L
Manganese (Mn)	EG020A-F	1.15 mg/L
Manganese (Mn)	EG020A-T	1.20 mg/L
Molybdenum (Mo)	EG020A-T	<0.001 mg/L
Nickel (Ni)	EG020A-T	0.031 mg/L
Potassium (K)	ED093T-UL	6.03 mg/L
Selenium (Se)	EG094B-T	<0.0002 mg/L
Silver (Ag)	EG020B-T	<0.001 mg/L
Sodium (Na)	ED093T-UL	52.9 mg/L
Strontium (Sr)	EG020B-T	0.203 mg/L
Vanadium (V)	EG020A-F	<0.01 mg/L
Vanadium (V)	EG020A-T	<0.01 mg/L
Zinc (Zn)	EG020A-F	0.008 mg/L
Zinc (Zn)	EG020A-T	0.010 mg/L

* NATA accreditation does not cover the performance of this service



Accreditation Number 1099
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Authorised by Thanh Hoang Le
 Senior Chemist

Final - Report Number: 2336952
ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Nikki Tomlinson

Sample Number MPW021456
Date Sampled 26-Apr-2018 08:45
Date Received 27-Apr-2018
Date Completed 7-May-2018
Date Authorised 7-May-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Stream Gauge

Source: MP **Customer Sampling Point:** 003 **Sampling Code:** WX22 **Sample Frequency:** Month

Testing Laboratory: ALS Environmental

Anions	Test Method	Filtered
Fluoride (F)	ED009-X	0.078 mg/L
Chloride (Cl)	ED009-X	50.3 mg/L
Sulfate (SO4)	ED009-X	292 mg/L
Nitrate (N)	EK058G	<0.01 mg/L
Nitrite (N)	EK057G	<0.01 mg/L
Nitrate and Nitrite (N)	EK059G	<0.01 mg/L

Alkalinity	Test Method: ED037-P	Total
Total Alkalinity (CaCO3)		62 mg/L
Phenolphthalein Alkalinity (CaCO3)		<1 mg/L
Bicarbonate (CaCO3)		62 mg/L

Phosphate	Test Method: EK067G	Total
Total Phosphorus (P)		<0.01 mg/L

Physical	Test Method	Total
Total Dissolved Solids @ 180°C	EA015H	505 mg/L
Turbidity	EA045	1.7 NTU

Other	Test Method	Total
Nitrogen (N)	EK062G	0.1 mg/L
Nitrogen (N) - Kjeldahl	EK061G	0.1 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1812068. Report Date: 4-May-2018

* NATA accreditation does not cover the performance of this service



Accreditation Number 1099
 Accredited for compliance with ISO/IEC 17025.

Authorised by Thanh Hoang Le
 Senior Chemist

Final - Report Number: 2336952
ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Nikki Tomlinson

Sample Number MPW021457
Date Sampled 26-Apr-2018 09:20
Date Received 27-Apr-2018
Date Completed 7-May-2018
Date Authorised 7-May-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Groundwater Bore MPGM4

Source: MP **Customer Sampling Point:** 006 **Sampling Code:** D1 **Sample Frequency:** Month

Testing Laboratory: Mount Piper
Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	2.9 m
Bore Volume Pumped	*Analysis in Field	122 L
Recharge Bore Level	*Analysis in Field	3.5 m
pH	CA12125	5.90
Conductivity	CA12125	5870 µS/cm

Testing Laboratory: ALS Environmental
Water

Cations - Metals	Test Method	Filtered	Total
Mercury (Hg)	EG035T-LL		<0.00004 mg/L
Aluminium (Al)	EG020A-T		0.24 mg/L
Arsenic (As)	EG020A-T		0.008 mg/L
Barium (Ba)	EG020A-T		0.030 mg/L
Boron (B)	EG020A-T		1.95 mg/L
Cadmium (Cd)	EG020A-T		<0.0001 mg/L
Calcium (Ca)	ED093T-UL		466 mg/L
Chromium (Cr)	EG020A-T		<0.001 mg/L
Copper (Cu)	EG020A-T		<0.001 mg/L
Iron (Fe)	EG020A-F	43.6 mg/L	
Lead (Pb)	EG020A-T		<0.001 mg/L
Magnesium (Mg)	ED093T-UL		343 mg/L
Manganese (Mn)	EG020A-F	18.0 mg/L	
Molybdenum (Mo)	EG020A-T		<0.001 mg/L
Nickel (Ni)	EG020A-T		1.14 mg/L
Potassium (K)	ED093T-UL		46.9 mg/L
Selenium (Se)	EG094B-T		<0.0002 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		594 mg/L
Vanadium (V)	EG020A-F	<0.01 mg/L	
Vanadium (V)	EG020A-T		<0.01 mg/L

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 Senior Chemist

Final - Report Number: 2336952
ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Nikki Tomlinson

Sample Number MPW021457
Date Sampled 26-Apr-2018 09:20
Date Received 27-Apr-2018
Date Completed 7-May-2018
Date Authorised 7-May-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Groundwater Bore MPGM4

Source: MP **Customer Sampling Point:** 006 **Sampling Code:** D1 **Sample Frequency:** Month

Testing Laboratory: ALS Environmental

Zinc (Zn) EG020A-T 0.121 mg/L

Anions Test Method: ED009-X

	Filtered
Fluoride (F)	0.070 mg/L
Chloride (Cl)	693 mg/L
Sulfate (SO4)	2750 mg/L

Alkalinity Test Method: ED037-P

	Total
Total Alkalinity (CaCO3)	169 mg/L

Physical Test Method: EA015H

	Total
Total Dissolved Solids @ 180°C	5100 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1812068. Report Date: 4-May-2018

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ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Nikki Tomlinson

Sample Number MPW021458
Date Sampled 27-Apr-2018 09:10
Date Received 27-Apr-2018
Date Completed 7-May-2018
Date Authorised 7-May-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Groundwater Bore MPGM4

Source: MP **Customer Sampling Point:** 013 **Sampling Code:** D8 **Sample Frequency:** Month

Testing Laboratory: Mount Piper
Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	2.5 m
Bore Volume Pumped	*Analysis in Field	40 L
Recharge Bore Level	*Analysis in Field	2.5 m
pH	CA12125	5.36
Conductivity	CA12125	730 µS/cm

Testing Laboratory: ALS Environmental
Water

Cations - Metals	Test Method	Filtered	Total
Mercury (Hg)	EG035T-LL		<0.00004 mg/L
Aluminium (Al)	EG020A-T		0.23 mg/L
Arsenic (As)	EG020A-T		<0.001 mg/L
Barium (Ba)	EG020A-T		0.048 mg/L
Boron (B)	EG020A-T		0.07 mg/L
Cadmium (Cd)	EG020A-T		<0.0001 mg/L
Calcium (Ca)	ED093T-UL		47.4 mg/L
Chromium (Cr)	EG020A-T		<0.001 mg/L
Copper (Cu)	EG020A-T		<0.001 mg/L
Iron (Fe)	EG094B-F	0.221 mg/L	
Lead (Pb)	EG020A-T		<0.001 mg/L
Magnesium (Mg)	ED093T-UL		38.2 mg/L
Manganese (Mn)	EG020A-F	1.14 mg/L	
Molybdenum (Mo)	EG020A-T		<0.001 mg/L
Nickel (Ni)	EG020A-T		0.083 mg/L
Potassium (K)	ED093T-UL		4.73 mg/L
Selenium (Se)	EG094B-T		<0.0002 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		45.3 mg/L
Vanadium (V)	EG020A-F	<0.01 mg/L	
Vanadium (V)	EG020A-T		<0.01 mg/L

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Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Nikki Tomlinson

Sample Number MPW021458
Date Sampled 27-Apr-2018 09:10
Date Received 27-Apr-2018
Date Completed 7-May-2018
Date Authorised 7-May-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Groundwater Bore MPGM4

Source: MP **Customer Sampling Point:** 013 **Sampling Code:** D8 **Sample Frequency:** Month

Testing Laboratory: ALS Environmental

Zinc (Zn) EG020A-T 0.103 mg/L

Anions Test Method: ED009-X

	Filtered
Fluoride (F)	0.028 mg/L
Chloride (Cl)	34.5 mg/L
Sulfate (SO4)	330 mg/L

Alkalinity Test Method: ED037-P

	Total
Total Alkalinity (CaCO3)	11 mg/L

Physical Test Method: EA015H

	Total
Total Dissolved Solids @ 180°C	474 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1812068. Report Date: 4-May-2018

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BOULDER ROAD
PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Nikki Tomlinson

Sample Number MPW021459
Date Sampled 26-Apr-2018 14:10
Date Received 27-Apr-2018
Date Completed 30-Apr-2018
Date Authorised 30-Apr-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: MP Ash - D10 - D21

Source: MP

Customer Sampling Point: 253

Sampling Code: D21

Sample Frequency:
ADDITIONAL_MONTH

Testing Laboratory: Mount Piper

Water

Field Analysis Test Method: Analysis in Field
Dry

Total

N Tomlinson

Authorised by Nikki Tomlinson
Senior Chemist

Final - Report Number: 2336952
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 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Nikki Tomlinson

Sample Number MPW021460
Date Sampled 26-Apr-2018 14:20
Date Received 27-Apr-2018
Date Completed 7-May-2018
Date Authorised 7-May-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: MP Ash - D10 - D23

Source: MP **Customer Sampling Point:** 254 **Sampling Code:** D23 **Sample Frequency:** ADDITIONAL_MONTH

Testing Laboratory: Mount Piper
Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	24.7 m
Bore Volume Pumped	*Analysis in Field	50 L
Recharge Bore Level	*Analysis in Field	24.7 m
pH	CA12125	5.71
Conductivity	CA12125	3950 µS/cm

Testing Laboratory: ALS Environmental
Water

Cations - Metals	Test Method	Filtered	Total
Mercury (Hg)	EG035T-LL		<0.00004 mg/L
Aluminium (Al)	EG020A-T		1.36 mg/L
Arsenic (As)	EG020A-T		0.001 mg/L
Barium (Ba)	EG020A-T		0.018 mg/L
Boron (B)	EG020A-T		0.39 mg/L
Cadmium (Cd)	EG020A-T		0.0004 mg/L
Calcium (Ca)	ED093T-UL		233 mg/L
Chromium (Cr)	EG020A-T		0.101 mg/L
Copper (Cu)	EG020A-T		0.004 mg/L
Iron (Fe)	EG020A-F	13.8 mg/L	
Lead (Pb)	EG020A-T		0.003 mg/L
Magnesium (Mg)	ED093T-UL		122 mg/L
Manganese (Mn)	EG020A-F	2.34 mg/L	
Molybdenum (Mo)	EG020A-T		0.004 mg/L
Nickel (Ni)	EG020A-T		0.460 mg/L
Potassium (K)	ED093T-UL		44.3 mg/L
Selenium (Se)	EG094B-T		0.0003 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		560 mg/L
Vanadium (V)	EG020A-F	<0.01 mg/L	

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Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Nikki Tomlinson

Sample Number MPW021460
Date Sampled 26-Apr-2018 14:20
Date Received 27-Apr-2018
Date Completed 7-May-2018
Date Authorised 7-May-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: MP Ash - D10 - D23

Source: MP **Customer Sampling Point:** 254 **Sampling Code:** D23 **Sample Frequency:** ADDITIONAL_MONTH

Testing Laboratory: ALS Environmental

Vanadium (V)	EG020A-T	<0.01 mg/L
Zinc (Zn)	EG020A-T	0.593 mg/L

Anions Test Method: ED009-X	Filtered
Fluoride (F)	0.120 mg/L
Chloride (Cl)	245 mg/L
Sulfate (SO4)	1990 mg/L

Alkalinity Test Method: ED037-P	Total
Total Alkalinity (CaCO3)	85 mg/L

Physical Test Method: EA015H	Total
Total Dissolved Solids @ 180°C	3200 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1812068. Report Date: 4-May-2018

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 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Nikki Tomlinson

Sample Number MPW021461
Date Sampled 27-Apr-2018 10:35
Date Received 27-Apr-2018
Date Completed 7-May-2018
Date Authorised 7-May-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Groundwater Bore MPGM4

Source: MP **Customer Sampling Point:** 223 **Sampling Code:** D18 **Sample Frequency:** Month

Testing Laboratory: Mount Piper

Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	24.2 m
Bore Volume Pumped	*Analysis in Field	41 L
Recharge Bore Level	*Analysis in Field	34.7 m
pH	CA12125	6.68
Conductivity	CA12125	820 µS/cm

Testing Laboratory: ALS Environmental

Water

Cations - Metals	Test Method	Filtered	Total
Mercury (Hg)	EG035T-LL		<0.00004 mg/L
Aluminium (Al)	EG020A-T		0.48 mg/L
Arsenic (As)	EG020A-T		0.002 mg/L
Barium (Ba)	EG020A-T		0.565 mg/L
Boron (B)	EG020A-T		0.09 mg/L
Cadmium (Cd)	EG020A-T		0.0002 mg/L
Calcium (Ca)	ED093T-UL		81.4 mg/L
Chromium (Cr)	EG020A-T		0.004 mg/L
Copper (Cu)	EG020A-T		0.003 mg/L
Iron (Fe)	EG094B-F	0.108 mg/L	
Lead (Pb)	EG020A-T		0.001 mg/L
Magnesium (Mg)	ED093T-UL		33.7 mg/L
Manganese (Mn)	EG020A-F	0.159 mg/L	
Molybdenum (Mo)	EG020A-T		0.005 mg/L
Nickel (Ni)	EG020A-T		0.009 mg/L
Potassium (K)	ED093T-UL		19.7 mg/L
Selenium (Se)	EG094B-T		0.0005 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		42.2 mg/L
Vanadium (V)	EG020A-F	<0.01 mg/L	
Vanadium (V)	EG020A-T		<0.01 mg/L

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 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Nikki Tomlinson

Sample Number MPW021461
Date Sampled 27-Apr-2018 10:35
Date Received 27-Apr-2018
Date Completed 7-May-2018
Date Authorised 7-May-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Groundwater Bore MPGM4

Source: MP **Customer Sampling Point:** 223 **Sampling Code:** D18 **Sample Frequency:** Month

Testing Laboratory: ALS Environmental

Zinc (Zn) EG020A-T 0.046 mg/L

Anions Test Method: ED009-X

	Filtered
Fluoride (F)	0.465 mg/L
Chloride (Cl)	15.3 mg/L
Sulfate (SO4)	89.2 mg/L

Alkalinity Test Method: ED037-P

	Total
Total Alkalinity (CaCO3)	360 mg/L

Physical Test Method: EA015H

	Total
Total Dissolved Solids @ 180°C	496 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1812068. Report Date: 4-May-2018

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BOULDER ROAD
PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Nikki Tomlinson

Sample Number MPW021462
Date Sampled 26-Apr-2018 12:25
Date Received 27-Apr-2018
Date Completed 30-Apr-2018
Date Authorised 30-Apr-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: MP Ash - D10 - SW3-S

Source: MP

Customer Sampling Point: 257

Sampling Code: SW3-S

Sample Frequency:
ADDITIONAL_MONTH

Testing Laboratory: Mount Piper

Water

Field Analysis Test Method: Analysis in Field
Initial Bore Level

Total
17.0 m

Insufficient Volume to Sample

N Tomlinson

Authorised by Nikki Tomlinson
Senior Chemist

Final - Report Number: 2336952
ENERGY AUSTRALIA C/- MT PIPER POWER
BOULDER ROAD
PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Nikki Tomlinson

Sample Number MPW021463
Date Sampled 26-Apr-2018 12:20
Date Received 27-Apr-2018
Date Completed 30-Apr-2018
Date Authorised 30-Apr-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: MP Ash - D10 - SW3-D

Source: MP

Customer Sampling Point: 256

Sampling Code: SW3-D

Sample Frequency:
ADDITIONAL_MONTH

Testing Laboratory: Mount Piper

Water

Field Analysis Test Method: Analysis in Field
Initial Bore Level

Total
25.1 m

Insufficient Volume to Sample

N Tomlinson

Authorised by Nikki Tomlinson
Senior Chemist

Final - Report Number: 2336952
ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Nikki Tomlinson

Sample Number MPW021464
Date Sampled 27-Apr-2018 10:25
Date Received 27-Apr-2018
Date Completed 7-May-2018
Date Authorised 7-May-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: MP Ash - D10 - B5

Source: MP **Customer Sampling Point:** 250 **Sampling Code:** B5 **Sample Frequency:** ADDITIONAL_MONTH

Testing Laboratory: Mount Piper
Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	36.5 m
Bore Volume Pumped	*Analysis in Field	1 L
Recharge Bore Level	*Analysis in Field	36.5 m
pH	CA12125	6.26
Conductivity	CA12125	48280 µS/cm

Testing Laboratory: ALS Environmental
Water

Cations - Metals	Test Method	Filtered	Total
Mercury (Hg)	EG035T-LL		<0.00004 mg/L
Aluminium (Al)	EG020A-T		0.43 mg/L
Arsenic (As)	EG020A-T		0.017 mg/L
Barium (Ba)	EG020A-T		0.043 mg/L
Boron (B)	EG020A-T		13.0 mg/L
Cadmium (Cd)	EG020A-T		0.161 mg/L
Calcium (Ca)	ED093T-UL		506 mg/L
Chromium (Cr)	EG020A-T		<0.010 mg/L
Copper (Cu)	EG020A-T		0.035 mg/L
Iron (Fe)	EG020A-F	0.24 mg/L	
Lead (Pb)	EG020A-T		<0.010 mg/L
Magnesium (Mg)	ED093T-UL		2040 mg/L
Manganese (Mn)	EG020A-F	12.8 mg/L	
Molybdenum (Mo)	EG020A-T		1.65 mg/L
Nickel (Ni)	EG020A-T		1.12 mg/L
Potassium (K)	ED093T-UL		1660 mg/L
Selenium (Se)	EG094B-T		0.0843 mg/L
Silver (Ag)	EG020B-T		<0.010 mg/L
Sodium (Na)	ED093T-UL		14200 mg/L
Vanadium (V)	EG020A-F	<0.10 mg/L	

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 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Nikki Tomlinson

Sample Number MPW021464
Date Sampled 27-Apr-2018 10:25
Date Received 27-Apr-2018
Date Completed 7-May-2018
Date Authorised 7-May-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: MP Ash - D10 - B5

Source: MP **Customer Sampling Point:** 250 **Sampling Code:** B5 **Sample Frequency:** ADDITIONAL_MONTH

Testing Laboratory: ALS Environmental

Vanadium (V)	EG020A-T	<0.10 mg/L
Zinc (Zn)	EG020A-T	4.59 mg/L

Anions Test Method: ED009-X	Filtered
Fluoride (F)	1.01 mg/L
Chloride (Cl)	4560 mg/L
Sulfate (SO4)	33600 mg/L

Alkalinity Test Method: ED037-P	Total
Total Alkalinity (CaCO3)	79 mg/L

Physical Test Method: EA015H	Total
Total Dissolved Solids @ 180°C	53000 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1812068. Report Date: 4-May-2018

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Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Nikki Tomlinson

Sample Number MPW021465
Date Sampled 27-Apr-2018 09:55
Date Received 27-Apr-2018
Date Completed 7-May-2018
Date Authorised 7-May-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: MP Ash - D10 - B5-1

Source: MP **Customer Sampling Point:** 251 **Sampling Code:** B5-1 **Sample Frequency:** ADDITIONAL_MONTH

Testing Laboratory: Mount Piper
Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	36.8 m
Bore Volume Pumped	*Analysis in Field	4 L
Recharge Bore Level	*Analysis in Field	36.8 m
pH	CA12125	5.58
Conductivity	CA12125	44590 µS/cm

Testing Laboratory: ALS Environmental
Water

Cations - Metals	Test Method	Filtered	Total
Mercury (Hg)	EG035T-LL		0.00010 mg/L
Aluminium (Al)	EG020A-T		23.9 mg/L
Arsenic (As)	EG020A-T		0.040 mg/L
Barium (Ba)	EG020A-T		0.175 mg/L
Boron (B)	EG020A-T		9.82 mg/L
Cadmium (Cd)	EG020A-T		0.0683 mg/L
Calcium (Ca)	ED093T-UL		491 mg/L
Chromium (Cr)	EG020A-T		0.070 mg/L
Copper (Cu)	EG020A-T		0.055 mg/L
Iron (Fe)	EG020A-F	0.47 mg/L	
Lead (Pb)	EG020A-T		0.053 mg/L
Magnesium (Mg)	ED093T-UL		1790 mg/L
Manganese (Mn)	EG020A-F	41.5 mg/L	
Molybdenum (Mo)	EG020A-T		0.026 mg/L
Nickel (Ni)	EG020A-T		2.13 mg/L
Potassium (K)	ED093T-UL		1480 mg/L
Selenium (Se)	EG094B-T		0.165 mg/L
Silver (Ag)	EG020B-T		<0.010 mg/L
Sodium (Na)	ED093T-UL		13600 mg/L
Vanadium (V)	EG020A-F	<0.10 mg/L	

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 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Nikki Tomlinson

Sample Number MPW021465
Date Sampled 27-Apr-2018 09:55
Date Received 27-Apr-2018
Date Completed 7-May-2018
Date Authorised 7-May-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: MP Ash - D10 - B5-1

Source: MP **Customer Sampling Point:** 251 **Sampling Code:** B5-1 **Sample Frequency:** ADDITIONAL_MONTH

Testing Laboratory: ALS Environmental

Vanadium (V)	EG020A-T	<0.10 mg/L
Zinc (Zn)	EG020A-T	3.45 mg/L

Anions	Test Method	Filtered
Fluoride (F)	ED009-X	<5.00 mg/L
Chloride (Cl)	ED009-X	3580 mg/L
Sulfate (SO4)	ED009-X	31800 mg/L

ED009x: samples ES1812068-7, 8, 18 and 19 required dilution due to matrix interferences. LOR values have been adjusted accordingly.

Alkalinity Test Method: ED037-P	Total
Total Alkalinity (CaCO3)	110 mg/L

Physical Test Method: EA015H	Total
Total Dissolved Solids @ 180°C	51000 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1812068. Report Date: 4-May-2018

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 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Nikki Tomlinson

Sample Number MPW021466
Date Sampled 26-Apr-2018 12:10
Date Received 27-Apr-2018
Date Completed 7-May-2018
Date Authorised 7-May-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: MP Ash - D10 - NA5

Source: MP **Customer Sampling Point:** 255 **Sampling Code:** NA5 **Sample Frequency:** ADDITIONAL_MONTH

Testing Laboratory: Mount Piper

Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	25.2 m
Bore Volume Pumped	*Analysis in Field	11 L
Recharge Bore Level	*Analysis in Field	25.2 m
pH	CA12125	5.85
Conductivity	CA12125	4950 µS/cm

Testing Laboratory: ALS Environmental

Water

Cations - Metals	Test Method	Filtered	Total
Mercury (Hg)	EG035T-LL		<0.00004 mg/L
Aluminium (Al)	EG020A-T		1.26 mg/L
Arsenic (As)	EG020A-T		<0.001 mg/L
Barium (Ba)	EG020A-T		0.027 mg/L
Boron (B)	EG020A-T		9.47 mg/L
Cadmium (Cd)	EG020A-T		0.0097 mg/L
Calcium (Ca)	ED093T-UL		385 mg/L
Chromium (Cr)	EG020A-T		0.006 mg/L
Copper (Cu)	EG020A-T		0.002 mg/L
Iron (Fe)	EG020A-F	0.57 mg/L	
Lead (Pb)	EG020A-T		<0.001 mg/L
Magnesium (Mg)	ED093T-UL		118 mg/L
Manganese (Mn)	EG020A-F	7.02 mg/L	
Molybdenum (Mo)	EG020A-T		0.246 mg/L
Nickel (Ni)	EG020A-T		0.450 mg/L
Potassium (K)	ED093T-UL		135 mg/L
Selenium (Se)	EG094B-T		0.0220 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		643 mg/L
Vanadium (V)	EG020A-F	<0.01 mg/L	

* NATA accreditation does not cover the performance of this service



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Authorised by Thanh Hoang Le
 Senior Chemist

Final - Report Number: 2336952
ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Nikki Tomlinson

Sample Number MPW021466
Date Sampled 26-Apr-2018 12:10
Date Received 27-Apr-2018
Date Completed 7-May-2018
Date Authorised 7-May-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: MP Ash - D10 - NA5

Source: MP **Customer Sampling Point:** 255 **Sampling Code:** NA5 **Sample Frequency:** ADDITIONAL_MONTH

Testing Laboratory: ALS Environmental

Vanadium (V)	EG020A-T	<0.01 mg/L
Zinc (Zn)	EG020A-T	0.700 mg/L

Anions	Test Method	Filtered
Fluoride (F)	ED009-X	<5.00 mg/L
Chloride (Cl)	ED009-X	154 mg/L
Sulfate (SO4)	ED009-X	2740 mg/L

ED009x: samples ES1812068-7, 8, 18 and 19 required dilution due to matrix interferences. LOR values have been adjusted accordingly.

Alkalinity Test Method: ED037-P	Total
Total Alkalinity (CaCO3)	109 mg/L

Physical Test Method: EA015H	Total
Total Dissolved Solids @ 180°C	3670 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1812068. Report Date: 4-May-2018

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 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Nikki Tomlinson

Sample Number MPW021468
Date Sampled 27-Apr-2018 11:25
Date Received 27-Apr-2018
Date Completed 7-May-2018
Date Authorised 7-May-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: MP Ash - D10 - D20

Source: MP **Customer Sampling Point:** 252 **Sampling Code:** D20 **Sample Frequency:** ADDITIONAL_MONTH

Testing Laboratory: Mount Piper
Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	17.5 m
Bore Volume Pumped	*Analysis in Field	15 L
Recharge Bore Level	*Analysis in Field	17.5 m
pH	CA12125	6.04
Conductivity	CA12125	3980 µS/cm

Testing Laboratory: ALS Environmental
Water

Cations - Metals	Test Method	Filtered	Total
Mercury (Hg)	EG035T-LL		<0.00004 mg/L
Aluminium (Al)	EG020A-T		0.90 mg/L
Arsenic (As)	EG020A-T		0.001 mg/L
Barium (Ba)	EG020A-T		0.020 mg/L
Boron (B)	EG020A-T		2.12 mg/L
Cadmium (Cd)	EG020A-T		0.0012 mg/L
Calcium (Ca)	ED093T-UL		327 mg/L
Chromium (Cr)	EG020A-T		0.004 mg/L
Copper (Cu)	EG020A-T		0.003 mg/L
Iron (Fe)	EG020A-F	2.28 mg/L	
Lead (Pb)	EG020A-T		0.002 mg/L
Magnesium (Mg)	ED093T-UL		369 mg/L
Manganese (Mn)	EG020A-F	24.6 mg/L	
Molybdenum (Mo)	EG020A-T		0.002 mg/L
Nickel (Ni)	EG020A-T		0.607 mg/L
Potassium (K)	ED093T-UL		27.0 mg/L
Selenium (Se)	EG094B-T		0.0004 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		206 mg/L
Vanadium (V)	EG020A-F	<0.01 mg/L	

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Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Nikki Tomlinson

Sample Number MPW021468
Date Sampled 27-Apr-2018 11:25
Date Received 27-Apr-2018
Date Completed 7-May-2018
Date Authorised 7-May-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: MP Ash - D10 - D20

Source: MP **Customer Sampling Point:** 252 **Sampling Code:** D20 **Sample Frequency:** ADDITIONAL_MONTH

Testing Laboratory: ALS Environmental

Vanadium (V)	EG020A-T	<0.01 mg/L
Zinc (Zn)	EG020A-T	0.323 mg/L

Anions Test Method: ED009-X	Filtered
Fluoride (F)	0.254 mg/L
Chloride (Cl)	128 mg/L
Sulfate (SO4)	2370 mg/L

Alkalinity Test Method: ED037-P	Total
Total Alkalinity (CaCO3)	332 mg/L

Physical Test Method: EA015H	Total
Total Dissolved Solids @ 180°C	3760 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1812068. Report Date: 4-May-2018

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 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Nikki Tomlinson

Sample Number MPW021469
Date Sampled 27-Apr-2018 11:00
Date Received 27-Apr-2018
Date Completed 7-May-2018
Date Authorised 7-May-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Groundwater Bore MPGM4

Source: MP **Customer Sampling Point:** 224 **Sampling Code:** D19 **Sample Frequency:** Month

Testing Laboratory: Mount Piper
Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	9.7 m
Bore Volume Pumped	*Analysis in Field	14 L
Recharge Bore Level	*Analysis in Field	9.7 m
pH	CA12125	5.95
Conductivity	CA12125	6330 µS/cm

Testing Laboratory: ALS Environmental
Water

Cations - Metals	Test Method	Filtered	Total
Mercury (Hg)	EG035T-LL		<0.00004 mg/L
Aluminium (Al)	EG020A-T		1.48 mg/L
Arsenic (As)	EG020A-T		0.002 mg/L
Barium (Ba)	EG020A-T		0.019 mg/L
Boron (B)	EG020A-T		2.44 mg/L
Cadmium (Cd)	EG020A-T		0.0001 mg/L
Calcium (Ca)	ED093T-UL		336 mg/L
Chromium (Cr)	EG020A-T		0.018 mg/L
Copper (Cu)	EG020A-T		0.003 mg/L
Iron (Fe)	EG094B-F	27.6 mg/L	
Lead (Pb)	EG020A-T		0.007 mg/L
Magnesium (Mg)	ED093T-UL		275 mg/L
Manganese (Mn)	EG020A-F	12.1 mg/L	
Molybdenum (Mo)	EG020A-T		0.001 mg/L
Nickel (Ni)	EG020A-T		0.948 mg/L
Potassium (K)	ED093T-UL		65.8 mg/L
Selenium (Se)	EG094B-T		0.0008 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		906 mg/L
Vanadium (V)	EG020A-F	<0.01 mg/L	
Vanadium (V)	EG020A-T		<0.01 mg/L

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Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Nikki Tomlinson

Sample Number MPW021469
Date Sampled 27-Apr-2018 11:00
Date Received 27-Apr-2018
Date Completed 7-May-2018
Date Authorised 7-May-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Groundwater Bore MPGM4

Source: MP **Customer Sampling Point:** 224 **Sampling Code:** D19 **Sample Frequency:** Month

Testing Laboratory: ALS Environmental

Zinc (Zn)	EG020A-T	0.380 mg/L
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Anions Test Method: ED009-X	Filtered	
Fluoride (F)	0.074 mg/L	
Chloride (Cl)	515 mg/L	
Sulfate (SO4)	3190 mg/L	

Alkalinity Test Method: ED037-P	Total	
Total Alkalinity (CaCO3)	128 mg/L	

Physical Test Method: EA015H	Total	
Total Dissolved Solids @ 180°C	5240 mg/L	

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1812068. Report Date: 4-May-2018

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 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Nikki Tomlinson

Sample Number MPW021470
Date Sampled 27-Apr-2018 08:50
Date Received 27-Apr-2018
Date Completed 7-May-2018
Date Authorised 7-May-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Groundwater Bore MPGM4

Source: MP **Customer Sampling Point:** 008 **Sampling Code:** D3 **Sample Frequency:** Month

Testing Laboratory: Mount Piper
Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	7.0 m
Bore Volume Pumped	*Analysis in Field	218 L
Recharge Bore Level	*Analysis in Field	9.9 m
pH	CA12125	6.08
Conductivity	CA12125	850 µS/cm

Testing Laboratory: ALS Environmental
Water

Cations - Metals	Test Method	Filtered	Total
Mercury (Hg)	EG035T-LL		<0.00004 mg/L
Aluminium (Al)	EG020A-T		0.03 mg/L
Arsenic (As)	EG020A-T		<0.001 mg/L
Barium (Ba)	EG020A-T		0.019 mg/L
Boron (B)	EG020A-T		<0.05 mg/L
Cadmium (Cd)	EG020A-T		<0.0001 mg/L
Calcium (Ca)	ED093T-UL		75.2 mg/L
Chromium (Cr)	EG020A-T		0.001 mg/L
Copper (Cu)	EG020A-T		<0.001 mg/L
Iron (Fe)	EG020A-F	10.3 mg/L	
Lead (Pb)	EG020A-T		<0.001 mg/L
Magnesium (Mg)	ED093T-UL		42.2 mg/L
Manganese (Mn)	EG020A-F	0.667 mg/L	
Molybdenum (Mo)	EG020A-T		<0.001 mg/L
Nickel (Ni)	EG020A-T		0.004 mg/L
Potassium (K)	ED093T-UL		8.95 mg/L
Selenium (Se)	EG094B-T		<0.0002 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		34.2 mg/L
Vanadium (V)	EG020A-F	<0.01 mg/L	
Vanadium (V)	EG020A-T		<0.01 mg/L

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Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Nikki Tomlinson

Sample Number MPW021470
Date Sampled 27-Apr-2018 08:50
Date Received 27-Apr-2018
Date Completed 7-May-2018
Date Authorised 7-May-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Groundwater Bore MPGM4

Source: MP **Customer Sampling Point:** 008 **Sampling Code:** D3 **Sample Frequency:** Month

Testing Laboratory: ALS Environmental

Zinc (Zn) EG020A-T <0.005 mg/L

Anions Test Method: ED009-X

	Filtered
Fluoride (F)	0.089 mg/L
Chloride (Cl)	28.8 mg/L
Sulfate (SO4)	296 mg/L

Alkalinity Test Method: ED037-P

	Total
Total Alkalinity (CaCO3)	137 mg/L

Physical Test Method: EA015H

	Total
Total Dissolved Solids @ 180°C	566 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1812068. Report Date: 4-May-2018

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 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Nikki Tomlinson

Sample Number MPW021471
Date Sampled 26-Apr-2018 15:20
Date Received 27-Apr-2018
Date Completed 7-May-2018
Date Authorised 7-May-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Groundwater Bore MPGM4

Source: MP **Customer Sampling Point:** 016 **Sampling Code:** D11 **Sample Frequency:** Month

Testing Laboratory: Mount Piper
Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	26.2 m
Bore Volume Pumped	*Analysis in Field	132 L
Recharge Bore Level	*Analysis in Field	26.2 m
pH	CA12125	6.20
Conductivity	CA12125	9810 µS/cm

Testing Laboratory: ALS Environmental
Water

Cations - Metals	Test Method	Filtered	Total
Mercury (Hg)	EG035T-LL		<0.00004 mg/L
Aluminium (Al)	EG020A-T		<0.01 mg/L
Arsenic (As)	EG020A-T		0.007 mg/L
Barium (Ba)	EG020A-T		0.015 mg/L
Boron (B)	EG020A-T		2.68 mg/L
Cadmium (Cd)	EG020A-T		<0.0001 mg/L
Calcium (Ca)	ED093T-UL		608 mg/L
Chromium (Cr)	EG020A-T		0.004 mg/L
Copper (Cu)	EG020A-T		<0.001 mg/L
Iron (Fe)	EG020A-F	73.4 mg/L	
Lead (Pb)	EG020A-T		<0.001 mg/L
Magnesium (Mg)	ED093T-UL		426 mg/L
Manganese (Mn)	EG020A-F	16.7 mg/L	
Molybdenum (Mo)	EG020A-T		<0.001 mg/L
Nickel (Ni)	EG020A-T		0.914 mg/L
Potassium (K)	ED093T-UL		111 mg/L
Selenium (Se)	EG094B-T		<0.0002 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		1410 mg/L
Vanadium (V)	EG020A-F	<0.01 mg/L	
Vanadium (V)	EG020A-T		<0.01 mg/L

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 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Nikki Tomlinson

Sample Number MPW021471
Date Sampled 26-Apr-2018 15:20
Date Received 27-Apr-2018
Date Completed 7-May-2018
Date Authorised 7-May-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Groundwater Bore MPGM4

Source: MP **Customer Sampling Point:** 016 **Sampling Code:** D11 **Sample Frequency:** Month

Testing Laboratory: ALS Environmental

Zinc (Zn)	EG020A-T	0.129 mg/L
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Anions Test Method: ED009-X		Filtered
Fluoride (F)		0.097 mg/L
Chloride (Cl)		1000 mg/L
Sulfate (SO4)		4840 mg/L

Alkalinity Test Method: ED037-P		Total
Total Alkalinity (CaCO3)		183 mg/L

Physical Test Method: EA015H		Total
Total Dissolved Solids @ 180°C		8960 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1812068. Report Date: 4-May-2018

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 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Nikki Tomlinson

Sample Number MPW021472
Date Sampled 26-Apr-2018 13:40
Date Received 27-Apr-2018
Date Completed 7-May-2018
Date Authorised 7-May-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Groundwater Bore MPGM4

Source: MP **Customer Sampling Point:** 015 **Sampling Code:** D10 **Sample Frequency:** Month

Testing Laboratory: Mount Piper
Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	15.0 m
Bore Volume Pumped	*Analysis in Field	153 L
Recharge Bore Level	*Analysis in Field	15.0 m
pH	CA12125	5.54
Conductivity	CA12125	10110 µS/cm

Testing Laboratory: ALS Environmental
Water

Cations - Metals	Test Method	Filtered	Total
Mercury (Hg)	EG035T-LL		<0.00004 mg/L
Aluminium (Al)	EG020A-T		0.08 mg/L
Arsenic (As)	EG020A-T		<0.001 mg/L
Barium (Ba)	EG020A-T		0.016 mg/L
Boron (B)	EG020A-T		3.66 mg/L
Cadmium (Cd)	EG020A-T		0.0061 mg/L
Calcium (Ca)	ED093T-UL		357 mg/L
Chromium (Cr)	EG020A-T		<0.001 mg/L
Copper (Cu)	EG020A-T		<0.001 mg/L
Iron (Fe)	EG020A-F	5.72 mg/L	
Lead (Pb)	EG020A-T		0.004 mg/L
Magnesium (Mg)	ED093T-UL		384 mg/L
Manganese (Mn)	EG020A-F	8.06 mg/L	
Molybdenum (Mo)	EG020A-T		<0.001 mg/L
Nickel (Ni)	EG020A-T		0.960 mg/L
Potassium (K)	ED093T-UL		192 mg/L
Selenium (Se)	EG094B-T		0.0037 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		1710 mg/L
Vanadium (V)	EG020A-F	<0.01 mg/L	
Vanadium (V)	EG020A-T		<0.01 mg/L

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Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Nikki Tomlinson

Sample Number MPW021472
Date Sampled 26-Apr-2018 13:40
Date Received 27-Apr-2018
Date Completed 7-May-2018
Date Authorised 7-May-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Groundwater Bore MPGM4

Source: MP **Customer Sampling Point:** 015 **Sampling Code:** D10 **Sample Frequency:** Month

Testing Laboratory: ALS Environmental

Zinc (Zn)	EG020A-T	1.04 mg/L
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Anions Test Method: ED009-X	Filtered
Fluoride (F)	0.433 mg/L
Chloride (Cl)	932 mg/L
Sulfate (SO4)	5280 mg/L

Alkalinity Test Method: ED037-P	Total
Total Alkalinity (CaCO3)	83 mg/L

Physical Test Method: EA015H	Total
Total Dissolved Solids @ 180°C	8720 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1812068. Report Date: 4-May-2018

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 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Nikki Tomlinson

Sample Number MPW021473
Date Sampled 27-Apr-2018 13:40
Date Received 27-Apr-2018
Date Completed 7-May-2018
Date Authorised 7-May-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Groundwater Bore MPGM4

Source: MP **Customer Sampling Point:** 222 **Sampling Code:** D17 **Sample Frequency:** Month

Testing Laboratory: Mount Piper
Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	28.0 m
Bore Volume Pumped	*Analysis in Field	33 L
Recharge Bore Level	*Analysis in Field	28.0 m
pH	CA12125	6.19
Conductivity	CA12125	3660 µS/cm

Testing Laboratory: ALS Environmental
Water

Cations - Metals	Test Method	Filtered	Total
Mercury (Hg)	EG035T-LL		<0.00004 mg/L
Aluminium (Al)	EG020A-T		0.05 mg/L
Arsenic (As)	EG020A-T		0.002 mg/L
Barium (Ba)	EG020A-T		0.015 mg/L
Boron (B)	EG020A-T		0.10 mg/L
Cadmium (Cd)	EG020A-T		<0.0001 mg/L
Calcium (Ca)	ED093T-UL		268 mg/L
Chromium (Cr)	EG020A-T		0.005 mg/L
Copper (Cu)	EG020A-T		<0.001 mg/L
Iron (Fe)	EG020A-F	23.1 mg/L	
Lead (Pb)	EG020A-T		<0.001 mg/L
Magnesium (Mg)	ED093T-UL		158 mg/L
Manganese (Mn)	EG020A-F	3.53 mg/L	
Molybdenum (Mo)	EG020A-T		<0.001 mg/L
Nickel (Ni)	EG020A-T		0.115 mg/L
Potassium (K)	ED093T-UL		22.9 mg/L
Selenium (Se)	EG094B-T		<0.0002 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		412 mg/L
Vanadium (V)	EG020A-F	<0.01 mg/L	
Vanadium (V)	EG020A-T		<0.01 mg/L

* NATA accreditation does not cover the performance of this service



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Authorised by Thanh Hoang Le
 Senior Chemist

Final - Report Number: 2336952
ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Nikki Tomlinson

Sample Number MPW021473
Date Sampled 27-Apr-2018 13:40
Date Received 27-Apr-2018
Date Completed 7-May-2018
Date Authorised 7-May-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Groundwater Bore MPGM4

Source: MP **Customer Sampling Point:** 222 **Sampling Code:** D17 **Sample Frequency:** Month

Testing Laboratory: ALS Environmental

Zinc (Zn)	EG020A-T	0.090 mg/L
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Anions Test Method: ED009-X	Filtered
Fluoride (F)	0.074 mg/L
Chloride (Cl)	236 mg/L
Sulfate (SO4)	1830 mg/L

Alkalinity Test Method: ED037-P	Total
Total Alkalinity (CaCO3)	130 mg/L

Physical Test Method: EA015H	Total
Total Dissolved Solids @ 180°C	2830 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1812068. Report Date: 4-May-2018

* NATA accreditation does not cover the performance of this service



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 Senior Chemist

Final - Report Number: 2336952
ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Nikki Tomlinson

Sample Number MPW021474
Date Sampled 27-Apr-2018 12:40
Date Received 27-Apr-2018
Date Completed 7-May-2018
Date Authorised 7-May-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Groundwater Bore MPGM4

Source: MP **Customer Sampling Point:** 220 **Sampling Code:** D15 **Sample Frequency:** Month

Testing Laboratory: Mount Piper

Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	26.2 m
Bore Volume Pumped	*Analysis in Field	26 L
Recharge Bore Level	*Analysis in Field	26.2 m
pH	CA12125	5.45
Conductivity	CA12125	4260 µS/cm

Testing Laboratory: ALS Environmental

Water

Cations - Metals	Test Method	Filtered	Total
Mercury (Hg)	EG035T-LL		<0.00004 mg/L
Aluminium (Al)	EG020A-T		1.14 mg/L
Arsenic (As)	EG020A-T		0.004 mg/L
Barium (Ba)	EG020A-T		0.014 mg/L
Boron (B)	EG020A-T		0.31 mg/L
Cadmium (Cd)	EG020A-T		0.0004 mg/L
Calcium (Ca)	ED093T-UL		256 mg/L
Chromium (Cr)	EG020A-T		0.035 mg/L
Copper (Cu)	EG020A-T		0.003 mg/L
Iron (Fe)	EG020A-F	18.6 mg/L	
Lead (Pb)	EG020A-T		0.004 mg/L
Magnesium (Mg)	ED093T-UL		124 mg/L
Manganese (Mn)	EG020A-F	2.41 mg/L	
Molybdenum (Mo)	EG020A-T		0.002 mg/L
Nickel (Ni)	EG020A-T		0.704 mg/L
Potassium (K)	ED093T-UL		41.1 mg/L
Selenium (Se)	EG094B-T		0.0004 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		644 mg/L
Vanadium (V)	EG020A-F	<0.01 mg/L	
Vanadium (V)	EG020A-T		<0.01 mg/L

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ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Nikki Tomlinson

Sample Number MPW021474
Date Sampled 27-Apr-2018 12:40
Date Received 27-Apr-2018
Date Completed 7-May-2018
Date Authorised 7-May-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Groundwater Bore MPGM4

Source: MP **Customer Sampling Point:** 220 **Sampling Code:** D15 **Sample Frequency:** Month

Testing Laboratory: ALS Environmental

Zinc (Zn)	EG020A-T	1.24 mg/L
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Anions Test Method: ED009-X	Filtered
Fluoride (F)	0.030 mg/L
Chloride (Cl)	264 mg/L
Sulfate (SO4)	2190 mg/L

Alkalinity Test Method: ED037-P	Total
Total Alkalinity (CaCO3)	48 mg/L

Physical Test Method: EA015H	Total
Total Dissolved Solids @ 180°C	3540 mg/L

TDS by method EA-015 may bias high for various samples due to the presence of fine particulate matter, which may pass through the prescribed GF/C paper.

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1812068. Report Date: 4-May-2018

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Final - Report Number: 2336952
ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Nikki Tomlinson

Sample Number MPW021475
Date Sampled 27-Apr-2018 13:25
Date Received 27-Apr-2018
Date Completed 7-May-2018
Date Authorised 7-May-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Groundwater Bore MPGM4

Source: MP **Customer Sampling Point:** 221 **Sampling Code:** D16 **Sample Frequency:** Month

Testing Laboratory: Mount Piper
Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	13.0 m
Bore Volume Pumped	*Analysis in Field	138 L
Recharge Bore Level	*Analysis in Field	13.0 m
pH	CA12125	6.48
Conductivity	CA12125	1450 µS/cm

Testing Laboratory: ALS Environmental
Water

Cations - Metals	Test Method	Filtered	Total
Mercury (Hg)	EG035T-LL		<0.00004 mg/L
Aluminium (Al)	EG020A-T		<0.01 mg/L
Arsenic (As)	EG020A-T		<0.001 mg/L
Barium (Ba)	EG020A-T		0.010 mg/L
Boron (B)	EG020A-T		0.09 mg/L
Cadmium (Cd)	EG020A-T		<0.0001 mg/L
Calcium (Ca)	ED093T-UL		198 mg/L
Chromium (Cr)	EG020A-T		0.005 mg/L
Copper (Cu)	EG020A-T		<0.001 mg/L
Iron (Fe)	EG094B-F	1.86 mg/L	
Lead (Pb)	EG020A-T		<0.001 mg/L
Magnesium (Mg)	ED093T-UL		69.3 mg/L
Manganese (Mn)	EG020A-F	0.038 mg/L	
Molybdenum (Mo)	EG020A-T		<0.001 mg/L
Nickel (Ni)	EG020A-T		0.008 mg/L
Potassium (K)	ED093T-UL		24.6 mg/L
Selenium (Se)	EG094B-T		<0.0002 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		21.3 mg/L
Vanadium (V)	EG020A-F	<0.01 mg/L	
Vanadium (V)	EG020A-T		<0.01 mg/L

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Final - Report Number: 2336952
ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Nikki Tomlinson

Sample Number MPW021475
Date Sampled 27-Apr-2018 13:25
Date Received 27-Apr-2018
Date Completed 7-May-2018
Date Authorised 7-May-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Groundwater Bore MPM4

Source: MP **Customer Sampling Point:** 221 **Sampling Code:** D16 **Sample Frequency:** Month

Testing Laboratory: ALS Environmental

Zinc (Zn)	EG020A-T	<0.005 mg/L
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Anions Test Method: ED009-X	Filtered	
Fluoride (F)		0.201 mg/L
Chloride (Cl)		54.5 mg/L
Sulfate (SO4)		583 mg/L

Alkalinity Test Method: ED037-P		Total
Total Alkalinity (CaCO3)		239 mg/L

Physical Test Method: EA015H		Total
Total Dissolved Solids @ 180°C		1070 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1812068. Report Date: 4-May-2018

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 Senior Chemist

Final - Report Number: 2336952
ENERGY AUSTRALIA C/- MT PIPER POWER
BOULDER ROAD
PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Nikki Tomlinson

Sample Number MPW021476
Date Sampled 26-Apr-2018 12:20
Date Received 27-Apr-2018
Date Completed 30-Apr-2018
Date Authorised 30-Apr-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: MP Ash - D10 - SW3-D

Source: MP **Customer Sampling Point:** 256 **Sampling Code:** SW3-D **Sample Frequency:** Ad-Hoc

Testing Laboratory: Mount Piper
Water

Field Analysis	Test Method: Analysis in Field	Total
Initial Bore Level		17.0 m

Insufficient Volume to Sample

•System out of service.

N Tomlinson

Authorised by Nikki Tomlinson
Senior Chemist

Final - Report Number: 2336952
ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Nikki Tomlinson

Sample Number MPW021477
Date Sampled 26-Apr-2018 10:35
Date Received 27-Apr-2018
Date Completed 7-May-2018
Date Authorised 7-May-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: MP Ash - D10 - B5

Source: MP **Customer Sampling Point:** 250 **Sampling Code:** B5 **Sample Frequency:** Ad-Hoc

Testing Laboratory: Mount Piper
Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	36.5 m
pH	CA12125	6.25
Conductivity	CA12125	49570 µS/cm

Testing Laboratory: ALS Environmental
Water

Cations - Metals	Test Method	Filtered	Total
Mercury (Hg)	EG035T-LL		<0.00004 mg/L
Aluminium (Al)	EG020A-T		15.1 mg/L
Arsenic (As)	EG020A-T		0.025 mg/L
Barium (Ba)	EG020A-T		0.101 mg/L
Boron (B)	EG020A-T		13.2 mg/L
Cadmium (Cd)	EG020A-T		0.133 mg/L
Calcium (Ca)	ED093T-UL		507 mg/L
Chromium (Cr)	EG020A-T		0.018 mg/L
Copper (Cu)	EG020A-T		0.085 mg/L
Iron (Fe)	EG020A-F	0.42 mg/L	
Lead (Pb)	EG020A-T		0.021 mg/L
Magnesium (Mg)	ED093T-UL		2100 mg/L
Manganese (Mn)	EG020A-F	13.4 mg/L	
Molybdenum (Mo)	EG020A-T		2.19 mg/L
Nickel (Ni)	EG020A-T		1.12 mg/L
Potassium (K)	ED093T-UL		1670 mg/L
Selenium (Se)	EG094B-T		0.0875 mg/L
Silver (Ag)	EG020B-T		<0.010 mg/L
Sodium (Na)	ED093T-UL		14900 mg/L
Vanadium (V)	EG020A-F	<0.10 mg/L	
Vanadium (V)	EG020A-T		<0.10 mg/L
Zinc (Zn)	EG020A-T		3.38 mg/L

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 Senior Chemist

Final - Report Number: 2336952
ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Nikki Tomlinson

Sample Number MPW021477
Date Sampled 26-Apr-2018 10:35
Date Received 27-Apr-2018
Date Completed 7-May-2018
Date Authorised 7-May-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: MP Ash - D10 - B5

Source: MP **Customer Sampling Point:** 250 **Sampling Code:** B5 **Sample Frequency:** Ad-Hoc

Testing Laboratory: ALS Environmental

Anions	Test Method	Filtered
Fluoride (F)	ED009-X	<5.00 mg/L
Chloride (Cl)	ED009-X	4440 mg/L
Sulfate (SO4)	ED009-X	36100 mg/L

ED009x: samples ES1812068-7, 8, 18 and 19 required dilution due to matrix interferences. LOR values have been adjusted accordingly.

Alkalinity Test Method: ED037-P **Total**
 Total Alkalinity (CaCO3) 54 mg/L

Physical Test Method: EA015H **Total**
 Total Dissolved Solids @ 180°C 57200 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1812068. Report Date: 4-May-2018

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Authorised by Thanh Hoang Le
 Senior Chemist

Final - Report Number: 2336952
ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Nikki Tomlinson

Sample Number MPW021478
Date Sampled 26-Apr-2018 11:10
Date Received 27-Apr-2018
Date Completed 7-May-2018
Date Authorised 7-May-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: MP Ash - D10 - B5-1

Source: MP **Customer Sampling Point:** 251 **Sampling Code:** B5-1 **Sample Frequency:** Ad-Hoc

Testing Laboratory: Mount Piper
Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	36.8 m
pH	CA12125	5.85
Conductivity	CA12125	44760 µS/cm

Testing Laboratory: ALS Environmental
Water

Cations - Metals	Test Method	Filtered	Total
Mercury (Hg)	EG035T-LL		0.00009 mg/L
Aluminium (Al)	EG020A-T		20.4 mg/L
Arsenic (As)	EG020A-T		0.035 mg/L
Barium (Ba)	EG020A-T		0.158 mg/L
Boron (B)	EG020A-T		9.25 mg/L
Cadmium (Cd)	EG020A-T		0.0662 mg/L
Calcium (Ca)	ED093T-UL		495 mg/L
Chromium (Cr)	EG020A-T		0.098 mg/L
Copper (Cu)	EG020A-T		0.049 mg/L
Iron (Fe)	EG020A-F	0.46 mg/L	
Lead (Pb)	EG020A-T		0.041 mg/L
Magnesium (Mg)	ED093T-UL		1800 mg/L
Manganese (Mn)	EG020A-F	39.9 mg/L	
Molybdenum (Mo)	EG020A-T		0.067 mg/L
Nickel (Ni)	EG020A-T		2.07 mg/L
Potassium (K)	ED093T-UL		1500 mg/L
Selenium (Se)	EG094B-T		0.163 mg/L
Silver (Ag)	EG020B-T		<0.010 mg/L
Sodium (Na)	ED093T-UL		13800 mg/L
Vanadium (V)	EG020A-F	<0.10 mg/L	
Vanadium (V)	EG020A-T		<0.10 mg/L
Zinc (Zn)	EG020A-T		3.22 mg/L

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Final - Report Number: 2336952
ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Nikki Tomlinson

Sample Number MPW021478
Date Sampled 26-Apr-2018 11:10
Date Received 27-Apr-2018
Date Completed 7-May-2018
Date Authorised 7-May-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: MP Ash - D10 - B5-1

Source: MP **Customer Sampling Point:** 251 **Sampling Code:** B5-1 **Sample Frequency:** Ad-Hoc

Testing Laboratory: ALS Environmental

Anions	Test Method	Filtered
Fluoride (F)	ED009-X	<5.00 mg/L
Chloride (Cl)	ED009-X	3520 mg/L
Sulfate (SO4)	ED009-X	31300 mg/L

ED009x: samples ES1812068-7, 8, 18 and 19 required dilution due to matrix interferences. LOR values have been adjusted accordingly.

Alkalinity Test Method: ED037-P	Total
Total Alkalinity (CaCO3)	160 mg/L

Physical Test Method: EA015H	Total
Total Dissolved Solids @ 180°C	50800 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1812068. Report Date: 4-May-2018

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 Senior Chemist

Final - Report Number: 2361672
ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Nikki Tomlinson

Sample Number MPW021909
Date Sampled 24-May-2018 08:25
Date Received 25-May-2018
Date Completed 4-Jun-2018
Date Authorised 7-Jun-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Groundwater Bore MPGM4

Source: MP **Customer Sampling Point:** 014 **Sampling Code:** D9 **Sample Frequency:** Month

Testing Laboratory: Mount Piper
Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	2.3 m
Bore Volume Pumped	*Analysis in Field	2.5 L
Recharge Bore Level	*Analysis in Field	2.3 m
pH	CA12125	5.92
Conductivity	CA12125	3140 µS/cm

Testing Laboratory: ALS Environmental
Water

Cations - Metals	Test Method	Filtered	Total
Mercury (Hg)	EG035T-LL		<0.00004 mg/L
Aluminium (Al)	EG020A-T		0.03 mg/L
Arsenic (As)	EG020A-T		<0.001 mg/L
Barium (Ba)	EG020A-T		0.032 mg/L
Boron (B)	EG020A-T		0.90 mg/L
Cadmium (Cd)	EG020A-T		<0.0001 mg/L
Calcium (Ca)	ED093T-UL		245 mg/L
Chromium (Cr)	EG020A-T		<0.001 mg/L
Copper (Cu)	EG020A-T		<0.001 mg/L
Iron (Fe)	EG020A-F	19.8 mg/L	
Lead (Pb)	EG020A-T		<0.001 mg/L
Magnesium (Mg)	ED093T-UL		236 mg/L
Manganese (Mn)	EG020A-F	13.0 mg/L	
Molybdenum (Mo)	EG020A-T		0.001 mg/L
Nickel (Ni)	EG020A-T		0.300 mg/L
Potassium (K)	ED093T-UL		16.7 mg/L
Selenium (Se)	EG094B-T		<0.0002 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		206 mg/L
Vanadium (V)	EG020A-F	<0.01 mg/L	
Vanadium (V)	EG020A-T		<0.01 mg/L

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Final - Report Number: 2361672
ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Nikki Tomlinson

Sample Number MPW021909
Date Sampled 24-May-2018 08:25
Date Received 25-May-2018
Date Completed 4-Jun-2018
Date Authorised 7-Jun-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Groundwater Bore MPGM4

Source: MP **Customer Sampling Point:** 014 **Sampling Code:** D9 **Sample Frequency:** Month

Testing Laboratory: ALS Environmental

Zinc (Zn)	EG020A-T	0.111 mg/L
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Anions Test Method: ED009-X

Fluoride (F)	Filtered	0.138 mg/L
Chloride (Cl)		151 mg/L
Sulfate (SO4)		1600 mg/L

Alkalinity Test Method: ED037-P

Total Alkalinity (CaCO3)	Total
	139 mg/L

Physical Test Method: EA015H

Total Dissolved Solids @ 180°C	Total
	2230 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1815170. Report Date: 4-Jun-2018

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Final - Report Number: 2361672
ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Nikki Tomlinson

Sample Number MPW021910
Date Sampled 23-May-2018 08:50
Date Received 25-May-2018
Date Completed 4-Jun-2018
Date Authorised 7-Jun-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Stream Gauge

Source: MP **Customer Sampling Point:** 003 **Sampling Code:** WX22 **Sample Frequency:** Month

Testing Laboratory: Mount Piper
 Water

Field Analysis	Test Method	Total
Discharge Flowing	*Analysis in Field	Flow
pH	CA12125	6.82
Conductivity	CA12125	920 µS/cm
Temperature	CA12125	4.5 °C
Dissolved Oxygen (O2)	*Analysis in Field	12.6 mg/L



Field Photo

Testing Laboratory: ALS Environmental
 Water

Cations - Metals	Test Method	Filtered	Total
Mercury (Hg)	EG035T-LL		<0.00004 mg/L
Aluminium (Al)	EG020A-F	<0.01 mg/L	
Aluminium (Al)	EG020A-T		<0.01 mg/L
Arsenic (As)	EG020A-T		<0.001 mg/L

* NATA accreditation does not cover the performance of this service



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Authorised by Thanh Hoang Le
 Senior Chemist

Final - Report Number: 2361672
ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Nikki Tomlinson

Sample Number MPW021910
Date Sampled 23-May-2018 08:50
Date Received 25-May-2018
Date Completed 4-Jun-2018
Date Authorised 7-Jun-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Stream Gauge

Source: MP **Customer Sampling Point:** 003 **Sampling Code:** WX22 **Sample Frequency:** Month

Testing Laboratory: ALS Environmental

Barium (Ba)	EG020A-T	0.032 mg/L
Boron (B)	EG020A-T	0.12 mg/L
Cadmium (Cd)	EG020A-T	<0.0001 mg/L
Calcium (Ca)	ED093T-UL	65.2 mg/L
Chromium (Cr)	EG020A-T	<0.001 mg/L
Copper (Cu)	EG020A-F	<0.001 mg/L
Copper (Cu)	EG020A-T	<0.001 mg/L
Iron (Fe)	EG094B-F	0.141 mg/L
Iron (Fe)	EG094B-T	0.298 mg/L
Lead (Pb)	EG020A-T	<0.001 mg/L
Magnesium (Mg)	ED093T-UL	42.4 mg/L
Manganese (Mn)	EG020A-F	0.632 mg/L
Manganese (Mn)	EG020A-T	0.653 mg/L
Molybdenum (Mo)	EG020A-T	<0.001 mg/L
Nickel (Ni)	EG020A-T	0.028 mg/L
Potassium (K)	ED093T-UL	5.89 mg/L
Selenium (Se)	EG094B-T	<0.0002 mg/L
Silver (Ag)	EG020B-T	<0.001 mg/L
Sodium (Na)	ED093T-UL	53.8 mg/L
Strontium (Sr)	EG020B-T	0.214 mg/L
Vanadium (V)	EG020A-F	<0.01 mg/L
Vanadium (V)	EG020A-T	<0.01 mg/L
Zinc (Zn)	EG020A-F	0.007 mg/L
Zinc (Zn)	EG020A-T	0.007 mg/L

* NATA accreditation does not cover the performance of this service



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Authorised by Thanh Hoang Le
 Senior Chemist

Final - Report Number: 2361672
ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Nikki Tomlinson

Sample Number MPW021910
Date Sampled 23-May-2018 08:50
Date Received 25-May-2018
Date Completed 4-Jun-2018
Date Authorised 7-Jun-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Stream Gauge

Source: MP **Customer Sampling Point:** 003 **Sampling Code:** WX22 **Sample Frequency:** Month

Testing Laboratory: ALS Environmental

Anions	Test Method	Filtered
Fluoride (F)	ED009-X	0.097 mg/L
Chloride (Cl)	ED009-X	60.6 mg/L
Sulfate (SO4)	ED009-X	312 mg/L
Nitrate (N)	EK058G	0.02 mg/L
Nitrite (N)	EK057G	<0.01 mg/L
Nitrate and Nitrite (N)	EK059G	0.02 mg/L

Alkalinity	Test Method: ED037-P	Total
Total Alkalinity (CaCO3)		60 mg/L
Phenolphthalein Alkalinity (CaCO3)		<1 mg/L
Bicarbonate (CaCO3)		60 mg/L

Phosphate	Test Method: EK067G	Total
Total Phosphorus (P)		0.01 mg/L

Physical	Test Method	Total
Total Dissolved Solids @ 180°C	EA015H	617 mg/L
Turbidity	EA045	1.6 NTU

Other	Test Method	Total
Nitrogen (N)	EK062G	0.1 mg/L
Nitrogen (N) - Kjeldahl	EK061G	0.1 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1815170. Report Date: 4-Jun-2018

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Final - Report Number: 2361672
ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Nikki Tomlinson

Sample Number MPW021911
Date Sampled 23-May-2018 09:30
Date Received 25-May-2018
Date Completed 4-Jun-2018
Date Authorised 7-Jun-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Groundwater Bore MPGM4

Source: MP **Customer Sampling Point:** 006 **Sampling Code:** D1 **Sample Frequency:** Month

Testing Laboratory: Mount Piper
Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	3.1 m
Bore Volume Pumped	*Analysis in Field	118 L
Recharge Bore Level	*Analysis in Field	3.6 m
pH	CA12125	5.90
Conductivity	CA12125	5990 µS/cm

Testing Laboratory: ALS Environmental
Water

Cations - Metals	Test Method	Filtered	Total
Mercury (Hg)	EG035T-LL		<0.00004 mg/L
Aluminium (Al)	EG020A-T		0.03 mg/L
Arsenic (As)	EG020A-T		0.007 mg/L
Barium (Ba)	EG020A-T		0.031 mg/L
Boron (B)	EG020A-T		2.01 mg/L
Cadmium (Cd)	EG020A-T		<0.0001 mg/L
Calcium (Ca)	ED093T-UL		457 mg/L
Chromium (Cr)	EG020A-T		<0.001 mg/L
Copper (Cu)	EG020A-T		<0.001 mg/L
Iron (Fe)	EG020A-F	50.1 mg/L	
Lead (Pb)	EG020A-T		<0.001 mg/L
Magnesium (Mg)	ED093T-UL		338 mg/L
Manganese (Mn)	EG020A-F	17.0 mg/L	
Molybdenum (Mo)	EG020A-T		<0.001 mg/L
Nickel (Ni)	EG020A-T		1.16 mg/L
Potassium (K)	ED093T-UL		40.9 mg/L
Selenium (Se)	EG094B-T		<0.0002 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		643 mg/L
Vanadium (V)	EG020A-F	<0.01 mg/L	
Vanadium (V)	EG020A-T		<0.01 mg/L

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Final - Report Number: 2361672
ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Nikki Tomlinson

Sample Number MPW021911
Date Sampled 23-May-2018 09:30
Date Received 25-May-2018
Date Completed 4-Jun-2018
Date Authorised 7-Jun-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Groundwater Bore MPGM4

Source: MP **Customer Sampling Point:** 006 **Sampling Code:** D1 **Sample Frequency:** Month

Testing Laboratory: ALS Environmental

Zinc (Zn)	EG020A-T	0.125 mg/L
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Anions Test Method: ED009-X	Filtered	
Fluoride (F)		0.080 mg/L
Chloride (Cl)		675 mg/L
Sulfate (SO4)		2620 mg/L

Alkalinity Test Method: ED037-P		Total
Total Alkalinity (CaCO3)		185 mg/L

Physical Test Method: EA015H		Total
Total Dissolved Solids @ 180°C		4890 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1815170. Report Date: 4-Jun-2018

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 Senior Chemist

Final - Report Number: 2361672
ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Nikki Tomlinson

Sample Number MPW021912
Date Sampled 24-May-2018 09:35
Date Received 25-May-2018
Date Completed 4-Jun-2018
Date Authorised 7-Jun-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Groundwater Bore MPGM4

Source: MP **Customer Sampling Point:** 013 **Sampling Code:** D8 **Sample Frequency:** Month

Testing Laboratory: Mount Piper

Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	2.6 m
Bore Volume Pumped	*Analysis in Field	44 L
Recharge Bore Level	*Analysis in Field	2.7 m
pH	CA12125	5.47
Conductivity	CA12125	1280 µS/cm

Testing Laboratory: ALS Environmental

Water

Cations - Metals	Test Method	Filtered	Total
Mercury (Hg)	EG035T-LL		<0.00004 mg/L
Aluminium (Al)	EG020A-T		0.06 mg/L
Arsenic (As)	EG020A-T		<0.001 mg/L
Barium (Ba)	EG020A-T		0.071 mg/L
Boron (B)	EG020A-T		0.16 mg/L
Cadmium (Cd)	EG020A-T		<0.0001 mg/L
Calcium (Ca)	ED093T-UL		77.6 mg/L
Chromium (Cr)	EG020A-T		<0.001 mg/L
Copper (Cu)	EG020A-T		0.005 mg/L
Iron (Fe)	EG094B-F	1.60 mg/L	
Lead (Pb)	EG020A-T		<0.001 mg/L
Magnesium (Mg)	ED093T-UL		63.4 mg/L
Manganese (Mn)	EG020A-F	2.33 mg/L	
Molybdenum (Mo)	EG020A-T		<0.001 mg/L
Nickel (Ni)	EG020A-T		0.142 mg/L
Potassium (K)	ED093T-UL		6.95 mg/L
Selenium (Se)	EG094B-T		<0.0002 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		92.2 mg/L
Vanadium (V)	EG020A-F	<0.01 mg/L	
Vanadium (V)	EG020A-T		<0.01 mg/L

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Final - Report Number: 2361672
ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Nikki Tomlinson

Sample Number MPW021912
Date Sampled 24-May-2018 09:35
Date Received 25-May-2018
Date Completed 4-Jun-2018
Date Authorised 7-Jun-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Groundwater Bore MPGM4

Source: MP **Customer Sampling Point:** 013 **Sampling Code:** D8 **Sample Frequency:** Month

Testing Laboratory: ALS Environmental

Zinc (Zn) EG020A-T 0.158 mg/L

Anions Test Method: ED009-X

	Filtered
Fluoride (F)	0.042 mg/L
Chloride (Cl)	80.4 mg/L
Sulfate (SO4)	506 mg/L

Alkalinity Test Method: ED037-P

Total Alkalinity (CaCO3)	Total 22 mg/L
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Physical Test Method: EA015H

Total Dissolved Solids @ 180°C	Total 952 mg/L
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Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1815170. Report Date: 4-Jun-2018

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Final - Report Number: 2361672
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BOULDER ROAD
PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Nikki Tomlinson

Sample Number MPW021913
Date Sampled 23-May-2018 13:20
Date Received 25-May-2018
Date Completed 25-May-2018
Date Authorised 25-May-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: MP Ash - D10 - D21

Source: MP

Customer Sampling Point: 253

Sampling Code: D21

Sample Frequency:
ADDITIONAL_MONTH

Testing Laboratory: Mount Piper

Water

Field Analysis Test Method: Analysis in Field
Dry

Total

N Tomlinson

Authorised by Nikki Tomlinson
Senior Chemist

Final - Report Number: 2361672
ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Nikki Tomlinson

Sample Number MPW021914
Date Sampled 23-May-2018 13:10
Date Received 25-May-2018
Date Completed 4-Jun-2018
Date Authorised 7-Jun-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: MP Ash - D10 - D23

Source: MP **Customer Sampling Point:** 254 **Sampling Code:** D23 **Sample Frequency:** ADDITIONAL_MONTH

Testing Laboratory: Mount Piper
Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	25.1 m
Bore Volume Pumped	*Analysis in Field	47 L
Recharge Bore Level	*Analysis in Field	25.1 m
pH	CA12125	5.57
Conductivity	CA12125	3820 µS/cm

Testing Laboratory: ALS Environmental
Water

Cations - Metals	Test Method	Filtered	Total
Mercury (Hg)	EG035T-LL		<0.00004 mg/L
Aluminium (Al)	EG020A-T		0.71 mg/L
Arsenic (As)	EG020A-T		0.002 mg/L
Barium (Ba)	EG020A-T		0.016 mg/L
Boron (B)	EG020A-T		0.42 mg/L
Cadmium (Cd)	EG020A-T		0.0002 mg/L
Calcium (Ca)	ED093T-UL		216 mg/L
Chromium (Cr)	EG020A-T		0.004 mg/L
Copper (Cu)	EG020A-T		0.001 mg/L
Iron (Fe)	EG020A-F	19.9 mg/L	
Lead (Pb)	EG020A-T		0.004 mg/L
Magnesium (Mg)	ED093T-UL		117 mg/L
Manganese (Mn)	EG020A-F	2.33 mg/L	
Molybdenum (Mo)	EG020A-T		<0.001 mg/L
Nickel (Ni)	EG020A-T		0.394 mg/L
Potassium (K)	ED093T-UL		42.8 mg/L
Selenium (Se)	EG094B-T		0.0002 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		589 mg/L
Vanadium (V)	EG020A-F	<0.01 mg/L	

* NATA accreditation does not cover the performance of this service



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Authorised by Thanh Hoang Le
 Senior Chemist

Final - Report Number: 2361672
ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Nikki Tomlinson

Sample Number MPW021914
Date Sampled 23-May-2018 13:10
Date Received 25-May-2018
Date Completed 4-Jun-2018
Date Authorised 7-Jun-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: MP Ash - D10 - D23

Source: MP **Customer Sampling Point:** 254 **Sampling Code:** D23 **Sample Frequency:** ADDITIONAL_MONTH

Testing Laboratory: ALS Environmental

Vanadium (V)	EG020A-T	<0.01 mg/L
Zinc (Zn)	EG020A-T	0.616 mg/L

Anions Test Method: ED009-X	Filtered
Fluoride (F)	0.150 mg/L
Chloride (Cl)	228 mg/L
Sulfate (SO4)	1860 mg/L

Alkalinity Test Method: ED037-P	Total
Total Alkalinity (CaCO3)	69 mg/L

Physical Test Method: EA015H	Total
Total Dissolved Solids @ 180°C	3080 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1815170. Report Date: 4-Jun-2018

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 Senior Chemist

Final - Report Number: 2361672
ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Nikki Tomlinson

Sample Number MPW021915
Date Sampled 24-May-2018 12:15
Date Received 25-May-2018
Date Completed 4-Jun-2018
Date Authorised 7-Jun-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Groundwater Bore MPGM4

Source: MP **Customer Sampling Point:** 223 **Sampling Code:** D18 **Sample Frequency:** Month

Testing Laboratory: Mount Piper

Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	24.6 m
Bore Volume Pumped	*Analysis in Field	20 L
Recharge Bore Level	*Analysis in Field	31.1 m
pH	CA12125	6.67
Conductivity	CA12125	790 µS/cm

Testing Laboratory: ALS Environmental

Water

Cations - Metals	Test Method	Filtered	Total
Mercury (Hg)	EG035T-LL		<0.00004 mg/L
Aluminium (Al)	EG020A-T		0.05 mg/L
Arsenic (As)	EG020A-T		0.003 mg/L
Barium (Ba)	EG020A-T		0.589 mg/L
Boron (B)	EG020A-T		0.07 mg/L
Cadmium (Cd)	EG020A-T		<0.0001 mg/L
Calcium (Ca)	ED093T-UL		82.0 mg/L
Chromium (Cr)	EG020A-T		<0.001 mg/L
Copper (Cu)	EG020A-T		0.002 mg/L
Iron (Fe)	EG094B-F	0.540 mg/L	
Lead (Pb)	EG020A-T		<0.001 mg/L
Magnesium (Mg)	ED093T-UL		33.4 mg/L
Manganese (Mn)	EG020A-F	0.176 mg/L	
Molybdenum (Mo)	EG020A-T		0.003 mg/L
Nickel (Ni)	EG020A-T		0.009 mg/L
Potassium (K)	ED093T-UL		18.7 mg/L
Selenium (Se)	EG094B-T		0.0002 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		33.3 mg/L
Vanadium (V)	EG020A-F	<0.01 mg/L	
Vanadium (V)	EG020A-T		<0.01 mg/L

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 Senior Chemist

Final - Report Number: 2361672
ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Nikki Tomlinson

Sample Number MPW021915
Date Sampled 24-May-2018 12:15
Date Received 25-May-2018
Date Completed 4-Jun-2018
Date Authorised 7-Jun-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Groundwater Bore MPGM4

Source: MP **Customer Sampling Point:** 223 **Sampling Code:** D18 **Sample Frequency:** Month

Testing Laboratory: ALS Environmental

Zinc (Zn) EG020A-T 0.039 mg/L

Anions Test Method: ED009-X

	Filtered
Fluoride (F)	0.536 mg/L
Chloride (Cl)	14.3 mg/L
Sulfate (SO4)	64.1 mg/L

Alkalinity Test Method: ED037-P

Total Alkalinity (CaCO3)	Total 369 mg/L
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Physical Test Method: EA015H

Total Dissolved Solids @ 180°C	Total 534 mg/L
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Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1815170. Report Date: 4-Jun-2018

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 Senior Chemist

Final - Report Number: 2361672
ENERGY AUSTRALIA C/- MT PIPER POWER
BOULDER ROAD
PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Nikki Tomlinson

Sample Number MPW021916
Date Sampled 23-May-2018 13:30
Date Received 25-May-2018
Date Completed 25-May-2018
Date Authorised 25-May-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: MP Ash - D10 - SW3-S

Source: MP

Customer Sampling Point: 257

Sampling Code: SW3-S

Sample Frequency:
ADDITIONAL_MONTH

Testing Laboratory: Mount Piper

Water

Field Analysis Test Method: Analysis in Field
Initial Bore Level

Total
17.2 m

Insufficient Volume to Sample

N Tomlinson

Authorised by Nikki Tomlinson
Senior Chemist

Customer Analytical Services

Mount Piper Power Station 350 Boulder Road Portland 2847 NSW

Email: customeranalyticalservices@nalco.com



Final - Report Number: 2361672

ENERGY AUSTRALIA C/- MT PIPER POWER

BOULDER ROAD

PORTLAND NSW 2847 AUSTRALIA

Sold To: 0500082301 **Ship To:** 0500082301

Representative: Clive Stacey

Sampled By: Nikki Tomlinson

Sample Number

MPW021917

Date Sampled

23-May-2018 13:30

Date Received

25-May-2018

Date Completed

25-May-2018

Date Authorised

25-May-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: MP Ash - D10 - SW3-D

Source: MP

Customer Sampling Point: 256

Sampling Code: SW3-D

Sample Frequency:

ADDITIONAL_MONTH

Testing Laboratory: Mount Piper

Water

Field Analysis **Test Method:** Analysis in Field
Dry

Total

Authorised by Nikki Tomlinson
Senior Chemist

Final - Report Number: 2361672
ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Nikki Tomlinson

Sample Number MPW021918
Date Sampled 24-May-2018 10:25
Date Received 25-May-2018
Date Completed 4-Jun-2018
Date Authorised 7-Jun-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: MP Ash - D10 - B5

Source: MP **Customer Sampling Point:** 250 **Sampling Code:** B5 **Sample Frequency:** ADDITIONAL_MONTH

Testing Laboratory: Mount Piper
Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	38.0 m
Bore Volume Pumped	*Analysis in Field	1.5 L
Recharge Bore Level	*Analysis in Field	38.0 m
pH	CA12125	6.20
Conductivity	CA12125	47920 µS/cm

Testing Laboratory: ALS Environmental
Water

Cations - Metals	Test Method	Filtered	Total
Mercury (Hg)	EG035T-LL		<0.00004 mg/L
Aluminium (Al)	EG020A-T		0.38 mg/L
Arsenic (As)	EG020A-T		0.015 mg/L
Barium (Ba)	EG020A-T		0.042 mg/L
Boron (B)	EG020A-T		12.6 mg/L
Cadmium (Cd)	EG020A-T		0.166 mg/L
Calcium (Ca)	ED093T-UL		496 mg/L
Chromium (Cr)	EG020A-T		<0.010 mg/L
Copper (Cu)	EG020A-T		0.030 mg/L
Iron (Fe)	EG020A-F	0.17 mg/L	
Lead (Pb)	EG020A-T		<0.010 mg/L
Magnesium (Mg)	ED093T-UL		1920 mg/L
Manganese (Mn)	EG020A-F	13.3 mg/L	
Molybdenum (Mo)	EG020A-T		1.58 mg/L
Nickel (Ni)	EG020A-T		1.06 mg/L
Potassium (K)	ED093T-UL		1380 mg/L
Selenium (Se)	EG094B-T		0.0766 mg/L
Silver (Ag)	EG020B-T		<0.010 mg/L
Sodium (Na)	ED093T-UL		14200 mg/L
Vanadium (V)	EG020A-F	<0.10 mg/L	

* NATA accreditation does not cover the performance of this service



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Final - Report Number: 2361672
ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Nikki Tomlinson

Sample Number MPW021918
Date Sampled 24-May-2018 10:25
Date Received 25-May-2018
Date Completed 4-Jun-2018
Date Authorised 7-Jun-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: MP Ash - D10 - B5

Source: MP **Customer Sampling Point:** 250 **Sampling Code:** B5 **Sample Frequency:** ADDITIONAL_MONTH

Testing Laboratory: ALS Environmental

Vanadium (V)	EG020A-T	<0.10 mg/L
Zinc (Zn)	EG020A-T	4.89 mg/L

Anions Test Method: ED009-X	Filtered
Fluoride (F)	1.13 mg/L
Chloride (Cl)	4380 mg/L
Sulfate (SO4)	15000 mg/L

Alkalinity Test Method: ED037-P	Total
Total Alkalinity (CaCO3)	88 mg/L

Physical Test Method: EA015H	Total
Total Dissolved Solids @ 180°C	55800 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1815170. Report Date: 4-Jun-2018

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 Senior Chemist

Final - Report Number: 2361672
ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Nikki Tomlinson

Sample Number MPW021919
Date Sampled 23-May-2018 14:30
Date Received 25-May-2018
Date Completed 4-Jun-2018
Date Authorised 7-Jun-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: MP Ash - D10 - B5-1

Source: MP **Customer Sampling Point:** 251 **Sampling Code:** B5-1 **Sample Frequency:** ADDITIONAL_MONTH

Testing Laboratory: Mount Piper
Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	36.8 m
Bore Volume Pumped	*Analysis in Field	9 L
Recharge Bore Level	*Analysis in Field	36.8 m
pH	CA12125	5.53
Conductivity	CA12125	43740 µS/cm

Testing Laboratory: ALS Environmental
Water

Cations - Metals	Test Method	Filtered	Total
Mercury (Hg)	EG035T-LL		<0.00004 mg/L
Aluminium (Al)	EG020A-T		2.49 mg/L
Arsenic (As)	EG020A-T		<0.010 mg/L
Barium (Ba)	EG020A-T		0.044 mg/L
Boron (B)	EG020A-T		9.87 mg/L
Cadmium (Cd)	EG020A-T		0.0579 mg/L
Calcium (Ca)	ED093T-UL		480 mg/L
Chromium (Cr)	EG020A-T		<0.010 mg/L
Copper (Cu)	EG020A-T		0.025 mg/L
Iron (Fe)	EG020A-F	0.23 mg/L	
Lead (Pb)	EG020A-T		<0.010 mg/L
Magnesium (Mg)	ED093T-UL		1670 mg/L
Manganese (Mn)	EG020A-F	37.7 mg/L	
Molybdenum (Mo)	EG020A-T		0.012 mg/L
Nickel (Ni)	EG020A-T		1.88 mg/L
Potassium (K)	ED093T-UL		1100 mg/L
Selenium (Se)	EG094B-T		0.135 mg/L
Silver (Ag)	EG020B-T		<0.010 mg/L
Sodium (Na)	ED093T-UL		13700 mg/L
Vanadium (V)	EG020A-F	<0.10 mg/L	

* NATA accreditation does not cover the performance of this service



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Authorised by Thanh Hoang Le
 Senior Chemist

Final - Report Number: 2361672
ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Nikki Tomlinson

Sample Number MPW021919
Date Sampled 23-May-2018 14:30
Date Received 25-May-2018
Date Completed 4-Jun-2018
Date Authorised 7-Jun-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: MP Ash - D10 - B5-1

Source: MP **Customer Sampling Point:** 251 **Sampling Code:** B5-1 **Sample Frequency:** ADDITIONAL_MONTH

Testing Laboratory: ALS Environmental

Vanadium (V)	EG020A-T	<0.10 mg/L
Zinc (Zn)	EG020A-T	2.79 mg/L

Anions	Test Method: ED009-X	Filtered
Fluoride (F)		2.92 mg/L
Chloride (Cl)		3690 mg/L
Sulfate (SO4)		28800 mg/L

Alkalinity	Test Method: ED037-P	Total
Total Alkalinity (CaCO3)		123 mg/L

Physical	Test Method: EA015H	Total
Total Dissolved Solids @ 180°C		50500 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1815170. Report Date: 4-Jun-2018

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 Senior Chemist

Final - Report Number: 2361672
ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Nikki Tomlinson

Sample Number MPW021920
Date Sampled 24-May-2018 10:45
Date Received 25-May-2018
Date Completed 4-Jun-2018
Date Authorised 7-Jun-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: MP Ash - D10 - NA5

Source: MP **Customer Sampling Point:** 255 **Sampling Code:** NA5 **Sample Frequency:** ADDITIONAL_MONTH

Testing Laboratory: Mount Piper
Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	25.3 m
Bore Volume Pumped	*Analysis in Field	11 L
Recharge Bore Level	*Analysis in Field	25.3 m
pH	CA12125	5.86
Conductivity	CA12125	4880 µS/cm

Testing Laboratory: ALS Environmental
Water

Cations - Metals	Test Method	Filtered	Total
Mercury (Hg)	EG035T-LL		<0.00004 mg/L
Aluminium (Al)	EG020A-T		1.24 mg/L
Arsenic (As)	EG020A-T		<0.001 mg/L
Barium (Ba)	EG020A-T		0.027 mg/L
Boron (B)	EG020A-T		10.6 mg/L
Cadmium (Cd)	EG020A-T		0.0086 mg/L
Calcium (Ca)	ED093T-UL		339 mg/L
Chromium (Cr)	EG020A-T		0.002 mg/L
Copper (Cu)	EG020A-T		0.012 mg/L
Iron (Fe)	EG020A-F	0.46 mg/L	
Lead (Pb)	EG020A-T		<0.001 mg/L
Magnesium (Mg)	ED093T-UL		112 mg/L
Manganese (Mn)	EG020A-F	6.65 mg/L	
Molybdenum (Mo)	EG020A-T		0.164 mg/L
Nickel (Ni)	EG020A-T		0.427 mg/L
Potassium (K)	ED093T-UL		140 mg/L
Selenium (Se)	EG094B-T		0.0204 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		685 mg/L
Vanadium (V)	EG020A-F	<0.01 mg/L	

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ENERGY AUSTRALIA C/- MT PIPER POWER
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 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Nikki Tomlinson

Sample Number MPW021920
Date Sampled 24-May-2018 10:45
Date Received 25-May-2018
Date Completed 4-Jun-2018
Date Authorised 7-Jun-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: MP Ash - D10 - NA5

Source: MP **Customer Sampling Point:** 255 **Sampling Code:** NA5 **Sample Frequency:** ADDITIONAL_MONTH

Testing Laboratory: ALS Environmental

Vanadium (V)	EG020A-T	<0.01 mg/L
Zinc (Zn)	EG020A-T	0.667 mg/L

Anions Test Method: ED009-X	Filtered
Fluoride (F)	5.13 mg/L
Chloride (Cl)	145 mg/L
Sulfate (SO4)	2500 mg/L

Alkalinity Test Method: ED037-P	Total
Total Alkalinity (CaCO3)	121 mg/L

Physical Test Method: EA015H	Total
Total Dissolved Solids @ 180°C	4060 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1815170. Report Date: 4-Jun-2018

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 Senior Chemist

Final - Report Number: 2361672
ENERGY AUSTRALIA C/- MT PIPER POWER
BOULDER ROAD
PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Nikki Tomlinson

Sample Number MPW021921
Date Sampled 24-May-2018 13:45
Date Received 25-May-2018
Date Completed 25-May-2018
Date Authorised 25-May-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: MP Ash - D10 - D20

Source: MP

Customer Sampling Point: 252

Sampling Code: D20

Sample Frequency:
ADDITIONAL_MONTH

Testing Laboratory: Mount Piper

Water

Field Analysis Test Method: Analysis in Field
Initial Bore Level

Total
17.7 m

Couldn't be pumped - Blocked at Approximately 0.7m down

N Tomlinson

Authorised by Nikki Tomlinson
Senior Chemist

Final - Report Number: 2361672
ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Nikki Tomlinson

Sample Number MPW021922
Date Sampled 24-May-2018 14:00
Date Received 25-May-2018
Date Completed 4-Jun-2018
Date Authorised 7-Jun-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Groundwater Bore MPGM4

Source: MP **Customer Sampling Point:** 224 **Sampling Code:** D19 **Sample Frequency:** Month

Testing Laboratory: Mount Piper

Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	9.8 m
Bore Volume Pumped	*Analysis in Field	13 L
Recharge Bore Level	*Analysis in Field	9.8 m
pH	CA12125	5.92
Conductivity	CA12125	6320 µS/cm

Testing Laboratory: ALS Environmental

Water

Cations - Metals	Test Method	Filtered	Total
Mercury (Hg)	EG035T-LL		<0.00004 mg/L
Aluminium (Al)	EG020A-T		1.69 mg/L
Arsenic (As)	EG020A-T		0.011 mg/L
Barium (Ba)	EG020A-T		0.050 mg/L
Boron (B)	EG020A-T		2.83 mg/L
Cadmium (Cd)	EG020A-T		0.0002 mg/L
Calcium (Ca)	ED093T-UL		334 mg/L
Chromium (Cr)	EG020A-T		0.036 mg/L
Copper (Cu)	EG020A-T		0.019 mg/L
Iron (Fe)	EG094B-F	29.9 mg/L	
Lead (Pb)	EG020A-T		0.027 mg/L
Magnesium (Mg)	ED093T-UL		277 mg/L
Manganese (Mn)	EG020A-F	11.0 mg/L	
Molybdenum (Mo)	EG020A-T		0.004 mg/L
Nickel (Ni)	EG020A-T		0.927 mg/L
Potassium (K)	ED093T-UL		62.1 mg/L
Selenium (Se)	EG094B-T		0.0006 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		1020 mg/L
Vanadium (V)	EG020A-F	<0.01 mg/L	
Vanadium (V)	EG020A-T		<0.01 mg/L

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 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Nikki Tomlinson

Sample Number MPW021922
Date Sampled 24-May-2018 14:00
Date Received 25-May-2018
Date Completed 4-Jun-2018
Date Authorised 7-Jun-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Groundwater Bore MPGM4

Source: MP **Customer Sampling Point:** 224 **Sampling Code:** D19 **Sample Frequency:** Month

Testing Laboratory: ALS Environmental

Zinc (Zn) EG020A-T 0.463 mg/L

Anions Test Method: ED009-X

	Filtered
Fluoride (F)	0.153 mg/L
Chloride (Cl)	504 mg/L
Sulfate (SO4)	3020 mg/L

Alkalinity Test Method: ED037-P

	Total
Total Alkalinity (CaCO3)	133 mg/L

Physical Test Method: EA015H

	Total
Total Dissolved Solids @ 180°C	5330 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1815170. Report Date: 4-Jun-2018

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 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Nikki Tomlinson

Sample Number MPW021923
Date Sampled 24-May-2018 09:10
Date Received 25-May-2018
Date Completed 4-Jun-2018
Date Authorised 7-Jun-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Groundwater Bore MPGM4

Source: MP **Customer Sampling Point:** 008 **Sampling Code:** D3 **Sample Frequency:** Month

Testing Laboratory: Mount Piper

Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	7.9 m
Bore Volume Pumped	*Analysis in Field	196 L
Recharge Bore Level	*Analysis in Field	10.0 m
pH	CA12125	6.11
Conductivity	CA12125	880 µS/cm

Testing Laboratory: ALS Environmental

Water

Cations - Metals	Test Method	Filtered	Total
Mercury (Hg)	EG035T-LL		<0.00004 mg/L
Aluminium (Al)	EG020A-T		<0.01 mg/L
Arsenic (As)	EG020A-T		<0.001 mg/L
Barium (Ba)	EG020A-T		0.020 mg/L
Boron (B)	EG020A-T		<0.05 mg/L
Cadmium (Cd)	EG020A-T		<0.0001 mg/L
Calcium (Ca)	ED093T-UL		76.9 mg/L
Chromium (Cr)	EG020A-T		<0.001 mg/L
Copper (Cu)	EG020A-T		0.003 mg/L
Iron (Fe)	EG020A-F	12.0 mg/L	
Lead (Pb)	EG020A-T		<0.001 mg/L
Magnesium (Mg)	ED093T-UL		45.5 mg/L
Manganese (Mn)	EG020A-F	0.656 mg/L	
Molybdenum (Mo)	EG020A-T		<0.001 mg/L
Nickel (Ni)	EG020A-T		0.002 mg/L
Potassium (K)	ED093T-UL		9.73 mg/L
Selenium (Se)	EG094B-T		<0.0002 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		34.9 mg/L
Vanadium (V)	EG020A-F	<0.01 mg/L	
Vanadium (V)	EG020A-T		<0.01 mg/L

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ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Nikki Tomlinson

Sample Number MPW021923
Date Sampled 24-May-2018 09:10
Date Received 25-May-2018
Date Completed 4-Jun-2018
Date Authorised 7-Jun-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Groundwater Bore MPGM4

Source: MP **Customer Sampling Point:** 008 **Sampling Code:** D3 **Sample Frequency:** Month

Testing Laboratory: ALS Environmental

Zinc (Zn) EG020A-T 0.006 mg/L

Anions Test Method: ED009-X

	Filtered
Fluoride (F)	0.078 mg/L
Chloride (Cl)	28.2 mg/L
Sulfate (SO4)	293 mg/L

Alkalinity Test Method: ED037-P

	Total
Total Alkalinity (CaCO3)	169 mg/L

Physical Test Method: EA015H

	Total
Total Dissolved Solids @ 180°C	590 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1815170. Report Date: 4-Jun-2018

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Final - Report Number: 2361672
ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Nikki Tomlinson

Sample Number MPW021924
Date Sampled 24-May-2018 11:55
Date Received 25-May-2018
Date Completed 4-Jun-2018
Date Authorised 7-Jun-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Groundwater Bore MPGM4

Source: MP **Customer Sampling Point:** 016 **Sampling Code:** D11 **Sample Frequency:** Month

Testing Laboratory: Mount Piper
Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	26.7 m
Bore Volume Pumped	*Analysis in Field	124 L
Recharge Bore Level	*Analysis in Field	26.7 m
pH	CA12125	6.19
Conductivity	CA12125	9850 µS/cm

Testing Laboratory: ALS Environmental
Water

Cations - Metals	Test Method	Filtered	Total
Mercury (Hg)	EG035T-LL		<0.00004 mg/L
Aluminium (Al)	EG020A-T		<0.01 mg/L
Arsenic (As)	EG020A-T		0.009 mg/L
Barium (Ba)	EG020A-T		0.015 mg/L
Boron (B)	EG020A-T		2.91 mg/L
Cadmium (Cd)	EG020A-T		<0.0001 mg/L
Calcium (Ca)	ED093T-UL		624 mg/L
Chromium (Cr)	EG020A-T		<0.001 mg/L
Copper (Cu)	EG020A-T		0.003 mg/L
Iron (Fe)	EG020A-F	113 mg/L	
Lead (Pb)	EG020A-T		<0.001 mg/L
Magnesium (Mg)	ED093T-UL		432 mg/L
Manganese (Mn)	EG020A-F	16.0 mg/L	
Molybdenum (Mo)	EG020A-T		0.002 mg/L
Nickel (Ni)	EG020A-T		0.898 mg/L
Potassium (K)	ED093T-UL		95.4 mg/L
Selenium (Se)	EG094B-T		0.0002 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		1540 mg/L
Vanadium (V)	EG020A-F	<0.01 mg/L	
Vanadium (V)	EG020A-T		<0.01 mg/L

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ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Nikki Tomlinson

Sample Number MPW021924
Date Sampled 24-May-2018 11:55
Date Received 25-May-2018
Date Completed 4-Jun-2018
Date Authorised 7-Jun-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Groundwater Bore MPGM4

Source: MP **Customer Sampling Point:** 016 **Sampling Code:** D11 **Sample Frequency:** Month

Testing Laboratory: ALS Environmental

Zinc (Zn)	EG020A-T	0.132 mg/L
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Anions Test Method: ED009-X	Filtered	
Fluoride (F)	0.101 mg/L	
Chloride (Cl)	1010 mg/L	
Sulfate (SO4)	5090 mg/L	

Alkalinity Test Method: ED037-P	Total	
Total Alkalinity (CaCO3)	181 mg/L	

Physical Test Method: EA015H	Total	
Total Dissolved Solids @ 180°C	7180 mg/L	

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1815170. Report Date: 4-Jun-2018

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ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Nikki Tomlinson

Sample Number MPW021925
Date Sampled 23-May-2018 12:25
Date Received 25-May-2018
Date Completed 4-Jun-2018
Date Authorised 7-Jun-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Groundwater Bore MPGM4

Source: MP **Customer Sampling Point:** 015 **Sampling Code:** D10 **Sample Frequency:** Month

Testing Laboratory: Mount Piper
Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	15.4 m
Bore Volume Pumped	*Analysis in Field	147 L
Recharge Bore Level	*Analysis in Field	15.4 m
pH	CA12125	5.54
Conductivity	CA12125	11130 µS/cm

Testing Laboratory: ALS Environmental
Water

Cations - Metals	Test Method	Filtered	Total
Mercury (Hg)	EG035T-LL		<0.00004 mg/L
Aluminium (Al)	EG020A-T		0.08 mg/L
Arsenic (As)	EG020A-T		<0.001 mg/L
Barium (Ba)	EG020A-T		0.017 mg/L
Boron (B)	EG020A-T		4.84 mg/L
Cadmium (Cd)	EG020A-T		0.0073 mg/L
Calcium (Ca)	ED093T-UL		382 mg/L
Chromium (Cr)	EG020A-T		<0.001 mg/L
Copper (Cu)	EG020A-T		0.002 mg/L
Iron (Fe)	EG020A-F	2.02 mg/L	
Lead (Pb)	EG020A-T		0.005 mg/L
Magnesium (Mg)	ED093T-UL		417 mg/L
Manganese (Mn)	EG020A-F	8.25 mg/L	
Molybdenum (Mo)	EG020A-T		<0.001 mg/L
Nickel (Ni)	EG020A-T		1.00 mg/L
Potassium (K)	ED093T-UL		232 mg/L
Selenium (Se)	EG094B-T		0.0037 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		2020 mg/L
Vanadium (V)	EG020A-F	<0.01 mg/L	
Vanadium (V)	EG020A-T		<0.01 mg/L

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 Senior Chemist

Final - Report Number: 2361672
ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Nikki Tomlinson

Sample Number MPW021925
Date Sampled 23-May-2018 12:25
Date Received 25-May-2018
Date Completed 4-Jun-2018
Date Authorised 7-Jun-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Groundwater Bore MPGM4

Source: MP **Customer Sampling Point:** 015 **Sampling Code:** D10 **Sample Frequency:** Month

Testing Laboratory: ALS Environmental

Zinc (Zn) EG020A-T 1.00 mg/L

Anions Test Method: ED009-X

	Filtered
Fluoride (F)	0.935 mg/L
Chloride (Cl)	981 mg/L
Sulfate (SO4)	5590 mg/L

Alkalinity Test Method: ED037-P

Total Alkalinity (CaCO3)	Total 88 mg/L
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Physical Test Method: EA015H

Total Dissolved Solids @ 180°C	Total 8480 mg/L
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Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1815170. Report Date: 4-Jun-2018

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ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Nikki Tomlinson

Sample Number MPW021926
Date Sampled 24-May-2018 15:25
Date Received 25-May-2018
Date Completed 4-Jun-2018
Date Authorised 7-Jun-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Groundwater Bore MPGM4

Source: MP **Customer Sampling Point:** 222 **Sampling Code:** D17 **Sample Frequency:** Month

Testing Laboratory: Mount Piper
Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	28.4 m
Bore Volume Pumped	*Analysis in Field	31 L
Recharge Bore Level	*Analysis in Field	28.4 m
pH	CA12125	6.11
Conductivity	CA12125	3490 µS/cm

Testing Laboratory: ALS Environmental
Water

Cations - Metals	Test Method	Filtered	Total
Mercury (Hg)	EG035T-LL		<0.00004 mg/L
Aluminium (Al)	EG020A-T		<0.01 mg/L
Arsenic (As)	EG020A-T		0.002 mg/L
Barium (Ba)	EG020A-T		0.015 mg/L
Boron (B)	EG020A-T		0.08 mg/L
Cadmium (Cd)	EG020A-T		<0.0001 mg/L
Calcium (Ca)	ED093T-UL		257 mg/L
Chromium (Cr)	EG020A-T		<0.001 mg/L
Copper (Cu)	EG020A-T		0.010 mg/L
Iron (Fe)	EG020A-F	29.2 mg/L	
Lead (Pb)	EG020A-T		<0.001 mg/L
Magnesium (Mg)	ED093T-UL		158 mg/L
Manganese (Mn)	EG020A-F	2.83 mg/L	
Molybdenum (Mo)	EG020A-T		<0.001 mg/L
Nickel (Ni)	EG020A-T		0.099 mg/L
Potassium (K)	ED093T-UL		20.0 mg/L
Selenium (Se)	EG094B-T		<0.0002 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		418 mg/L
Vanadium (V)	EG020A-F	<0.01 mg/L	
Vanadium (V)	EG020A-T		<0.01 mg/L

* NATA accreditation does not cover the performance of this service



Accreditation Number 1099
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Authorised by Thanh Hoang Le
 Senior Chemist

Final - Report Number: 2361672
ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Nikki Tomlinson

Sample Number MPW021926
Date Sampled 24-May-2018 15:25
Date Received 25-May-2018
Date Completed 4-Jun-2018
Date Authorised 7-Jun-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Groundwater Bore MPGM4

Source: MP **Customer Sampling Point:** 222 **Sampling Code:** D17 **Sample Frequency:** Month

Testing Laboratory: ALS Environmental

Zinc (Zn)	EG020A-T	0.080 mg/L
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Anions	Test Method: ED009-X	Filtered
Fluoride (F)		0.181 mg/L
Chloride (Cl)		221 mg/L
Sulfate (SO4)		1670 mg/L

Alkalinity	Test Method: ED037-P	Total
Total Alkalinity (CaCO3)		117 mg/L

Physical	Test Method: EA015H	Total
Total Dissolved Solids @ 180°C		2190 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1815170. Report Date: 4-Jun-2018

* NATA accreditation does not cover the performance of this service



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Authorised by Thanh Hoang Le
 Senior Chemist

Final - Report Number: 2361672
ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Nikki Tomlinson

Sample Number MPW021927
Date Sampled 24-May-2018 14:30
Date Received 25-May-2018
Date Completed 4-Jun-2018
Date Authorised 7-Jun-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Groundwater Bore MPGM4

Source: MP **Customer Sampling Point:** 220 **Sampling Code:** D15 **Sample Frequency:** Month

Testing Laboratory: Mount Piper
Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	26.3 m
Bore Volume Pumped	*Analysis in Field	25 L
Recharge Bore Level	*Analysis in Field	26.3 m
pH	CA12125	5.41
Conductivity	CA12125	4320 µS/cm

Testing Laboratory: ALS Environmental
Water

Cations - Metals	Test Method	Filtered	Total
Mercury (Hg)	EG035T-LL		0.00006 mg/L
Aluminium (Al)	EG020A-T		2.93 mg/L
Arsenic (As)	EG020A-T		0.020 mg/L
Barium (Ba)	EG020A-T		0.034 mg/L
Boron (B)	EG020A-T		0.30 mg/L
Cadmium (Cd)	EG020A-T		0.0004 mg/L
Calcium (Ca)	ED093T-UL		260 mg/L
Chromium (Cr)	EG020A-T		0.048 mg/L
Copper (Cu)	EG020A-T		0.031 mg/L
Iron (Fe)	EG020A-F	17.2 mg/L	
Lead (Pb)	EG020A-T		0.019 mg/L
Magnesium (Mg)	ED093T-UL		130 mg/L
Manganese (Mn)	EG020A-F	2.23 mg/L	
Molybdenum (Mo)	EG020A-T		0.003 mg/L
Nickel (Ni)	EG020A-T		0.724 mg/L
Potassium (K)	ED093T-UL		41.7 mg/L
Selenium (Se)	EG094B-T		0.0014 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		767 mg/L
Vanadium (V)	EG020A-F	<0.01 mg/L	
Vanadium (V)	EG020A-T		<0.01 mg/L

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 Senior Chemist

Final - Report Number: 2361672
ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Nikki Tomlinson

Sample Number MPW021927
Date Sampled 24-May-2018 14:30
Date Received 25-May-2018
Date Completed 4-Jun-2018
Date Authorised 7-Jun-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Groundwater Bore MPGM4

Source: MP **Customer Sampling Point:** 220 **Sampling Code:** D15 **Sample Frequency:** Month

Testing Laboratory: ALS Environmental

Zinc (Zn) EG020A-T 1.26 mg/L

Anions Test Method: ED009-X

	Filtered
Fluoride (F)	0.062 mg/L
Chloride (Cl)	262 mg/L
Sulfate (SO4)	2130 mg/L

Alkalinity Test Method: ED037-P

Total Alkalinity (CaCO3)	Total 47 mg/L
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Physical Test Method: EA015H

Total Dissolved Solids @ 180°C	Total 2730 mg/L
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Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1815170. Report Date: 4-Jun-2018

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Accreditation Number 1099
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Authorised by Thanh Hoang Le
 Senior Chemist

Final - Report Number: 2361672
ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Nikki Tomlinson

Sample Number MPW021928
Date Sampled 24-May-2018 15:05
Date Received 25-May-2018
Date Completed 4-Jun-2018
Date Authorised 7-Jun-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Groundwater Bore MPGM4

Source: MP **Customer Sampling Point:** 221 **Sampling Code:** D16 **Sample Frequency:** Month

Testing Laboratory: Mount Piper
Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	13.5 m
Bore Volume Pumped	*Analysis in Field	135 L
Recharge Bore Level	*Analysis in Field	13.3 m
pH	CA12125	6.46
Conductivity	CA12125	1410 µS/cm

Testing Laboratory: ALS Environmental
Water

Cations - Metals	Test Method	Filtered	Total
Mercury (Hg)	EG035T-LL		<0.00004 mg/L
Aluminium (Al)	EG020A-T		<0.01 mg/L
Arsenic (As)	EG020A-T		<0.001 mg/L
Barium (Ba)	EG020A-T		0.011 mg/L
Boron (B)	EG020A-T		0.05 mg/L
Cadmium (Cd)	EG020A-T		<0.0001 mg/L
Calcium (Ca)	ED093T-UL		188 mg/L
Chromium (Cr)	EG020A-T		0.001 mg/L
Copper (Cu)	EG020A-T		0.008 mg/L
Iron (Fe)	EG094B-F	2.01 mg/L	
Lead (Pb)	EG020A-T		<0.001 mg/L
Magnesium (Mg)	ED093T-UL		69.3 mg/L
Manganese (Mn)	EG020A-F	0.034 mg/L	
Molybdenum (Mo)	EG020A-T		<0.001 mg/L
Nickel (Ni)	EG020A-T		0.006 mg/L
Potassium (K)	ED093T-UL		24.4 mg/L
Selenium (Se)	EG094B-T		<0.0002 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		20.2 mg/L
Vanadium (V)	EG020A-F	<0.01 mg/L	
Vanadium (V)	EG020A-T		<0.01 mg/L

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Authorised by Thanh Hoang Le
 Senior Chemist

Final - Report Number: 2361672
ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Nikki Tomlinson

Sample Number MPW021928
Date Sampled 24-May-2018 15:05
Date Received 25-May-2018
Date Completed 4-Jun-2018
Date Authorised 7-Jun-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Groundwater Bore MPGM4

Source: MP **Customer Sampling Point:** 221 **Sampling Code:** D16 **Sample Frequency:** Month

Testing Laboratory: ALS Environmental

Zinc (Zn) EG020A-T <0.005 mg/L

Anions Test Method: ED009-X

	Filtered
Fluoride (F)	0.331 mg/L
Chloride (Cl)	51.8 mg/L
Sulfate (SO4)	510 mg/L

Alkalinity Test Method: ED037-P

	Total
Total Alkalinity (CaCO3)	249 mg/L

Physical Test Method: EA015H

	Total
Total Dissolved Solids @ 180°C	967 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1815170. Report Date: 4-Jun-2018

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Authorised by Thanh Hoang Le
 Senior Chemist

Customer Analytical Services

Mount Piper Power Station 350 Boulder Road Portland 2847 NSW

Email: customeranalyticalservices@nalco.com



Final - Report Number: 2361672

ENERGY AUSTRALIA C/- MT PIPER POWER

BOULDER ROAD

PORTLAND NSW 2847 AUSTRALIA

Sold To: 0500082301 **Ship To:** 0500082301

Representative: Clive Stacey

Sampled By: Nikki Tomlinson

Sample Number

MPW021929

Date Sampled

23-May-2018 13:30

Date Received

25-May-2018

Date Completed

25-May-2018

Date Authorised

25-May-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: MP Ash - D10 - SW3-D

Source: MP

Customer Sampling Point: 256

Sampling Code: SW3-D

Sample Frequency: Ad-Hoc

Testing Laboratory: Mount Piper

Water

Field Analysis Test Method: Analysis in Field
Dry

Total

Authorised by Nikki Tomlinson
Senior Chemist

Final - Report Number: 2361672
ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Nikki Tomlinson

Sample Number MPW021930
Date Sampled 23-May-2018 14:00
Date Received 25-May-2018
Date Completed 4-Jun-2018
Date Authorised 7-Jun-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: MP Ash - D10 - B5

Source: MP **Customer Sampling Point:** 250 **Sampling Code:** B5 **Sample Frequency:** Ad-Hoc

Testing Laboratory: Mount Piper
Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	38.0 m
Bore Volume Pumped	*Analysis in Field	1.5 L
Recharge Bore Level	*Analysis in Field	38.0 m
pH	CA12125	6.03
Conductivity	CA12125	49810 µS/cm

Testing Laboratory: ALS Environmental
Water

Cations - Metals	Test Method	Filtered	Total
Mercury (Hg)	EG035T-LL		<0.00004 mg/L
Aluminium (Al)	EG020A-T		3.63 mg/L
Arsenic (As)	EG020A-T		0.027 mg/L
Barium (Ba)	EG020A-T		0.049 mg/L
Boron (B)	EG020A-T		13.0 mg/L
Cadmium (Cd)	EG020A-T		0.149 mg/L
Calcium (Ca)	ED093T-UL		486 mg/L
Chromium (Cr)	EG020A-T		0.010 mg/L
Copper (Cu)	EG020A-T		0.071 mg/L
Iron (Fe)	EG020A-F	0.46 mg/L	
Lead (Pb)	EG020A-T		<0.010 mg/L
Magnesium (Mg)	ED093T-UL		1940 mg/L
Manganese (Mn)	EG020A-F	14.6 mg/L	
Molybdenum (Mo)	EG020A-T		2.50 mg/L
Nickel (Ni)	EG020A-T		1.21 mg/L
Potassium (K)	ED093T-UL		1520 mg/L
Selenium (Se)	EG094B-T		0.0843 mg/L
Silver (Ag)	EG020B-T		<0.010 mg/L
Sodium (Na)	ED093T-UL		14300 mg/L
Vanadium (V)	EG020A-F	<0.10 mg/L	
Vanadium (V)	EG020A-T		<0.10 mg/L

* NATA accreditation does not cover the performance of this service



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Authorised by Thanh Hoang Le
 Senior Chemist

Final - Report Number: 2361672
ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Nikki Tomlinson

Sample Number MPW021930
Date Sampled 23-May-2018 14:00
Date Received 25-May-2018
Date Completed 4-Jun-2018
Date Authorised 7-Jun-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: MP Ash - D10 - B5

Source: MP **Customer Sampling Point:** 250 **Sampling Code:** B5 **Sample Frequency:** Ad-Hoc

Testing Laboratory: ALS Environmental

Zinc (Zn)	EG020A-T	3.93 mg/L
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Anions Test Method: ED009-X		Filtered
Fluoride (F)		1.73 mg/L
Chloride (Cl)		4570 mg/L
Sulfate (SO4)		34300 mg/L

Alkalinity Test Method: ED037-P		Total
Total Alkalinity (CaCO3)		71 mg/L

Physical Test Method: EA015H		Total
Total Dissolved Solids @ 180°C		59200 mg/L

TDS by method EA-015 may bias high for various samples due to the presence of fine particulate matter, which may pass through the prescribed GF/C paper.

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1815170. Report Date: 4-Jun-2018

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 Senior Chemist

Final - Report Number: 2361672
ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Nikki Tomlinson

Sample Number MPW021931
Date Sampled 23-May-2018 14:25
Date Received 25-May-2018
Date Completed 4-Jun-2018
Date Authorised 7-Jun-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: MP Ash - D10 - B5-1

Source: MP **Customer Sampling Point:** 251 **Sampling Code:** B5-1 **Sample Frequency:** Ad-Hoc

Testing Laboratory: Mount Piper
Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	36.8 m
Bore Volume Pumped	*Analysis in Field	9 L
Recharge Bore Level	*Analysis in Field	36.8 m
pH	CA12125	5.54
Conductivity	CA12125	44310 µS/cm

Testing Laboratory: ALS Environmental
Water

Cations - Metals	Test Method	Filtered	Total
Mercury (Hg)	EG035T-LL		<0.00004 mg/L
Aluminium (Al)	EG020A-T		1.76 mg/L
Arsenic (As)	EG020A-T		<0.010 mg/L
Barium (Ba)	EG020A-T		0.043 mg/L
Boron (B)	EG020A-T		9.78 mg/L
Cadmium (Cd)	EG020A-T		0.0631 mg/L
Calcium (Ca)	ED093T-UL		469 mg/L
Chromium (Cr)	EG020A-T		<0.010 mg/L
Copper (Cu)	EG020A-T		0.047 mg/L
Iron (Fe)	EG020A-F	0.25 mg/L	
Lead (Pb)	EG020A-T		<0.010 mg/L
Magnesium (Mg)	ED093T-UL		1470 mg/L
Manganese (Mn)	EG020A-F	40.6 mg/L	
Molybdenum (Mo)	EG020A-T		0.016 mg/L
Nickel (Ni)	EG020A-T		2.02 mg/L
Potassium (K)	ED093T-UL		1200 mg/L
Selenium (Se)	EG094B-T		0.168 mg/L
Silver (Ag)	EG020B-T		<0.010 mg/L
Sodium (Na)	ED093T-UL		8910 mg/L
Vanadium (V)	EG020A-F	<0.10 mg/L	
Vanadium (V)	EG020A-T		<0.10 mg/L

* NATA accreditation does not cover the performance of this service



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Authorised by Thanh Hoang Le
 Senior Chemist

Final - Report Number: 2361672
ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Nikki Tomlinson

Sample Number MPW021931
Date Sampled 23-May-2018 14:25
Date Received 25-May-2018
Date Completed 4-Jun-2018
Date Authorised 7-Jun-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: MP Ash - D10 - B5-1

Source: MP **Customer Sampling Point:** 251 **Sampling Code:** B5-1 **Sample Frequency:** Ad-Hoc

Testing Laboratory: ALS Environmental

Zinc (Zn)	EG020A-T	3.06 mg/L
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Anions Test Method: ED009-X	Filtered	
Fluoride (F)	5.30 mg/L	
Chloride (Cl)	3470 mg/L	
Sulfate (SO4)	29600 mg/L	

Alkalinity Test Method: ED037-P		Total
Total Alkalinity (CaCO3)		120 mg/L

Physical Test Method: EA015H		Total
Total Dissolved Solids @ 180°C		46800 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1815170. Report Date: 4-Jun-2018

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Accreditation Number 1099
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Authorised by Thanh Hoang Le
 Senior Chemist

Final - Report Number: 2388243
ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Amy Ribaux

Sample Number MPW022389
Date Sampled 28-Jun-2018 08:30
Date Received 29-Jun-2018
Date Completed 6-Jul-2018
Date Authorised 10-Jul-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Groundwater Bore MPGM4

Source: MP **Customer Sampling Point:** 014 **Sampling Code:** D9 **Sample Frequency:** Month

Testing Laboratory: Mount Piper

Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	2.4 m
Bore Volume Pumped	*Analysis in Field	2 L
Recharge Bore Level	*Analysis in Field	2.4 m
pH	CA12125	5.88
Conductivity	CA12125	3500 µS/cm

Testing Laboratory: ALS Environmental

Water

Cations - Metals	Test Method	Filtered	Total
Mercury (Hg)	EG035T-LL		<0.00004 mg/L
Aluminium (Al)	EG020A-T		0.08 mg/L
Arsenic (As)	EG020A-T		<0.001 mg/L
Barium (Ba)	EG020A-T		0.034 mg/L
Boron (B)	EG020A-T		0.96 mg/L
Cadmium (Cd)	EG020A-T		<0.0001 mg/L
Calcium (Ca)	ED093T-UL		283 mg/L
Chromium (Cr)	EG020A-T		<0.001 mg/L
Copper (Cu)	EG020A-T		<0.001 mg/L
Iron (Fe)	EG020A-F	13.1 mg/L	
Lead (Pb)	EG020A-T		<0.001 mg/L
Magnesium (Mg)	ED093T-UL		250 mg/L
Manganese (Mn)	EG020A-F	13.7 mg/L	
Molybdenum (Mo)	EG020A-T		<0.001 mg/L
Nickel (Ni)	EG020A-T		0.396 mg/L
Potassium (K)	ED093T-UL		20.8 mg/L
Selenium (Se)	EG094B-T		<0.0002 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		245 mg/L
Vanadium (V)	EG020A-F	<0.01 mg/L	
Vanadium (V)	EG020A-T		<0.01 mg/L

* NATA accreditation does not cover the performance of this service



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Authorised by Thanh Hoang Le
 Senior Chemist

Final - Report Number: 2388243
ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Amy Ribaux

Sample Number MPW022389
Date Sampled 28-Jun-2018 08:30
Date Received 29-Jun-2018
Date Completed 6-Jul-2018
Date Authorised 10-Jul-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Groundwater Bore MPGM4

Source: MP **Customer Sampling Point:** 014 **Sampling Code:** D9 **Sample Frequency:** Month

Testing Laboratory: ALS Environmental

Zinc (Zn) EG020A-T 0.131 mg/L

Anions Test Method: ED009-X

	Filtered
Fluoride (F)	0.125 mg/L
Chloride (Cl)	264 mg/L
Sulfate (SO4)	1860 mg/L

Alkalinity Test Method: ED037-P

	Total
Total Alkalinity (CaCO3)	113 mg/L

Physical Test Method: EA015H

	Total
Total Dissolved Solids @ 180°C	2170 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1819119. Report Date: 5-Jul-2018

* NATA accreditation does not cover the performance of this service



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Authorised by Thanh Hoang Le
 Senior Chemist

Final - Report Number: 2388243
ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Amy Ribaux

Sample Number MPW022390
Date Sampled 27-Jun-2018 09:00
Date Received 29-Jun-2018
Date Completed 6-Jul-2018
Date Authorised 10-Jul-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Stream Gauge

Source: MP **Customer Sampling Point:** 003 **Sampling Code:** WX22 **Sample Frequency:** Month

Testing Laboratory: Mount Piper
 Water

Field Analysis	Test Method	Total
Discharge Flowing	*Analysis in Field	Flow
Appearance	*Analysis in Field	Clear
pH	CA12125	6.98
Conductivity	CA12125	632 µS/cm
Temperature	CA12125	3.0 °C
Dissolved Oxygen (O2)	*Analysis in Field	13.5 mg/L



Field Photo

Testing Laboratory: ALS Environmental
 Water

Cations - Metals	Test Method	Filtered	Total
Mercury (Hg)	EG035T-LL		<0.00004 mg/L
Aluminium (Al)	EG020A-F	<0.01 mg/L	
Aluminium (Al)	EG020A-T		0.01 mg/L

* NATA accreditation does not cover the performance of this service



Accreditation Number 1099
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Authorised by Thanh Hoang Le
 Senior Chemist

Final - Report Number: 2388243
ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Amy Ribaux

Sample Number MPW022390
Date Sampled 27-Jun-2018 09:00
Date Received 29-Jun-2018
Date Completed 6-Jul-2018
Date Authorised 10-Jul-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Stream Gauge

Source: MP **Customer Sampling Point:** 003 **Sampling Code:** WX22 **Sample Frequency:** Month

Testing Laboratory: ALS Environmental

Arsenic (As)	EG020A-T	<0.001 mg/L
Barium (Ba)	EG020A-T	0.020 mg/L
Boron (B)	EG020A-T	0.09 mg/L
Cadmium (Cd)	EG020A-T	<0.0001 mg/L
Calcium (Ca)	ED093T-UL	43.4 mg/L
Chromium (Cr)	EG020A-T	<0.001 mg/L
Copper (Cu)	EG020A-F	<0.001 mg/L
Copper (Cu)	EG020A-T	<0.001 mg/L
Iron (Fe)	EG094B-F	0.103 mg/L
Iron (Fe)	EG094B-T	0.300 mg/L
Lead (Pb)	EG020A-T	<0.001 mg/L
Magnesium (Mg)	ED093T-UL	27.7 mg/L
Manganese (Mn)	EG020A-F	0.273 mg/L
Manganese (Mn)	EG020A-T	0.334 mg/L
Molybdenum (Mo)	EG020A-T	<0.001 mg/L
Nickel (Ni)	EG020A-T	0.016 mg/L
Potassium (K)	ED093T-UL	4.92 mg/L
Selenium (Se)	EG094B-T	<0.0002 mg/L
Silver (Ag)	EG020B-T	<0.001 mg/L
Sodium (Na)	ED093T-UL	43.9 mg/L
Strontium (Sr)	EG020B-T	0.140 mg/L
Vanadium (V)	EG020A-F	<0.01 mg/L
Vanadium (V)	EG020A-T	<0.01 mg/L
Zinc (Zn)	EG020A-F	0.010 mg/L
Zinc (Zn)	EG020A-T	0.012 mg/L

* NATA accreditation does not cover the performance of this service



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Authorised by Thanh Hoang Le
 Senior Chemist

Final - Report Number: 2388243
ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Amy Ribaux

Sample Number MPW022390
Date Sampled 27-Jun-2018 09:00
Date Received 29-Jun-2018
Date Completed 6-Jul-2018
Date Authorised 10-Jul-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Stream Gauge

Source: MP **Customer Sampling Point:** 003 **Sampling Code:** WX22 **Sample Frequency:** Month

Testing Laboratory: ALS Environmental

Anions	Test Method	Filtered
Fluoride (F)	ED009-X	0.080 mg/L
Chloride (Cl)	ED009-X	44.7 mg/L
Sulfate (SO4)	ED009-X	210 mg/L
Nitrate (N)	EK058G	<0.01 mg/L
Nitrite (N)	EK057G	<0.01 mg/L
Nitrate and Nitrite (N)	EK059G	<0.01 mg/L

Alkalinity	Test Method: ED037-P	Total
Total Alkalinity (CaCO3)		44 mg/L
Phenolphthalein Alkalinity (CaCO3)		<1 mg/L
Bicarbonate (CaCO3)		44 mg/L

Phosphate	Test Method: EK067G	Total
Total Phosphorus (P)		<0.01 mg/L

Physical	Test Method	Total
Total Dissolved Solids @ 180°C	EA015H	320 mg/L
Turbidity	EA045	1.0 NTU

Other	Test Method	Total
Nitrogen (N)	EK062G	0.1 mg/L
Nitrogen (N) - Kjeldahl	EK061G	0.1 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1819119. Report Date: 5-Jul-2018

* NATA accreditation does not cover the performance of this service



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Authorised by Thanh Hoang Le
 Senior Chemist

Final - Report Number: 2388243
ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Amy Ribaux

Sample Number MPW022391
Date Sampled 27-Jun-2018 09:30
Date Received 29-Jun-2018
Date Completed 6-Jul-2018
Date Authorised 10-Jul-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Groundwater Bore MPGM4

Source: MP **Customer Sampling Point:** 006 **Sampling Code:** D1 **Sample Frequency:** Month

Testing Laboratory: Mount Piper
Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	3.6 m
Bore Volume Pumped	*Analysis in Field	111 L
Recharge Bore Level	*Analysis in Field	4.2 m
pH	CA12125	5.96
Conductivity	CA12125	4500 µS/cm

Testing Laboratory: ALS Environmental
Water

Cations - Metals	Test Method	Filtered	Total
Mercury (Hg)	EG035T-LL		<0.00004 mg/L
Aluminium (Al)	EG020A-T		0.08 mg/L
Arsenic (As)	EG020A-T		0.005 mg/L
Barium (Ba)	EG020A-T		0.024 mg/L
Boron (B)	EG020A-T		1.70 mg/L
Cadmium (Cd)	EG020A-T		<0.0001 mg/L
Calcium (Ca)	ED093T-UL		354 mg/L
Chromium (Cr)	EG020A-T		<0.001 mg/L
Copper (Cu)	EG020A-T		<0.001 mg/L
Iron (Fe)	EG020A-F	34.1 mg/L	
Lead (Pb)	EG020A-T		<0.001 mg/L
Magnesium (Mg)	ED093T-UL		266 mg/L
Manganese (Mn)	EG020A-F	14.3 mg/L	
Molybdenum (Mo)	EG020A-T		<0.001 mg/L
Nickel (Ni)	EG020A-T		0.781 mg/L
Potassium (K)	ED093T-UL		36.0 mg/L
Selenium (Se)	EG094B-T		<0.0002 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		398 mg/L
Vanadium (V)	EG020A-F	<0.01 mg/L	
Vanadium (V)	EG020A-T		<0.01 mg/L

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 Senior Chemist

Final - Report Number: 2388243
ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Amy Ribaux

Sample Number MPW022391
Date Sampled 27-Jun-2018 09:30
Date Received 29-Jun-2018
Date Completed 6-Jul-2018
Date Authorised 10-Jul-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Groundwater Bore MPGM4

Source: MP **Customer Sampling Point:** 006 **Sampling Code:** D1 **Sample Frequency:** Month

Testing Laboratory: ALS Environmental

Zinc (Zn)	EG020A-T	0.079 mg/L
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Anions Test Method: ED009-X	Filtered	
Fluoride (F)	0.028 mg/L	
Chloride (Cl)	431 mg/L	
Sulfate (SO4)	1990 mg/L	

Alkalinity Test Method: ED037-P	Total	
Total Alkalinity (CaCO3)	184 mg/L	

Physical Test Method: EA015H	Total	
Total Dissolved Solids @ 180°C	2990 mg/L	

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1819119. Report Date: 5-Jul-2018

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Authorised by Thanh Hoang Le
 Senior Chemist

Final - Report Number: 2388243
ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Amy Ribaux

Sample Number MPW022392
Date Sampled 28-Jun-2018 08:15
Date Received 29-Jun-2018
Date Completed 6-Jul-2018
Date Authorised 10-Jul-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Groundwater Bore MPGM4

Source: MP **Customer Sampling Point:** 013 **Sampling Code:** D8 **Sample Frequency:** Month

Testing Laboratory: Mount Piper
Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	2.6 m
Bore Volume Pumped	*Analysis in Field	45 L
Recharge Bore Level	*Analysis in Field	2.6 m
pH	CA12125	5.47
Conductivity	CA12125	980 µS/cm

Testing Laboratory: ALS Environmental
Water

Cations - Metals	Test Method	Filtered	Total
Mercury (Hg)	EG035T-LL		<0.00004 mg/L
Aluminium (Al)	EG020A-T		0.17 mg/L
Arsenic (As)	EG020A-T		<0.001 mg/L
Barium (Ba)	EG020A-T		0.046 mg/L
Boron (B)	EG020A-T		0.14 mg/L
Cadmium (Cd)	EG020A-T		<0.0001 mg/L
Calcium (Ca)	ED093T-UL		60.4 mg/L
Chromium (Cr)	EG020A-T		<0.001 mg/L
Copper (Cu)	EG020A-T		0.001 mg/L
Iron (Fe)	EG094B-F	0.845 mg/L	
Lead (Pb)	EG020A-T		<0.001 mg/L
Magnesium (Mg)	ED093T-UL		46.9 mg/L
Manganese (Mn)	EG020A-F	1.99 mg/L	
Molybdenum (Mo)	EG020A-T		<0.001 mg/L
Nickel (Ni)	EG020A-T		0.109 mg/L
Potassium (K)	ED093T-UL		6.13 mg/L
Selenium (Se)	EG094B-T		<0.0002 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		79.2 mg/L
Vanadium (V)	EG020A-F	<0.01 mg/L	
Vanadium (V)	EG020A-T		<0.01 mg/L

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ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Amy Ribaux

Sample Number MPW022392
Date Sampled 28-Jun-2018 08:15
Date Received 29-Jun-2018
Date Completed 6-Jul-2018
Date Authorised 10-Jul-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Groundwater Bore MPGM4

Source: MP **Customer Sampling Point:** 013 **Sampling Code:** D8 **Sample Frequency:** Month

Testing Laboratory: ALS Environmental

Zinc (Zn)	EG020A-T	0.130 mg/L
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Anions Test Method: ED009-X

Fluoride (F)	Filtered	0.016 mg/L
Chloride (Cl)		61.2 mg/L
Sulfate (SO4)		391 mg/L

Alkalinity Test Method: ED037-P

Total Alkalinity (CaCO3)	Total
	23 mg/L

Physical Test Method: EA015H

Total Dissolved Solids @ 180°C	Total
	713 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1819119. Report Date: 5-Jul-2018

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Final - Report Number: 2388243
ENERGY AUSTRALIA C/- MT PIPER POWER
BOULDER ROAD
PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Amy Ribaux

Sample Number MPW022393
Date Sampled 27-Jun-2018 14:30
Date Received 28-Jun-2018
Date Completed 29-Jun-2018
Date Authorised 29-Jun-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: MP Ash - D10 - D21

Source: MP

Customer Sampling Point: 253

Sampling Code: D21

Sample Frequency:
ADDITIONAL_MONTH

Testing Laboratory: Mount Piper

Water

Field Analysis Test Method: Analysis in Field
Dry

Total

Nominson

Authorised by Nikki Tomlinson
Senior Chemist

Final - Report Number: 2388243
ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Amy Ribaux

Sample Number MPW022394
Date Sampled 27-Jun-2018 02:20
Date Received 29-Jun-2018
Date Completed 6-Jul-2018
Date Authorised 10-Jul-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: MP Ash - D10 - D23

Source: MP **Customer Sampling Point:** 254 **Sampling Code:** D23 **Sample Frequency:** ADDITIONAL_MONTH

Testing Laboratory: Mount Piper
Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	25.0 m
Bore Volume Pumped	*Analysis in Field	48 L
Recharge Bore Level	*Analysis in Field	25.0 m
pH	CA12125	5.62
Conductivity	CA12125	3720 µS/cm

Testing Laboratory: ALS Environmental
Water

Cations - Metals	Test Method	Filtered	Total
Mercury (Hg)	EG035T-LL		<0.00004 mg/L
Aluminium (Al)	EG020A-T		0.78 mg/L
Arsenic (As)	EG020A-T		0.002 mg/L
Barium (Ba)	EG020A-T		0.015 mg/L
Boron (B)	EG020A-T		0.45 mg/L
Cadmium (Cd)	EG020A-T		0.0003 mg/L
Calcium (Ca)	ED093T-UL		222 mg/L
Chromium (Cr)	EG020A-T		0.017 mg/L
Copper (Cu)	EG020A-T		0.002 mg/L
Iron (Fe)	EG020A-F	23.5 mg/L	
Lead (Pb)	EG020A-T		0.003 mg/L
Magnesium (Mg)	ED093T-UL		120 mg/L
Manganese (Mn)	EG020A-F	2.39 mg/L	
Molybdenum (Mo)	EG020A-T		<0.001 mg/L
Nickel (Ni)	EG020A-T		0.406 mg/L
Potassium (K)	ED093T-UL		50.7 mg/L
Selenium (Se)	EG094B-T		0.0003 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		524 mg/L
Vanadium (V)	EG020A-F	<0.01 mg/L	

* NATA accreditation does not cover the performance of this service



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Authorised by Thanh Hoang Le
 Senior Chemist

Final - Report Number: 2388243
ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Amy Ribaux

Sample Number MPW022394
Date Sampled 27-Jun-2018 02:20
Date Received 29-Jun-2018
Date Completed 6-Jul-2018
Date Authorised 10-Jul-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: MP Ash - D10 - D23

Source: MP **Customer Sampling Point:** 254 **Sampling Code:** D23 **Sample Frequency:** ADDITIONAL_MONTH

Testing Laboratory: ALS Environmental

Vanadium (V)	EG020A-T	<0.01 mg/L
Zinc (Zn)	EG020A-T	0.649 mg/L

Anions Test Method: ED009-X	Filtered
Fluoride (F)	0.087 mg/L
Chloride (Cl)	216 mg/L
Sulfate (SO4)	1850 mg/L

Alkalinity Test Method: ED037-P	Total
Total Alkalinity (CaCO3)	65 mg/L

Physical Test Method: EA015H	Total
Total Dissolved Solids @ 180°C	2730 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1819119. Report Date: 5-Jul-2018

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Authorised by Thanh Hoang Le
 Senior Chemist

Final - Report Number: 2388243
ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Amy Ribaux

Sample Number MPW022395
Date Sampled 28-Jun-2018 10:20
Date Received 29-Jun-2018
Date Completed 6-Jul-2018
Date Authorised 10-Jul-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Groundwater Bore MPGM4

Source: MP **Customer Sampling Point:** 223 **Sampling Code:** D18 **Sample Frequency:** Month

Testing Laboratory: Mount Piper

Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	23.8 m
Bore Volume Pumped	*Analysis in Field	18 L
Recharge Bore Level	*Analysis in Field	29.6 m
pH	CA12125	6.56
Conductivity	CA12125	750 µS/cm

Testing Laboratory: ALS Environmental

Water

Cations - Metals	Test Method	Filtered	Total
Mercury (Hg)	EG035T-LL		<0.00004 mg/L
Aluminium (Al)	EG020A-T		0.04 mg/L
Arsenic (As)	EG020A-T		0.002 mg/L
Barium (Ba)	EG020A-T		0.536 mg/L
Boron (B)	EG020A-T		0.07 mg/L
Cadmium (Cd)	EG020A-T		<0.0001 mg/L
Calcium (Ca)	ED093T-UL		83.0 mg/L
Chromium (Cr)	EG020A-T		<0.001 mg/L
Copper (Cu)	EG020A-T		0.001 mg/L
Iron (Fe)	EG094B-F	0.069 mg/L	
Lead (Pb)	EG020A-T		<0.001 mg/L
Magnesium (Mg)	ED093T-UL		32.8 mg/L
Manganese (Mn)	EG020A-F	0.175 mg/L	
Molybdenum (Mo)	EG020A-T		0.001 mg/L
Nickel (Ni)	EG020A-T		0.006 mg/L
Potassium (K)	ED093T-UL		18.2 mg/L
Selenium (Se)	EG094B-T		<0.0002 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		33.4 mg/L
Vanadium (V)	EG020A-F	<0.01 mg/L	
Vanadium (V)	EG020A-T		<0.01 mg/L

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 Senior Chemist

Final - Report Number: 2388243
ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Amy Ribaux

Sample Number MPW022395
Date Sampled 28-Jun-2018 10:20
Date Received 29-Jun-2018
Date Completed 6-Jul-2018
Date Authorised 10-Jul-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Groundwater Bore MPGM4

Source: MP **Customer Sampling Point:** 223 **Sampling Code:** D18 **Sample Frequency:** Month

Testing Laboratory: ALS Environmental

Zinc (Zn) EG020A-T 0.045 mg/L

Anions Test Method: ED009-X

	Filtered
Fluoride (F)	0.458 mg/L
Chloride (Cl)	12.8 mg/L
Sulfate (SO4)	53.8 mg/L

Alkalinity Test Method: ED037-P

Total Alkalinity (CaCO3)	Total 366 mg/L
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Physical Test Method: EA015H

Total Dissolved Solids @ 180°C	Total 477 mg/L
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Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1819119. Report Date: 5-Jul-2018

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 Senior Chemist

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ENERGY AUSTRALIA C/- MT PIPER POWER
BOULDER ROAD
PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Amy Ribaux

Sample Number MPW022396
Date Sampled 27-Jun-2018 12:20
Date Received 28-Jun-2018
Date Completed 29-Jun-2018
Date Authorised 29-Jun-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: MP Ash - D10 - SW3-S

Source: MP

Customer Sampling Point: 257

Sampling Code: SW3-S

Sample Frequency:
ADDITIONAL_MONTH

Testing Laboratory: Mount Piper

Water

Field Analysis Test Method: Analysis in Field
Dry

Total

Nominson

Authorised by Nikki Tomlinson
Senior Chemist

Customer Analytical Services

Mount Piper Power Station 350 Boulder Road Portland 2847 NSW

Email: customeranalyticalservices@nalco.com



Final - Report Number: 2388243

ENERGY AUSTRALIA C/- MT PIPER POWER

BOULDER ROAD

PORTLAND NSW 2847 AUSTRALIA

Sold To: 0500082301 **Ship To:** 0500082301

Representative: Clive Stacey

Sampled By: Amy Ribaux

Sample Number

MPW022397

Date Sampled

27-Jun-2018 12:25

Date Received

28-Jun-2018

Date Completed

29-Jun-2018

Date Authorised

29-Jun-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: MP Ash - D10 - SW3-D

Source: MP

Customer Sampling Point: 256

Sampling Code: SW3-D

Sample Frequency:

ADDITIONAL_MONTH

Testing Laboratory: Mount Piper

Water

Field Analysis
Dry

Test Method: Analysis in Field

Total

Authorised by Nikki Tomlinson
Senior Chemist

Final - Report Number: 2388243
ENERGY AUSTRALIA C/- MT PIPER POWER
BOULDER ROAD
PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Amy Ribaux

Sample Number MPW022398
Date Sampled 27-Jun-2018 11:35
Date Received 28-Jun-2018
Date Completed 29-Jun-2018
Date Authorised 29-Jun-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: MP Ash - D10 - B5

Source: MP

Customer Sampling Point: 250

Sampling Code: B5

Sample Frequency:
ADDITIONAL_MONTH

Testing Laboratory: Mount Piper

Water

Field Analysis Test Method: Analysis in Field
Initial Bore Level

Total
38.5 m

Bent casing

Nominson

Authorised by Nikki Tomlinson
Senior Chemist

Final - Report Number: 2388243
ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Amy Ribaux

Sample Number MPW022399
Date Sampled 28-Jun-2018 09:10
Date Received 29-Jun-2018
Date Completed 6-Jul-2018
Date Authorised 10-Jul-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: MP Ash - D10 - B5-1

Source: MP **Customer Sampling Point:** 251 **Sampling Code:** B5-1 **Sample Frequency:** ADDITIONAL_MONTH

Testing Laboratory: Mount Piper
Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	36.8 m
Bore Volume Pumped	*Analysis in Field	3.5 L
Recharge Bore Level	*Analysis in Field	36.8 m
pH	CA12125	5.60
Conductivity	CA12125	46110 µS/cm

Testing Laboratory: ALS Environmental
Water

Cations - Metals	Test Method	Filtered	Total
Mercury (Hg)	EG035T-LL		0.00008 mg/L
Aluminium (Al)	EG020A-T		6.00 mg/L
Arsenic (As)	EG020A-T		0.020 mg/L
Barium (Ba)	EG020A-T		0.058 mg/L
Boron (B)	EG020A-T		10.3 mg/L
Cadmium (Cd)	EG020A-T		0.0731 mg/L
Calcium (Ca)	ED093T-UL		474 mg/L
Chromium (Cr)	EG020A-T		0.017 mg/L
Copper (Cu)	EG020A-T		<0.010 mg/L
Iron (Fe)	EG020A-F	0.24 mg/L	
Lead (Pb)	EG020A-T		0.027 mg/L
Magnesium (Mg)	ED093T-UL		1700 mg/L
Manganese (Mn)	EG020A-F	35.3 mg/L	
Molybdenum (Mo)	EG020A-T		<0.010 mg/L
Nickel (Ni)	EG020A-T		2.24 mg/L
Potassium (K)	ED093T-UL		1160 mg/L
Selenium (Se)	EG094B-T		0.246 mg/L
Silver (Ag)	EG020B-T		<0.010 mg/L
Sodium (Na)	ED093T-UL		12100 mg/L
Vanadium (V)	EG020A-F	<0.10 mg/L	

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Authorised by Thanh Hoang Le
 Senior Chemist

Final - Report Number: 2388243
ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Amy Ribaux

Sample Number MPW022399
Date Sampled 28-Jun-2018 09:10
Date Received 29-Jun-2018
Date Completed 6-Jul-2018
Date Authorised 10-Jul-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: MP Ash - D10 - B5-1

Source: MP **Customer Sampling Point:** 251 **Sampling Code:** B5-1 **Sample Frequency:** ADDITIONAL_MONTH

Testing Laboratory: ALS Environmental

Vanadium (V)	EG020A-T	<0.10 mg/L
Zinc (Zn)	EG020A-T	3.44 mg/L

Anions Test Method: ED009-X	Filtered
Fluoride (F)	3.10 mg/L
Chloride (Cl)	3790 mg/L
Sulfate (SO4)	27400 mg/L

Alkalinity Test Method: ED037-P	Total
Total Alkalinity (CaCO3)	130 mg/L

Physical Test Method: EA015H	Total
Total Dissolved Solids @ 180°C	91300 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1819119. Report Date: 5-Jul-2018

* NATA accreditation does not cover the performance of this service



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Authorised by Thanh Hoang Le
 Senior Chemist

Final - Report Number: 2388243
ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Amy Ribaux

Sample Number MPW022400
Date Sampled 27-Jun-2018 12:10
Date Received 29-Jun-2018
Date Completed 6-Jul-2018
Date Authorised 10-Jul-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: MP Ash - D10 - NA5

Source: MP **Customer Sampling Point:** 255 **Sampling Code:** NA5 **Sample Frequency:** ADDITIONAL_MONTH

Testing Laboratory: Mount Piper Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	25.1 m
Bore Volume Pumped	*Analysis in Field	12 L
Recharge Bore Level	*Analysis in Field	23.9 m
pH	CA12125	5.90
Conductivity	CA12125	4950 µS/cm

Testing Laboratory: ALS Environmental Water

Cations - Metals	Test Method	Filtered	Total
Mercury (Hg)	EG035T-LL		<0.00004 mg/L
Aluminium (Al)	EG020A-T		1.49 mg/L
Arsenic (As)	EG020A-T		<0.001 mg/L
Barium (Ba)	EG020A-T		0.028 mg/L
Boron (B)	EG020A-T		12.6 mg/L
Cadmium (Cd)	EG020A-T		0.0087 mg/L
Calcium (Ca)	ED093T-UL		376 mg/L
Chromium (Cr)	EG020A-T		0.010 mg/L
Copper (Cu)	EG020A-T		0.002 mg/L
Iron (Fe)	EG020A-F	0.84 mg/L	
Lead (Pb)	EG020A-T		<0.001 mg/L
Magnesium (Mg)	ED093T-UL		125 mg/L
Manganese (Mn)	EG020A-F	7.90 mg/L	
Molybdenum (Mo)	EG020A-T		0.173 mg/L
Nickel (Ni)	EG020A-T		0.498 mg/L
Potassium (K)	ED093T-UL		144 mg/L
Selenium (Se)	EG094B-T		0.0295 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		628 mg/L
Vanadium (V)	EG020A-F	<0.01 mg/L	

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 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Amy Ribaux

Sample Number MPW022400
Date Sampled 27-Jun-2018 12:10
Date Received 29-Jun-2018
Date Completed 6-Jul-2018
Date Authorised 10-Jul-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: MP Ash - D10 - NA5

Source: MP **Customer Sampling Point:** 255 **Sampling Code:** NA5 **Sample Frequency:** ADDITIONAL_MONTH

Testing Laboratory: ALS Environmental

Vanadium (V)	EG020A-T	<0.01 mg/L
Zinc (Zn)	EG020A-T	0.713 mg/L

Anions	Test Method: ED009-X	Filtered
Fluoride (F)		5.41 mg/L
Chloride (Cl)		142 mg/L
Sulfate (SO4)		2760 mg/L

Alkalinity	Test Method: ED037-P	Total
Total Alkalinity (CaCO3)		136 mg/L

Physical	Test Method: EA015H	Total
Total Dissolved Solids @ 180°C		3780 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1819119. Report Date: 5-Jul-2018

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 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Amy Ribaux

Sample Number MPW022401
Date Sampled 27-Jun-2018 15:30
Date Received 29-Jun-2018
Date Completed 6-Jul-2018
Date Authorised 10-Jul-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: MP Ash - D10 - D20

Source: MP **Customer Sampling Point:** 252 **Sampling Code:** D20 **Sample Frequency:** ADDITIONAL_MONTH

Testing Laboratory: Mount Piper
Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	17.6 m
Bore Volume Pumped	*Analysis in Field	14.5 L
Recharge Bore Level	*Analysis in Field	17.6 m
pH	CA12125	6.01
Conductivity	CA12125	4010 µS/cm

Testing Laboratory: ALS Environmental
Water

Cations - Metals	Test Method	Filtered	Total
Mercury (Hg)	EG035T-LL		0.00006 mg/L
Aluminium (Al)	EG020A-T		2.44 mg/L
Arsenic (As)	EG020A-T		0.004 mg/L
Barium (Ba)	EG020A-T		0.043 mg/L
Boron (B)	EG020A-T		2.67 mg/L
Cadmium (Cd)	EG020A-T		0.0061 mg/L
Calcium (Ca)	ED093T-UL		340 mg/L
Chromium (Cr)	EG020A-T		0.008 mg/L
Copper (Cu)	EG020A-T		0.010 mg/L
Iron (Fe)	EG020A-F	4.51 mg/L	
Lead (Pb)	EG020A-T		0.010 mg/L
Magnesium (Mg)	ED093T-UL		366 mg/L
Manganese (Mn)	EG020A-F	23.9 mg/L	
Molybdenum (Mo)	EG020A-T		<0.001 mg/L
Nickel (Ni)	EG020A-T		0.638 mg/L
Potassium (K)	ED093T-UL		34.7 mg/L
Selenium (Se)	EG094B-T		0.0013 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		206 mg/L
Vanadium (V)	EG020A-F	<0.01 mg/L	

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ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Amy Ribaux

Sample Number MPW022401
Date Sampled 27-Jun-2018 15:30
Date Received 29-Jun-2018
Date Completed 6-Jul-2018
Date Authorised 10-Jul-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: MP Ash - D10 - D20

Source: MP **Customer Sampling Point:** 252 **Sampling Code:** D20 **Sample Frequency:** ADDITIONAL_MONTH

Testing Laboratory: ALS Environmental

Vanadium (V)	EG020A-T	<0.01 mg/L
Zinc (Zn)	EG020A-T	0.493 mg/L

Anions Test Method: ED009-X	Filtered
Fluoride (F)	0.711 mg/L
Chloride (Cl)	127 mg/L
Sulfate (SO4)	2290 mg/L

Alkalinity Test Method: ED037-P	Total
Total Alkalinity (CaCO3)	325 mg/L

Physical Test Method: EA015H	Total
Total Dissolved Solids @ 180°C	3210 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1819119. Report Date: 5-Jul-2018

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ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Amy Ribaux

Sample Number MPW022402
Date Sampled 27-Jun-2018 15:15
Date Received 29-Jun-2018
Date Completed 6-Jul-2018
Date Authorised 10-Jul-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Groundwater Bore MPGM4

Source: MP **Customer Sampling Point:** 224 **Sampling Code:** D19 **Sample Frequency:** Month

Testing Laboratory: Mount Piper
Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	10.1 m
Bore Volume Pumped	*Analysis in Field	11.5 L
Recharge Bore Level	*Analysis in Field	10.1 m
pH	CA12125	5.92
Conductivity	CA12125	6380 µS/cm

Testing Laboratory: ALS Environmental
Water

Cations - Metals	Test Method	Filtered	Total
Mercury (Hg)	EG035T-LL		0.00005 mg/L
Aluminium (Al)	EG020A-T		2.06 mg/L
Arsenic (As)	EG020A-T		0.021 mg/L
Barium (Ba)	EG020A-T		0.074 mg/L
Boron (B)	EG020A-T		3.24 mg/L
Cadmium (Cd)	EG020A-T		0.0002 mg/L
Calcium (Ca)	ED093T-UL		324 mg/L
Chromium (Cr)	EG020A-T		0.044 mg/L
Copper (Cu)	EG020A-T		0.023 mg/L
Iron (Fe)	EG094B-F	29.9 mg/L	
Lead (Pb)	EG020A-T		0.094 mg/L
Magnesium (Mg)	ED093T-UL		278 mg/L
Manganese (Mn)	EG020A-F	13.7 mg/L	
Molybdenum (Mo)	EG020A-T		0.002 mg/L
Nickel (Ni)	EG020A-T		0.990 mg/L
Potassium (K)	ED093T-UL		80.0 mg/L
Selenium (Se)	EG094B-T		0.0017 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		931 mg/L
Vanadium (V)	EG020A-F	<0.01 mg/L	
Vanadium (V)	EG020A-T		0.01 mg/L

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ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Amy Ribaux

Sample Number MPW022402
Date Sampled 27-Jun-2018 15:15
Date Received 29-Jun-2018
Date Completed 6-Jul-2018
Date Authorised 10-Jul-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Groundwater Bore MPM4

Source: MP **Customer Sampling Point:** 224 **Sampling Code:** D19 **Sample Frequency:** Month

Testing Laboratory: ALS Environmental

Zinc (Zn)	EG020A-T	0.543 mg/L
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Anions Test Method: ED009-X

Fluoride (F)	Filtered	0.080 mg/L
Chloride (Cl)		506 mg/L
Sulfate (SO4)		3260 mg/L

Alkalinity Test Method: ED037-P

Total Alkalinity (CaCO3)	Total
	141 mg/L

Physical Test Method: EA015H

Total Dissolved Solids @ 180°C	Total
	5050 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1819119. Report Date: 5-Jul-2018

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 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Amy Ribaux

Sample Number MPW022403
Date Sampled 27-Jun-2018 10:20
Date Received 29-Jun-2018
Date Completed 6-Jul-2018
Date Authorised 10-Jul-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Groundwater Bore MPGM4

Source: MP **Customer Sampling Point:** 008 **Sampling Code:** D3 **Sample Frequency:** Month

Testing Laboratory: Mount Piper
Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	8.2 m
Bore Volume Pumped	*Analysis in Field	190 L
Recharge Bore Level	*Analysis in Field	10.2 m
pH	CA12125	6.09
Conductivity	CA12125	950 µS/cm

Testing Laboratory: ALS Environmental
Water

Cations - Metals	Test Method	Filtered	Total
Mercury (Hg)	EG035T-LL		0.00009 mg/L
Aluminium (Al)	EG020A-T		0.02 mg/L
Arsenic (As)	EG020A-T		<0.001 mg/L
Barium (Ba)	EG020A-T		0.026 mg/L
Boron (B)	EG020A-T		<0.05 mg/L
Cadmium (Cd)	EG020A-T		<0.0001 mg/L
Calcium (Ca)	ED093T-UL		80.8 mg/L
Chromium (Cr)	EG020A-T		<0.001 mg/L
Copper (Cu)	EG020A-T		<0.001 mg/L
Iron (Fe)	EG020A-F	10.1 mg/L	
Lead (Pb)	EG020A-T		<0.001 mg/L
Magnesium (Mg)	ED093T-UL		48.0 mg/L
Manganese (Mn)	EG020A-F	0.603 mg/L	
Molybdenum (Mo)	EG020A-T		<0.001 mg/L
Nickel (Ni)	EG020A-T		0.001 mg/L
Potassium (K)	ED093T-UL		8.92 mg/L
Selenium (Se)	EG094B-T		<0.0002 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		45.9 mg/L
Vanadium (V)	EG020A-F	<0.01 mg/L	
Vanadium (V)	EG020A-T		<0.01 mg/L

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Final - Report Number: 2388243
ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Amy Ribaux

Sample Number MPW022403
Date Sampled 27-Jun-2018 10:20
Date Received 29-Jun-2018
Date Completed 6-Jul-2018
Date Authorised 10-Jul-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Groundwater Bore MPGM4

Source: MP **Customer Sampling Point:** 008 **Sampling Code:** D3 **Sample Frequency:** Month

Testing Laboratory: ALS Environmental

Zinc (Zn)	EG020A-T	<0.005 mg/L
Anions	Test Method	Filtered
Fluoride (F)	ED009-X	<0.100 mg/L
Chloride (Cl)	ED009-X	46.0 mg/L
Sulfate (SO4)	ED009-X	298 mg/L

ED009x: Samples required dilution prior to extraction due to matrix interferences. LOR values have been adjusted accordingly.

Alkalinity Test Method: ED037-P	Total
Total Alkalinity (CaCO3)	162 mg/L

Physical Test Method: EA015H	Total
Total Dissolved Solids @ 180°C	660 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1819119. Report Date: 5-Jul-2018

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ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Amy Ribaux

Sample Number MPW022404
Date Sampled 27-Jun-2018 13:30
Date Received 29-Jun-2018
Date Completed 6-Jul-2018
Date Authorised 10-Jul-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Groundwater Bore MPGM4

Source: MP **Customer Sampling Point:** 016 **Sampling Code:** D11 **Sample Frequency:** Month

Testing Laboratory: Mount Piper

Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	26.7 m
Bore Volume Pumped	*Analysis in Field	125 L
Recharge Bore Level	*Analysis in Field	26.7 m
pH	CA12125	6.22
Conductivity	CA12125	9880 µS/cm

Testing Laboratory: ALS Environmental

Water

Cations - Metals	Test Method	Filtered	Total
Mercury (Hg)	EG035T-LL		<0.00004 mg/L
Aluminium (Al)	EG020A-T		0.02 mg/L
Arsenic (As)	EG020A-T		0.007 mg/L
Barium (Ba)	EG020A-T		0.016 mg/L
Boron (B)	EG020A-T		3.09 mg/L
Cadmium (Cd)	EG020A-T		<0.0001 mg/L
Calcium (Ca)	ED093T-UL		615 mg/L
Chromium (Cr)	EG020A-T		<0.001 mg/L
Copper (Cu)	EG020A-T		<0.001 mg/L
Iron (Fe)	EG020A-F	91.2 mg/L	
Lead (Pb)	EG020A-T		<0.001 mg/L
Magnesium (Mg)	ED093T-UL		445 mg/L
Manganese (Mn)	EG020A-F	17.2 mg/L	
Molybdenum (Mo)	EG020A-T		<0.001 mg/L
Nickel (Ni)	EG020A-T		0.906 mg/L
Potassium (K)	ED093T-UL		131 mg/L
Selenium (Se)	EG094B-T		<0.0002 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		1490 mg/L
Vanadium (V)	EG020A-F	<0.01 mg/L	
Vanadium (V)	EG020A-T		<0.01 mg/L

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Final - Report Number: 2388243
ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Amy Ribaux

Sample Number MPW022404
Date Sampled 27-Jun-2018 13:30
Date Received 29-Jun-2018
Date Completed 6-Jul-2018
Date Authorised 10-Jul-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Groundwater Bore MPGM4

Source: MP **Customer Sampling Point:** 016 **Sampling Code:** D11 **Sample Frequency:** Month

Testing Laboratory: ALS Environmental

Zinc (Zn)	EG020A-T	0.129 mg/L
Anions	Test Method	Filtered
Fluoride (F)	ED009-X	<0.500 mg/L
Chloride (Cl)	ED009-X	948 mg/L
Sulfate (SO4)	ED009-X	4730 mg/L

ED009x: Samples ES1819119-11, 12, 14 and 15 required dilution prior to extraction due to matrix interferences. LOR values have been adjusted accordingly.

Alkalinity Test Method: ED037-P	Total
Total Alkalinity (CaCO3)	176 mg/L

Physical Test Method: EA015H	Total
Total Dissolved Solids @ 180°C	6860 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1819119. Report Date: 5-Jul-2018

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ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Amy Ribaux

Sample Number MPW022405
Date Sampled 28-Jun-2018 11:00
Date Received 29-Jun-2018
Date Completed 6-Jul-2018
Date Authorised 10-Jul-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Groundwater Bore MPGM4

Source: MP **Customer Sampling Point:** 015 **Sampling Code:** D10 **Sample Frequency:** Month

Testing Laboratory: Mount Piper

Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	15.4 m
Bore Volume Pumped	*Analysis in Field	147 L
Recharge Bore Level	*Analysis in Field	15.4 m
pH	CA12125	5.57
Conductivity	CA12125	11040 µS/cm

Testing Laboratory: ALS Environmental

Water

Cations - Metals	Test Method	Filtered	Total
Mercury (Hg)	EG035T-LL		<0.00004 mg/L
Aluminium (Al)	EG020A-T		0.10 mg/L
Arsenic (As)	EG020A-T		<0.001 mg/L
Barium (Ba)	EG020A-T		0.015 mg/L
Boron (B)	EG020A-T		4.93 mg/L
Cadmium (Cd)	EG020A-T		0.0067 mg/L
Calcium (Ca)	ED093T-UL		365 mg/L
Chromium (Cr)	EG020A-T		<0.001 mg/L
Copper (Cu)	EG020A-T		<0.001 mg/L
Iron (Fe)	EG020A-F	4.62 mg/L	
Lead (Pb)	EG020A-T		0.005 mg/L
Magnesium (Mg)	ED093T-UL		431 mg/L
Manganese (Mn)	EG020A-F	9.14 mg/L	
Molybdenum (Mo)	EG020A-T		<0.001 mg/L
Nickel (Ni)	EG020A-T		1.04 mg/L
Potassium (K)	ED093T-UL		228 mg/L
Selenium (Se)	EG094B-T		0.0035 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		1950 mg/L
Vanadium (V)	EG020A-F	<0.01 mg/L	
Vanadium (V)	EG020A-T		<0.01 mg/L

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Final - Report Number: 2388243
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 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Amy Ribaux

Sample Number MPW022405
Date Sampled 28-Jun-2018 11:00
Date Received 29-Jun-2018
Date Completed 6-Jul-2018
Date Authorised 10-Jul-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Groundwater Bore MPM4

Source: MP **Customer Sampling Point:** 015 **Sampling Code:** D10 **Sample Frequency:** Month

Testing Laboratory: ALS Environmental

Zinc (Zn)	EG020A-T	1.04 mg/L
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Anions	Test Method: ED009-X	Filtered
Fluoride (F)		0.592 mg/L
Chloride (Cl)		1000 mg/L
Sulfate (SO4)		5640 mg/L

Alkalinity	Test Method: ED037-P	Total
Total Alkalinity (CaCO3)		91 mg/L

Physical	Test Method: EA015H	Total
Total Dissolved Solids @ 180°C		9210 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1819119. Report Date: 5-Jul-2018

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ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Amy Ribaux

Sample Number MPW022406
Date Sampled 28-Jun-2018 12:20
Date Received 29-Jun-2018
Date Completed 6-Jul-2018
Date Authorised 10-Jul-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Groundwater Bore MPGM4

Source: MP **Customer Sampling Point:** 222 **Sampling Code:** D17 **Sample Frequency:** Month

Testing Laboratory: Mount Piper

Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	28.6 m
Bore Volume Pumped	*Analysis in Field	30 L
Recharge Bore Level	*Analysis in Field	29.5 m
pH	CA12125	6.16
Conductivity	CA12125	3450 µS/cm

Testing Laboratory: ALS Environmental

Water

Cations - Metals	Test Method	Filtered	Total
Mercury (Hg)	EG035T-LL		<0.00004 mg/L
Aluminium (Al)	EG020A-T		0.07 mg/L
Arsenic (As)	EG020A-T		0.003 mg/L
Barium (Ba)	EG020A-T		0.016 mg/L
Boron (B)	EG020A-T		0.20 mg/L
Cadmium (Cd)	EG020A-T		<0.0001 mg/L
Calcium (Ca)	ED093T-UL		257 mg/L
Chromium (Cr)	EG020A-T		<0.001 mg/L
Copper (Cu)	EG020A-T		<0.001 mg/L
Iron (Fe)	EG020A-F	28.2 mg/L	
Lead (Pb)	EG020A-T		<0.001 mg/L
Magnesium (Mg)	ED093T-UL		156 mg/L
Manganese (Mn)	EG020A-F	3.44 mg/L	
Molybdenum (Mo)	EG020A-T		<0.001 mg/L
Nickel (Ni)	EG020A-T		0.101 mg/L
Potassium (K)	ED093T-UL		23.1 mg/L
Selenium (Se)	EG094B-T		<0.0002 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		392 mg/L
Vanadium (V)	EG020A-F	<0.01 mg/L	
Vanadium (V)	EG020A-T		<0.01 mg/L

* NATA accreditation does not cover the performance of this service



Accreditation Number 1099
 Accredited for compliance with ISO/IEC 17025.

Authorised by Thanh Hoang Le
 Senior Chemist

Final - Report Number: 2388243
ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Amy Ribaux

Sample Number MPW022406
Date Sampled 28-Jun-2018 12:20
Date Received 29-Jun-2018
Date Completed 6-Jul-2018
Date Authorised 10-Jul-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Groundwater Bore MPGM4

Source: MP **Customer Sampling Point:** 222 **Sampling Code:** D17 **Sample Frequency:** Month

Testing Laboratory: ALS Environmental

Zinc (Zn)	EG020A-T	0.090 mg/L
Anions	Test Method	Filtered
Fluoride (F)	ED009-X	<0.200 mg/L
Chloride (Cl)	ED009-X	223 mg/L
Sulfate (SO4)	ED009-X	1590 mg/L

ED009x: Samples required dilution prior to extraction due to matrix interferences. LOR values have been adjusted accordingly.

Alkalinity Test Method: ED037-P	Total
Total Alkalinity (CaCO3)	143 mg/L

Physical Test Method: EA015H	Total
Total Dissolved Solids @ 180°C	2460 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1819119. Report Date: 5-Jul-2018

* NATA accreditation does not cover the performance of this service



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Authorised by Thanh Hoang Le
 Senior Chemist

Final - Report Number: 2388243
ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Amy Ribaux

Sample Number MPW022407
Date Sampled 28-Jun-2018 10:50
Date Received 29-Jun-2018
Date Completed 6-Jul-2018
Date Authorised 10-Jul-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Groundwater Bore MPGM4

Source: MP **Customer Sampling Point:** 220 **Sampling Code:** D15 **Sample Frequency:** Month

Testing Laboratory: Mount Piper

Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	24.7 m
Bore Volume Pumped	*Analysis in Field	35 L
Recharge Bore Level	*Analysis in Field	25.9 m
pH	CA12125	5.43
Conductivity	CA12125	4040 µS/cm

Testing Laboratory: ALS Environmental

Water

Cations - Metals	Test Method	Filtered	Total
Mercury (Hg)	EG035T-LL		<0.00004 mg/L
Aluminium (Al)	EG020A-T		0.56 mg/L
Arsenic (As)	EG020A-T		0.003 mg/L
Barium (Ba)	EG020A-T		0.016 mg/L
Boron (B)	EG020A-T		0.27 mg/L
Cadmium (Cd)	EG020A-T		0.0005 mg/L
Calcium (Ca)	ED093T-UL		243 mg/L
Chromium (Cr)	EG020A-T		0.005 mg/L
Copper (Cu)	EG020A-T		0.002 mg/L
Iron (Fe)	EG020A-F	20.0 mg/L	
Lead (Pb)	EG020A-T		0.003 mg/L
Magnesium (Mg)	ED093T-UL		118 mg/L
Manganese (Mn)	EG020A-F	2.17 mg/L	
Molybdenum (Mo)	EG020A-T		<0.001 mg/L
Nickel (Ni)	EG020A-T		0.689 mg/L
Potassium (K)	ED093T-UL		42.0 mg/L
Selenium (Se)	EG094B-T		0.0005 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		602 mg/L
Vanadium (V)	EG020A-F	<0.01 mg/L	
Vanadium (V)	EG020A-T		<0.01 mg/L

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 Senior Chemist

Final - Report Number: 2388243
ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Amy Ribaux

Sample Number MPW022407
Date Sampled 28-Jun-2018 10:50
Date Received 29-Jun-2018
Date Completed 6-Jul-2018
Date Authorised 10-Jul-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Groundwater Bore MPGM4

Source: MP **Customer Sampling Point:** 220 **Sampling Code:** D15 **Sample Frequency:** Month

Testing Laboratory: ALS Environmental

Zinc (Zn)	EG020A-T	1.24 mg/L
Anions	Test Method	Filtered
Fluoride (F)	ED009-X	<0.200 mg/L
Chloride (Cl)	ED009-X	232 mg/L
Sulfate (SO4)	ED009-X	1980 mg/L

ED009x: Samples required dilution prior to extraction due to matrix interferences. LOR values have been adjusted accordingly.

Alkalinity Test Method: ED037-P **Total**
 Total Alkalinity (CaCO3) 43 mg/L

Physical Test Method: EA015H **Total**
 Total Dissolved Solids @ 180°C 2670 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1819119. Report Date: 5-Jul-2018

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Authorised by Thanh Hoang Le
 Senior Chemist

Final - Report Number: 2388243
ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Amy Ribaux

Sample Number MPW022408
Date Sampled 28-Jun-2018 11:35
Date Received 29-Jun-2018
Date Completed 6-Jul-2018
Date Authorised 10-Jul-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Groundwater Bore MPGM4

Source: MP **Customer Sampling Point:** 221 **Sampling Code:** D16 **Sample Frequency:** Month

Testing Laboratory: Mount Piper

Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	13.4 m
Bore Volume Pumped	*Analysis in Field	136 L
Recharge Bore Level	*Analysis in Field	135 m
pH	CA12125	6.53
Conductivity	CA12125	1370 µS/cm

Testing Laboratory: ALS Environmental

Water

Cations - Metals	Test Method	Filtered	Total
Mercury (Hg)	EG035T-LL		<0.00004 mg/L
Aluminium (Al)	EG020A-T		<0.01 mg/L
Arsenic (As)	EG020A-T		<0.001 mg/L
Barium (Ba)	EG020A-T		0.011 mg/L
Boron (B)	EG020A-T		0.05 mg/L
Cadmium (Cd)	EG020A-T		<0.0001 mg/L
Calcium (Ca)	ED093T-UL		187 mg/L
Chromium (Cr)	EG020A-T		0.003 mg/L
Copper (Cu)	EG020A-T		<0.001 mg/L
Iron (Fe)	EG094B-F	2.01 mg/L	
Lead (Pb)	EG020A-T		<0.001 mg/L
Magnesium (Mg)	ED093T-UL		66.0 mg/L
Manganese (Mn)	EG020A-F	0.031 mg/L	
Molybdenum (Mo)	EG020A-T		<0.001 mg/L
Nickel (Ni)	EG020A-T		0.006 mg/L
Potassium (K)	ED093T-UL		23.2 mg/L
Selenium (Se)	EG094B-T		<0.0002 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		22.1 mg/L
Vanadium (V)	EG020A-F	<0.01 mg/L	
Vanadium (V)	EG020A-T		<0.01 mg/L

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Authorised by Thanh Hoang Le
 Senior Chemist

Final - Report Number: 2388243
ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Amy Ribaux

Sample Number MPW022408
Date Sampled 28-Jun-2018 11:35
Date Received 29-Jun-2018
Date Completed 6-Jul-2018
Date Authorised 10-Jul-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Groundwater Bore MPGM4

Source: MP **Customer Sampling Point:** 221 **Sampling Code:** D16 **Sample Frequency:** Month

Testing Laboratory: ALS Environmental

Zinc (Zn) EG020A-T 0.009 mg/L

Anions Test Method: ED009-X

	Filtered
Fluoride (F)	0.190 mg/L
Chloride (Cl)	48.2 mg/L
Sulfate (SO4)	498 mg/L

Alkalinity Test Method: ED037-P

	Total
Total Alkalinity (CaCO3)	263 mg/L

Physical Test Method: EA015H

	Total
Total Dissolved Solids @ 180°C	922 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1819119. Report Date: 5-Jul-2018

* NATA accreditation does not cover the performance of this service



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Authorised by Thanh Hoang Le
 Senior Chemist

Final - Report Number: 2388243
ENERGY AUSTRALIA C/- MT PIPER POWER
BOULDER ROAD
PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Amy Ribaux

Sample Number MPW022409
Date Sampled 27-Jun-2018 12:25
Date Received 28-Jun-2018
Date Completed 29-Jun-2018
Date Authorised 29-Jun-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: MP Ash - D10 - SW3-D

Source: MP **Customer Sampling Point:** 256 **Sampling Code:** SW3-D **Sample Frequency:** Ad-Hoc

Testing Laboratory: Mount Piper
Water

Field Analysis **Test Method:** Analysis in Field
Dry

Total

•System out of service.

N Tomlinson

Authorised by Nikki Tomlinson
Senior Chemist

Final - Report Number: 2388243
ENERGY AUSTRALIA C/- MT PIPER POWER
BOULDER ROAD
PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Amy Ribaux

Sample Number MPW022410
Date Sampled 27-Jun-2018 11:35
Date Received 28-Jun-2018
Date Completed 29-Jun-2018
Date Authorised 29-Jun-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: MP Ash - D10 - B5

Source: MP

Customer Sampling Point: 250

Sampling Code: B5

Sample Frequency: Ad-Hoc

Testing Laboratory: Mount Piper
Water

Field Analysis Test Method: Analysis in Field
Bent casing

Total

N Tomlinson

Authorised by Nikki Tomlinson
Senior Chemist

Final - Report Number: 2388243
ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Amy Ribaux

Sample Number MPW022411
Date Sampled 27-Jun-2018 11:25
Date Received 29-Jun-2018
Date Completed 6-Jul-2018
Date Authorised 10-Jul-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: MP Ash - D10 - B5-1

Source: MP **Customer Sampling Point:** 251 **Sampling Code:** B5-1 **Sample Frequency:** Ad-Hoc

Testing Laboratory: Mount Piper

Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	36.8 m
Bore Volume Pumped	*Analysis in Field	3.5 L
Recharge Bore Level	*Analysis in Field	36.8 m
pH	CA12125	5.67
Conductivity	CA12125	45960 µS/cm

Testing Laboratory: ALS Environmental

Water

Cations - Metals	Test Method	Filtered	Total
Mercury (Hg)	EG035T-LL		0.00014 mg/L
Aluminium (Al)	EG020A-T		11.2 mg/L
Arsenic (As)	EG020A-T		0.027 mg/L
Barium (Ba)	EG020A-T		0.075 mg/L
Boron (B)	EG020A-T		10.9 mg/L
Cadmium (Cd)	EG020A-T		0.0735 mg/L
Calcium (Ca)	ED093T-UL		472 mg/L
Chromium (Cr)	EG020A-T		0.036 mg/L
Copper (Cu)	EG020A-T		0.030 mg/L
Iron (Fe)	EG020A-F	<0.10 mg/L	
Lead (Pb)	EG020A-T		0.040 mg/L
Magnesium (Mg)	ED093T-UL		1700 mg/L
Manganese (Mn)	EG020A-F	35.8 mg/L	
Molybdenum (Mo)	EG020A-T		<0.010 mg/L
Nickel (Ni)	EG020A-T		2.34 mg/L
Potassium (K)	ED093T-UL		1170 mg/L
Selenium (Se)	EG094B-T		0.242 mg/L
Silver (Ag)	EG020B-T		<0.010 mg/L
Sodium (Na)	ED093T-UL		12000 mg/L
Vanadium (V)	EG020A-F	<0.10 mg/L	
Vanadium (V)	EG020A-T		<0.10 mg/L

* NATA accreditation does not cover the performance of this service



Accreditation Number 1099
 Accredited for compliance with ISO/IEC 17025.

Authorised by Thanh Hoang Le
 Senior Chemist

Final - Report Number: 2388243
ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Amy Ribaux

Sample Number MPW022411
Date Sampled 27-Jun-2018 11:25
Date Received 29-Jun-2018
Date Completed 6-Jul-2018
Date Authorised 10-Jul-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: MP Ash - D10 - B5-1

Source: MP **Customer Sampling Point:** 251 **Sampling Code:** B5-1 **Sample Frequency:** Ad-Hoc

Testing Laboratory: ALS Environmental

Zinc (Zn)	EG020A-T	3.55 mg/L
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Anions Test Method: ED009-X	Filtered
Fluoride (F)	3.36 mg/L
Chloride (Cl)	3800 mg/L
Sulfate (SO4)	29500 mg/L

Alkalinity Test Method: ED037-P	Total
Total Alkalinity (CaCO3)	127 mg/L

Physical Test Method: EA015H	Total
Total Dissolved Solids @ 180°C	52000 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1819119. Report Date: 5-Jul-2018

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Authorised by Thanh Hoang Le
 Senior Chemist

Final - Report Number: 2413194
ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Amy Ribaux

Sample Number MPW022784
Date Sampled 26-Jul-2018 09:50
Date Received 30-Jul-2018
Date Completed 6-Aug-2018
Date Authorised 8-Aug-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Groundwater Bore MPGM4

Source: MP **Customer Sampling Point:** 014 **Sampling Code:** D9 **Sample Frequency:** Month

Testing Laboratory: Mount Piper
Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	2.4 m
Bore Volume Pumped	*Analysis in Field	6 L
Recharge Bore Level	*Analysis in Field	2.4 m
pH	CA12125	5.84
Conductivity	CA12125	4360 µS/cm

Testing Laboratory: ALS Environmental
Water

Cations - Metals	Test Method	Filtered	Total
Mercury (Hg)	EG035T-LL		<0.00004 mg/L
Aluminium (Al)	EG020A-T		0.20 mg/L
Arsenic (As)	EG020A-T		0.001 mg/L
Barium (Ba)	EG020A-T		0.044 mg/L
Boron (B)	EG020A-T		0.86 mg/L
Cadmium (Cd)	EG020A-T		<0.0001 mg/L
Calcium (Ca)	ED093T-UL		357 mg/L
Chromium (Cr)	EG020A-T		<0.001 mg/L
Copper (Cu)	EG020A-T		0.002 mg/L
Iron (Fe)	EG020A-F	32.5 mg/L	
Lead (Pb)	EG020A-T		0.001 mg/L
Magnesium (Mg)	ED093T-UL		302 mg/L
Manganese (Mn)	EG020A-F	15.4 mg/L	
Molybdenum (Mo)	EG020A-T		0.003 mg/L
Nickel (Ni)	EG020A-T		0.665 mg/L
Potassium (K)	ED093T-UL		21.9 mg/L
Selenium (Se)	EG094B-T		0.0002 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		339 mg/L
Vanadium (V)	EG020A-F	<0.01 mg/L	
Vanadium (V)	EG020A-T		<0.01 mg/L

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Authorised by Thanh Hoang Le
 Senior Chemist

Final - Report Number: 2413194
ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Amy Ribaux

Sample Number MPW022784
Date Sampled 26-Jul-2018 09:50
Date Received 30-Jul-2018
Date Completed 6-Aug-2018
Date Authorised 8-Aug-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Groundwater Bore MPGM4

Source: MP **Customer Sampling Point:** 014 **Sampling Code:** D9 **Sample Frequency:** Month

Testing Laboratory: ALS Environmental

Zinc (Zn) EG020A-T 0.171 mg/L

Anions Test Method: ED009-X

	Filtered
Fluoride (F)	3.02 mg/L
Chloride (Cl)	342 mg/L
Sulfate (SO4)	1970 mg/L

Alkalinity Test Method: ED037-P

	Total
Total Alkalinity (CaCO3)	114 mg/L

Physical Test Method: EA015H

	Total
Total Dissolved Solids @ 180°C	3710 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1822051. Report Date: 3-Aug-2018

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 Accredited for compliance with ISO/IEC 17025.

Authorised by Thanh Hoang Le
 Senior Chemist

Final - Report Number: 2413194
ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Amy Ribaux

Sample Number MPW022785
Date Sampled 26-Jul-2018 08:45
Date Received 30-Jul-2018
Date Completed 6-Aug-2018
Date Authorised 8-Aug-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Stream Gauge

Source: MP **Customer Sampling Point:** 003 **Sampling Code:** WX22 **Sample Frequency:** Month

Testing Laboratory: Mount Piper
 Water

Field Analysis	Test Method	Total
Discharge Flowing	*Analysis in Field	Flow
pH	CA12125	6.74
Conductivity	CA12125	484 µS/cm
Temperature	CA12125	1.9 °C
Dissolved Oxygen (O2)	*Analysis in Field	16.1 mg/L



Field Photo

Testing Laboratory: ALS Environmental
 Water

Cations - Metals	Test Method	Filtered	Total
Mercury (Hg)	EG035T-LL		<0.00004 mg/L
Aluminium (Al)	EG020A-F	<0.01 mg/L	
Aluminium (Al)	EG020A-T		0.02 mg/L
Arsenic (As)	EG020A-T		<0.001 mg/L

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 Senior Chemist

Final - Report Number: 2413194
ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Amy Ribaux

Sample Number MPW022785
Date Sampled 26-Jul-2018 08:45
Date Received 30-Jul-2018
Date Completed 6-Aug-2018
Date Authorised 8-Aug-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Stream Gauge

Source: MP **Customer Sampling Point:** 003 **Sampling Code:** WX22 **Sample Frequency:** Month

Testing Laboratory: ALS Environmental

Barium (Ba)	EG020A-T	0.015 mg/L
Boron (B)	EG020A-T	0.09 mg/L
Cadmium (Cd)	EG020A-T	<0.0001 mg/L
Calcium (Ca)	ED093T-UL	29.1 mg/L
Chromium (Cr)	EG020A-T	<0.001 mg/L
Copper (Cu)	EG020A-F	<0.001 mg/L
Copper (Cu)	EG020A-T	0.001 mg/L
Iron (Fe)	EG094B-F	0.122 mg/L
Iron (Fe)	EG094B-T	0.179 mg/L
Lead (Pb)	EG020A-T	<0.001 mg/L
Magnesium (Mg)	ED093T-UL	18.5 mg/L
Manganese (Mn)	EG020A-F	0.167 mg/L
Manganese (Mn)	EG020A-T	0.189 mg/L
Molybdenum (Mo)	EG020A-T	<0.001 mg/L
Nickel (Ni)	EG020A-T	0.012 mg/L
Potassium (K)	ED093T-UL	4.53 mg/L
Selenium (Se)	EG094B-T	<0.0002 mg/L
Silver (Ag)	EG020B-T	<0.001 mg/L
Sodium (Na)	ED093T-UL	33.9 mg/L
Strontium (Sr)	EG020B-T	0.103 mg/L
Vanadium (V)	EG020A-F	<0.01 mg/L
Vanadium (V)	EG020A-T	<0.01 mg/L
Zinc (Zn)	EG020A-F	<0.005 mg/L
Zinc (Zn)	EG020A-T	0.007 mg/L

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 Senior Chemist

Final - Report Number: 2413194
ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Amy Ribaux

Sample Number MPW022785
Date Sampled 26-Jul-2018 08:45
Date Received 30-Jul-2018
Date Completed 6-Aug-2018
Date Authorised 8-Aug-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Stream Gauge

Source: MP **Customer Sampling Point:** 003 **Sampling Code:** WX22 **Sample Frequency:** Month

Testing Laboratory: ALS Environmental

Anions	Test Method	Filtered
Fluoride (F)	ED009-X	0.844 mg/L
Chloride (Cl)	ED009-X	27.8 mg/L
Sulfate (SO4)	ED009-X	158 mg/L
Nitrate (N)	EK058G	0.03 mg/L
Nitrite (N)	EK057G	<0.01 mg/L
Nitrate and Nitrite (N)	EK059G	0.03 mg/L

Alkalinity	Test Method: ED037-P	Total
Total Alkalinity (CaCO3)		36 mg/L
Phenolphthalein Alkalinity (CaCO3)		<1 mg/L
Bicarbonate (CaCO3)		36 mg/L

Phosphate	Test Method: EK067G	Total
Total Phosphorus (P)		<0.01 mg/L

Physical	Test Method	Total
Total Dissolved Solids @ 180°C	EA015H	270 mg/L
Turbidity	EA045	1.1 NTU

Other	Test Method	Total
Nitrogen (N)	EK062G	0.1 mg/L
Nitrogen (N) - Kjeldahl	EK061G	0.1 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1822051. Report Date: 3-Aug-2018

* NATA accreditation does not cover the performance of this service



Accreditation Number 1099
 Accredited for compliance with ISO/IEC 17025.

Authorised by Thanh Hoang Le
 Senior Chemist

Customer Analytical Services

Mount Piper Power Station 350 Boulder Road Portland 2847 NSW

Email: customeranalyticalservices@nalco.com

NALCO Water
An Ecolab Company

Final - Report Number: 2413194

ENERGY AUSTRALIA C/- MT PIPER POWER

BOULDER ROAD

PORTLAND NSW 2847 AUSTRALIA

Sold To: 0500082301 **Ship To:** 0500082301

Representative: Clive Stacey

Sampled By: Amy Ribaux

Sample Number

MPW022786

Date Sampled

25-Jul-2018 08:55

Date Received

30-Jul-2018

Date Completed

6-Aug-2018

Date Authorised

8-Aug-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Groundwater Bore MPGM4

Source: MP

Customer Sampling Point: 006

Sampling Code: D1

Sample Frequency: Month

Testing Laboratory: Mount Piper

Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	2.7 m
Bore Volume Pumped	*Analysis in Field	124 L
Recharge Bore Level	*Analysis in Field	4.4 m
pH	CA12125	5.91
Conductivity	CA12125	4250 µS/cm

Testing Laboratory: ALS Environmental

Water

Cations - Metals	Test Method	Filtered	Total
Mercury (Hg)	EG035T-LL		<0.00004 mg/L
Aluminium (Al)	EG020A-T		0.08 mg/L
Arsenic (As)	EG020A-T		0.005 mg/L
Barium (Ba)	EG020A-T		0.023 mg/L
Boron (B)	EG020A-T		1.60 mg/L
Cadmium (Cd)	EG020A-T		<0.0001 mg/L
Calcium (Ca)	ED093T-UL		334 mg/L
Chromium (Cr)	EG020A-T		<0.001 mg/L
Copper (Cu)	EG020A-T		<0.001 mg/L
Iron (Fe)	EG020A-F	31.9 mg/L	
Lead (Pb)	EG020A-T		<0.001 mg/L
Magnesium (Mg)	ED093T-UL		244 mg/L
Manganese (Mn)	EG020A-F	14.0 mg/L	
Molybdenum (Mo)	EG020A-T		<0.001 mg/L
Nickel (Ni)	EG020A-T		0.720 mg/L
Potassium (K)	ED093T-UL		30.4 mg/L
Selenium (Se)	EG094B-T		<0.0002 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		393 mg/L
Vanadium (V)	EG020A-F	<0.01 mg/L	
Vanadium (V)	EG020A-T		<0.01 mg/L

* NATA accreditation does not cover the performance of this service



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Authorised by Thanh Hoang Le
Senior Chemist

Final - Report Number: 2413194
ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Amy Ribaux

Sample Number MPW022786
Date Sampled 25-Jul-2018 08:55
Date Received 30-Jul-2018
Date Completed 6-Aug-2018
Date Authorised 8-Aug-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Groundwater Bore MPGM4

Source: MP **Customer Sampling Point:** 006 **Sampling Code:** D1 **Sample Frequency:** Month

Testing Laboratory: ALS Environmental

Zinc (Zn)	EG020A-T	0.075 mg/L
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Anions Test Method: ED009-X	Filtered
Fluoride (F)	3.99 mg/L
Chloride (Cl)	376 mg/L
Sulfate (SO4)	1930 mg/L

Alkalinity Test Method: ED037-P	Total
Total Alkalinity (CaCO3)	160 mg/L

Physical Test Method: EA015H	Total
Total Dissolved Solids @ 180°C	3520 mg/L

TDS by method EA-015 may bias high for sample 3 due to the presence of fine particulate matter, which may pass through the prescribed GF/C paper.

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1822051. Report Date: 3-Aug-2018

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Authorised by Thanh Hoang Le
 Senior Chemist

Final - Report Number: 2413194
ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Amy Ribaux

Sample Number MPW022787
Date Sampled 26-Jul-2018 08:25
Date Received 30-Jul-2018
Date Completed 6-Aug-2018
Date Authorised 8-Aug-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Groundwater Bore MPGM4

Source: MP **Customer Sampling Point:** 013 **Sampling Code:** D8 **Sample Frequency:** Month

Testing Laboratory: Mount Piper
Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	2.6 m
Bore Volume Pumped	*Analysis in Field	45 L
Recharge Bore Level	*Analysis in Field	2.6 m
pH	CA12125	5.46
Conductivity	CA12125	990 µS/cm

Testing Laboratory: ALS Environmental
Water

Cations - Metals	Test Method	Filtered	Total
Mercury (Hg)	EG035T-LL		<0.00004 mg/L
Aluminium (Al)	EG020A-T		0.09 mg/L
Arsenic (As)	EG020A-T		<0.001 mg/L
Barium (Ba)	EG020A-T		0.037 mg/L
Boron (B)	EG020A-T		0.15 mg/L
Cadmium (Cd)	EG020A-T		<0.0001 mg/L
Calcium (Ca)	ED093T-UL		57.7 mg/L
Chromium (Cr)	EG020A-T		0.002 mg/L
Copper (Cu)	EG020A-T		0.002 mg/L
Iron (Fe)	EG094B-F	0.440 mg/L	
Lead (Pb)	EG020A-T		<0.001 mg/L
Magnesium (Mg)	ED093T-UL		46.4 mg/L
Manganese (Mn)	EG020A-F	1.61 mg/L	
Molybdenum (Mo)	EG020A-T		<0.001 mg/L
Nickel (Ni)	EG020A-T		0.087 mg/L
Potassium (K)	ED093T-UL		6.05 mg/L
Selenium (Se)	EG094B-T		<0.0002 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		73.2 mg/L
Vanadium (V)	EG020A-F	<0.01 mg/L	
Vanadium (V)	EG020A-T		<0.01 mg/L

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Authorised by Thanh Hoang Le
 Senior Chemist

Final - Report Number: 2413194
ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Amy Ribaux

Sample Number MPW022787
Date Sampled 26-Jul-2018 08:25
Date Received 30-Jul-2018
Date Completed 6-Aug-2018
Date Authorised 8-Aug-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Groundwater Bore MPGM4

Source: MP **Customer Sampling Point:** 013 **Sampling Code:** D8 **Sample Frequency:** Month

Testing Laboratory: ALS Environmental

Zinc (Zn) EG020A-T 0.105 mg/L

Anions Test Method: ED009-X

	Filtered
Fluoride (F)	0.680 mg/L
Chloride (Cl)	57.3 mg/L
Sulfate (SO4)	397 mg/L

Alkalinity Test Method: ED037-P

	Total
Total Alkalinity (CaCO3)	22 mg/L

Physical Test Method: EA015H

	Total
Total Dissolved Solids @ 180°C	672 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1822051. Report Date: 3-Aug-2018

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Authorised by Thanh Hoang Le
 Senior Chemist

Final - Report Number: 2413194
ENERGY AUSTRALIA C/- MT PIPER POWER
BOULDER ROAD
PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Amy Ribaux

Sample Number MPW022788
Date Sampled 25-Jul-2018 13:25
Date Received 26-Jul-2018
Date Completed 26-Jul-2018
Date Authorised 26-Jul-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: MP Ash - D10 - D21

Source: MP

Customer Sampling Point: 253

Sampling Code: D21

Sample Frequency:
ADDITIONAL_MONTH

Testing Laboratory: Mount Piper

Water

Field Analysis Test Method: Analysis in Field
Dry

Total

Water

Nomlinson

Authorised by Nikki Tomlinson
Senior Chemist

Final - Report Number: 2413194
ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Amy Ribaux

Sample Number MPW022789
Date Sampled 25-Jul-2018 13:55
Date Received 30-Jul-2018
Date Completed 6-Aug-2018
Date Authorised 8-Aug-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: MP Ash - D10 - D23

Source: MP **Customer Sampling Point:** 254 **Sampling Code:** D23 **Sample Frequency:** ADDITIONAL_MONTH

Testing Laboratory: Mount Piper Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	25.1 m
Bore Volume Pumped	*Analysis in Field	47 L
Recharge Bore Level	*Analysis in Field	25.5 m
pH	CA12125	5.50
Conductivity	CA12125	3820 µS/cm

Testing Laboratory: ALS Environmental Water

Cations - Metals	Test Method	Filtered	Total
Mercury (Hg)	EG035T-LL		<0.00004 mg/L
Aluminium (Al)	EG020A-T		1.82 mg/L
Arsenic (As)	EG020A-T		0.003 mg/L
Barium (Ba)	EG020A-T		0.024 mg/L
Boron (B)	EG020A-T		0.42 mg/L
Cadmium (Cd)	EG020A-T		0.0004 mg/L
Calcium (Ca)	ED093T-UL		227 mg/L
Chromium (Cr)	EG020A-T		0.007 mg/L
Copper (Cu)	EG020A-T		0.004 mg/L
Iron (Fe)	EG020A-F	27.4 mg/L	
Lead (Pb)	EG020A-T		0.006 mg/L
Magnesium (Mg)	ED093T-UL		117 mg/L
Manganese (Mn)	EG020A-F	2.94 mg/L	
Molybdenum (Mo)	EG020A-T		<0.001 mg/L
Nickel (Ni)	EG020A-T		0.476 mg/L
Potassium (K)	ED093T-UL		41.3 mg/L
Selenium (Se)	EG094B-T		0.0007 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		553 mg/L
Vanadium (V)	EG020A-F	<0.01 mg/L	

* NATA accreditation does not cover the performance of this service



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Authorised by Thanh Hoang Le
 Senior Chemist

Final - Report Number: 2413194
ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Amy Ribaux

Sample Number MPW022789
Date Sampled 25-Jul-2018 13:55
Date Received 30-Jul-2018
Date Completed 6-Aug-2018
Date Authorised 8-Aug-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: MP Ash - D10 - D23

Source: MP **Customer Sampling Point:** 254 **Sampling Code:** D23 **Sample Frequency:** ADDITIONAL_MONTH

Testing Laboratory: ALS Environmental

Vanadium (V)	EG020A-T	<0.01 mg/L
Zinc (Zn)	EG020A-T	0.789 mg/L

Anions Test Method: ED009-X	Filtered
Fluoride (F)	3.18 mg/L
Chloride (Cl)	201 mg/L
Sulfate (SO4)	1920 mg/L

Alkalinity Test Method: ED037-P	Total
Total Alkalinity (CaCO3)	53 mg/L

Physical Test Method: EA015H	Total
Total Dissolved Solids @ 180°C	3080 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1822051. Report Date: 3-Aug-2018

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Authorised by Thanh Hoang Le
 Senior Chemist

Final - Report Number: 2413194
ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Amy Ribaux

Sample Number MPW022790
Date Sampled 26-Jul-2018 11:05
Date Received 30-Jul-2018
Date Completed 6-Aug-2018
Date Authorised 8-Aug-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Groundwater Bore MPGM4

Source: MP **Customer Sampling Point:** 223 **Sampling Code:** D18 **Sample Frequency:** Month

Testing Laboratory: Mount Piper
Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	20.3 m
Bore Volume Pumped	*Analysis in Field	20 L
Recharge Bore Level	*Analysis in Field	29.3 m
pH	CA12125	6.63
Conductivity	CA12125	760 µS/cm

Testing Laboratory: ALS Environmental
Water

Cations - Metals	Test Method	Filtered	Total
Mercury (Hg)	EG035T-LL		<0.00004 mg/L
Aluminium (Al)	EG020A-T		0.26 mg/L
Arsenic (As)	EG020A-T		0.002 mg/L
Barium (Ba)	EG020A-T		0.570 mg/L
Boron (B)	EG020A-T		0.08 mg/L
Cadmium (Cd)	EG020A-T		0.0001 mg/L
Calcium (Ca)	ED093T-UL		78.4 mg/L
Chromium (Cr)	EG020A-T		<0.001 mg/L
Copper (Cu)	EG020A-T		0.002 mg/L
Iron (Fe)	EG094B-F	0.024 mg/L	
Lead (Pb)	EG020A-T		<0.001 mg/L
Magnesium (Mg)	ED093T-UL		31.8 mg/L
Manganese (Mn)	EG020A-F	0.156 mg/L	
Molybdenum (Mo)	EG020A-T		0.003 mg/L
Nickel (Ni)	EG020A-T		0.007 mg/L
Potassium (K)	ED093T-UL		18.1 mg/L
Selenium (Se)	EG094B-T		0.0004 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		31.9 mg/L
Vanadium (V)	EG020A-F	<0.01 mg/L	
Vanadium (V)	EG020A-T		<0.01 mg/L

* NATA accreditation does not cover the performance of this service



Accreditation Number 1099
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Authorised by Thanh Hoang Le
 Senior Chemist

Final - Report Number: 2413194
ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Amy Ribaux

Sample Number MPW022790
Date Sampled 26-Jul-2018 11:05
Date Received 30-Jul-2018
Date Completed 6-Aug-2018
Date Authorised 8-Aug-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Groundwater Bore MPGM4

Source: MP **Customer Sampling Point:** 223 **Sampling Code:** D18 **Sample Frequency:** Month

Testing Laboratory: ALS Environmental

Zinc (Zn)	EG020A-T	0.051 mg/L
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Anions	Test Method: ED009-X	Filtered
Fluoride (F)		3.30 mg/L
Chloride (Cl)		10.9 mg/L
Sulfate (SO4)		54.6 mg/L

Alkalinity	Test Method: ED037-P	Total
Total Alkalinity (CaCO3)		329 mg/L

Physical	Test Method: EA015H	Total
Total Dissolved Solids @ 180°C		413 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1822051. Report Date: 3-Aug-2018

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Accreditation Number 1099
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Authorised by Thanh Hoang Le
 Senior Chemist

Final - Report Number: 2413194
ENERGY AUSTRALIA C/- MT PIPER POWER
BOULDER ROAD
PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Amy Ribaux

Sample Number MPW022791
Date Sampled 25-Jul-2018 13:20
Date Received 26-Jul-2018
Date Completed 26-Jul-2018
Date Authorised 26-Jul-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: MP Ash - D10 - SW3-S

Source: MP

Customer Sampling Point: 257

Sampling Code: SW3-S

Sample Frequency:
ADDITIONAL_MONTH

Testing Laboratory: Mount Piper

Water

Field Analysis Test Method: Analysis in Field
Initial Bore Level

Total
15.0 m

volume not extractable

Water

N Tomlinson

Authorised by Nikki Tomlinson
Senior Chemist

Final - Report Number: 2413194
ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Amy Ribaux

Sample Number	MPW022791
Date Sampled	25-Jul-2018 13:20
Date Received	26-Jul-2018
Date Completed	26-Jul-2018
Date Authorised	26-Jul-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: MP Ash - D10 - SW3-S

Source: MP	Customer Sampling Point: 257	Sampling Code: SW3-S	Sample Frequency: ADDITIONAL_MONTH
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Final - Report Number: 2413194
ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Amy Ribaux

Sample Number	MPW022792
Date Sampled	25-Jul-2018 13:15
Date Received	26-Jul-2018
Date Completed	26-Jul-2018
Date Authorised	26-Jul-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: MP Ash - D10 - SW3-D

Source: MP	Customer Sampling Point: 256	Sampling Code: SW3-D	Sample Frequency: ADDITIONAL_MONTH
-------------------	-------------------------------------	-----------------------------	--

Testing Laboratory: Mount Piper

Water

Field Analysis	Test Method: Analysis in Field	Total
Dry		

Water

Nomlinson

Authorised by Nikki Tomlinson
 Senior Chemist

Final - Report Number: 2413194
ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Amy Ribaux

Sample Number MPW022792
Date Sampled 25-Jul-2018 13:15
Date Received 26-Jul-2018
Date Completed 26-Jul-2018
Date Authorised 26-Jul-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: MP Ash - D10 - SW3-D

Source: MP **Customer Sampling Point:** 256 **Sampling Code:** SW3-D **Sample Frequency:** ADDITIONAL_MONTH

Final - Report Number: 2413194
ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Amy Ribaux

Sample Number MPW022793
Date Sampled 26-Jul-2018 10:30
Date Received 30-Jul-2018
Date Completed 6-Aug-2018
Date Authorised 8-Aug-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: MP Ash - D10 - B5

Source: MP **Customer Sampling Point:** 250 **Sampling Code:** B5 **Sample Frequency:** ADDITIONAL_MONTH

Testing Laboratory: Mount Piper

Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	38.3 m
Bore Volume Pumped	*Analysis in Field	1.5 L
Recharge Bore Level	*Analysis in Field	38.3 m
pH	CA12125	6.14
Conductivity	CA12125	47820 µS/cm

Testing Laboratory: ALS Environmental

Water

Cations - Metals	Test Method	Filtered	Total
Mercury (Hg)	EG035T-LL		<0.00004 mg/L
Aluminium (Al)	EG020A-T		0.92 mg/L
Arsenic (As)	EG020A-T		0.017 mg/L
Barium (Ba)	EG020A-T		0.045 mg/L
Boron (B)	EG020A-T		14.2 mg/L
Cadmium (Cd)	EG020A-T		0.160 mg/L

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Accreditation Number 1099
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Authorised by Thanh Hoang Le
 Senior Chemist

Customer Analytical Services

Mount Piper Power Station 350 Boulder Road Portland 2847 NSW

Email: customeranalyticalservices@nalco.com



Final - Report Number: 2413194
ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Amy Ribaux

Sample Number MPW022793
Date Sampled 26-Jul-2018 10:30
Date Received 30-Jul-2018
Date Completed 6-Aug-2018
Date Authorised 8-Aug-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: MP Ash - D10 - B5

Source: MP **Customer Sampling Point:** 250 **Sampling Code:** B5 **Sample Frequency:** ADDITIONAL_MONTH

Testing Laboratory: ALS Environmental

Calcium (Ca)	ED093T-UL	524 mg/L
Chromium (Cr)	EG020A-T	<0.010 mg/L
Copper (Cu)	EG020A-T	0.048 mg/L
Iron (Fe)	EG020A-F	0.32 mg/L
Lead (Pb)	EG020A-T	<0.010 mg/L
Magnesium (Mg)	ED093T-UL	1990 mg/L
Manganese (Mn)	EG020A-F	13.5 mg/L
Molybdenum (Mo)	EG020A-T	4.90 mg/L
Nickel (Ni)	EG020A-T	1.24 mg/L
Potassium (K)	ED093T-UL	1510 mg/L
Selenium (Se)	EG094B-T	0.0874 mg/L
Silver (Ag)	EG020B-T	<0.010 mg/L
Sodium (Na)	ED093T-UL	13700 mg/L
Vanadium (V)	EG020A-F	<0.10 mg/L
Vanadium (V)	EG020A-T	<0.10 mg/L
Zinc (Zn)	EG020A-T	4.09 mg/L

Anions Test Method: ED009-X	Filtered
Fluoride (F)	3.53 mg/L
Chloride (Cl)	4310 mg/L
Sulfate (SO4)	34800 mg/L

Alkalinity Test Method: ED037-P	Total
Total Alkalinity (CaCO3)	67 mg/L

Physical Test Method: EA015H	Total
Total Dissolved Solids @ 180°C	51100 mg/L

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Authorised by Thanh Hoang Le
 Senior Chemist

Final - Report Number: 2413194
ENERGY AUSTRALIA C/- MT PIPER POWER
BOULDER ROAD
PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Amy Ribaux

Sample Number MPW022793
Date Sampled 26-Jul-2018 10:30
Date Received 30-Jul-2018
Date Completed 6-Aug-2018
Date Authorised 8-Aug-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: MP Ash - D10 - B5

Source: MP

Customer Sampling Point: 250

Sampling Code: B5

Sample Frequency:
ADDITIONAL_MONTH

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1822051. Report Date: 3-Aug-2018

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Accreditation Number 1099
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A handwritten signature in black ink, appearing to be "Thanh Hoang Le".

Authorised by Thanh Hoang Le
Senior Chemist

Final - Report Number: 2413194
ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Amy Ribaux

Sample Number MPW022794
Date Sampled 26-Jul-2018 10:45
Date Received 30-Jul-2018
Date Completed 6-Aug-2018
Date Authorised 8-Aug-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: MP Ash - D10 - B5-1

Source: MP **Customer Sampling Point:** 251 **Sampling Code:** B5-1 **Sample Frequency:** ADDITIONAL_MONTH

Testing Laboratory: Mount Piper
Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	36.9 m
Bore Volume Pumped	*Analysis in Field	0 L
Recharge Bore Level	*Analysis in Field	36.9 m
pH	CA12125	5.57
Conductivity	CA12125	46980 µS/cm

Testing Laboratory: ALS Environmental
Water

Cations - Metals	Test Method	Filtered	Total
Mercury (Hg)	EG035T-LL		0.00009 mg/L
Aluminium (Al)	EG020A-T		8.97 mg/L
Arsenic (As)	EG020A-T		0.019 mg/L
Barium (Ba)	EG020A-T		0.073 mg/L
Boron (B)	EG020A-T		10.7 mg/L
Cadmium (Cd)	EG020A-T		0.0703 mg/L
Calcium (Ca)	ED093T-UL		500 mg/L
Chromium (Cr)	EG020A-T		0.053 mg/L
Copper (Cu)	EG020A-T		0.024 mg/L
Iron (Fe)	EG020A-F	0.31 mg/L	
Lead (Pb)	EG020A-T		0.031 mg/L
Magnesium (Mg)	ED093T-UL		1900 mg/L
Manganese (Mn)	EG020A-F	40.4 mg/L	
Molybdenum (Mo)	EG020A-T		0.064 mg/L
Nickel (Ni)	EG020A-T		2.35 mg/L
Potassium (K)	ED093T-UL		1190 mg/L
Selenium (Se)	EG094B-T		0.250 mg/L
Silver (Ag)	EG020B-T		<0.010 mg/L
Sodium (Na)	ED093T-UL		13600 mg/L
Vanadium (V)	EG020A-F	<0.10 mg/L	

* NATA accreditation does not cover the performance of this service



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Authorised by Thanh Hoang Le
 Senior Chemist

Final - Report Number: 2413194
ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Amy Ribaux

Sample Number MPW022794
Date Sampled 26-Jul-2018 10:45
Date Received 30-Jul-2018
Date Completed 6-Aug-2018
Date Authorised 8-Aug-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: MP Ash - D10 - B5-1

Source: MP **Customer Sampling Point:** 251 **Sampling Code:** B5-1 **Sample Frequency:** ADDITIONAL_MONTH

Testing Laboratory: ALS Environmental

Vanadium (V)	EG020A-T	<0.10 mg/L
Zinc (Zn)	EG020A-T	3.54 mg/L

Anions Test Method: ED009-X	Filtered
Fluoride (F)	3.74 mg/L
Chloride (Cl)	3620 mg/L
Sulfate (SO4)	33200 mg/L

Alkalinity Test Method: ED037-P	Total
Total Alkalinity (CaCO3)	120 mg/L

Physical Test Method: EA015H	Total
Total Dissolved Solids @ 180°C	49600 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1822051. Report Date: 3-Aug-2018

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ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Amy Ribaux

Sample Number MPW022795
Date Sampled 25-Jul-2018 11:45
Date Received 30-Jul-2018
Date Completed 6-Aug-2018
Date Authorised 8-Aug-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: MP Ash - D10 - NA5

Source: MP **Customer Sampling Point:** 255 **Sampling Code:** NA5 **Sample Frequency:** ADDITIONAL_MONTH

Testing Laboratory: Mount Piper
Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	25.2 m
Bore Volume Pumped	*Analysis in Field	19 L
Recharge Bore Level	*Analysis in Field	25.2 m
pH	CA12125	5.91
Conductivity	CA12125	4510 µS/cm

Testing Laboratory: ALS Environmental
Water

Cations - Metals	Test Method	Filtered	Total
Mercury (Hg)	EG035T-LL		<0.00004 mg/L
Aluminium (Al)	EG020A-T		1.56 mg/L
Arsenic (As)	EG020A-T		<0.001 mg/L
Barium (Ba)	EG020A-T		0.025 mg/L
Boron (B)	EG020A-T		10.2 mg/L
Cadmium (Cd)	EG020A-T		0.0075 mg/L
Calcium (Ca)	ED093T-UL		322 mg/L
Chromium (Cr)	EG020A-T		0.001 mg/L
Copper (Cu)	EG020A-T		0.001 mg/L
Iron (Fe)	EG020A-F	0.16 mg/L	
Lead (Pb)	EG020A-T		<0.001 mg/L
Magnesium (Mg)	ED093T-UL		104 mg/L
Manganese (Mn)	EG020A-F	6.33 mg/L	
Molybdenum (Mo)	EG020A-T		0.246 mg/L
Nickel (Ni)	EG020A-T		0.404 mg/L
Potassium (K)	ED093T-UL		124 mg/L
Selenium (Se)	EG094B-T		0.0304 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		630 mg/L
Vanadium (V)	EG020A-F	<0.01 mg/L	

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Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Amy Ribaux

Sample Number MPW022795
Date Sampled 25-Jul-2018 11:45
Date Received 30-Jul-2018
Date Completed 6-Aug-2018
Date Authorised 8-Aug-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: MP Ash - D10 - NA5

Source: MP **Customer Sampling Point:** 255 **Sampling Code:** NA5 **Sample Frequency:** ADDITIONAL_MONTH

Testing Laboratory: ALS Environmental

Vanadium (V)	EG020A-T	<0.01 mg/L
Zinc (Zn)	EG020A-T	0.603 mg/L

Anions Test Method: ED009-X	Filtered
Fluoride (F)	5.31 mg/L
Chloride (Cl)	105 mg/L
Sulfate (SO4)	2260 mg/L

Alkalinity Test Method: ED037-P	Total
Total Alkalinity (CaCO3)	139 mg/L

Physical Test Method: EA015H	Total
Total Dissolved Solids @ 180°C	3800 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1822051. Report Date: 3-Aug-2018

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ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Amy Ribaux

Sample Number MPW022796
Date Sampled 25-Jul-2018 15:45
Date Received 30-Jul-2018
Date Completed 6-Aug-2018
Date Authorised 8-Aug-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: MP Ash - D10 - D20

Source: MP **Customer Sampling Point:** 252 **Sampling Code:** D20 **Sample Frequency:** ADDITIONAL_MONTH

Testing Laboratory: Mount Piper Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	17.8 m
Bore Volume Pumped	*Analysis in Field	13 L
Recharge Bore Level	*Analysis in Field	17.8 m
pH	CA12125	5.96
Conductivity	CA12125	4080 µS/cm

Testing Laboratory: ALS Environmental Water

Cations - Metals	Test Method	Filtered	Total
Mercury (Hg)	EG035T-LL		<0.00004 mg/L
Aluminium (Al)	EG020A-T		2.85 mg/L
Arsenic (As)	EG020A-T		0.004 mg/L
Barium (Ba)	EG020A-T		0.050 mg/L
Boron (B)	EG020A-T		3.60 mg/L
Cadmium (Cd)	EG020A-T		0.0046 mg/L
Calcium (Ca)	ED093T-UL		342 mg/L
Chromium (Cr)	EG020A-T		0.010 mg/L
Copper (Cu)	EG020A-T		0.009 mg/L
Iron (Fe)	EG020A-F	5.54 mg/L	
Lead (Pb)	EG020A-T		0.006 mg/L
Magnesium (Mg)	ED093T-UL		356 mg/L
Manganese (Mn)	EG020A-F	25.8 mg/L	
Molybdenum (Mo)	EG020A-T		0.003 mg/L
Nickel (Ni)	EG020A-T		0.762 mg/L
Potassium (K)	ED093T-UL		34.3 mg/L
Selenium (Se)	EG094B-T		0.0008 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		253 mg/L
Vanadium (V)	EG020A-F	<0.01 mg/L	

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Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Amy Ribaux

Sample Number MPW022796
Date Sampled 25-Jul-2018 15:45
Date Received 30-Jul-2018
Date Completed 6-Aug-2018
Date Authorised 8-Aug-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: MP Ash - D10 - D20

Source: MP **Customer Sampling Point:** 252 **Sampling Code:** D20 **Sample Frequency:** ADDITIONAL_MONTH

Testing Laboratory: ALS Environmental

Vanadium (V)	EG020A-T	<0.01 mg/L
Zinc (Zn)	EG020A-T	0.551 mg/L

Anions Test Method: ED009-X	Filtered
Fluoride (F)	5.44 mg/L
Chloride (Cl)	111 mg/L
Sulfate (SO4)	2450 mg/L

Alkalinity Test Method: ED037-P	Total
Total Alkalinity (CaCO3)	271 mg/L

Physical Test Method: EA015H	Total
Total Dissolved Solids @ 180°C	3810 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1822051. Report Date: 3-Aug-2018

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 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Amy Ribaux

Sample Number MPW022797
Date Sampled 25-Jul-2018 15:30
Date Received 30-Jul-2018
Date Completed 6-Aug-2018
Date Authorised 8-Aug-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Groundwater Bore MPGM4

Source: MP **Customer Sampling Point:** 224 **Sampling Code:** D19 **Sample Frequency:** Month

Testing Laboratory: Mount Piper
 Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	10.2 m
Bore Volume Pumped	*Analysis in Field	11 L
Recharge Bore Level	*Analysis in Field	10.2 m
pH	CA12125	5.91
Conductivity	CA12125	6570 µS/cm

Testing Laboratory: ALS Environmental
 Water

Cations - Metals	Test Method	Filtered	Total
Mercury (Hg)	EG035T-LL		<0.00004 mg/L
Aluminium (Al)	EG020A-T		1.11 mg/L
Arsenic (As)	EG020A-T		0.014 mg/L
Barium (Ba)	EG020A-T		0.052 mg/L
Boron (B)	EG020A-T		2.87 mg/L
Cadmium (Cd)	EG020A-T		0.0002 mg/L
Calcium (Ca)	ED093T-UL		343 mg/L
Chromium (Cr)	EG020A-T		0.021 mg/L
Copper (Cu)	EG020A-T		0.015 mg/L
Iron (Fe)	EG094B-F	26.2 mg/L	
Lead (Pb)	EG020A-T		0.050 mg/L
Magnesium (Mg)	ED093T-UL		283 mg/L
Manganese (Mn)	EG020A-F	13.7 mg/L	
Molybdenum (Mo)	EG020A-T		0.002 mg/L
Nickel (Ni)	EG020A-T		1.04 mg/L
Potassium (K)	ED093T-UL		67.4 mg/L
Selenium (Se)	EG094B-T		0.0024 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		987 mg/L
Vanadium (V)	EG020A-F	<0.01 mg/L	
Vanadium (V)	EG020A-T		<0.01 mg/L

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 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Amy Ribaux

Sample Number MPW022797
Date Sampled 25-Jul-2018 15:30
Date Received 30-Jul-2018
Date Completed 6-Aug-2018
Date Authorised 8-Aug-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Groundwater Bore MPGM4

Source: MP **Customer Sampling Point:** 224 **Sampling Code:** D19 **Sample Frequency:** Month

Testing Laboratory: ALS Environmental

Zinc (Zn)	EG020A-T	0.498 mg/L
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Anions Test Method: ED009-X	Filtered	
Fluoride (F)		3.00 mg/L
Chloride (Cl)		487 mg/L
Sulfate (SO4)		3250 mg/L

Alkalinity Test Method: ED037-P	Total	
Total Alkalinity (CaCO3)		116 mg/L

Physical Test Method: EA015H	Total	
Total Dissolved Solids @ 180°C		5610 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1822051. Report Date: 3-Aug-2018

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 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Amy Ribaux

Sample Number MPW022798
Date Sampled 26-Jul-2018 09:35
Date Received 30-Jul-2018
Date Completed 6-Aug-2018
Date Authorised 8-Aug-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Groundwater Bore MPGM4

Source: MP **Customer Sampling Point:** 008 **Sampling Code:** D3 **Sample Frequency:** Month

Testing Laboratory: Mount Piper
Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	8.2 m
Bore Volume Pumped	*Analysis in Field	190 L
Recharge Bore Level	*Analysis in Field	10.4 m
pH	CA12125	6.13
Conductivity	CA12125	950 µS/cm

Testing Laboratory: ALS Environmental
Water

Cations - Metals	Test Method	Filtered	Total
Mercury (Hg)	EG035T-LL		<0.00004 mg/L
Aluminium (Al)	EG020A-T		0.01 mg/L
Arsenic (As)	EG020A-T		<0.001 mg/L
Barium (Ba)	EG020A-T		0.025 mg/L
Boron (B)	EG020A-T		0.15 mg/L
Cadmium (Cd)	EG020A-T		<0.0001 mg/L
Calcium (Ca)	ED093T-UL		79.4 mg/L
Chromium (Cr)	EG020A-T		<0.001 mg/L
Copper (Cu)	EG020A-T		<0.001 mg/L
Iron (Fe)	EG020A-F	10.8 mg/L	
Lead (Pb)	EG020A-T		<0.001 mg/L
Magnesium (Mg)	ED093T-UL		47.8 mg/L
Manganese (Mn)	EG020A-F	0.656 mg/L	
Molybdenum (Mo)	EG020A-T		<0.001 mg/L
Nickel (Ni)	EG020A-T		0.003 mg/L
Potassium (K)	ED093T-UL		9.11 mg/L
Selenium (Se)	EG094B-T		<0.0002 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		39.1 mg/L
Vanadium (V)	EG020A-F	<0.01 mg/L	
Vanadium (V)	EG020A-T		<0.01 mg/L

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 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Amy Ribaux

Sample Number MPW022798
Date Sampled 26-Jul-2018 09:35
Date Received 30-Jul-2018
Date Completed 6-Aug-2018
Date Authorised 8-Aug-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Groundwater Bore MPGM4

Source: MP **Customer Sampling Point:** 008 **Sampling Code:** D3 **Sample Frequency:** Month

Testing Laboratory: ALS Environmental

Zinc (Zn) EG020A-T <0.005 mg/L

Anions	Test Method	Filtered
Fluoride (F)	ED009-X	0.589 mg/L
Chloride (Cl)	ED009-X	33.7 mg/L
Sulfate (SO4)	ED009-X	288 mg/L

ED009-X LOR of Fluoride in samples 11, 13-16 raised due to sample matrix

Alkalinity Test Method: ED037-P **Total**
 Total Alkalinity (CaCO3) 135 mg/L

Physical Test Method: EA015H **Total**
 Total Dissolved Solids @ 180°C 600 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1822051. Report Date: 3-Aug-2018

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 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Amy Ribaux

Sample Number MPW022799
Date Sampled 25-Jul-2018 13:00
Date Received 30-Jul-2018
Date Completed 6-Aug-2018
Date Authorised 8-Aug-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Groundwater Bore MPGM4

Source: MP **Customer Sampling Point:** 016 **Sampling Code:** D11 **Sample Frequency:** Month

Testing Laboratory: Mount Piper
Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	28.4 m
Bore Volume Pumped	*Analysis in Field	120 L
Recharge Bore Level	*Analysis in Field	28.4 m
pH	CA12125	6.20
Conductivity	CA12125	10150 µS/cm

Testing Laboratory: ALS Environmental
Water

Cations - Metals	Test Method	Filtered	Total
Mercury (Hg)	EG035T-LL		<0.00004 mg/L
Aluminium (Al)	EG020A-T		0.02 mg/L
Arsenic (As)	EG020A-T		0.007 mg/L
Barium (Ba)	EG020A-T		0.018 mg/L
Boron (B)	EG020A-T		2.85 mg/L
Cadmium (Cd)	EG020A-T		<0.0001 mg/L
Calcium (Ca)	ED093T-UL		608 mg/L
Chromium (Cr)	EG020A-T		<0.001 mg/L
Copper (Cu)	EG020A-T		<0.001 mg/L
Iron (Fe)	EG020A-F	81.6 mg/L	
Lead (Pb)	EG020A-T		<0.001 mg/L
Magnesium (Mg)	ED093T-UL		422 mg/L
Manganese (Mn)	EG020A-F	18.8 mg/L	
Molybdenum (Mo)	EG020A-T		<0.001 mg/L
Nickel (Ni)	EG020A-T		0.988 mg/L
Potassium (K)	ED093T-UL		106 mg/L
Selenium (Se)	EG094B-T		0.0003 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		1510 mg/L
Vanadium (V)	EG020A-F	<0.01 mg/L	
Vanadium (V)	EG020A-T		<0.01 mg/L

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Final - Report Number: 2413194
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 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Amy Ribaux

Sample Number MPW022799
Date Sampled 25-Jul-2018 13:00
Date Received 30-Jul-2018
Date Completed 6-Aug-2018
Date Authorised 8-Aug-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Groundwater Bore MPGM4

Source: MP **Customer Sampling Point:** 016 **Sampling Code:** D11 **Sample Frequency:** Month

Testing Laboratory: ALS Environmental

Zinc (Zn)	EG020A-T	0.136 mg/L
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Anions Test Method: ED009-X	Filtered	
Fluoride (F)	<0.500 mg/L	
Chloride (Cl)	803 mg/L	
Sulfate (SO4)	4280 mg/L	

Alkalinity Test Method: ED037-P		Total
Total Alkalinity (CaCO3)		164 mg/L

Physical Test Method: EA015H		Total
Total Dissolved Solids @ 180°C		9010 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1822051. Report Date: 3-Aug-2018

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Final - Report Number: 2413194
ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Amy Ribaux

Sample Number MPW022800
Date Sampled 25-Jul-2018 14:45
Date Received 30-Jul-2018
Date Completed 6-Aug-2018
Date Authorised 8-Aug-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Groundwater Bore MPGM4

Source: MP **Customer Sampling Point:** 015 **Sampling Code:** D10 **Sample Frequency:** Month

Testing Laboratory: Mount Piper
Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	15.6 m
Bore Volume Pumped	*Analysis in Field	144 L
Recharge Bore Level	*Analysis in Field	15.6 m
pH	CA12125	5.58
Conductivity	CA12125	10830 µS/cm

Testing Laboratory: ALS Environmental
Water

Cations - Metals	Test Method	Filtered	Total
Mercury (Hg)	EG035T-LL		<0.00004 mg/L
Aluminium (Al)	EG020A-T		0.12 mg/L
Arsenic (As)	EG020A-T		<0.001 mg/L
Barium (Ba)	EG020A-T		0.015 mg/L
Boron (B)	EG020A-T		4.35 mg/L
Cadmium (Cd)	EG020A-T		0.0072 mg/L
Calcium (Ca)	ED093T-UL		358 mg/L
Chromium (Cr)	EG020A-T		<0.001 mg/L
Copper (Cu)	EG020A-T		0.001 mg/L
Iron (Fe)	EG020A-F	5.39 mg/L	
Lead (Pb)	EG020A-T		0.005 mg/L
Magnesium (Mg)	ED093T-UL		393 mg/L
Manganese (Mn)	EG020A-F	8.31 mg/L	
Molybdenum (Mo)	EG020A-T		<0.001 mg/L
Nickel (Ni)	EG020A-T		1.05 mg/L
Potassium (K)	ED093T-UL		204 mg/L
Selenium (Se)	EG094B-T		0.0037 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		1900 mg/L
Vanadium (V)	EG020A-F	<0.01 mg/L	
Vanadium (V)	EG020A-T		<0.01 mg/L

* NATA accreditation does not cover the performance of this service



Accreditation Number 1099
 Accredited for compliance with ISO/IEC 17025.

Authorised by Thanh Hoang Le
 Senior Chemist

Final - Report Number: 2413194
ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Amy Ribaux

Sample Number MPW022800
Date Sampled 25-Jul-2018 14:45
Date Received 30-Jul-2018
Date Completed 6-Aug-2018
Date Authorised 8-Aug-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Groundwater Bore MPGM4

Source: MP **Customer Sampling Point:** 015 **Sampling Code:** D10 **Sample Frequency:** Month

Testing Laboratory: ALS Environmental

Zinc (Zn) EG020A-T 1.05 mg/L

Anions Test Method: ED009-X

	Filtered
Fluoride (F)	<0.500 mg/L
Chloride (Cl)	727 mg/L
Sulfate (SO4)	4420 mg/L

Alkalinity Test Method: ED037-P

	Total
Total Alkalinity (CaCO3)	81 mg/L

Physical Test Method: EA015H

	Total
Total Dissolved Solids @ 180°C	9330 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1822051. Report Date: 3-Aug-2018

* NATA accreditation does not cover the performance of this service



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Authorised by Thanh Hoang Le
 Senior Chemist

Final - Report Number: 2413194
ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Amy Ribaux

Sample Number MPW022801
Date Sampled 26-Jul-2018 13:00
Date Received 30-Jul-2018
Date Completed 6-Aug-2018
Date Authorised 8-Aug-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Groundwater Bore MPGM4

Source: MP **Customer Sampling Point:** 222 **Sampling Code:** D17 **Sample Frequency:** Month

Testing Laboratory: Mount Piper
Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	28.7 m
Bore Volume Pumped	*Analysis in Field	29 L
Recharge Bore Level	*Analysis in Field	28.7 m
pH	CA12125	6.11
Conductivity	CA12125	3400 µS/cm

Testing Laboratory: ALS Environmental
Water

Cations - Metals	Test Method	Filtered	Total
Mercury (Hg)	EG035T-LL		<0.00004 mg/L
Aluminium (Al)	EG020A-T		0.03 mg/L
Arsenic (As)	EG020A-T		0.002 mg/L
Barium (Ba)	EG020A-T		0.016 mg/L
Boron (B)	EG020A-T		0.22 mg/L
Cadmium (Cd)	EG020A-T		<0.0001 mg/L
Calcium (Ca)	ED093T-UL		248 mg/L
Chromium (Cr)	EG020A-T		0.001 mg/L
Copper (Cu)	EG020A-T		<0.001 mg/L
Iron (Fe)	EG020A-F	26.7 mg/L	
Lead (Pb)	EG020A-T		<0.001 mg/L
Magnesium (Mg)	ED093T-UL		152 mg/L
Manganese (Mn)	EG020A-F	3.13 mg/L	
Molybdenum (Mo)	EG020A-T		<0.001 mg/L
Nickel (Ni)	EG020A-T		0.094 mg/L
Potassium (K)	ED093T-UL		20.7 mg/L
Selenium (Se)	EG094B-T		<0.0002 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		393 mg/L
Vanadium (V)	EG020A-F	<0.01 mg/L	
Vanadium (V)	EG020A-T		<0.01 mg/L

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Authorised by Thanh Hoang Le
 Senior Chemist

Final - Report Number: 2413194
ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Amy Ribaux

Sample Number MPW022801
Date Sampled 26-Jul-2018 13:00
Date Received 30-Jul-2018
Date Completed 6-Aug-2018
Date Authorised 8-Aug-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Groundwater Bore MPM4

Source: MP **Customer Sampling Point:** 222 **Sampling Code:** D17 **Sample Frequency:** Month

Testing Laboratory: ALS Environmental

Zinc (Zn) EG020A-T 0.083 mg/L

Anions Test Method: ED009-X

	Filtered
Fluoride (F)	<0.500 mg/L
Chloride (Cl)	161 mg/L
Sulfate (SO4)	1300 mg/L

Alkalinity Test Method: ED037-P

	Total
Total Alkalinity (CaCO3)	140 mg/L

Physical Test Method: EA015H

	Total
Total Dissolved Solids @ 180°C	2680 mg/L

TDS by method EA-015 may bias high for various samples due to the presence of fine particulate matter, which may pass through the prescribed GF/C paper.

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1822051. Report Date: 3-Aug-2018

* NATA accreditation does not cover the performance of this service



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Authorised by Thanh Hoang Le
 Senior Chemist

Final - Report Number: 2413194
ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Amy Ribaux

Sample Number MPW022802
Date Sampled 26-Jul-2018 11:40
Date Received 30-Jul-2018
Date Completed 6-Aug-2018
Date Authorised 8-Aug-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Groundwater Bore MPGM4

Source: MP **Customer Sampling Point:** 220 **Sampling Code:** D15 **Sample Frequency:** Month

Testing Laboratory: Mount Piper
Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	26.4 m
Bore Volume Pumped	*Analysis in Field	25 L
Recharge Bore Level	*Analysis in Field	26.4 m
pH	CA12125	5.39
Conductivity	CA12125	4000 µS/cm

Testing Laboratory: ALS Environmental
Water

Cations - Metals	Test Method	Filtered	Total
Mercury (Hg)	EG035T-LL		<0.00004 mg/L
Aluminium (Al)	EG020A-T		0.83 mg/L
Arsenic (As)	EG020A-T		0.004 mg/L
Barium (Ba)	EG020A-T		0.016 mg/L
Boron (B)	EG020A-T		0.28 mg/L
Cadmium (Cd)	EG020A-T		0.0005 mg/L
Calcium (Ca)	ED093T-UL		241 mg/L
Chromium (Cr)	EG020A-T		0.215 mg/L
Copper (Cu)	EG020A-T		0.008 mg/L
Iron (Fe)	EG020A-F	20.4 mg/L	
Lead (Pb)	EG020A-T		0.004 mg/L
Magnesium (Mg)	ED093T-UL		114 mg/L
Manganese (Mn)	EG020A-F	2.51 mg/L	
Molybdenum (Mo)	EG020A-T		0.007 mg/L
Nickel (Ni)	EG020A-T		0.808 mg/L
Potassium (K)	ED093T-UL		37.2 mg/L
Selenium (Se)	EG094B-T		0.0005 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		615 mg/L
Vanadium (V)	EG020A-F	<0.01 mg/L	
Vanadium (V)	EG020A-T		<0.01 mg/L

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 Senior Chemist

Final - Report Number: 2413194
ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Amy Ribaux

Sample Number MPW022802
Date Sampled 26-Jul-2018 11:40
Date Received 30-Jul-2018
Date Completed 6-Aug-2018
Date Authorised 8-Aug-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Groundwater Bore MPGM4

Source: MP **Customer Sampling Point:** 220 **Sampling Code:** D15 **Sample Frequency:** Month

Testing Laboratory: ALS Environmental

Zinc (Zn) EG020A-T 1.29 mg/L

Anions Test Method: ED009-X

	Filtered
Fluoride (F)	<0.500 mg/L
Chloride (Cl)	201 mg/L
Sulfate (SO4)	1970 mg/L

Alkalinity Test Method: ED037-P

	Total
Total Alkalinity (CaCO3)	40 mg/L

Physical Test Method: EA015H

	Total
Total Dissolved Solids @ 180°C	3210 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1822051. Report Date: 3-Aug-2018

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 Senior Chemist

Final - Report Number: 2413194
ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Amy Ribaux

Sample Number MPW022803
Date Sampled 26-Jul-2018 12:25
Date Received 30-Jul-2018
Date Completed 6-Aug-2018
Date Authorised 8-Aug-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Groundwater Bore MPGM4

Source: MP **Customer Sampling Point:** 221 **Sampling Code:** D16 **Sample Frequency:** Month

Testing Laboratory: Mount Piper
Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	13.6 m
Bore Volume Pumped	*Analysis in Field	135 L
Recharge Bore Level	*Analysis in Field	13.6 m
pH	CA12125	6.49
Conductivity	CA12125	1390 µS/cm

Testing Laboratory: ALS Environmental
Water

Cations - Metals	Test Method	Filtered	Total
Mercury (Hg)	EG035T-LL		<0.00004 mg/L
Aluminium (Al)	EG020A-T		0.01 mg/L
Arsenic (As)	EG020A-T		<0.001 mg/L
Barium (Ba)	EG020A-T		0.012 mg/L
Boron (B)	EG020A-T		0.08 mg/L
Cadmium (Cd)	EG020A-T		<0.0001 mg/L
Calcium (Ca)	ED093T-UL		190 mg/L
Chromium (Cr)	EG020A-T		0.002 mg/L
Copper (Cu)	EG020A-T		<0.001 mg/L
Iron (Fe)	EG094B-F	1.78 mg/L	
Lead (Pb)	EG020A-T		<0.001 mg/L
Magnesium (Mg)	ED093T-UL		66.2 mg/L
Manganese (Mn)	EG020A-F	0.034 mg/L	
Molybdenum (Mo)	EG020A-T		<0.001 mg/L
Nickel (Ni)	EG020A-T		0.004 mg/L
Potassium (K)	ED093T-UL		23.5 mg/L
Selenium (Se)	EG094B-T		<0.0002 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		20.0 mg/L
Vanadium (V)	EG020A-F	<0.01 mg/L	
Vanadium (V)	EG020A-T		<0.01 mg/L

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Authorised by Thanh Hoang Le
 Senior Chemist

Final - Report Number: 2413194
ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Amy Ribaux

Sample Number MPW022803
Date Sampled 26-Jul-2018 12:25
Date Received 30-Jul-2018
Date Completed 6-Aug-2018
Date Authorised 8-Aug-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Groundwater Bore MPGM4

Source: MP **Customer Sampling Point:** 221 **Sampling Code:** D16 **Sample Frequency:** Month

Testing Laboratory: ALS Environmental

Zinc (Zn)	EG020A-T	<0.005 mg/L
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Anions Test Method: ED009-X	Filtered	
Fluoride (F)		0.694 mg/L
Chloride (Cl)		45.7 mg/L
Sulfate (SO4)		486 mg/L

Alkalinity Test Method: ED037-P	Total	
Total Alkalinity (CaCO3)		243 mg/L

Physical Test Method: EA015H	Total	
Total Dissolved Solids @ 180°C		967 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1822051. Report Date: 3-Aug-2018

* NATA accreditation does not cover the performance of this service



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Authorised by Thanh Hoang Le
 Senior Chemist

Customer Analytical Services

Mount Piper Power Station 350 Boulder Road Portland 2847 NSW

Email: customeranalyticalservices@nalco.com



Final - Report Number: 2413194
ENERGY AUSTRALIA C/- MT PIPER POWER
BOULDER ROAD
PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Amy Ribaux

Sample Number	MPW022804
Date Sampled	25-Jul-2018 13:15
Date Received	26-Jul-2018
Date Completed	26-Jul-2018
Date Authorised	26-Jul-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: MP Ash - D10 - SW3-D

Source: MP

Customer Sampling Point: 256

Sampling Code: SW3-D

Sample Frequency: Ad-Hoc

Testing Laboratory: Mount Piper

Water

Field Analysis Test Method: Analysis in Field
Dry

Total

Authorised by Nikki Tomlinson
Senior Chemist

Final - Report Number: 2413194
ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Amy Ribaux

Sample Number MPW022805
Date Sampled 25-Jul-2018 10:45
Date Received 30-Jul-2018
Date Completed 6-Aug-2018
Date Authorised 8-Aug-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: MP Ash - D10 - B5

Source: MP **Customer Sampling Point:** 250 **Sampling Code:** B5 **Sample Frequency:** Ad-Hoc

Testing Laboratory: Mount Piper

Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	38.3 m
Bore Volume Pumped	*Analysis in Field	1.5 L
Recharge Bore Level	*Analysis in Field	38.3 m
pH	CA12125	5.90
Conductivity	CA12125	48000 µS/cm

Testing Laboratory: ALS Environmental

Water

Cations - Metals	Test Method	Filtered	Total
Mercury (Hg)	EG035T-LL		0.00010 mg/L
Aluminium (Al)	EG020A-T		8.42 mg/L
Arsenic (As)	EG020A-T		0.028 mg/L
Barium (Ba)	EG020A-T		0.067 mg/L
Boron (B)	EG020A-T		14.4 mg/L
Cadmium (Cd)	EG020A-T		0.132 mg/L
Calcium (Ca)	ED093T-UL		519 mg/L
Chromium (Cr)	EG020A-T		0.017 mg/L
Copper (Cu)	EG020A-T		0.092 mg/L
Iron (Fe)	EG020A-F	0.84 mg/L	
Lead (Pb)	EG020A-T		0.011 mg/L
Magnesium (Mg)	ED093T-UL		1920 mg/L
Manganese (Mn)	EG020A-F	14.0 mg/L	
Molybdenum (Mo)	EG020A-T		6.66 mg/L
Nickel (Ni)	EG020A-T		1.29 mg/L
Potassium (K)	ED093T-UL		1480 mg/L
Selenium (Se)	EG094B-T		0.108 mg/L
Silver (Ag)	EG020B-T		<0.010 mg/L
Sodium (Na)	ED093T-UL		13900 mg/L
Vanadium (V)	EG020A-F	<0.10 mg/L	
Vanadium (V)	EG020A-T		<0.10 mg/L

* NATA accreditation does not cover the performance of this service



Accreditation Number 1099
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Authorised by Thanh Hoang Le
 Senior Chemist

Final - Report Number: 2413194
ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Amy Ribaux

Sample Number MPW022805
Date Sampled 25-Jul-2018 10:45
Date Received 30-Jul-2018
Date Completed 6-Aug-2018
Date Authorised 8-Aug-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: MP Ash - D10 - B5

Source: MP **Customer Sampling Point:** 250 **Sampling Code:** B5 **Sample Frequency:** Ad-Hoc

Testing Laboratory: ALS Environmental

Zinc (Zn)	EG020A-T	2.66 mg/L
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Anions Test Method: ED009-X	Filtered	
Fluoride (F)	3.49 mg/L	
Chloride (Cl)	3560 mg/L	
Sulfate (SO4)	30600 mg/L	

Alkalinity Test Method: ED037-P		Total
Total Alkalinity (CaCO3)		52 mg/L

Physical Test Method: EA015H		Total
Total Dissolved Solids @ 180°C		48400 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1822051. Report Date: 3-Aug-2018

* NATA accreditation does not cover the performance of this service



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Authorised by Thanh Hoang Le
 Senior Chemist

Final - Report Number: 2413194
ENERGY AUSTRALIA C/- MT PIPER POWER
BOULDER ROAD
PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Amy Ribaux

Sample Number MPW022806
Date Sampled 25-Jul-2018 11:15
Date Received 26-Jul-2018
Date Completed 26-Jul-2018
Date Authorised 26-Jul-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: MP Ash - D10 - B5-1

Source: MP

Customer Sampling Point: 251

Sampling Code: B5-1

Sample Frequency: Ad-Hoc

Testing Laboratory: Mount Piper
Water

Field Analysis Test Method: Analysis in Field
Initial Bore Level

Total
36.9 m

volume not extractable

•System out of service.

Water

N Tomlinson

Authorised by Nikki Tomlinson
Senior Chemist

Customer Analytical Services

Mount Piper Power Station 350 Boulder Road Portland 2847 NSW

Email: customeranalyticalservices@nalco.com



Final - Report Number: 2413194

ENERGY AUSTRALIA C/- MT PIPER POWER

BOULDER ROAD

PORTLAND NSW 2847 AUSTRALIA

Sold To: 0500082301 **Ship To:** 0500082301

Representative: Clive Stacey

Sampled By: Amy Ribaux

Sample Number

MPW022806

Date Sampled

25-Jul-2018 11:15

Date Received

26-Jul-2018

Date Completed

26-Jul-2018

Date Authorised

26-Jul-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: MP Ash - D10 - B5-1

Source: MP

Customer Sampling Point: 251

Sampling Code: B5-1

Sample Frequency: Ad-Hoc

A handwritten signature in black ink that reads "Tomlinson".

Authorised by Nikki Tomlinson
Senior Chemist

Final - Report Number: 2438402
ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Amy Ribaux

Sample Number MPW023191
Date Sampled 23-Aug-2018 08:50
Date Received 23-Aug-2018
Date Completed 31-Aug-2018
Date Authorised 5-Sep-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Groundwater Bore MPGM4

Source: MP **Customer Sampling Point:** 014 **Sampling Code:** D9 **Sample Frequency:** Month

Testing Laboratory: Mount Piper
Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	2.6 m
Bore Volume Pumped	*Analysis in Field	7 L
Recharge Bore Level	*Analysis in Field	2.6 m
pH	CA12125	5.89
Conductivity	CA12125	4630 µS/cm

Testing Laboratory: ALS Environmental
Water

Cations - Metals	Test Method	Filtered	Total
Mercury (Hg)	EG035T-LL		0.00005 mg/L
Aluminium (Al)	EG020A-T		0.42 mg/L
Arsenic (As)	EG020A-T		0.003 mg/L
Barium (Ba)	EG020A-T		0.045 mg/L
Boron (B)	EG020A-T		0.94 mg/L
Cadmium (Cd)	EG020A-T		<0.0001 mg/L
Calcium (Ca)	ED093T-UL		390 mg/L
Chromium (Cr)	EG020A-T		<0.001 mg/L
Copper (Cu)	EG020A-T		0.002 mg/L
Iron (Fe)	EG020A-F	30.6 mg/L	
Lead (Pb)	EG020A-T		0.004 mg/L
Magnesium (Mg)	ED093T-UL		302 mg/L
Manganese (Mn)	EG020A-F	15.1 mg/L	
Molybdenum (Mo)	EG020A-T		0.005 mg/L
Nickel (Ni)	EG020A-T		0.657 mg/L
Potassium (K)	ED093T-UL		25.4 mg/L
Selenium (Se)	EG094B-T		0.0003 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		376 mg/L
Vanadium (V)	EG020A-F	<0.01 mg/L	
Vanadium (V)	EG020A-T		<0.01 mg/L

* NATA accreditation does not cover the performance of this service



Accreditation Number 1099
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Authorised by Thanh Hoang Le
 Senior Chemist

Final - Report Number: 2438402
ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Amy Ribaux

Sample Number MPW023191
Date Sampled 23-Aug-2018 08:50
Date Received 23-Aug-2018
Date Completed 31-Aug-2018
Date Authorised 5-Sep-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Groundwater Bore MPGM4

Source: MP **Customer Sampling Point:** 014 **Sampling Code:** D9 **Sample Frequency:** Month

Testing Laboratory: ALS Environmental

Zinc (Zn)	EG020A-T	0.234 mg/L
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Anions Test Method: ED009-X	Filtered	
Fluoride (F)	<0.100 mg/L	
Chloride (Cl)	425 mg/L	
Sulfate (SO4)	2250 mg/L	

Alkalinity Test Method: ED037-P	Total	
Total Alkalinity (CaCO3)	89 mg/L	

Physical Test Method: EA015H	Total	
Total Dissolved Solids @ 180°C	3690 mg/L	

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1824906. Report Date: 30-Aug-2018

* NATA accreditation does not cover the performance of this service



Accreditation Number 1099
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Authorised by Thanh Hoang Le
 Senior Chemist

Final - Report Number: 2438402
ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Amy Ribaux

Sample Number MPW023192
Date Sampled 22-Aug-2018 08:50
Date Received 23-Aug-2018
Date Completed 31-Aug-2018
Date Authorised 5-Sep-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Stream Gauge

Source: MP **Customer Sampling Point:** 003 **Sampling Code:** WX22 **Sample Frequency:** Month

Testing Laboratory: Mount Piper
 Water

Field Analysis	Test Method	Total
Discharge Flowing	*Analysis in Field	Flow
Appearance	*Analysis in Field	Clear
pH	CA12125	6.99
Conductivity	CA12125	529 µS/cm
Temperature	CA12125	4.7 °C
Dissolved Oxygen (O2)	*Analysis in Field	13.1 mg/L



Field Photo

Testing Laboratory: ALS Environmental
 Water

Cations - Metals	Test Method	Filtered	Total
Mercury (Hg)	EG035T-LL		<0.00004 mg/L
Aluminium (Al)	EG020A-F	<0.01 mg/L	
Aluminium (Al)	EG020A-T		0.02 mg/L

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Authorised by Thanh Hoang Le
 Senior Chemist

Final - Report Number: 2438402
ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Amy Ribaux

Sample Number MPW023192
Date Sampled 22-Aug-2018 08:50
Date Received 23-Aug-2018
Date Completed 31-Aug-2018
Date Authorised 5-Sep-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Stream Gauge

Source: MP **Customer Sampling Point:** 003 **Sampling Code:** WX22 **Sample Frequency:** Month

Testing Laboratory: ALS Environmental

Arsenic (As)	EG020A-T	<0.001 mg/L
Barium (Ba)	EG020A-T	0.016 mg/L
Boron (B)	EG020A-T	0.05 mg/L
Cadmium (Cd)	EG020A-T	<0.0001 mg/L
Calcium (Ca)	ED093T-UL	33.6 mg/L
Chromium (Cr)	EG020A-T	<0.001 mg/L
Copper (Cu)	EG020A-F	<0.001 mg/L
Copper (Cu)	EG020A-T	0.001 mg/L
Iron (Fe)	EG094B-F	0.115 mg/L
Iron (Fe)	EG094B-T	0.265 mg/L
Lead (Pb)	EG020A-T	<0.001 mg/L
Magnesium (Mg)	ED093T-UL	20.9 mg/L
Manganese (Mn)	EG020A-F	0.160 mg/L
Manganese (Mn)	EG020A-T	0.192 mg/L
Molybdenum (Mo)	EG020A-T	<0.001 mg/L
Nickel (Ni)	EG020A-T	0.015 mg/L
Potassium (K)	ED093T-UL	4.59 mg/L
Selenium (Se)	EG094B-T	<0.0002 mg/L
Silver (Ag)	EG020B-T	<0.001 mg/L
Sodium (Na)	ED093T-UL	37.9 mg/L
Strontium (Sr)	EG020B-T	0.123 mg/L
Vanadium (V)	EG020A-F	<0.01 mg/L
Vanadium (V)	EG020A-T	<0.01 mg/L
Zinc (Zn)	EG020A-F	0.008 mg/L
Zinc (Zn)	EG020A-T	0.011 mg/L

* NATA accreditation does not cover the performance of this service



Accreditation Number 1099
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Authorised by Thanh Hoang Le
 Senior Chemist

Final - Report Number: 2438402
ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Amy Ribaux

Sample Number MPW023192
Date Sampled 22-Aug-2018 08:50
Date Received 23-Aug-2018
Date Completed 31-Aug-2018
Date Authorised 5-Sep-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Stream Gauge

Source: MP **Customer Sampling Point:** 003 **Sampling Code:** WX22 **Sample Frequency:** Month

Testing Laboratory: ALS Environmental

Anions	Test Method	Filtered
Fluoride (F)	ED009-X	0.064 mg/L
Chloride (Cl)	ED009-X	33.6 mg/L
Sulfate (SO4)	ED009-X	158 mg/L
Nitrate (N)	EK058G	<0.01 mg/L
Nitrite (N)	EK057G	0.02 mg/L
Nitrate and Nitrite (N)	EK059G	0.02 mg/L

Alkalinity	Test Method: ED037-P	Total
Total Alkalinity (CaCO3)		36 mg/L
Phenolphthalein Alkalinity (CaCO3)		<1 mg/L
Bicarbonate (CaCO3)		36 mg/L

Phosphate	Test Method: EK067G	Total
Total Phosphorus (P)		<0.01 mg/L

Physical	Test Method	Total
Total Dissolved Solids @ 180°C	EA015H	641 mg/L
Turbidity	EA045	1.4 NTU

Other	Test Method	Total
Nitrogen (N)	EK062G	0.2 mg/L
Nitrogen (N) - Kjeldahl	EK061G	0.2 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1824906. Report Date: 30-Aug-2018

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Authorised by Thanh Hoang Le
 Senior Chemist

Final - Report Number: 2438402
ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Amy Ribaux

Sample Number MPW023193
Date Sampled 22-Aug-2018 09:30
Date Received 23-Aug-2018
Date Completed 31-Aug-2018
Date Authorised 5-Sep-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Groundwater Bore MPGM4

Source: MP **Customer Sampling Point:** 006 **Sampling Code:** D1 **Sample Frequency:** Month

Testing Laboratory: Mount Piper
Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	3.8 m
Bore Volume Pumped	*Analysis in Field	108 L
Recharge Bore Level	*Analysis in Field	3.8 m
pH	CA12125	5.92
Conductivity	CA12125	4110 µS/cm

Testing Laboratory: ALS Environmental
Water

Cations - Metals	Test Method	Filtered	Total
Mercury (Hg)	EG035T-LL		<0.00004 mg/L
Aluminium (Al)	EG020A-T		0.11 mg/L
Arsenic (As)	EG020A-T		0.005 mg/L
Barium (Ba)	EG020A-T		0.024 mg/L
Boron (B)	EG020A-T		1.70 mg/L
Cadmium (Cd)	EG020A-T		<0.0001 mg/L
Calcium (Ca)	ED093T-UL		308 mg/L
Chromium (Cr)	EG020A-T		<0.001 mg/L
Copper (Cu)	EG020A-T		<0.001 mg/L
Iron (Fe)	EG020A-F	28.3 mg/L	
Lead (Pb)	EG020A-T		<0.001 mg/L
Magnesium (Mg)	ED093T-UL		239 mg/L
Manganese (Mn)	EG020A-F	13.0 mg/L	
Molybdenum (Mo)	EG020A-T		<0.001 mg/L
Nickel (Ni)	EG020A-T		0.716 mg/L
Potassium (K)	ED093T-UL		29.0 mg/L
Selenium (Se)	EG094B-T		<0.0002 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		346 mg/L
Vanadium (V)	EG020A-F	<0.01 mg/L	
Vanadium (V)	EG020A-T		<0.01 mg/L

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 Senior Chemist

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ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Amy Ribaux

Sample Number MPW023193
Date Sampled 22-Aug-2018 09:30
Date Received 23-Aug-2018
Date Completed 31-Aug-2018
Date Authorised 5-Sep-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Groundwater Bore MPGM4

Source: MP **Customer Sampling Point:** 006 **Sampling Code:** D1 **Sample Frequency:** Month

Testing Laboratory: ALS Environmental

Zinc (Zn) EG020A-T 0.071 mg/L

Anions Test Method: ED009-X

	Filtered
Fluoride (F)	<0.200 mg/L
Chloride (Cl)	361 mg/L
Sulfate (SO4)	1940 mg/L

Alkalinity Test Method: ED037-P

	Total
Total Alkalinity (CaCO3)	163 mg/L

Physical Test Method: EA015H

	Total
Total Dissolved Solids @ 180°C	3510 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1824906. Report Date: 30-Aug-2018

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Authorised by Thanh Hoang Le
 Senior Chemist

Final - Report Number: 2438402
ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Amy Ribaux

Sample Number MPW023194
Date Sampled 23-Aug-2018 08:30
Date Received 23-Aug-2018
Date Completed 31-Aug-2018
Date Authorised 5-Sep-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Groundwater Bore MPGM4

Source: MP **Customer Sampling Point:** 013 **Sampling Code:** D8 **Sample Frequency:** Month

Testing Laboratory: Mount Piper
Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	2.6 m
Bore Volume Pumped	*Analysis in Field	40 L
Recharge Bore Level	*Analysis in Field	2.6 m
pH	CA12125	5.63
Conductivity	CA12125	900 µS/cm

Testing Laboratory: ALS Environmental
Water

Cations - Metals	Test Method	Filtered	Total
Mercury (Hg)	EG035T-LL		<0.00004 mg/L
Aluminium (Al)	EG020A-T		0.09 mg/L
Arsenic (As)	EG020A-T		<0.001 mg/L
Barium (Ba)	EG020A-T		0.031 mg/L
Boron (B)	EG020A-T		0.10 mg/L
Cadmium (Cd)	EG020A-T		<0.0001 mg/L
Calcium (Ca)	ED093T-UL		50.6 mg/L
Chromium (Cr)	EG020A-T		<0.001 mg/L
Copper (Cu)	EG020A-T		0.002 mg/L
Iron (Fe)	EG094B-F	0.428 mg/L	
Lead (Pb)	EG020A-T		<0.001 mg/L
Magnesium (Mg)	ED093T-UL		40.1 mg/L
Manganese (Mn)	EG020A-F	1.40 mg/L	
Molybdenum (Mo)	EG020A-T		<0.001 mg/L
Nickel (Ni)	EG020A-T		0.083 mg/L
Potassium (K)	ED093T-UL		5.20 mg/L
Selenium (Se)	EG094B-T		<0.0002 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		63.2 mg/L
Vanadium (V)	EG020A-F	<0.01 mg/L	
Vanadium (V)	EG020A-T		<0.01 mg/L

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ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Amy Ribaux

Sample Number MPW023194
Date Sampled 23-Aug-2018 08:30
Date Received 23-Aug-2018
Date Completed 31-Aug-2018
Date Authorised 5-Sep-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Groundwater Bore MPGM4

Source: MP **Customer Sampling Point:** 013 **Sampling Code:** D8 **Sample Frequency:** Month

Testing Laboratory: ALS Environmental

Zinc (Zn) EG020A-T 0.090 mg/L

Anions Test Method: ED009-X

	Filtered
Fluoride (F)	<0.100 mg/L
Chloride (Cl)	54.0 mg/L
Sulfate (SO4)	370 mg/L

Alkalinity Test Method: ED037-P

Total Alkalinity (CaCO3)	Total 22 mg/L
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Physical Test Method: EA015H

Total Dissolved Solids @ 180°C	Total 509 mg/L
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Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1824906. Report Date: 30-Aug-2018

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 Senior Chemist

Final - Report Number: 2438402
ENERGY AUSTRALIA C/- MT PIPER POWER
BOULDER ROAD
PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Amy Ribaux

Sample Number MPW023195
Date Sampled 22-Aug-2018 14:10
Date Received 23-Aug-2018
Date Completed 24-Aug-2018
Date Authorised 24-Aug-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: MP Ash - D10 - D21

Source: MP

Customer Sampling Point: 253

Sampling Code: D21

Sample Frequency:
ADDITIONAL_MONTH

Testing Laboratory: Mount Piper

Water

Field Analysis Test Method: Analysis in Field
Dry

Total

Water

N Tomlinson

Authorised by Nikki Tomlinson
Senior Chemist

Final - Report Number: 2438402
ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Amy Ribaux

Sample Number MPW023196
Date Sampled 22-Aug-2018 14:00
Date Received 23-Aug-2018
Date Completed 31-Aug-2018
Date Authorised 5-Sep-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: MP Ash - D10 - D23

Source: MP **Customer Sampling Point:** 254 **Sampling Code:** D23 **Sample Frequency:** ADDITIONAL_MONTH

Testing Laboratory: Mount Piper
Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	25.5 m
Bore Volume Pumped	*Analysis in Field	45 L
Recharge Bore Level	*Analysis in Field	25.5 m
pH	CA12125	5.36
Conductivity	CA12125	4060 µS/cm

Testing Laboratory: ALS Environmental
Water

Cations - Metals	Test Method	Filtered	Total
Mercury (Hg)	EG035T-LL		<0.00004 mg/L
Aluminium (Al)	EG020A-T		1.26 mg/L
Arsenic (As)	EG020A-T		0.002 mg/L
Barium (Ba)	EG020A-T		0.017 mg/L
Boron (B)	EG020A-T		0.43 mg/L
Cadmium (Cd)	EG020A-T		0.0004 mg/L
Calcium (Ca)	ED093T-UL		243 mg/L
Chromium (Cr)	EG020A-T		0.002 mg/L
Copper (Cu)	EG020A-T		0.002 mg/L
Iron (Fe)	EG020A-F	27.9 mg/L	
Lead (Pb)	EG020A-T		0.004 mg/L
Magnesium (Mg)	ED093T-UL		127 mg/L
Manganese (Mn)	EG020A-F	2.80 mg/L	
Molybdenum (Mo)	EG020A-T		<0.001 mg/L
Nickel (Ni)	EG020A-T		0.559 mg/L
Potassium (K)	ED093T-UL		46.4 mg/L
Selenium (Se)	EG094B-T		0.0005 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		553 mg/L
Vanadium (V)	EG020A-F	<0.01 mg/L	

* NATA accreditation does not cover the performance of this service



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Authorised by Thanh Hoang Le
 Senior Chemist

Final - Report Number: 2438402
ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Amy Ribaux

Sample Number MPW023196
Date Sampled 22-Aug-2018 14:00
Date Received 23-Aug-2018
Date Completed 31-Aug-2018
Date Authorised 5-Sep-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: MP Ash - D10 - D23

Source: MP **Customer Sampling Point:** 254 **Sampling Code:** D23 **Sample Frequency:** ADDITIONAL_MONTH

Testing Laboratory: ALS Environmental

Vanadium (V)	EG020A-T	<0.01 mg/L
Zinc (Zn)	EG020A-T	0.959 mg/L

Anions Test Method: ED009-X	Filtered
Fluoride (F)	2.03 mg/L
Chloride (Cl)	233 mg/L
Sulfate (SO4)	1970 mg/L

Alkalinity Test Method: ED037-P	Total
Total Alkalinity (CaCO3)	44 mg/L

Physical Test Method: EA015H	Total
Total Dissolved Solids @ 180°C	3030 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1824906. Report Date: 30-Aug-2018

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Authorised by Thanh Hoang Le
 Senior Chemist

Final - Report Number: 2438402
ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Amy Ribaux

Sample Number MPW023197
Date Sampled 23-Aug-2018 11:00
Date Received 23-Aug-2018
Date Completed 31-Aug-2018
Date Authorised 5-Sep-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Groundwater Bore MPGM4

Source: MP **Customer Sampling Point:** 223 **Sampling Code:** D18 **Sample Frequency:** Month

Testing Laboratory: Mount Piper
Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	23.8 m
Bore Volume Pumped	*Analysis in Field	118 L
Recharge Bore Level	*Analysis in Field	30.8 m
pH	CA12125	6.64
Conductivity	CA12125	720 µS/cm

Testing Laboratory: ALS Environmental
Water

Cations - Metals	Test Method	Filtered	Total
Mercury (Hg)	EG035T-LL		<0.00004 mg/L
Aluminium (Al)	EG020A-T		0.28 mg/L
Arsenic (As)	EG020A-T		0.003 mg/L
Barium (Ba)	EG020A-T		0.604 mg/L
Boron (B)	EG020A-T		0.07 mg/L
Cadmium (Cd)	EG020A-T		<0.0001 mg/L
Calcium (Ca)	ED093T-UL		83.7 mg/L
Chromium (Cr)	EG020A-T		<0.001 mg/L
Copper (Cu)	EG020A-T		<0.001 mg/L
Iron (Fe)	EG094B-F	0.021 mg/L	
Lead (Pb)	EG020A-T		<0.001 mg/L
Magnesium (Mg)	ED093T-UL		32.0 mg/L
Manganese (Mn)	EG020A-F	0.123 mg/L	
Molybdenum (Mo)	EG020A-T		0.004 mg/L
Nickel (Ni)	EG020A-T		0.007 mg/L
Potassium (K)	ED093T-UL		17.1 mg/L
Selenium (Se)	EG094B-T		<0.0002 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		25.6 mg/L
Vanadium (V)	EG020A-F	<0.01 mg/L	
Vanadium (V)	EG020A-T		<0.01 mg/L

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 Senior Chemist

Final - Report Number: 2438402
ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Amy Ribaux

Sample Number MPW023197
Date Sampled 23-Aug-2018 11:00
Date Received 23-Aug-2018
Date Completed 31-Aug-2018
Date Authorised 5-Sep-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Groundwater Bore MPGM4

Source: MP **Customer Sampling Point:** 223 **Sampling Code:** D18 **Sample Frequency:** Month

Testing Laboratory: ALS Environmental

Zinc (Zn)	EG020A-T	0.046 mg/L
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Anions Test Method: ED009-X	Filtered	
Fluoride (F)		1.92 mg/L
Chloride (Cl)		8.09 mg/L
Sulfate (SO4)		81.2 mg/L

Alkalinity Test Method: ED037-P		Total
Total Alkalinity (CaCO3)		324 mg/L

Physical Test Method: EA015H		Total
Total Dissolved Solids @ 180°C		375 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1824906. Report Date: 30-Aug-2018

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 Senior Chemist

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ENERGY AUSTRALIA C/- MT PIPER POWER
BOULDER ROAD
PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Amy Ribaux

Sample Number MPW023198
Date Sampled 22-Aug-2018 11:25
Date Received 23-Aug-2018
Date Completed 24-Aug-2018
Date Authorised 24-Aug-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: MP Ash - D10 - SW3-S

Source: MP

Customer Sampling Point: 257

Sampling Code: SW3-S

Sample Frequency:
ADDITIONAL_MONTH

Testing Laboratory: Mount Piper

Water

Field Analysis Test Method: Analysis in Field
Dry

Total

Water

N Tomlinson

Authorised by Nikki Tomlinson
Senior Chemist

Customer Analytical Services

Mount Piper Power Station 350 Boulder Road Portland 2847 NSW

Email: customeranalyticalservices@nalco.com



Final - Report Number: 2438402
ENERGY AUSTRALIA C/- MT PIPER POWER
BOULDER ROAD
PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Amy Ribaux

Sample Number MPW023199
Date Sampled 22-Aug-2018 11:20
Date Received 23-Aug-2018
Date Completed 24-Aug-2018
Date Authorised 24-Aug-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: MP Ash - D10 - SW3-D

Source: MP

Customer Sampling Point: 256

Sampling Code: SW3-D

Sample Frequency:
ADDITIONAL_MONTH

Testing Laboratory: Mount Piper

Water

Field Analysis Test Method: Analysis in Field
Dry

Total

Water

Authorised by Nikki Tomlinson
Senior Chemist

Final - Report Number: 2438402
ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Amy Ribaux

Sample Number MPW023200
Date Sampled 23-Aug-2018 09:50
Date Received 23-Aug-2018
Date Completed 31-Aug-2018
Date Authorised 5-Sep-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: MP Ash - D10 - B5

Source: MP **Customer Sampling Point:** 250 **Sampling Code:** B5 **Sample Frequency:** ADDITIONAL_MONTH

Testing Laboratory: Mount Piper
Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	38.5 m
Bore Volume Pumped	*Analysis in Field	2 L
Recharge Bore Level	*Analysis in Field	38.5 m
pH	CA12125	5.93
Conductivity	CA12125	46260 µS/cm

Testing Laboratory: ALS Environmental
Water

Cations - Metals	Test Method	Filtered	Total
Mercury (Hg)	EG035T-LL		<0.00004 mg/L
Aluminium (Al)	EG020A-T		2.26 mg/L
Arsenic (As)	EG020A-T		0.011 mg/L
Barium (Ba)	EG020A-T		0.047 mg/L
Boron (B)	EG020A-T		13.5 mg/L
Cadmium (Cd)	EG020A-T		0.141 mg/L
Calcium (Ca)	ED093T-UL		544 mg/L
Chromium (Cr)	EG020A-T		<0.010 mg/L
Copper (Cu)	EG020A-T		0.067 mg/L
Iron (Fe)	EG020A-F	0.53 mg/L	
Lead (Pb)	EG020A-T		<0.010 mg/L
Magnesium (Mg)	ED093T-UL		1940 mg/L
Manganese (Mn)	EG020A-F	12.6 mg/L	
Molybdenum (Mo)	EG020A-T		5.93 mg/L
Nickel (Ni)	EG020A-T		1.26 mg/L
Potassium (K)	ED093T-UL		1470 mg/L
Selenium (Se)	EG094B-T		0.0830 mg/L
Silver (Ag)	EG020B-T		<0.010 mg/L
Sodium (Na)	ED093T-UL		16600 mg/L
Vanadium (V)	EG020A-F	<0.10 mg/L	

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Authorised by Thanh Hoang Le
 Senior Chemist

Final - Report Number: 2438402
ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Amy Ribaux

Sample Number MPW023200
Date Sampled 23-Aug-2018 09:50
Date Received 23-Aug-2018
Date Completed 31-Aug-2018
Date Authorised 5-Sep-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: MP Ash - D10 - B5

Source: MP **Customer Sampling Point:** 250 **Sampling Code:** B5 **Sample Frequency:** ADDITIONAL_MONTH

Testing Laboratory: ALS Environmental

Vanadium (V)	EG020A-T	<0.10 mg/L
Zinc (Zn)	EG020A-T	3.66 mg/L

Anions Test Method: ED009-X	Filtered
Fluoride (F)	1.11 mg/L
Chloride (Cl)	2270 mg/L
Sulfate (SO4)	20200 mg/L

Alkalinity Test Method: ED037-P	Total
Total Alkalinity (CaCO3)	66 mg/L

Physical Test Method: EA015H	Total
Total Dissolved Solids @ 180°C	38500 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1824906. Report Date: 30-Aug-2018

* NATA accreditation does not cover the performance of this service



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Authorised by Thanh Hoang Le
 Senior Chemist

Final - Report Number: 2438402
ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Amy Ribaux

Sample Number MPW023201
Date Sampled 23-Aug-2018 09:40
Date Received 23-Aug-2018
Date Completed 31-Aug-2018
Date Authorised 5-Sep-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: MP Ash - D10 - B5-1

Source: MP **Customer Sampling Point:** 251 **Sampling Code:** B5-1 **Sample Frequency:** ADDITIONAL_MONTH

Testing Laboratory: Mount Piper

Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	36.9 m
Bore Volume Pumped	*Analysis in Field	5 L
Recharge Bore Level	*Analysis in Field	36.8 m
pH	CA12125	5.66
Conductivity	CA12125	46320 µS/cm

Testing Laboratory: ALS Environmental

Water

Cations - Metals	Test Method	Filtered	Total
Mercury (Hg)	EG035T-LL		<0.00004 mg/L
Aluminium (Al)	EG020A-T		3.15 mg/L
Arsenic (As)	EG020A-T		<0.010 mg/L
Barium (Ba)	EG020A-T		0.052 mg/L
Boron (B)	EG020A-T		9.29 mg/L
Cadmium (Cd)	EG020A-T		0.0700 mg/L
Calcium (Ca)	ED093T-UL		527 mg/L
Chromium (Cr)	EG020A-T		<0.010 mg/L
Copper (Cu)	EG020A-T		<0.010 mg/L
Iron (Fe)	EG020A-F	0.36 mg/L	
Lead (Pb)	EG020A-T		<0.010 mg/L
Magnesium (Mg)	ED093T-UL		1960 mg/L
Manganese (Mn)	EG020A-F	33.7 mg/L	
Molybdenum (Mo)	EG020A-T		0.016 mg/L
Nickel (Ni)	EG020A-T		2.34 mg/L
Potassium (K)	ED093T-UL		1210 mg/L
Selenium (Se)	EG094B-T		0.214 mg/L
Silver (Ag)	EG020B-T		<0.010 mg/L
Sodium (Na)	ED093T-UL		16600 mg/L
Vanadium (V)	EG020A-F	<0.10 mg/L	

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ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Amy Ribaux

Sample Number MPW023201
Date Sampled 23-Aug-2018 09:40
Date Received 23-Aug-2018
Date Completed 31-Aug-2018
Date Authorised 5-Sep-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: MP Ash - D10 - B5-1

Source: MP **Customer Sampling Point:** 251 **Sampling Code:** B5-1 **Sample Frequency:** ADDITIONAL_MONTH

Testing Laboratory: ALS Environmental

Vanadium (V)	EG020A-T	<0.10 mg/L
Zinc (Zn)	EG020A-T	3.66 mg/L

Anions	Test Method	Filtered
Fluoride (F)	ED009-X	1.50 mg/L
Chloride (Cl)	ED009-X	2910 mg/L
Sulfate (SO4)	ED009-X	28000 mg/L

ED009X LOR of Fluoride in samples number 1,3,4 and 15 were raised due to sample matrix

Alkalinity Test Method: ED037-P	Total
Total Alkalinity (CaCO3)	113 mg/L

Physical Test Method: EA015H	Total
Total Dissolved Solids @ 180°C	31900 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1824906. Report Date: 30-Aug-2018

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ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Amy Ribaux

Sample Number MPW023202
Date Sampled 22-Aug-2018 12:15
Date Received 23-Aug-2018
Date Completed 31-Aug-2018
Date Authorised 5-Sep-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: MP Ash - D10 - NA5

Source: MP **Customer Sampling Point:** 255 **Sampling Code:** NA5 **Sample Frequency:** ADDITIONAL_MONTH

Testing Laboratory: Mount Piper
Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	25.5 m
Bore Volume Pumped	*Analysis in Field	10 L
Recharge Bore Level	*Analysis in Field	25.5 m
pH	CA12125	5.86
Conductivity	CA12125	4790 µS/cm

Testing Laboratory: ALS Environmental
Water

Cations - Metals	Test Method	Filtered	Total
Mercury (Hg)	EG035T-LL		<0.00004 mg/L
Aluminium (Al)	EG020A-T		2.02 mg/L
Arsenic (As)	EG020A-T		<0.001 mg/L
Barium (Ba)	EG020A-T		0.032 mg/L
Boron (B)	EG020A-T		13.5 mg/L
Cadmium (Cd)	EG020A-T		0.0088 mg/L
Calcium (Ca)	ED093T-UL		348 mg/L
Chromium (Cr)	EG020A-T		0.018 mg/L
Copper (Cu)	EG020A-T		0.002 mg/L
Iron (Fe)	EG020A-F	0.32 mg/L	
Lead (Pb)	EG020A-T		0.002 mg/L
Magnesium (Mg)	ED093T-UL		122 mg/L
Manganese (Mn)	EG020A-F	7.45 mg/L	
Molybdenum (Mo)	EG020A-T		0.242 mg/L
Nickel (Ni)	EG020A-T		0.470 mg/L
Potassium (K)	ED093T-UL		138 mg/L
Selenium (Se)	EG094B-T		0.0376 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		630 mg/L
Vanadium (V)	EG020A-F	<0.01 mg/L	

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 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Amy Ribaux

Sample Number MPW023202
Date Sampled 22-Aug-2018 12:15
Date Received 23-Aug-2018
Date Completed 31-Aug-2018
Date Authorised 5-Sep-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: MP Ash - D10 - NA5

Source: MP **Customer Sampling Point:** 255 **Sampling Code:** NA5 **Sample Frequency:** ADDITIONAL_MONTH

Testing Laboratory: ALS Environmental

Vanadium (V)	EG020A-T	<0.01 mg/L
Zinc (Zn)	EG020A-T	0.690 mg/L

Anions Test Method: ED009-X	Filtered
Fluoride (F)	4.52 mg/L
Chloride (Cl)	100 mg/L
Sulfate (SO4)	2840 mg/L

Alkalinity Test Method: ED037-P	Total
Total Alkalinity (CaCO3)	111 mg/L

Physical Test Method: EA015H	Total
Total Dissolved Solids @ 180°C	3960 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1824906. Report Date: 30-Aug-2018

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ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Amy Ribaux

Sample Number MPW023203
Date Sampled 22-Aug-2018 15:00
Date Received 23-Aug-2018
Date Completed 31-Aug-2018
Date Authorised 5-Sep-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: MP Ash - D10 - D20

Source: MP **Customer Sampling Point:** 252 **Sampling Code:** D20 **Sample Frequency:** ADDITIONAL_MONTH

Testing Laboratory: Mount Piper
Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	17.7 m
Bore Volume Pumped	*Analysis in Field	14 L
Recharge Bore Level	*Analysis in Field	17.7 m
pH	CA12125	5.98
Conductivity	CA12125	4070 µS/cm

Testing Laboratory: ALS Environmental
Water

Cations - Metals	Test Method	Filtered	Total
Mercury (Hg)	EG035T-LL		<0.00004 mg/L
Aluminium (Al)	EG020A-T		2.52 mg/L
Arsenic (As)	EG020A-T		0.004 mg/L
Barium (Ba)	EG020A-T		0.048 mg/L
Boron (B)	EG020A-T		3.19 mg/L
Cadmium (Cd)	EG020A-T		0.0030 mg/L
Calcium (Ca)	ED093T-UL		330 mg/L
Chromium (Cr)	EG020A-T		0.008 mg/L
Copper (Cu)	EG020A-T		0.008 mg/L
Iron (Fe)	EG020A-F	3.93 mg/L	
Lead (Pb)	EG020A-T		0.006 mg/L
Magnesium (Mg)	ED093T-UL		367 mg/L
Manganese (Mn)	EG020A-F	26.4 mg/L	
Molybdenum (Mo)	EG020A-T		0.008 mg/L
Nickel (Ni)	EG020A-T		0.728 mg/L
Potassium (K)	ED093T-UL		31.7 mg/L
Selenium (Se)	EG094B-T		0.0004 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		226 mg/L
Vanadium (V)	EG020A-F	<0.01 mg/L	

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 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Amy Ribaux

Sample Number MPW023203
Date Sampled 22-Aug-2018 15:00
Date Received 23-Aug-2018
Date Completed 31-Aug-2018
Date Authorised 5-Sep-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: MP Ash - D10 - D20

Source: MP **Customer Sampling Point:** 252 **Sampling Code:** D20 **Sample Frequency:** ADDITIONAL_MONTH

Testing Laboratory: ALS Environmental

Vanadium (V)	EG020A-T	<0.01 mg/L
Zinc (Zn)	EG020A-T	0.472 mg/L

Anions	Test Method: ED009-X	Filtered
Fluoride (F)		0.717 mg/L
Chloride (Cl)		86.4 mg/L
Sulfate (SO4)		1240 mg/L

Alkalinity	Test Method: ED037-P	Total
Total Alkalinity (CaCO3)		278 mg/L

Physical	Test Method: EA015H	Total
Total Dissolved Solids @ 180°C		3320 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1824906. Report Date: 30-Aug-2018

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Final - Report Number: 2438402
ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Amy Ribaux

Sample Number MPW023204
Date Sampled 22-Aug-2018 14:45
Date Received 23-Aug-2018
Date Completed 31-Aug-2018
Date Authorised 5-Sep-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Groundwater Bore MPGM4

Source: MP **Customer Sampling Point:** 224 **Sampling Code:** D19 **Sample Frequency:** Month

Testing Laboratory: Mount Piper
Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	10.4 m
Bore Volume Pumped	*Analysis in Field	10 L
Recharge Bore Level	*Analysis in Field	10.4 m
pH	CA12125	5.93
Conductivity	CA12125	6710 µS/cm

Testing Laboratory: ALS Environmental
Water

Cations - Metals	Test Method	Filtered	Total
Mercury (Hg)	EG035T-LL		<0.00004 mg/L
Aluminium (Al)	EG020A-T		1.76 mg/L
Arsenic (As)	EG020A-T		0.006 mg/L
Barium (Ba)	EG020A-T		0.038 mg/L
Boron (B)	EG020A-T		3.33 mg/L
Cadmium (Cd)	EG020A-T		<0.0001 mg/L
Calcium (Ca)	ED093T-UL		296 mg/L
Chromium (Cr)	EG020A-T		0.096 mg/L
Copper (Cu)	EG020A-T		0.006 mg/L
Iron (Fe)	EG094B-F	31.7 mg/L	
Lead (Pb)	EG020A-T		0.022 mg/L
Magnesium (Mg)	ED093T-UL		254 mg/L
Manganese (Mn)	EG020A-F	14.9 mg/L	
Molybdenum (Mo)	EG020A-T		0.006 mg/L
Nickel (Ni)	EG020A-T		1.10 mg/L
Potassium (K)	ED093T-UL		58.6 mg/L
Selenium (Se)	EG094B-T		0.0009 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		903 mg/L
Vanadium (V)	EG020A-F	<0.01 mg/L	
Vanadium (V)	EG020A-T		<0.01 mg/L

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 Senior Chemist

Final - Report Number: 2438402
ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Amy Ribaux

Sample Number MPW023204
Date Sampled 22-Aug-2018 14:45
Date Received 23-Aug-2018
Date Completed 31-Aug-2018
Date Authorised 5-Sep-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Groundwater Bore MPGM4

Source: MP **Customer Sampling Point:** 224 **Sampling Code:** D19 **Sample Frequency:** Month

Testing Laboratory: ALS Environmental

Zinc (Zn)	EG020A-T	1.96 mg/L
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Anions	Test Method: ED009-X	Filtered
Fluoride (F)		0.917 mg/L
Chloride (Cl)		478 mg/L
Sulfate (SO4)		3230 mg/L

Alkalinity	Test Method: ED037-P	Total
Total Alkalinity (CaCO3)		130 mg/L

Physical	Test Method: EA015H	Total
Total Dissolved Solids @ 180°C		6180 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1824906. Report Date: 30-Aug-2018

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 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Amy Ribaux

Sample Number MPW023205
Date Sampled 22-Aug-2018 10:10
Date Received 23-Aug-2018
Date Completed 31-Aug-2018
Date Authorised 5-Sep-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Groundwater Bore MPGM4

Source: MP **Customer Sampling Point:** 008 **Sampling Code:** D3 **Sample Frequency:** Month

Testing Laboratory: Mount Piper
Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	8.6 m
Bore Volume Pumped	*Analysis in Field	180 L
Recharge Bore Level	*Analysis in Field	11.3 m
pH	CA12125	6.01
Conductivity	CA12125	920 µS/cm

Testing Laboratory: ALS Environmental
Water

Cations - Metals	Test Method	Filtered	Total
Mercury (Hg)	EG035T-LL		<0.00004 mg/L
Aluminium (Al)	EG020A-T		<0.01 mg/L
Arsenic (As)	EG020A-T		<0.001 mg/L
Barium (Ba)	EG020A-T		0.024 mg/L
Boron (B)	EG020A-T		<0.05 mg/L
Cadmium (Cd)	EG020A-T		<0.0001 mg/L
Calcium (Ca)	ED093T-UL		84.8 mg/L
Chromium (Cr)	EG020A-T		<0.001 mg/L
Copper (Cu)	EG020A-T		<0.001 mg/L
Iron (Fe)	EG020A-F	12.9 mg/L	
Lead (Pb)	EG020A-T		<0.001 mg/L
Magnesium (Mg)	ED093T-UL		47.4 mg/L
Manganese (Mn)	EG020A-F	0.760 mg/L	
Molybdenum (Mo)	EG020A-T		<0.001 mg/L
Nickel (Ni)	EG020A-T		0.002 mg/L
Potassium (K)	ED093T-UL		8.75 mg/L
Selenium (Se)	EG094B-T		<0.0002 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		36.9 mg/L
Vanadium (V)	EG020A-F	<0.01 mg/L	
Vanadium (V)	EG020A-T		<0.01 mg/L

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ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Amy Ribaux

Sample Number MPW023205
Date Sampled 22-Aug-2018 10:10
Date Received 23-Aug-2018
Date Completed 31-Aug-2018
Date Authorised 5-Sep-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Groundwater Bore MPGM4

Source: MP **Customer Sampling Point:** 008 **Sampling Code:** D3 **Sample Frequency:** Month

Testing Laboratory: ALS Environmental

Zinc (Zn)	EG020A-T	<0.005 mg/L
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Anions Test Method: ED009-X	Filtered
Fluoride (F)	0.196 mg/L
Chloride (Cl)	27.3 mg/L
Sulfate (SO4)	333 mg/L

Alkalinity Test Method: ED037-P	Total
Total Alkalinity (CaCO3)	120 mg/L

Physical Test Method: EA015H	Total
Total Dissolved Solids @ 180°C	664 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1824906. Report Date: 30-Aug-2018

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 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Amy Ribaux

Sample Number MPW023206
Date Sampled 22-Aug-2018 13:20
Date Received 23-Aug-2018
Date Completed 31-Aug-2018
Date Authorised 5-Sep-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Groundwater Bore MPGM4

Source: MP **Customer Sampling Point:** 016 **Sampling Code:** D11 **Sample Frequency:** Month

Testing Laboratory: Mount Piper
Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	28.7 m
Bore Volume Pumped	*Analysis in Field	95 L
Recharge Bore Level	*Analysis in Field	28.7 m
pH	CA12125	6.18
Conductivity	CA12125	9960 µS/cm

Testing Laboratory: ALS Environmental
Water

Cations - Metals	Test Method	Filtered	Total
Mercury (Hg)	EG035T-LL		<0.00004 mg/L
Aluminium (Al)	EG020A-T		<0.01 mg/L
Arsenic (As)	EG020A-T		0.010 mg/L
Barium (Ba)	EG020A-T		0.015 mg/L
Boron (B)	EG020A-T		3.26 mg/L
Cadmium (Cd)	EG020A-T		<0.0001 mg/L
Calcium (Ca)	ED093T-UL		628 mg/L
Chromium (Cr)	EG020A-T		<0.001 mg/L
Copper (Cu)	EG020A-T		<0.001 mg/L
Iron (Fe)	EG020A-F	106 mg/L	
Lead (Pb)	EG020A-T		<0.001 mg/L
Magnesium (Mg)	ED093T-UL		466 mg/L
Manganese (Mn)	EG020A-F	18.4 mg/L	
Molybdenum (Mo)	EG020A-T		0.002 mg/L
Nickel (Ni)	EG020A-T		0.936 mg/L
Potassium (K)	ED093T-UL		103 mg/L
Selenium (Se)	EG094B-T		0.0002 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		1820 mg/L
Vanadium (V)	EG020A-F	<0.01 mg/L	
Vanadium (V)	EG020A-T		<0.01 mg/L

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ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Amy Ribaux

Sample Number MPW023206
Date Sampled 22-Aug-2018 13:20
Date Received 23-Aug-2018
Date Completed 31-Aug-2018
Date Authorised 5-Sep-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Groundwater Bore MPGM4

Source: MP **Customer Sampling Point:** 016 **Sampling Code:** D11 **Sample Frequency:** Month

Testing Laboratory: ALS Environmental

Zinc (Zn)	EG020A-T	0.178 mg/L
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Anions Test Method: ED009-X	Filtered	
Fluoride (F)		0.628 mg/L
Chloride (Cl)		929 mg/L
Sulfate (SO4)		4840 mg/L

Alkalinity Test Method: ED037-P	Total	
Total Alkalinity (CaCO3)		158 mg/L

Physical Test Method: EA015H	Total	
Total Dissolved Solids @ 180°C		7800 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1824906. Report Date: 30-Aug-2018

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 Senior Chemist

Final - Report Number: 2438402
ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Amy Ribaux

Sample Number MPW023207
Date Sampled 23-Aug-2018 10:40
Date Received 23-Aug-2018
Date Completed 31-Aug-2018
Date Authorised 5-Sep-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Groundwater Bore MPGM4

Source: MP **Customer Sampling Point:** 015 **Sampling Code:** D10 **Sample Frequency:** Month

Testing Laboratory: Mount Piper
Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	15.9 m
Bore Volume Pumped	*Analysis in Field	140 L
Recharge Bore Level	*Analysis in Field	15.6 m
pH	CA12125	5.53
Conductivity	CA12125	10680 µS/cm

Testing Laboratory: ALS Environmental
Water

Cations - Metals	Test Method	Filtered	Total
Mercury (Hg)	EG035T-LL		<0.00004 mg/L
Aluminium (Al)	EG020A-T		0.10 mg/L
Arsenic (As)	EG020A-T		<0.001 mg/L
Barium (Ba)	EG020A-T		0.016 mg/L
Boron (B)	EG020A-T		4.75 mg/L
Cadmium (Cd)	EG020A-T		0.0068 mg/L
Calcium (Ca)	ED093T-UL		368 mg/L
Chromium (Cr)	EG020A-T		<0.001 mg/L
Copper (Cu)	EG020A-T		<0.001 mg/L
Iron (Fe)	EG020A-F	5.06 mg/L	
Lead (Pb)	EG020A-T		0.005 mg/L
Magnesium (Mg)	ED093T-UL		424 mg/L
Manganese (Mn)	EG020A-F	8.61 mg/L	
Molybdenum (Mo)	EG020A-T		0.002 mg/L
Nickel (Ni)	EG020A-T		1.04 mg/L
Potassium (K)	ED093T-UL		236 mg/L
Selenium (Se)	EG094B-T		0.0034 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		2340 mg/L
Vanadium (V)	EG020A-F	<0.01 mg/L	
Vanadium (V)	EG020A-T		<0.01 mg/L

* NATA accreditation does not cover the performance of this service



Accreditation Number 1099
 Accredited for compliance with ISO/IEC 17025.

Authorised by Thanh Hoang Le
 Senior Chemist

Final - Report Number: 2438402
ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Amy Ribaux

Sample Number MPW023207
Date Sampled 23-Aug-2018 10:40
Date Received 23-Aug-2018
Date Completed 31-Aug-2018
Date Authorised 5-Sep-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Groundwater Bore MPGM4

Source: MP **Customer Sampling Point:** 015 **Sampling Code:** D10 **Sample Frequency:** Month

Testing Laboratory: ALS Environmental

Zinc (Zn)	EG020A-T	1.03 mg/L
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Anions Test Method: ED009-X	Filtered	
Fluoride (F)	0.775 mg/L	
Chloride (Cl)	871 mg/L	
Sulfate (SO4)	6370 mg/L	

Alkalinity Test Method: ED037-P		Total
Total Alkalinity (CaCO3)		80 mg/L

Physical Test Method: EA015H		Total
Total Dissolved Solids @ 180°C		8740 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1824906. Report Date: 30-Aug-2018

* NATA accreditation does not cover the performance of this service



Accreditation Number 1099
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Authorised by Thanh Hoang Le
 Senior Chemist

Final - Report Number: 2438402
ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Amy Ribaux

Sample Number MPW023208
Date Sampled 23-Aug-2018 12:25
Date Received 23-Aug-2018
Date Completed 31-Aug-2018
Date Authorised 5-Sep-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Groundwater Bore MPGM4

Source: MP **Customer Sampling Point:** 222 **Sampling Code:** D17 **Sample Frequency:** Month

Testing Laboratory: Mount Piper
Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	29 m
Bore Volume Pumped	*Analysis in Field	27 L
Recharge Bore Level	*Analysis in Field	29 m
pH	CA12125	6.10
Conductivity	CA12125	3390 µS/cm

Testing Laboratory: ALS Environmental
Water

Cations - Metals	Test Method	Filtered	Total
Mercury (Hg)	EG035T-LL		<0.00004 mg/L
Aluminium (Al)	EG020A-T		0.11 mg/L
Arsenic (As)	EG020A-T		0.002 mg/L
Barium (Ba)	EG020A-T		0.016 mg/L
Boron (B)	EG020A-T		0.22 mg/L
Cadmium (Cd)	EG020A-T		<0.0001 mg/L
Calcium (Ca)	ED093T-UL		251 mg/L
Chromium (Cr)	EG020A-T		<0.001 mg/L
Copper (Cu)	EG020A-T		<0.001 mg/L
Iron (Fe)	EG020A-F	27.4 mg/L	
Lead (Pb)	EG020A-T		<0.001 mg/L
Magnesium (Mg)	ED093T-UL		151 mg/L
Manganese (Mn)	EG020A-F	3.22 mg/L	
Molybdenum (Mo)	EG020A-T		<0.001 mg/L
Nickel (Ni)	EG020A-T		0.091 mg/L
Potassium (K)	ED093T-UL		21.0 mg/L
Selenium (Se)	EG094B-T		<0.0002 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		364 mg/L
Vanadium (V)	EG020A-F	<0.01 mg/L	
Vanadium (V)	EG020A-T		<0.01 mg/L

* NATA accreditation does not cover the performance of this service



Accreditation Number 1099
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Authorised by Thanh Hoang Le
 Senior Chemist

Final - Report Number: 2438402
ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Amy Ribaux

Sample Number MPW023208
Date Sampled 23-Aug-2018 12:25
Date Received 23-Aug-2018
Date Completed 31-Aug-2018
Date Authorised 5-Sep-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Groundwater Bore MPGM4

Source: MP **Customer Sampling Point:** 222 **Sampling Code:** D17 **Sample Frequency:** Month

Testing Laboratory: ALS Environmental

Zinc (Zn)	EG020A-T	0.083 mg/L
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Anions Test Method: ED009-X	Filtered	
Fluoride (F)	<0.100 mg/L	
Chloride (Cl)	195 mg/L	
Sulfate (SO4)	1560 mg/L	

Alkalinity Test Method: ED037-P	Total	
Total Alkalinity (CaCO3)	118 mg/L	

Physical Test Method: EA015H	Total	
Total Dissolved Solids @ 180°C	2760 mg/L	

TDS by method EA-015 may bias high for various samples due to the presence of fine particulate matter, which may pass through the prescribed GF/C paper.

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1824906. Report Date: 30-Aug-2018

* NATA accreditation does not cover the performance of this service



Accreditation Number 1099
 Accredited for compliance with ISO/IEC 17025.

Authorised by Thanh Hoang Le
 Senior Chemist

Final - Report Number: 2438402
ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Amy Ribaux

Sample Number MPW023209
Date Sampled 23-Aug-2018 11:25
Date Received 23-Aug-2018
Date Completed 31-Aug-2018
Date Authorised 5-Sep-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Groundwater Bore MPGM4

Source: MP **Customer Sampling Point:** 220 **Sampling Code:** D15 **Sample Frequency:** Month

Testing Laboratory: Mount Piper
Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	25.8 m
Bore Volume Pumped	*Analysis in Field	28 L
Recharge Bore Level	*Analysis in Field	26.0 m
pH	CA12125	5.31
Conductivity	CA12125	4130 µS/cm

Testing Laboratory: ALS Environmental
Water

Cations - Metals	Test Method	Filtered	Total
Mercury (Hg)	EG035T-LL		<0.00004 mg/L
Aluminium (Al)	EG020A-T		1.25 mg/L
Arsenic (As)	EG020A-T		0.005 mg/L
Barium (Ba)	EG020A-T		0.017 mg/L
Boron (B)	EG020A-T		0.31 mg/L
Cadmium (Cd)	EG020A-T		0.0004 mg/L
Calcium (Ca)	ED093T-UL		247 mg/L
Chromium (Cr)	EG020A-T		0.179 mg/L
Copper (Cu)	EG020A-T		0.010 mg/L
Iron (Fe)	EG020A-F	18.4 mg/L	
Lead (Pb)	EG020A-T		0.008 mg/L
Magnesium (Mg)	ED093T-UL		122 mg/L
Manganese (Mn)	EG020A-F	2.37 mg/L	
Molybdenum (Mo)	EG020A-T		0.009 mg/L
Nickel (Ni)	EG020A-T		0.807 mg/L
Potassium (K)	ED093T-UL		40.9 mg/L
Selenium (Se)	EG094B-T		0.0005 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		627 mg/L
Vanadium (V)	EG020A-F	<0.01 mg/L	
Vanadium (V)	EG020A-T		<0.01 mg/L

* NATA accreditation does not cover the performance of this service



Accreditation Number 1099
 Accredited for compliance with ISO/IEC 17025.

Authorised by Thanh Hoang Le
 Senior Chemist

Final - Report Number: 2438402
ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Amy Ribaux

Sample Number MPW023209
Date Sampled 23-Aug-2018 11:25
Date Received 23-Aug-2018
Date Completed 31-Aug-2018
Date Authorised 5-Sep-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Groundwater Bore MPGM4

Source: MP **Customer Sampling Point:** 220 **Sampling Code:** D15 **Sample Frequency:** Month

Testing Laboratory: ALS Environmental

Zinc (Zn)	EG020A-T	1.27 mg/L
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Anions Test Method: ED009-X	Filtered
Fluoride (F)	0.119 mg/L
Chloride (Cl)	234 mg/L
Sulfate (SO4)	2210 mg/L

Alkalinity Test Method: ED037-P	Total
Total Alkalinity (CaCO3)	36 mg/L

Physical Test Method: EA015H	Total
Total Dissolved Solids @ 180°C	3560 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1824906. Report Date: 30-Aug-2018

* NATA accreditation does not cover the performance of this service



Accreditation Number 1099
 Accredited for compliance with ISO/IEC 17025.

Authorised by Thanh Hoang Le
 Senior Chemist

Final - Report Number: 2438402
ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Amy Ribaux

Sample Number MPW023210
Date Sampled 23-Aug-2018 12:00
Date Received 23-Aug-2018
Date Completed 31-Aug-2018
Date Authorised 5-Sep-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Groundwater Bore MPGM4

Source: MP **Customer Sampling Point:** 221 **Sampling Code:** D16 **Sample Frequency:** Month

Testing Laboratory: Mount Piper
Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	13.9 m
Bore Volume Pumped	*Analysis in Field	133 L
Recharge Bore Level	*Analysis in Field	13.9 m
pH	CA12125	6.50
Conductivity	CA12125	1390 µS/cm

Testing Laboratory: ALS Environmental
Water

Cations - Metals	Test Method	Filtered	Total
Mercury (Hg)	EG035T-LL		<0.00004 mg/L
Aluminium (Al)	EG020A-T		0.03 mg/L
Arsenic (As)	EG020A-T		<0.001 mg/L
Barium (Ba)	EG020A-T		0.012 mg/L
Boron (B)	EG020A-T		0.07 mg/L
Cadmium (Cd)	EG020A-T		<0.0001 mg/L
Calcium (Ca)	ED093T-UL		189 mg/L
Chromium (Cr)	EG020A-T		0.011 mg/L
Copper (Cu)	EG020A-T		<0.001 mg/L
Iron (Fe)	EG094B-F	1.88 mg/L	
Lead (Pb)	EG020A-T		<0.001 mg/L
Magnesium (Mg)	ED093T-UL		65.6 mg/L
Manganese (Mn)	EG020A-F	0.032 mg/L	
Molybdenum (Mo)	EG020A-T		<0.001 mg/L
Nickel (Ni)	EG020A-T		0.010 mg/L
Potassium (K)	ED093T-UL		22.0 mg/L
Selenium (Se)	EG094B-T		<0.0002 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		20.9 mg/L
Vanadium (V)	EG020A-F	<0.01 mg/L	
Vanadium (V)	EG020A-T		<0.01 mg/L

* NATA accreditation does not cover the performance of this service



Accreditation Number 1099
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Authorised by Thanh Hoang Le
 Senior Chemist

Final - Report Number: 2438402
ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Amy Ribaux

Sample Number MPW023210
Date Sampled 23-Aug-2018 12:00
Date Received 23-Aug-2018
Date Completed 31-Aug-2018
Date Authorised 5-Sep-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Groundwater Bore MPGM4

Source: MP **Customer Sampling Point:** 221 **Sampling Code:** D16 **Sample Frequency:** Month

Testing Laboratory: ALS Environmental

Zinc (Zn)	EG020A-T	0.010 mg/L
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Anions Test Method: ED009-X		Filtered
Fluoride (F)		0.325 mg/L
Chloride (Cl)		44.4 mg/L
Sulfate (SO4)		506 mg/L

Alkalinity Test Method: ED037-P		Total
Total Alkalinity (CaCO3)		255 mg/L

Physical Test Method: EA015H		Total
Total Dissolved Solids @ 180°C		974 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1824906. Report Date: 30-Aug-2018

* NATA accreditation does not cover the performance of this service



Accreditation Number 1099
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Authorised by Thanh Hoang Le
 Senior Chemist

Final - Report Number: 2438402
ENERGY AUSTRALIA C/- MT PIPER POWER
BOULDER ROAD
PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Amy Ribaux

Sample Number MPW023211
Date Sampled 22-Aug-2018 11:20
Date Received 23-Aug-2018
Date Completed 24-Aug-2018
Date Authorised 24-Aug-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: MP Ash - D10 - SW3-D

Source: MP **Customer Sampling Point:** 256 **Sampling Code:** SW3-D **Sample Frequency:** Ad-Hoc

Testing Laboratory: Mount Piper

Water

Field Analysis **Test Method:** Analysis in Field
Dry

Total

Water

N Tomlinson

Authorised by Nikki Tomlinson
Senior Chemist

Final - Report Number: 2438402
ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Amy Ribaux

Sample Number MPW023212
Date Sampled 22-Aug-2018 11:30
Date Received 23-Aug-2018
Date Completed 31-Aug-2018
Date Authorised 5-Sep-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: MP Ash - D10 - B5

Source: MP **Customer Sampling Point:** 250 **Sampling Code:** B5 **Sample Frequency:** Ad-Hoc

Testing Laboratory: Mount Piper
Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	38.5 m
Bore Volume Pumped	*Analysis in Field	2 L
Recharge Bore Level	*Analysis in Field	38.5 m
pH	CA12125	5.81
Conductivity	CA12125	46610 µS/cm

Testing Laboratory: ALS Environmental
Water

Cations - Metals	Test Method	Filtered	Total
Mercury (Hg)	EG035T-LL		0.00005 mg/L
Aluminium (Al)	EG020A-T		22.1 mg/L
Arsenic (As)	EG020A-T		0.018 mg/L
Barium (Ba)	EG020A-T		0.107 mg/L
Boron (B)	EG020A-T		14.0 mg/L
Cadmium (Cd)	EG020A-T		0.112 mg/L
Calcium (Ca)	ED093T-UL		579 mg/L
Chromium (Cr)	EG020A-T		0.014 mg/L
Copper (Cu)	EG020A-T		0.093 mg/L
Iron (Fe)	EG020A-F	0.95 mg/L	
Lead (Pb)	EG020A-T		0.026 mg/L
Magnesium (Mg)	ED093T-UL		2060 mg/L
Manganese (Mn)	EG020A-F	12.5 mg/L	
Molybdenum (Mo)	EG020A-T		7.47 mg/L
Nickel (Ni)	EG020A-T		1.21 mg/L
Potassium (K)	ED093T-UL		1560 mg/L
Selenium (Se)	EG094B-T		0.0926 mg/L
Silver (Ag)	EG020B-T		<0.010 mg/L
Sodium (Na)	ED093T-UL		18000 mg/L
Vanadium (V)	EG020A-F	<0.10 mg/L	
Vanadium (V)	EG020A-T		<0.10 mg/L

* NATA accreditation does not cover the performance of this service



Accreditation Number 1099
 Accredited for compliance with ISO/IEC 17025.

Authorised by Thanh Hoang Le
 Senior Chemist

Final - Report Number: 2438402
ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Amy Ribaux

Sample Number MPW023212
Date Sampled 22-Aug-2018 11:30
Date Received 23-Aug-2018
Date Completed 31-Aug-2018
Date Authorised 5-Sep-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: MP Ash - D10 - B5

Source: MP **Customer Sampling Point:** 250 **Sampling Code:** B5 **Sample Frequency:** Ad-Hoc

Testing Laboratory: ALS Environmental

Zinc (Zn)	EG020A-T	2.34 mg/L
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Anions Test Method: ED009-X	Filtered	
Fluoride (F)		1.08 mg/L
Chloride (Cl)		3750 mg/L
Sulfate (SO4)		34300 mg/L

Alkalinity Test Method: ED037-P		Total
Total Alkalinity (CaCO3)		49 mg/L

Physical Test Method: EA015H		Total
Total Dissolved Solids @ 180°C		52300 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1824906. Report Date: 30-Aug-2018

* NATA accreditation does not cover the performance of this service



Accreditation Number 1099
 Accredited for compliance with ISO/IEC 17025.

Authorised by Thanh Hoang Le
 Senior Chemist

Final - Report Number: 2438402
ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Amy Ribaux

Sample Number MPW023213
Date Sampled 22-Aug-2018 11:45
Date Received 23-Aug-2018
Date Completed 31-Aug-2018
Date Authorised 5-Sep-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: MP Ash - D10 - B5-1

Source: MP **Customer Sampling Point:** 251 **Sampling Code:** B5-1 **Sample Frequency:** Ad-Hoc

Testing Laboratory: Mount Piper
Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	36.9 m
Bore Volume Pumped	*Analysis in Field	5 L
Recharge Bore Level	*Analysis in Field	36.8 m
pH	CA12125	5.72
Conductivity	CA12125	46130 µS/cm

Testing Laboratory: ALS Environmental
Water

Cations - Metals	Test Method	Filtered	Total
Mercury (Hg)	EG035T-LL		0.00030 mg/L
Aluminium (Al)	EG020A-T		22.9 mg/L
Arsenic (As)	EG020A-T		0.025 mg/L
Barium (Ba)	EG020A-T		0.072 mg/L
Boron (B)	EG020A-T		9.52 mg/L
Cadmium (Cd)	EG020A-T		0.0710 mg/L
Calcium (Ca)	ED093T-UL		585 mg/L
Chromium (Cr)	EG020A-T		0.128 mg/L
Copper (Cu)	EG020A-T		0.150 mg/L
Iron (Fe)	EG020A-F	<0.10 mg/L	
Lead (Pb)	EG020A-T		0.144 mg/L
Magnesium (Mg)	ED093T-UL		2210 mg/L
Manganese (Mn)	EG020A-F	37.9 mg/L	
Molybdenum (Mo)	EG020A-T		0.011 mg/L
Nickel (Ni)	EG020A-T		2.37 mg/L
Potassium (K)	ED093T-UL		1340 mg/L
Selenium (Se)	EG094B-T		0.277 mg/L
Silver (Ag)	EG020B-T		<0.010 mg/L
Sodium (Na)	ED093T-UL		18500 mg/L
Vanadium (V)	EG020A-F	<0.10 mg/L	
Vanadium (V)	EG020A-T		<0.10 mg/L

* NATA accreditation does not cover the performance of this service



Accreditation Number 1099
 Accredited for compliance with ISO/IEC 17025.

Authorised by Thanh Hoang Le
 Senior Chemist

Final - Report Number: 2438402
ENERGY AUSTRALIA C/- MT PIPER POWER
BOULDER ROAD
PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Amy Ribaux

Sample Number MPW023213
Date Sampled 22-Aug-2018 11:45
Date Received 23-Aug-2018
Date Completed 31-Aug-2018
Date Authorised 5-Sep-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: MP Ash - D10 - B5-1

Source: MP **Customer Sampling Point:** 251 **Sampling Code:** B5-1 **Sample Frequency:** Ad-Hoc

Testing Laboratory: ALS Environmental

Zinc (Zn) EG020A-T 3.85 mg/L

Anions Test Method: ED009-X

	Filtered
Fluoride (F)	1.89 mg/L
Chloride (Cl)	3810 mg/L
Sulfate (SO4)	36000 mg/L

Alkalinity Test Method: ED037-P

	Total
Total Alkalinity (CaCO3)	116 mg/L

Physical Test Method: EA015H

	Total
Total Dissolved Solids @ 180°C	54900 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1824906. Report Date: 30-Aug-2018

* NATA accreditation does not cover the performance of this service



Accreditation Number 1099
Accredited for compliance with ISO/IEC 17025.

Authorised by Thanh Hoang Le
Senior Chemist

Final - Report Number: 2131538
ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Nikki Tomlinson

Sample Number MPW018008
Date Sampled 16-Aug-2017 14:42
Date Received 24-Aug-2017
Date Completed 24-Aug-2017
Date Authorised 25-Aug-2017

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Downstream Final Holding Pond

Source: MP **Customer Sampling Point:** 002 **Sampling Code:** LDP6 **Sample Frequency:** Month

Testing Laboratory: Mount Piper
 Water

Field Analysis	Test Method	Total
pH	CA12125	7.78
Conductivity	CA12125	375 µS/cm
Dissolved Oxygen (O2)	*Analysis in Field	11.5 mg/L



Field Photo

Testing Laboratory: ALS Environmental
 Water

Cations - Metals	Test Method	Filtered	Total
Mercury (Hg)	EG035T-LL		<0.00004 mg/L
Aluminium (Al)	EG020A-F	0.01 mg/L	
Aluminium (Al)	EG020A-T		0.40 mg/L
Arsenic (As)	EG020A-T		<0.001 mg/L
Barium (Ba)	EG020A-T		0.020 mg/L
Beryllium (Be)	EG020A-T		<0.001 mg/L

* NATA accreditation does not cover the performance of this service



Accreditation Number 1099
 Accredited for compliance with ISO/IEC 17025 - Testing.

Authorised by Thanh Hoang Le
 Senior Chemist

Final - Report Number: 2131538

ENERGY AUSTRALIA C/- MT PIPER POWER

BOULDER ROAD

PORTLAND NSW 2847 AUSTRALIA

Sold To: 0500082301 **Ship To:** 0500082301

Representative: Clive Stacey

Sampled By: Nikki Tomlinson

Sample Number

MPW018008

Date Sampled

16-Aug-2017 14:42

Date Received

24-Aug-2017

Date Completed

24-Aug-2017

Date Authorised

25-Aug-2017

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Downstream Final Holding Pond

Source: MP

Customer Sampling Point: 002

Sampling Code: LDP6

Sample Frequency: Month

Testing Laboratory: ALS Environmental

Boron (B)	EG020A-T	0.20 mg/L
Cadmium (Cd)	EG020A-T	<0.0001 mg/L
Calcium (Ca)	ED093T-UL	26.6 mg/L
Chromium (Cr)	EG020A-T	0.004 mg/L
Copper (Cu)	EG020A-F	0.003 mg/L
Copper (Cu)	EG020A-T	0.006 mg/L
Iron (Fe)	EG094B-F	0.030 mg/L
Iron (Fe)	EG094B-T	0.420 mg/L
Lead (Pb)	EG020A-T	<0.001 mg/L
Magnesium (Mg)	ED093T-UL	13.0 mg/L
Manganese (Mn)	EG020A-F	0.020 mg/L
Manganese (Mn)	EG020A-T	0.099 mg/L
Molybdenum (Mo)	EG020A-T	0.004 mg/L
Nickel (Ni)	EG020A-T	0.006 mg/L
Potassium (K)	ED093T-UL	6.22 mg/L
Selenium (Se)	EG094B-T	0.0004 mg/L
Silver (Ag)	EG020B-T	<0.001 mg/L
Sodium (Na)	ED093T-UL	27.9 mg/L
Strontium (Sr)	EG020B-T	0.085 mg/L
Vanadium (V)	EG020A-F	<0.01 mg/L
Vanadium (V)	EG020A-T	<0.01 mg/L
Zinc (Zn)	EG020A-F	0.008 mg/L
Zinc (Zn)	EG020A-T	0.032 mg/L

Anions	Test Method	Filtered
Fluoride (F)	ED009-X	0.071 mg/L
Chloride (Cl)	ED009-X	12.1 mg/L
Sulfate (SO4)	ED009-X	88.2 mg/L
Nitrate (N)	EK058G	0.20 mg/L
Nitrite (N)	EK057G	<0.01 mg/L
Nitrate and Nitrite (N)	EK059G	0.20 mg/L

* NATA accreditation does not cover the performance of this service



Accreditation Number 1099
 Accredited for compliance with ISO/IEC 17025 - Testing.

Authorised by Thanh Hoang Le
 Senior Chemist

Final - Report Number: 2131538
ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Nikki Tomlinson

Sample Number MPW018008
Date Sampled 16-Aug-2017 14:42
Date Received 24-Aug-2017
Date Completed 24-Aug-2017
Date Authorised 25-Aug-2017

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Downstream Final Holding Pond

Source: MP **Customer Sampling Point:** 002 **Sampling Code:** LDP6 **Sample Frequency:** Month

Testing Laboratory: ALS Environmental

Alkalinity	Test Method: ED037-P	Total
Total Alkalinity (CaCO ₃)		74 mg/L
Phenolphthalein Alkalinity (CaCO ₃)		<1 mg/L
Bicarbonate (CaCO ₃)		74 mg/L

Phosphate	Test Method: EK067G	Total
Total Phosphorus (P)		<0.01 mg/L

Physical	Test Method	Total
Total Suspended Solids @ 105°C	EA025H	20 mg/L
Total Dissolved Solids @ 180°C	EA015H	242 mg/L
Turbidity	EA045	33.4 NTU

Other	Test Method	Total
Nitrogen (N)	EK062G	0.5 mg/L
Ammonia (NH ₃ -N)	EK055	<0.1 mg/L
Nitrogen (N) - Kjeldahl	EK061G	0.3 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1720486. Report Date: 24-Aug-2017

* NATA accreditation does not cover the performance of this service



Accreditation Number 1099
 Accredited for compliance with ISO/IEC 17025 - Testing.

Authorised by Thanh Hoang Le
 Senior Chemist

Final - Report Number: 2163056
ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Nikki Tomlinson

Sample Number MPW018502
Date Sampled 22-Sep-2017 10:45
Date Received 22-Sep-2017
Date Completed 4-Oct-2017
Date Authorised 6-Oct-2017

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Downstream Final Holding Pond

Source: MP **Customer Sampling Point:** 002 **Sampling Code:** LDP6 **Sample Frequency:** Month

Testing Laboratory: Mount Piper
 Water

Field Analysis	Test Method	Total
pH	CA12125	7.47
Conductivity	CA12125	472 µS/cm
Dissolved Oxygen (O2)	*Analysis in Field	10.5 mg/L



Field Photo

Testing Laboratory: ALS Environmental
 Water

Cations - Metals	Test Method	Filtered	Total
Mercury (Hg)	EG035T-LL		<0.00004 mg/L
Aluminium (Al)	EG020A-F	<0.01 mg/L	
Aluminium (Al)	EG020A-T		0.18 mg/L
Arsenic (As)	EG020A-T		<0.001 mg/L
Barium (Ba)	EG020A-T		0.024 mg/L
Beryllium (Be)	EG020A-T		<0.001 mg/L

* NATA accreditation does not cover the performance of this service



Accreditation Number 1099
 Accredited for compliance with ISO/IEC 17025 - Testing.

Authorised by Thanh Hoang Le
 Senior Chemist

Final - Report Number: 2163056
ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Nikki Tomlinson

Sample Number MPW018502
Date Sampled 22-Sep-2017 10:45
Date Received 22-Sep-2017
Date Completed 4-Oct-2017
Date Authorised 6-Oct-2017

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Downstream Final Holding Pond

Source: MP **Customer Sampling Point:** 002 **Sampling Code:** LDP6 **Sample Frequency:** Month

Testing Laboratory: ALS Environmental

Boron (B)	EG020A-T	<0.05 mg/L
Cadmium (Cd)	EG020A-T	<0.0001 mg/L
Calcium (Ca)	ED093T-UL	32.5 mg/L
Chromium (Cr)	EG020A-T	<0.001 mg/L
Copper (Cu)	EG020A-F	0.002 mg/L
Copper (Cu)	EG020A-T	0.004 mg/L
Iron (Fe)	EG094B-F	0.016 mg/L
Iron (Fe)	EG094B-T	0.149 mg/L
Lead (Pb)	EG020A-T	<0.001 mg/L
Magnesium (Mg)	ED093T-UL	15.9 mg/L
Manganese (Mn)	EG020A-F	0.044 mg/L
Manganese (Mn)	EG020A-T	0.056 mg/L
Molybdenum (Mo)	EG020A-T	0.003 mg/L
Nickel (Ni)	EG020A-T	0.004 mg/L
Potassium (K)	ED093T-UL	6.45 mg/L
Selenium (Se)	EG094B-T	0.0004 mg/L
Silver (Ag)	EG020B-T	<0.001 mg/L
Sodium (Na)	ED093T-UL	36.2 mg/L
Strontium (Sr)	EG020B-T	0.093 mg/L
Vanadium (V)	EG020A-F	<0.01 mg/L
Vanadium (V)	EG020A-T	<0.01 mg/L
Zinc (Zn)	EG020A-F	0.007 mg/L
Zinc (Zn)	EG020A-T	0.012 mg/L

Anions	Test Method	Filtered
Fluoride (F)	ED009-X	0.207 mg/L
Chloride (Cl)	ED009-X	16.7 mg/L
Sulfate (SO4)	ED009-X	124 mg/L
Nitrate (N)	EK058G	0.13 mg/L
Nitrite (N)	EK057G	<0.01 mg/L
Nitrate and Nitrite (N)	EK059G	0.13 mg/L

* NATA accreditation does not cover the performance of this service



Accreditation Number 1099
 Accredited for compliance with ISO/IEC 17025 - Testing.

Authorised by Thanh Hoang Le
 Senior Chemist

Final - Report Number: 2163056
ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Nikki Tomlinson

Sample Number MPW018502
Date Sampled 22-Sep-2017 10:45
Date Received 22-Sep-2017
Date Completed 4-Oct-2017
Date Authorised 6-Oct-2017

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Downstream Final Holding Pond

Source: MP **Customer Sampling Point:** 002 **Sampling Code:** LDP6 **Sample Frequency:** Month

Testing Laboratory: ALS Environmental

Alkalinity	Test Method: ED037-P	Total
Total Alkalinity (CaCO3)		109 mg/L
Phenolphthalein Alkalinity (CaCO3)		<1 mg/L
Bicarbonate (CaCO3)		109 mg/L

Phosphate	Test Method: EK067G	Total
Total Phosphorus (P)		<0.01 mg/L

Physical	Test Method	Total
Total Suspended Solids @ 105°C	EA025H	10 mg/L
Total Dissolved Solids @ 180°C	EA015H	290 mg/L
Turbidity	EA045	8.3 NTU

Other	Test Method	Total
Nitrogen (N)	EK062G	0.4 mg/L
Ammonia (NH3-N)	EK055	<0.1 mg/L
Nitrogen (N) - Kjeldahl	EK061G	0.3 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1723970. Report Date: 3-Oct-2017

* NATA accreditation does not cover the performance of this service



Accreditation Number 1099
 Accredited for compliance with ISO/IEC 17025 - Testing.

Authorised by Thanh Hoang Le
 Senior Chemist

Final - Report Number: 2185256
ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Nikki Tomlinson

Sample Number MPW018900
Date Sampled 19-Oct-2017 14:20
Date Received 20-Oct-2017
Date Completed 30-Oct-2017
Date Authorised 2-Nov-2017

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Downstream Final Holding Pond

Source: MP **Customer Sampling Point:** 002 **Sampling Code:** LDP6 **Sample Frequency:** Month

Testing Laboratory: Mount Piper
 Water

Field Analysis	Test Method	Total
pH	CA12125	7.54
Conductivity	CA12125	445 µS/cm
Dissolved Oxygen (O2)	*Analysis in Field	8.1 mg/L



Field Photo

Testing Laboratory: ALS Environmental
 Water

Cations - Metals	Test Method	Filtered	Total
Mercury (Hg)	EG035T-LL		<0.00004 mg/L
Aluminium (Al)	EG020A-F	0.03 mg/L	
Aluminium (Al)	EG020A-T		0.52 mg/L
Arsenic (As)	EG020A-T		<0.001 mg/L
Barium (Ba)	EG020A-T		0.029 mg/L
Beryllium (Be)	EG020A-T		<0.001 mg/L

* NATA accreditation does not cover the performance of this service



Accreditation Number 1099
 Accredited for compliance with ISO/IEC 17025 - Testing.

Authorised by Thanh Hoang Le
 Senior Chemist

Final - Report Number: 2185256
ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Nikki Tomlinson

Sample Number MPW018900
Date Sampled 19-Oct-2017 14:20
Date Received 20-Oct-2017
Date Completed 30-Oct-2017
Date Authorised 2-Nov-2017

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Downstream Final Holding Pond

Source: MP **Customer Sampling Point:** 002 **Sampling Code:** LDP6 **Sample Frequency:** Month

Testing Laboratory: ALS Environmental

Boron (B)	EG020A-T	<0.05 mg/L
Cadmium (Cd)	EG020A-T	<0.0001 mg/L
Calcium (Ca)	ED093T-UL	28.7 mg/L
Chromium (Cr)	EG020A-T	<0.001 mg/L
Copper (Cu)	EG020A-F	0.004 mg/L
Copper (Cu)	EG020A-T	0.007 mg/L
Iron (Fe)	EG094B-F	0.031 mg/L
Iron (Fe)	EG094B-T	0.542 mg/L
Lead (Pb)	EG020A-T	<0.001 mg/L
Magnesium (Mg)	ED093T-UL	14.3 mg/L
Manganese (Mn)	EG020A-F	0.032 mg/L
Manganese (Mn)	EG020A-T	0.188 mg/L
Molybdenum (Mo)	EG020A-T	0.004 mg/L
Nickel (Ni)	EG020A-T	0.008 mg/L
Potassium (K)	ED093T-UL	6.77 mg/L
Selenium (Se)	EG094B-T	0.0006 mg/L
Silver (Ag)	EG020B-T	<0.001 mg/L
Sodium (Na)	ED093T-UL	36.3 mg/L
Strontium (Sr)	EG020B-T	0.123 mg/L
Vanadium (V)	EG020A-F	<0.01 mg/L
Vanadium (V)	EG020A-T	<0.01 mg/L
Zinc (Zn)	EG020A-F	0.006 mg/L
Zinc (Zn)	EG020A-T	0.031 mg/L

Anions	Test Method	Filtered
Fluoride (F)	ED009-X	0.251 mg/L
Chloride (Cl)	ED009-X	15.4 mg/L
Sulfate (SO4)	ED009-X	90.7 mg/L
Nitrate (N)	EK058G	0.15 mg/L
Nitrite (N)	EK057G	<0.01 mg/L
Nitrate and Nitrite (N)	EK059G	0.15 mg/L

* NATA accreditation does not cover the performance of this service



Accreditation Number 1099
 Accredited for compliance with ISO/IEC 17025 - Testing.

Authorised by Thanh Hoang Le
 Senior Chemist

Final - Report Number: 2185256
ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Nikki Tomlinson

Sample Number MPW018900
Date Sampled 19-Oct-2017 14:20
Date Received 20-Oct-2017
Date Completed 30-Oct-2017
Date Authorised 2-Nov-2017

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Downstream Final Holding Pond

Source: MP **Customer Sampling Point:** 002 **Sampling Code:** LDP6 **Sample Frequency:** Month

Testing Laboratory: ALS Environmental

Alkalinity	Test Method: ED037-P	Total
Total Alkalinity (CaCO ₃)		107 mg/L
Phenolphthalein Alkalinity (CaCO ₃)		<1 mg/L
Bicarbonate (CaCO ₃)		107 mg/L

Phosphate	Test Method: EK067G	Total
Total Phosphorus (P)		0.03 mg/L

Physical	Test Method	Total
Total Suspended Solids @ 105°C	EA025H	20 mg/L
Total Dissolved Solids @ 180°C	EA015H	370 mg/L
Turbidity	EA045	21.8 NTU

Other	Test Method	Total
Nitrogen (N)	EK062G	0.8 mg/L
Ammonia (NH ₃ -N)	EK055	<0.1 mg/L
Nitrogen (N) - Kjeldahl	EK061G	0.7 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1726321. Report Date: 27-Oct-2017

* NATA accreditation does not cover the performance of this service



Accreditation Number 1099
 Accredited for compliance with ISO/IEC 17025 - Testing.

Authorised by Thanh Hoang Le
 Senior Chemist

Final - Report Number: 2201652
ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Nikki Tomlinson

Sample Number MPW019304
Date Sampled 16-Nov-2017 15:00
Date Received 20-Nov-2017
Date Completed 27-Nov-2017
Date Authorised 27-Nov-2017

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Downstream Final Holding Pond

Source: MP **Customer Sampling Point:** 002 **Sampling Code:** LDP6 **Sample Frequency:** Month

Testing Laboratory: Mount Piper
 Water

Field Analysis	Test Method	Total
pH	CA12125	7.35
Conductivity	CA12125	301 µS/cm
Dissolved Oxygen (O2)	*Analysis in Field	7.9 mg/L



Field Photo

Testing Laboratory: ALS Environmental
 Water

Cations - Metals	Test Method	Filtered	Total
Mercury (Hg)	EG035T-LL		<0.00004 mg/L
Aluminium (Al)	EG020A-F	0.04 mg/L	
Aluminium (Al)	EG020A-T		0.29 mg/L
Arsenic (As)	EG020A-T		<0.001 mg/L
Barium (Ba)	EG020A-T		0.019 mg/L
Beryllium (Be)	EG020A-T		<0.001 mg/L

* NATA accreditation does not cover the performance of this service



Accreditation Number 1099
 Accredited for compliance with ISO/IEC 17025.

Authorised by Thanh Hoang Le
 Senior Chemist

Final - Report Number: 2201652
ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Nikki Tomlinson

Sample Number MPW019304
Date Sampled 16-Nov-2017 15:00
Date Received 20-Nov-2017
Date Completed 27-Nov-2017
Date Authorised 27-Nov-2017

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Downstream Final Holding Pond

Source: MP **Customer Sampling Point:** 002 **Sampling Code:** LDP6 **Sample Frequency:** Month

Testing Laboratory: ALS Environmental

Boron (B)	EG020A-T	<0.05 mg/L
Cadmium (Cd)	EG020A-T	<0.0001 mg/L
Calcium (Ca)	ED093T-UL	23.7 mg/L
Chromium (Cr)	EG020A-T	<0.001 mg/L
Copper (Cu)	EG020A-F	0.005 mg/L
Copper (Cu)	EG020A-T	0.008 mg/L
Iron (Fe)	EG094B-F	0.083 mg/L
Iron (Fe)	EG094B-T	0.472 mg/L
Lead (Pb)	EG020A-T	<0.001 mg/L
Magnesium (Mg)	ED093T-UL	10.1 mg/L
Manganese (Mn)	EG020A-F	0.052 mg/L
Manganese (Mn)	EG020A-T	0.073 mg/L
Molybdenum (Mo)	EG020A-T	0.004 mg/L
Nickel (Ni)	EG020A-T	0.004 mg/L
Potassium (K)	ED093T-UL	3.64 mg/L
Selenium (Se)	EG094B-T	0.0004 mg/L
Silver (Ag)	EG020B-T	<0.001 mg/L
Sodium (Na)	ED093T-UL	17.9 mg/L
Strontium (Sr)	EG020B-T	0.072 mg/L
Vanadium (V)	EG020A-F	<0.01 mg/L
Vanadium (V)	EG020A-T	<0.01 mg/L
Zinc (Zn)	EG020A-F	<0.005 mg/L
Zinc (Zn)	EG020A-T	0.022 mg/L

Anions	Test Method	Filtered
Fluoride (F)	ED009-X	0.196 mg/L
Chloride (Cl)	ED009-X	8.09 mg/L
Sulfate (SO4)	ED009-X	53.6 mg/L
Nitrate (N)	EK058G	0.18 mg/L
Nitrite (N)	EK057G	<0.01 mg/L
Nitrate and Nitrite (N)	EK059G	0.18 mg/L

* NATA accreditation does not cover the performance of this service



Accreditation Number 1099
 Accredited for compliance with ISO/IEC 17025.

Authorised by Thanh Hoang Le
 Senior Chemist

Final - Report Number: 2201652
ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Nikki Tomlinson

Sample Number MPW019304
Date Sampled 16-Nov-2017 15:00
Date Received 20-Nov-2017
Date Completed 27-Nov-2017
Date Authorised 27-Nov-2017

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Downstream Final Holding Pond

Source: MP **Customer Sampling Point:** 002 **Sampling Code:** LDP6 **Sample Frequency:** Month

Testing Laboratory: ALS Environmental

Alkalinity	Test Method: ED037-P	Total
Total Alkalinity (CaCO ₃)		84 mg/L
Phenolphthalein Alkalinity (CaCO ₃)		<1 mg/L
Bicarbonate (CaCO ₃)		84 mg/L

Phosphate	Test Method: EK067G	Total
Total Phosphorus (P)		0.01 mg/L

Physical	Test Method	Total
Total Suspended Solids @ 105°C	EA025H	12 mg/L
Total Dissolved Solids @ 180°C	EA015H	195 mg/L
Turbidity	EA045	14.8 NTU

Other	Test Method	Total
Nitrogen (N)	EK062G	0.6 mg/L
Ammonia (NH ₃ -N)	EK055	<0.1 mg/L
Nitrogen (N) - Kjeldahl	EK061G	0.4 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1729076. Report Date: 24-Nov-2017

* NATA accreditation does not cover the performance of this service



Accreditation Number 1099
 Accredited for compliance with ISO/IEC 17025.

Authorised by Thanh Hoang Le
 Senior Chemist

Final - Report Number: 2239481
ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Nikki Tomlinson

Sample Number MPW019787
Date Sampled 20-Dec-2017 15:20
Date Received 3-Jan-2018
Date Completed 8-Jan-2018
Date Authorised 17-Jan-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Downstream Final Holding Pond

Source: MP **Customer Sampling Point:** 002 **Sampling Code:** LDP6 **Sample Frequency:** Month

Testing Laboratory: Mount Piper
 Water

Field Analysis	Test Method	Total
pH	CA12125	7.19
Conductivity	CA12125	257 µS/cm
Dissolved Oxygen (O2)	*Analysis in Field	4.1 mg/L



Field Photo

Testing Laboratory: ALS Environmental
 Water

Cations - Metals	Test Method	Filtered	Total
Mercury (Hg)	EG035T-LL		<0.00004 mg/L
Aluminium (Al)	EG020A-F	0.11 mg/L	
Aluminium (Al)	EG020A-T		1.56 mg/L
Arsenic (As)	EG020A-T		0.002 mg/L
Barium (Ba)	EG020A-T		0.032 mg/L
Beryllium (Be)	EG020A-T		<0.001 mg/L

* NATA accreditation does not cover the performance of this service



Accreditation Number 1099
 Accredited for compliance with ISO/IEC 17025.

Authorised by Thanh Hoang Le
 Senior Chemist

Customer Analytical Services

Mount Piper Power Station 350 Boulder Road Portland 2847 NSW

Email: customeranalyticalservices@nalco.com



Final - Report Number: 2239481

ENERGY AUSTRALIA C/- MT PIPER POWER

BOULDER ROAD

PORTLAND NSW 2847 AUSTRALIA

Sold To: 0500082301 **Ship To:** 0500082301

Representative: Clive Stacey

Sampled By: Nikki Tomlinson

Sample Number

MPW019787

Date Sampled

20-Dec-2017 15:20

Date Received

3-Jan-2018

Date Completed

8-Jan-2018

Date Authorised

17-Jan-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Downstream Final Holding Pond

Source: MP

Customer Sampling Point: 002

Sampling Code: LDP6

Sample Frequency: Month

Testing Laboratory: ALS Environmental

Boron (B)	EG020A-T	0.11 mg/L
Cadmium (Cd)	EG020A-T	0.0001 mg/L
Calcium (Ca)	ED093T-UL	22.6 mg/L
Chromium (Cr)	EG020A-T	0.002 mg/L
Copper (Cu)	EG020A-F	0.008 mg/L
Copper (Cu)	EG020A-T	0.019 mg/L
Iron (Fe)	EG094B-F	0.160 mg/L
Iron (Fe)	EG094B-T	1.26 mg/L
Lead (Pb)	EG020A-T	0.004 mg/L
Magnesium (Mg)	ED093T-UL	8.45 mg/L
Manganese (Mn)	EG020A-F	0.104 mg/L
Manganese (Mn)	EG020A-T	0.194 mg/L
Molybdenum (Mo)	EG020A-T	0.002 mg/L
Nickel (Ni)	EG020A-T	0.009 mg/L
Potassium (K)	ED093T-UL	5.28 mg/L
Selenium (Se)	EG094B-T	0.0004 mg/L
Silver (Ag)	EG020B-T	<0.001 mg/L
Sodium (Na)	ED093T-UL	15.4 mg/L
Strontium (Sr)	EG020B-T	0.065 mg/L
Vanadium (V)	EG020A-F	<0.01 mg/L
Vanadium (V)	EG020A-T	<0.01 mg/L
Zinc (Zn)	EG020A-F	0.012 mg/L
Zinc (Zn)	EG020A-T	0.050 mg/L

Anions	Test Method	Filtered
Fluoride (F)	ED009-X	0.160 mg/L
Chloride (Cl)	ED009-X	5.07 mg/L
Sulfate (SO4)	ED009-X	45.5 mg/L
Nitrate (N)	EK058G	0.22 mg/L
Nitrite (N)	EK057G	<0.01 mg/L
Nitrate and Nitrite (N)	EK059G	0.22 mg/L

* NATA accreditation does not cover the performance of this service



Accreditation Number 1099

Accredited for compliance with ISO/IEC 17025.

Authorised by Thanh Hoang Le
Senior Chemist

Final - Report Number: 2239481
ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Nikki Tomlinson

Sample Number MPW019787
Date Sampled 20-Dec-2017 15:20
Date Received 3-Jan-2018
Date Completed 8-Jan-2018
Date Authorised 17-Jan-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Downstream Final Holding Pond

Source: MP **Customer Sampling Point:** 002 **Sampling Code:** LDP6 **Sample Frequency:** Month

Testing Laboratory: ALS Environmental

Alkalinity	Test Method: ED037-P	Total
Total Alkalinity (CaCO ₃)		73 mg/L
Phenolphthalein Alkalinity (CaCO ₃)		<1 mg/L
Bicarbonate (CaCO ₃)		73 mg/L

Phosphate	Test Method: EK067G	Total
Total Phosphorus (P)		0.06 mg/L

Physical	Test Method	Total
Total Suspended Solids @ 105°C	EA025H	43 mg/L
Total Dissolved Solids @ 180°C	EA015H	202 mg/L
Turbidity	EA045	125 NTU

Other	Test Method	Total
Nitrogen (N)	EK062G	0.9 mg/L
Ammonia (NH ₃ -N)	EK055	0.1 mg/L
Nitrogen (N) - Kjeldahl	EK061G	0.7 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1732527. Report Date: 5-Jan-2018

* NATA accreditation does not cover the performance of this service



Accreditation Number 1099
 Accredited for compliance with ISO/IEC 17025.

Authorised by Thanh Hoang Le
 Senior Chemist

Final - Report Number: 2250366
ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Nikki Tomlinson

Sample Number MPW020120
Date Sampled 17-Jan-2018 15:20
Date Received 18-Jan-2018
Date Completed 29-Jan-2018
Date Authorised 31-Jan-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Downstream Final Holding Pond

Source: MP **Customer Sampling Point:** 002 **Sampling Code:** LDP6 **Sample Frequency:** Month

Testing Laboratory: Mount Piper
 Water

Field Analysis	Test Method	Total
pH	CA12125	7.35
Conductivity	CA12125	299 µS/cm
Dissolved Oxygen (O2)	*Analysis in Field	7.3 mg/L



Field Photo

Testing Laboratory: ALS Environmental
 Water

Cations - Metals	Test Method	Filtered	Total
Mercury (Hg)	EG035T-LL		<0.00004 mg/L
Aluminium (Al)	EG020A-F	0.02 mg/L	
Aluminium (Al)	EG020A-T		0.30 mg/L
Arsenic (As)	EG020A-T		<0.001 mg/L
Barium (Ba)	EG020A-T		0.024 mg/L
Beryllium (Be)	EG020A-T		<0.001 mg/L

* NATA accreditation does not cover the performance of this service



Accreditation Number 1099
 Accredited for compliance with ISO/IEC 17025.

Authorised by Thanh Hoang Le
 Senior Chemist

Customer Analytical Services

Mount Piper Power Station 350 Boulder Road Portland 2847 NSW

Email: customeranalyticalservices@nalco.com

NALCO Water
An Ecolab Company

Final - Report Number: 2250366

ENERGY AUSTRALIA C/- MT PIPER POWER

BOULDER ROAD

PORTLAND NSW 2847 AUSTRALIA

Sold To: 0500082301 **Ship To:** 0500082301

Representative: Clive Stacey

Sampled By: Nikki Tomlinson

Sample Number

MPW020120

Date Sampled

17-Jan-2018 15:20

Date Received

18-Jan-2018

Date Completed

29-Jan-2018

Date Authorised

31-Jan-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Downstream Final Holding Pond

Source: MP

Customer Sampling Point: 002

Sampling Code: LDP6

Sample Frequency: Month

Testing Laboratory: ALS Environmental

Boron (B)	EG020A-T	0.10 mg/L
Cadmium (Cd)	EG020A-T	<0.0001 mg/L
Calcium (Ca)	ED093T-UL	25.7 mg/L
Chromium (Cr)	EG020A-T	<0.001 mg/L
Copper (Cu)	EG020A-F	0.003 mg/L
Copper (Cu)	EG020A-T	0.005 mg/L
Iron (Fe)	EG094B-F	0.038 mg/L
Iron (Fe)	EG094B-T	0.298 mg/L
Lead (Pb)	EG020A-T	<0.001 mg/L
Magnesium (Mg)	ED093T-UL	11.2 mg/L
Manganese (Mn)	EG020A-F	0.120 mg/L
Manganese (Mn)	EG020A-T	0.144 mg/L
Molybdenum (Mo)	EG020A-T	0.003 mg/L
Nickel (Ni)	EG020A-T	0.002 mg/L
Potassium (K)	ED093T-UL	4.56 mg/L
Selenium (Se)	EG094B-T	0.0003 mg/L
Silver (Ag)	EG020B-T	<0.001 mg/L
Sodium (Na)	ED093T-UL	19.0 mg/L
Strontium (Sr)	EG020B-T	0.068 mg/L
Vanadium (V)	EG020A-F	<0.01 mg/L
Vanadium (V)	EG020A-T	<0.01 mg/L
Zinc (Zn)	EG020A-F	<0.005 mg/L
Zinc (Zn)	EG020A-T	0.012 mg/L

Anions	Test Method	Filtered
Fluoride (F)	ED009-X	0.166 mg/L
Chloride (Cl)	ED009-X	6.00 mg/L
Sulfate (SO4)	ED009-X	51.8 mg/L
Nitrate (N)	EK058G	0.14 mg/L
Nitrite (N)	EK057G	<0.01 mg/L
Nitrate and Nitrite (N)	EK059G	0.14 mg/L

* NATA accreditation does not cover the performance of this service



Accreditation Number 1099
Accredited for compliance with ISO/IEC 17025.

Authorised by Thanh Hoang Le
Senior Chemist

Final - Report Number: 2250366
ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Nikki Tomlinson

Sample Number MPW020120
Date Sampled 17-Jan-2018 15:20
Date Received 18-Jan-2018
Date Completed 29-Jan-2018
Date Authorised 31-Jan-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Downstream Final Holding Pond

Source: MP **Customer Sampling Point:** 002 **Sampling Code:** LDP6 **Sample Frequency:** Month

Testing Laboratory: ALS Environmental

Alkalinity	Test Method: ED037-P	Total
Total Alkalinity (CaCO3)		92 mg/L
Phenolphthalein Alkalinity (CaCO3)		<1 mg/L
Bicarbonate (CaCO3)		92 mg/L

Phosphate	Test Method: EK067G	Total
Total Phosphorus (P)		0.02 mg/L

Physical	Test Method	Total
Total Suspended Solids @ 105°C	EA025H	12 mg/L
Total Dissolved Solids @ 180°C	EA015H	198 mg/L
Turbidity	EA045	16.3 NTU

Other	Test Method	Total
Nitrogen (N)	EK062G	0.4 mg/L
Ammonia (NH3-N)	EK055	<0.1 mg/L
Nitrogen (N) - Kjeldahl	EK061G	0.3 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1802236. Report Date: 25-Jan-2018

* NATA accreditation does not cover the performance of this service



Accreditation Number 1099
 Accredited for compliance with ISO/IEC 17025.

Authorised by Thanh Hoang Le
 Senior Chemist

Final - Report Number: 2271589
ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Nikki Tomlinson

Sample Number MPW020541
Date Sampled 14-Feb-2018 15:05
Date Received 15-Feb-2018
Date Completed 23-Feb-2018
Date Authorised 28-Feb-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Downstream Final Holding Pond

Source: MP **Customer Sampling Point:** 002 **Sampling Code:** LDP6 **Sample Frequency:** Month

Testing Laboratory: Mount Piper
 Water

Field Analysis	Test Method	Total
pH	CA12125	7.39
Conductivity	CA12125	297 µS/cm
Dissolved Oxygen (O2)	*Analysis in Field	7.0 mg/L



Field Photo

Testing Laboratory: ALS Environmental
 Water

Cations - Metals	Test Method	Filtered	Total
Mercury (Hg)	EG035T-LL		<0.00004 mg/L
Aluminium (Al)	EG020A-F	0.06 mg/L	
Aluminium (Al)	EG020A-T		0.38 mg/L
Arsenic (As)	EG020A-T		<0.001 mg/L
Barium (Ba)	EG020A-T		0.024 mg/L
Beryllium (Be)	EG020A-T		<0.001 mg/L

* NATA accreditation does not cover the performance of this service



Accreditation Number 1099
 Accredited for compliance with ISO/IEC 17025.

Authorised by Thanh Hoang Le
 Senior Chemist

Final - Report Number: 2271589
ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Nikki Tomlinson

Sample Number MPW020541
Date Sampled 14-Feb-2018 15:05
Date Received 15-Feb-2018
Date Completed 23-Feb-2018
Date Authorised 28-Feb-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Downstream Final Holding Pond

Source: MP **Customer Sampling Point:** 002 **Sampling Code:** LDP6 **Sample Frequency:** Month

Testing Laboratory: ALS Environmental

Boron (B)	EG020A-T	0.23 mg/L
Cadmium (Cd)	EG020A-T	<0.0001 mg/L
Calcium (Ca)	ED093T-UL	24.1 mg/L
Chromium (Cr)	EG020A-T	0.017 mg/L
Copper (Cu)	EG020A-F	0.003 mg/L
Copper (Cu)	EG020A-T	0.009 mg/L
Iron (Fe)	EG094B-F	0.052 mg/L
Iron (Fe)	EG094B-T	0.624 mg/L
Lead (Pb)	EG020A-T	0.001 mg/L
Magnesium (Mg)	ED093T-UL	11.2 mg/L
Manganese (Mn)	EG020A-F	0.206 mg/L
Manganese (Mn)	EG020A-T	0.260 mg/L
Molybdenum (Mo)	EG020A-T	0.005 mg/L
Nickel (Ni)	EG020A-T	0.010 mg/L
Potassium (K)	ED093T-UL	5.15 mg/L
Selenium (Se)	EG094B-T	0.0003 mg/L
Silver (Ag)	EG020B-T	<0.001 mg/L
Sodium (Na)	ED093T-UL	19.4 mg/L
Strontium (Sr)	EG020B-T	0.082 mg/L
Vanadium (V)	EG020A-F	<0.01 mg/L
Vanadium (V)	EG020A-T	<0.01 mg/L
Zinc (Zn)	EG020A-F	0.013 mg/L
Zinc (Zn)	EG020A-T	0.036 mg/L

Anions	Test Method	Filtered
Fluoride (F)	ED009-X	0.293 mg/L
Chloride (Cl)	ED009-X	5.25 mg/L
Sulfate (SO4)	ED009-X	45.3 mg/L
Nitrate (N)	EK058G	0.16 mg/L
Nitrite (N)	EK057G	<0.01 mg/L
Nitrate and Nitrite (N)	EK059G	0.16 mg/L

* NATA accreditation does not cover the performance of this service



Accreditation Number 1099
 Accredited for compliance with ISO/IEC 17025.

Authorised by Thanh Hoang Le
 Senior Chemist

Final - Report Number: 2271589
ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Nikki Tomlinson

Sample Number MPW020541
Date Sampled 14-Feb-2018 15:05
Date Received 15-Feb-2018
Date Completed 23-Feb-2018
Date Authorised 28-Feb-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Downstream Final Holding Pond

Source: MP **Customer Sampling Point:** 002 **Sampling Code:** LDP6 **Sample Frequency:** Month

Testing Laboratory: ALS Environmental

Alkalinity	Test Method: ED037-P	Total
Total Alkalinity (CaCO3)		86 mg/L
Phenolphthalein Alkalinity (CaCO3)		<1 mg/L
Bicarbonate (CaCO3)		86 mg/L

Phosphate	Test Method: EK067G	Total
Total Phosphorus (P)		0.02 mg/L

Physical	Test Method	Total
Total Suspended Solids @ 105°C	EA025H	26 mg/L
Total Dissolved Solids @ 180°C	EA015H	165 mg/L
Turbidity	EA045	32.9 NTU

Other	Test Method	Total
Nitrogen (N)	EK062G	0.7 mg/L
Ammonia (NH3-N)	EK055	<0.1 mg/L
Nitrogen (N) - Kjeldahl	EK061G	0.5 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1805047. Report Date: 22-Feb-2018

* NATA accreditation does not cover the performance of this service



Accreditation Number 1099
 Accredited for compliance with ISO/IEC 17025.

Authorised by Thanh Hoang Le
 Senior Chemist

Final - Report Number: 2305617
ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Nikki Tomlinson

Sample Number MPW020946
Date Sampled 14-Mar-2018 15:35
Date Received 15-Mar-2018
Date Completed 26-Mar-2018
Date Authorised 29-Mar-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Downstream Final Holding Pond

Source: MP **Customer Sampling Point:** 002 **Sampling Code:** LDP6 **Sample Frequency:** Month

Testing Laboratory: Mount Piper
 Water

Field Analysis	Test Method	Total
pH	CA12125	7.23
Conductivity	CA12125	264 µS/cm
Dissolved Oxygen (O2)	*Analysis in Field	7.5 mg/L



Field Photo

Testing Laboratory: ALS Environmental
 Water

Cations - Metals	Test Method	Filtered	Total
Mercury (Hg)	EG035T-LL		<0.00004 mg/L
Aluminium (Al)	EG020A-F	0.06 mg/L	
Aluminium (Al)	EG020A-T		0.04 mg/L
Arsenic (As)	EG020A-T		<0.001 mg/L
Barium (Ba)	EG020A-T		0.020 mg/L
Beryllium (Be)	EG020A-T		<0.001 mg/L

* NATA accreditation does not cover the performance of this service



Accreditation Number 1099
 Accredited for compliance with ISO/IEC 17025.

Authorised by Thanh Hoang Le
 Senior Chemist

Final - Report Number: 2305617
ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Nikki Tomlinson

Sample Number MPW020946
Date Sampled 14-Mar-2018 15:35
Date Received 15-Mar-2018
Date Completed 26-Mar-2018
Date Authorised 29-Mar-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Downstream Final Holding Pond

Source: MP **Customer Sampling Point:** 002 **Sampling Code:** LDP6 **Sample Frequency:** Month

Testing Laboratory: ALS Environmental

Boron (B)	EG020A-T	<0.05 mg/L
Cadmium (Cd)	EG020A-T	<0.0001 mg/L
Calcium (Ca)	ED093T-UL	23.5 mg/L
Chromium (Cr)	EG020A-T	<0.001 mg/L
Copper (Cu)	EG020A-F	0.003 mg/L
Copper (Cu)	EG020A-T	0.002 mg/L
Iron (Fe)	EG094B-F	0.233 mg/L
Iron (Fe)	EG094B-T	0.059 mg/L
Lead (Pb)	EG020A-T	<0.001 mg/L
Magnesium (Mg)	ED093T-UL	9.32 mg/L
Manganese (Mn)	EG020A-F	0.238 mg/L
Manganese (Mn)	EG020A-T	0.204 mg/L
Molybdenum (Mo)	EG020A-T	0.001 mg/L
Nickel (Ni)	EG020A-T	0.004 mg/L
Potassium (K)	ED093T-UL	3.76 mg/L
Selenium (Se)	EG094B-T	0.0003 mg/L
Silver (Ag)	EG020B-T	<0.001 mg/L
Sodium (Na)	ED093T-UL	13.6 mg/L
Strontium (Sr)	EG020B-T	0.063 mg/L
Vanadium (V)	EG020A-F	<0.01 mg/L
Vanadium (V)	EG020A-T	<0.01 mg/L
Zinc (Zn)	EG020A-F	0.011 mg/L
Zinc (Zn)	EG020A-T	0.011 mg/L

EG020 : It is recognised that total concentration is less than dissolved for some metal analytes. However, the difference is within experimental variation of the methods.

EG094: It has been confirmed that total Iron concentrations is less than dissolved.

* NATA accreditation does not cover the performance of this service



Accreditation Number 1099
 Accredited for compliance with ISO/IEC 17025.

Authorised by Thanh Hoang Le
 Senior Chemist

Final - Report Number: 2305617
ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Nikki Tomlinson

Sample Number MPW020946
Date Sampled 14-Mar-2018 15:35
Date Received 15-Mar-2018
Date Completed 26-Mar-2018
Date Authorised 29-Mar-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Downstream Final Holding Pond

Source: MP **Customer Sampling Point:** 002 **Sampling Code:** LDP6 **Sample Frequency:** Month

Testing Laboratory: ALS Environmental

Anions	Test Method	Filtered
Fluoride (F)	ED009-X	0.111 mg/L
Chloride (Cl)	ED009-X	5.84 mg/L
Sulfate (SO4)	ED009-X	54.5 mg/L
Nitrate (N)	EK058G	0.21 mg/L
Nitrite (N)	EK057G	<0.01 mg/L
Nitrate and Nitrite (N)	EK059G	0.21 mg/L

Alkalinity	Test Method: ED037-P	Total
Total Alkalinity (CaCO3)		69 mg/L
Phenolphthalein Alkalinity (CaCO3)		<1 mg/L
Bicarbonate (CaCO3)		69 mg/L

Phosphate	Test Method: EK067G	Total
Total Phosphorus (P)		0.02 mg/L

Physical	Test Method	Total
Total Suspended Solids @ 105°C	EA025H	23 mg/L
Total Dissolved Solids @ 180°C	EA015H	175 mg/L
Turbidity	EA045	33.8 NTU

Other	Test Method	Total
Nitrogen (N)	EK062G	0.6 mg/L
Ammonia (NH3-N)	EK055	<0.1 mg/L
Nitrogen (N) - Kjeldahl	EK061G	0.4 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1807854. Report Date: 22-Mar-2018

* NATA accreditation does not cover the performance of this service



Accreditation Number 1099
 Accredited for compliance with ISO/IEC 17025.

Authorised by Thanh Hoang Le
 Senior Chemist

Final - Report Number: 2334589
ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Allan Bowcher

Sample Number MPW021405
Date Sampled 19-Apr-2018 12:15
Date Received 19-Apr-2018
Date Completed 30-Apr-2018
Date Authorised 3-May-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Downstream Final Holding Pond

Source: MP **Customer Sampling Point:** 002 **Sampling Code:** LDP6 **Sample Frequency:** Month

Testing Laboratory: Mount Piper
 Water

Field Analysis	Test Method	Total
Discharge Flowing	*Analysis in Field	Flow
Appearance	*Analysis in Field	Slightly Turbid
pH	CA12125	7.13
Conductivity	CA12125	382 µS/cm
Dissolved Oxygen (O2)	*Analysis in Field	8.4 mg/L



field photo

Testing Laboratory: ALS Environmental
 Water

Cations - Metals	Test Method	Filtered	Total
Mercury (Hg)	EG035T-LL		<0.00004 mg/L
Aluminium (Al)	EG020A-F	0.01 mg/L	
Aluminium (Al)	EG020A-T		0.15 mg/L
Arsenic (As)	EG020A-T		<0.001 mg/L

* NATA accreditation does not cover the performance of this service



Accreditation Number 1099
 Accredited for compliance with ISO/IEC 17025.

Authorised by Thanh Hoang Le
 Senior Chemist

Final - Report Number: 2334589
ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Allan Bowcher

Sample Number MPW021405
Date Sampled 19-Apr-2018 12:15
Date Received 19-Apr-2018
Date Completed 30-Apr-2018
Date Authorised 3-May-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Downstream Final Holding Pond

Source: MP **Customer Sampling Point:** 002 **Sampling Code:** LDP6 **Sample Frequency:** Month

Testing Laboratory: ALS Environmental

Barium (Ba)	EG020A-T	0.027 mg/L
Beryllium (Be)	EG020A-T	<0.001 mg/L
Boron (B)	EG020A-T	<0.05 mg/L
Cadmium (Cd)	EG020A-T	<0.0001 mg/L
Calcium (Ca)	ED093T-UL	25.4 mg/L
Chromium (Cr)	EG020A-T	<0.001 mg/L
Copper (Cu)	EG020A-F	0.002 mg/L
Copper (Cu)	EG020A-T	0.003 mg/L
Iron (Fe)	EG094B-F	0.043 mg/L
Iron (Fe)	EG094B-T	0.361 mg/L
Lead (Pb)	EG020A-T	<0.001 mg/L
Magnesium (Mg)	ED093T-UL	12.7 mg/L
Manganese (Mn)	EG020A-F	0.120 mg/L
Manganese (Mn)	EG020A-T	0.221 mg/L
Molybdenum (Mo)	EG020A-T	0.003 mg/L
Nickel (Ni)	EG020A-T	0.003 mg/L
Potassium (K)	ED093T-UL	4.20 mg/L
Selenium (Se)	EG094B-T	0.0003 mg/L
Silver (Ag)	EG020B-T	<0.001 mg/L
Sodium (Na)	ED093T-UL	25.0 mg/L
Strontium (Sr)	EG020B-T	0.088 mg/L
Vanadium (V)	EG020A-F	<0.01 mg/L
Vanadium (V)	EG020A-T	<0.01 mg/L
Zinc (Zn)	EG020A-F	<0.005 mg/L
Zinc (Zn)	EG020A-T	0.011 mg/L

* NATA accreditation does not cover the performance of this service



Accreditation Number 1099
 Accredited for compliance with ISO/IEC 17025.

Authorised by Thanh Hoang Le
 Senior Chemist

Final - Report Number: 2334589
ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Allan Bowcher

Sample Number MPW021405
Date Sampled 19-Apr-2018 12:15
Date Received 19-Apr-2018
Date Completed 30-Apr-2018
Date Authorised 3-May-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Downstream Final Holding Pond

Source: MP **Customer Sampling Point:** 002 **Sampling Code:** LDP6 **Sample Frequency:** Month

Testing Laboratory: ALS Environmental

Anions	Test Method	Filtered
Fluoride (F)	ED009-X	0.178 mg/L
Chloride (Cl)	ED009-X	10.6 mg/L
Sulfate (SO4)	ED009-X	76.7 mg/L
Nitrate (N)	EK058G	0.16 mg/L
Nitrite (N)	EK057G	<0.01 mg/L
Nitrate and Nitrite (N)	EK059G	0.16 mg/L

Alkalinity	Test Method: ED037-P	Total
Total Alkalinity (CaCO3)		103 mg/L
Phenolphthalein Alkalinity (CaCO3)		<1 mg/L
Bicarbonate (CaCO3)		103 mg/L

Phosphate	Test Method: EK067G	Total
Total Phosphorus (P)		<0.01 mg/L

Physical	Test Method	Total
Total Suspended Solids @ 105°C	EA025H	7 mg/L
Total Dissolved Solids @ 180°C	EA015H	320 mg/L
Turbidity	EA045	7.5 NTU

TDS by method EA-015 may bias high for sample 28 due to the presence of fine particulate matter, which may pass through the prescribed GF/C paper.

Other	Test Method	Total
Nitrogen (N)	EK062G	0.5 mg/L
Ammonia (NH3-N)	EK055	<0.1 mg/L
Nitrogen (N) - Kjeldahl	EK061G	0.3 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1811331. Report Date: 27-Apr-2018

* NATA accreditation does not cover the performance of this service



Accreditation Number 1099
 Accredited for compliance with ISO/IEC 17025.

Authorised by Thanh Hoang Le
 Senior Chemist

Final - Report Number: 2334589
ENERGY AUSTRALIA C/- MT PIPER POWER
BOULDER ROAD
PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Allan Bowcher

Sample Number MPW021405
Date Sampled 19-Apr-2018 12:15
Date Received 19-Apr-2018
Date Completed 30-Apr-2018
Date Authorised 3-May-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Downstream Final Holding Pond

Source: MP

Customer Sampling Point: 002

Sampling Code: LDP6

Sample Frequency: Month

* NATA accreditation does not cover the performance of this service



Accreditation Number 1099
Accredited for compliance with ISO/IEC 17025.

A handwritten signature in black ink, appearing to be 'Thanh Hoang Le'.

Authorised by Thanh Hoang Le
Senior Chemist

Final - Report Number: 2357655
ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Nikki Tomlinson

Sample Number MPW021824
Date Sampled 17-May-2018 15:10
Date Received 18-May-2018
Date Completed 28-May-2018
Date Authorised 1-Jun-2018

Summary Report

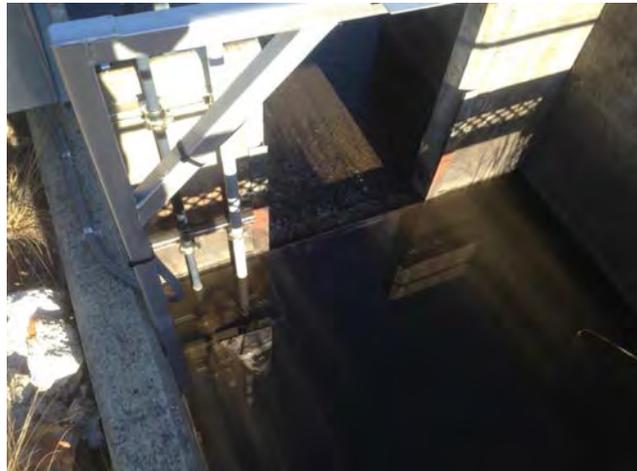
Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Downstream Final Holding Pond

Source: MP **Customer Sampling Point:** 002 **Sampling Code:** LDP6 **Sample Frequency:** Month

Testing Laboratory: Mount Piper
 Water

Field Analysis	Test Method	Total
pH	CA12125	7.67
Conductivity	CA12125	400 µS/cm
Dissolved Oxygen (O2)	*Analysis in Field	11.4 mg/L



Field Photo

Testing Laboratory: ALS Environmental
 Water

Cations - Metals	Test Method	Filtered	Total
Mercury (Hg)	EG035T-LL		<0.00004 mg/L
Aluminium (Al)	EG020A-F	0.02 mg/L	
Aluminium (Al)	EG020A-T		0.09 mg/L
Arsenic (As)	EG020A-T		<0.001 mg/L
Barium (Ba)	EG020A-T		0.026 mg/L
Beryllium (Be)	EG020A-T		<0.001 mg/L

* NATA accreditation does not cover the performance of this service



Accreditation Number 1099
 Accredited for compliance with ISO/IEC 17025.

Authorised by Thanh Hoang Le
 Senior Chemist

Final - Report Number: 2357655
ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Nikki Tomlinson

Sample Number MPW021824
Date Sampled 17-May-2018 15:10
Date Received 18-May-2018
Date Completed 28-May-2018
Date Authorised 1-Jun-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Downstream Final Holding Pond

Source: MP **Customer Sampling Point:** 002 **Sampling Code:** LDP6 **Sample Frequency:** Month

Testing Laboratory: ALS Environmental

Boron (B)	EG020A-T	0.10 mg/L
Cadmium (Cd)	EG020A-T	<0.0001 mg/L
Calcium (Ca)	ED093T-UL	28.8 mg/L
Chromium (Cr)	EG020A-T	<0.001 mg/L
Copper (Cu)	EG020A-F	0.002 mg/L
Copper (Cu)	EG020A-T	0.003 mg/L
Iron (Fe)	EG094B-F	0.044 mg/L
Iron (Fe)	EG094B-T	0.275 mg/L
Lead (Pb)	EG020A-T	<0.001 mg/L
Magnesium (Mg)	ED093T-UL	12.3 mg/L
Manganese (Mn)	EG020A-F	0.051 mg/L
Manganese (Mn)	EG020A-T	0.079 mg/L
Molybdenum (Mo)	EG020A-T	0.005 mg/L
Nickel (Ni)	EG020A-T	0.002 mg/L
Potassium (K)	ED093T-UL	5.26 mg/L
Selenium (Se)	EG094B-T	0.0004 mg/L
Silver (Ag)	EG020B-T	<0.001 mg/L
Sodium (Na)	ED093T-UL	26.8 mg/L
Strontium (Sr)	EG020B-T	0.086 mg/L
Vanadium (V)	EG020A-F	<0.01 mg/L
Vanadium (V)	EG020A-T	<0.01 mg/L
Zinc (Zn)	EG020A-F	0.005 mg/L
Zinc (Zn)	EG020A-T	0.009 mg/L

Anions	Test Method	Filtered
Fluoride (F)	ED009-X	0.122 mg/L
Chloride (Cl)	ED009-X	11.6 mg/L
Sulfate (SO4)	ED009-X	76.4 mg/L
Nitrate (N)	EK058G	0.14 mg/L
Nitrite (N)	EK057G	<0.01 mg/L
Nitrate and Nitrite (N)	EK059G	0.14 mg/L

* NATA accreditation does not cover the performance of this service



Accreditation Number 1099
 Accredited for compliance with ISO/IEC 17025.

Authorised by Thanh Hoang Le
 Senior Chemist

Final - Report Number: 2357655
ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Nikki Tomlinson

Sample Number MPW021824
Date Sampled 17-May-2018 15:10
Date Received 18-May-2018
Date Completed 28-May-2018
Date Authorised 1-Jun-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Downstream Final Holding Pond

Source: MP **Customer Sampling Point:** 002 **Sampling Code:** LDP6 **Sample Frequency:** Month

Testing Laboratory: ALS Environmental

Alkalinity	Test Method: ED037-P	Total
Total Alkalinity (CaCO3)		110 mg/L
Phenolphthalein Alkalinity (CaCO3)		<1 mg/L
Bicarbonate (CaCO3)		110 mg/L

Phosphate	Test Method: EK067G	Total
Total Phosphorus (P)		0.02 mg/L

Physical	Test Method	Total
Total Suspended Solids @ 105°C	EA025H	<5 mg/L
Total Dissolved Solids @ 180°C	EA015H	232 mg/L
Turbidity	EA045	8.0 NTU

Other	Test Method	Total
Nitrogen (N)	EK062G	0.6 mg/L
Ammonia (NH3-N)	EK055	0.1 mg/L
Nitrogen (N) - Kjeldahl	EK061G	0.5 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1814363. Report Date: 25-May-2018

* NATA accreditation does not cover the performance of this service



Accreditation Number 1099
 Accredited for compliance with ISO/IEC 17025.

Authorised by Thanh Hoang Le
 Senior Chemist

Final - Report Number: 2382754
ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Nikki Tomlinson

Sample Number MPW022287
Date Sampled 20-Jun-2018 14:45
Date Received 21-Jun-2018
Date Completed 2-Jul-2018
Date Authorised 3-Jul-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Downstream Final Holding Pond

Source: MP **Customer Sampling Point:** 002 **Sampling Code:** LDP6 **Sample Frequency:** Month

Testing Laboratory: Mount Piper
Water

Field Analysis	Test Method	Total
pH	CA12125	7.62
Conductivity	CA12125	345 µS/cm
Dissolved Oxygen (O2)	*Analysis in Field	12.6 mg/L



Field Photo

Testing Laboratory: ALS Environmental
Water

Cations - Metals	Test Method	Filtered	Total
Mercury (Hg)	EG035T-LL		<0.00004 mg/L
Aluminium (Al)	EG020A-F	0.01 mg/L	
Aluminium (Al)	EG020A-T		0.13 mg/L
Arsenic (As)	EG020A-T		<0.001 mg/L
Barium (Ba)	EG020A-T		0.025 mg/L
Beryllium (Be)	EG020A-T		<0.001 mg/L

* NATA accreditation does not cover the performance of this service



Accreditation Number 1099
 Accredited for compliance with ISO/IEC 17025.

Authorised by Thanh Hoang Le
 Senior Chemist

Final - Report Number: 2382754
ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Nikki Tomlinson

Sample Number MPW022287
Date Sampled 20-Jun-2018 14:45
Date Received 21-Jun-2018
Date Completed 2-Jul-2018
Date Authorised 3-Jul-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Downstream Final Holding Pond

Source: MP **Customer Sampling Point:** 002 **Sampling Code:** LDP6 **Sample Frequency:** Month

Testing Laboratory: ALS Environmental

Boron (B)	EG020A-T	<0.05 mg/L
Cadmium (Cd)	EG020A-T	<0.0001 mg/L
Calcium (Ca)	ED093T-UL	27.3 mg/L
Chromium (Cr)	EG020A-T	<0.001 mg/L
Copper (Cu)	EG020A-F	0.003 mg/L
Copper (Cu)	EG020A-T	0.005 mg/L
Iron (Fe)	EG094B-F	0.045 mg/L
Iron (Fe)	EG094B-T	0.300 mg/L
Lead (Pb)	EG020A-T	<0.001 mg/L
Magnesium (Mg)	ED093T-UL	11.6 mg/L
Manganese (Mn)	EG020A-F	0.040 mg/L
Manganese (Mn)	EG020A-T	0.175 mg/L
Molybdenum (Mo)	EG020A-T	0.002 mg/L
Nickel (Ni)	EG020A-T	0.004 mg/L
Potassium (K)	ED093T-UL	5.00 mg/L
Selenium (Se)	EG094B-T	0.0004 mg/L
Silver (Ag)	EG020B-T	<0.001 mg/L
Sodium (Na)	ED093T-UL	25.1 mg/L
Strontium (Sr)	EG020B-T	0.079 mg/L
Vanadium (V)	EG020A-F	<0.01 mg/L
Vanadium (V)	EG020A-T	<0.01 mg/L
Zinc (Zn)	EG020A-F	<0.005 mg/L
Zinc (Zn)	EG020A-T	0.018 mg/L

Anions	Test Method	Filtered
Fluoride (F)	ED009-X	0.071 mg/L
Chloride (Cl)	ED009-X	11.3 mg/L
Sulfate (SO4)	ED009-X	70.1 mg/L
Nitrate (N)	EK058G	0.14 mg/L
Nitrite (N)	EK057G	0.02 mg/L
Nitrate and Nitrite (N)	EK059G	0.16 mg/L

* NATA accreditation does not cover the performance of this service



Accreditation Number 1099
 Accredited for compliance with ISO/IEC 17025.

Authorised by Thanh Hoang Le
 Senior Chemist

Final - Report Number: 2382754
ENERGY AUSTRALIA C/- MT PIPER POWER
 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Nikki Tomlinson

Sample Number MPW022287
Date Sampled 20-Jun-2018 14:45
Date Received 21-Jun-2018
Date Completed 2-Jul-2018
Date Authorised 3-Jul-2018

Summary Report

Sampling completed according to procedure A-2.18 Sampling of Water and Waste Water:

Sampling point: Downstream Final Holding Pond

Source: MP **Customer Sampling Point:** 002 **Sampling Code:** LDP6 **Sample Frequency:** Month

Testing Laboratory: ALS Environmental

Alkalinity	Test Method: ED037-P	Total
Total Alkalinity (CaCO3)		92 mg/L
Phenolphthalein Alkalinity (CaCO3)		<1 mg/L
Bicarbonate (CaCO3)		92 mg/L

Phosphate	Test Method: EK067G	Total
Total Phosphorus (P)		<0.01 mg/L

Physical	Test Method	Total
Total Suspended Solids @ 105°C	EA025H	<5 mg/L
Total Dissolved Solids @ 180°C	EA015H	248 mg/L
Turbidity	EA045	12.2 NTU

Other	Test Method	Total
Nitrogen (N)	EK062G	0.4 mg/L
Ammonia (NH3-N)	EK055	<0.1 mg/L
Nitrogen (N) - Kjeldahl	EK061G	0.2 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1818245. Report Date: 29-Jun-2018

* NATA accreditation does not cover the performance of this service



Accreditation Number 1099
 Accredited for compliance with ISO/IEC 17025.

Authorised by Thanh Hoang Le
 Senior Chemist

Ecolab/Nalco Customer Analytical Services Laboratory

Quality assurance/quality control program

The laboratory's Quality assurance/quality control program ensures that sampling activities and analytical data is accurate, reliable and acceptable.

The Quality assurance/quality control program consists of both internal and external measures.

Internal

- Laboratory instrumentation and field equipment are calibrated at the correct intervals, as prescribed in the relevant NATA 'General equipment table'.
- Regular preventative maintenance is carried out on all key laboratory instrumentation and field equipment.
- Trip blanks (where appropriate) are supplied to monitor contamination.
- Certified reference materials are analysed routinely.
- Duplicate analysis is conducted to check precision.
- Spike analysis is conducted to check analyte recovery
- Laboratory blanks are analysed to monitor contamination.
- Quality control checks on media are performed.
- All records and subsequent reports are systematically checked.
- Quality control charts are used to statistically monitor trends in data.
- The laboratory is regularly internally audited.

External

- Ecolab Customer Analytical Services participates in regular chemical and microbiological external proficiency testing programs as well as NATA audits as per their surveillance program.

Sampling and data collection

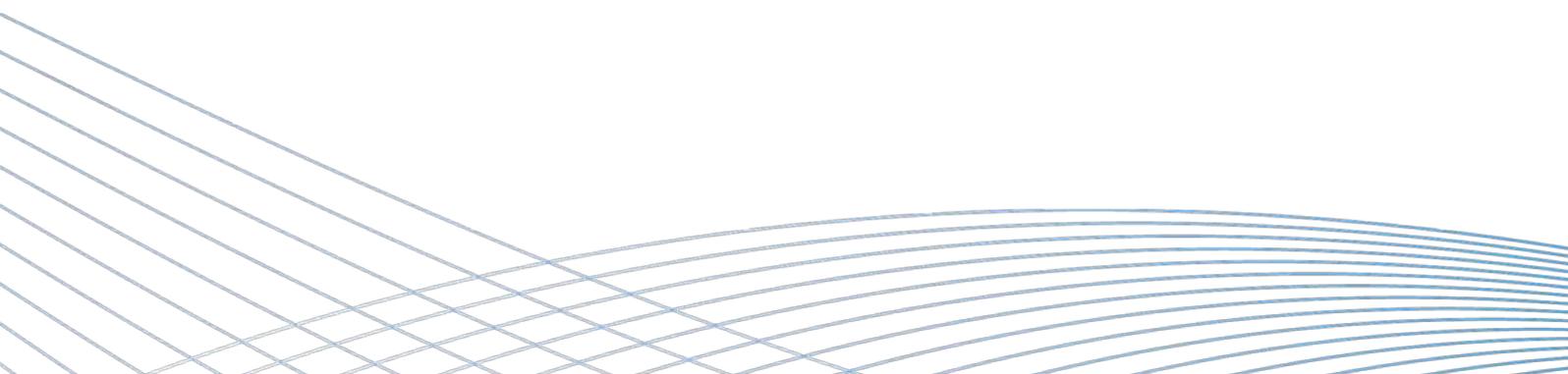
- All sampling is performed by trained personnel in accordance with procedure A-2.18 and relevant parts of Australian Standard 5667, for which NATA accreditation is held.
- Site measurements (DO, pH, turbidity, temperature and conductivity) and sampling observations (water depth) are recorded and reported in accordance with procedure CA12125.

Sample bottles

- Pre-labeled sample containers are used for routine sampling and testing.
- The sample bottles are prepared so that samples are preserved in accordance with Australian Standard 5667.1:1998 and Standard Methods for the Examination of Water and Wastewater, 22nd Edition (APHA).

Delivery of samples

- Eskies and freezer packs are used to maintain the integrity of the samples during transport from the sampling sites to our Customer Analytical Services Laboratory.



Ecolab/Nalco Customer Analytical Services Laboratory

Quality assurance/quality control program

The laboratory's Quality assurance/quality control program ensures that sampling activities and analytical data is accurate, reliable and acceptable.

The Quality assurance/quality control program consists of both internal and external measures.

Internal

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Sampling and data collection

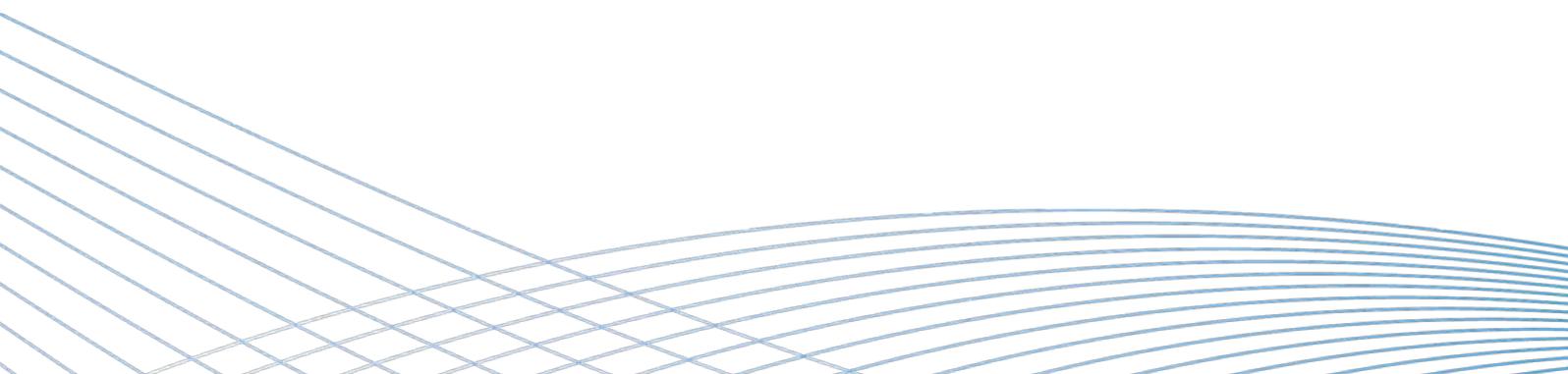
- All sampling is performed by trained personnel in accordance with procedure A-2.18 and relevant parts of Australian Standard 5667, for which NATA accreditation is held.
- Site measurements (DO, pH, turbidity, temperature and conductivity) and sampling observations (water depth) are recorded and reported in accordance with procedure CA12125.

Sample bottles

- Pre-labeled sample containers are used for routine sampling and testing.
- The sample bottles are prepared so that samples are preserved in accordance with Australian Standard 5667.1:1998 and Standard Methods for the Examination of Water and Wastewater, 22nd Edition (APHA).

Delivery of samples

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across the following
countries and territories
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India	Spain
Indonesia	Sweden
Ireland	Taiwan
Italy	Thailand
Japan	United Arab Emirates
Kazakhstan	UK
Malaysia	US
Mexico	Vietnam
The Netherlands	

ERM's Melbourne Office

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Melbourne, Victoria 3000
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F: +61 3 9696 8022

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