

Mt. Piper Brine Conditioned Fly Ash Co-placement Project

**Annual Environmental
Monitoring Report 2017/18**

EnergyAustralia NSW Pty Ltd

September 2018

Ref. 0470260

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Document Control:

0470260 Mt Piper Conditioned Fly Ash Co-placement Project

Version	Revision	Author	ERM Approval to Issue	
			Name	Date
Final	01	Gillian Williams	Tamie Weaver	18 September 2018
Final	02	Gillian Williams	Tamie Weaver	25 September 2018
Final	03	Gillian Williams	Tamie Weaver	26 September 2018

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Annual Environmental Monitoring Report 2017/18

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EnergyAustralia NSW Pty Ltd

September 2018

Reference: 0470260/01

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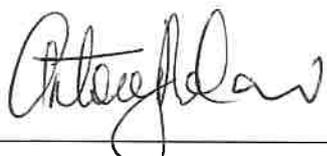
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Name of Operation	Mt Piper Brine in Ash Co-Placement
Name of Operator	EnergyAustralia NSW
Development Consent / Project Approval #	S90/01696
Environment Protection Licence (EPL) #	13007
Water Access Licence (WAL) #	27428
Water Supply and Water Use Approval #	10CA117220
Annual Environmental Monitoring Report (AEMR) Start Date	1 st July 2017
Annual Environmental Monitoring Report (AEMR) End Date	30 th June 2018
<p>I, Antony Nolan, certify that this report is a true and accurate record of the compliance status of Mt Piper Brine in Ash Co-Placement Project for the period 1st July 2017 to 30th June 2018 and that I am authorised to make this statement on behalf of EnergyAustralia NSW.</p> <p>Note:</p> <p>a) The Annual Review is an 'environmental audit' for the purposes of section 122B (2) of the Environmental Planning and Assessment Act 1979. Section 122E provides that a person must not include false or misleading information (or provide information for inclusion in) an audit report produced to the Minister in connection with an environmental audit if the person knows that the information is false or misleading in a material respect. The maximum penalty is, in the case of a corporation, \$1 million and for an individual, \$250,000.</p> <p>b) The Crimes Act 1900 contains other offences relating to false and misleading information: section 192G (Intention to defraud by false or misleading statement - maximum penalty 5 years' imprisonment); sections 307A, 307B and 307C (False or misleading applications/information/documents - maximum penalty 2 years' imprisonment or \$22,000, or both).</p>	
Name of authorised reporting officer	Antony Nolan
Title of authorised reporting officer	A/NSW Environment Leader
Signature of authorised reporting officer	
Date	26 September 2018

STATEMENT OF COMPLIANCE

EnergyAustralia (EA) owns and operates Mt Piper Brine in Ash Co-Placement Project Area. The Mt Piper Brine in Ash Co-Placement Project Area is located approximately 18 kilometres north-west of the city of Lithgow and is situated adjacent to the Lamberts North Ash Repository and approximately 200 m to the east of the Mt Piper Power Station.

Built over two stages in 1992 and 1993, the Mt Piper Power Station comprises two 700 MW coal-fired steam turbine generators that have the capacity to meet the energy needs of approximately 1.18 million homes in New South Wales every year. Mt Piper Power Station is fuelled using black coal sourced from mines in the local area. The power station's furnaces are designed to utilise the characteristics of the locally available coal to improve its efficiency and help keep the power station's emissions below statutory requirements. Ash is produced during coal combustion by the transformation of the non-combustible mineral matter present in coal.

Brine is produced through the use of a brine concentrator, which treats the recycled water used at the Power Station for cooling purposes. In this way, discharge of the potentially high salinity cooling water into local waterways is prevented. The co-placement of brine in ash was granted Project Approval by the NSW Department of Planning and Environment (DPE) on 23 March 2008.

A summary of the Mt Piper Brine in Ash Co-Placement Project Area compliance achieved during the reporting period, in relation to surface and groundwater quality, is provided in **Table S1**, in accordance with the format presented in the NSW Government's *Post-approval requirements for State Significant Mining Developments Annual Review Guideline* (NSW Government 2015). It is noted that not all aspects of the *Post-approval requirements for State Significant Mining Developments Annual Review Guideline* are relevant to the Brine in Ash Co-Placement Project as the Conditions of Approval for the project focus solely on Surface and Groundwater monitoring. We have presented information where relevant in the following sections.

Table S1 *Statement of Compliance (to 30 June 2018)*

Compliance with Conditions of the relevant approval(s)	
Project Approval S90/01696	No
Environment Protection Licence (EPL) #13007	Yes
Water Access License (WAL) #27428	Yes

A summary of the site's non-compliances is presented in *Table S2* below, in accordance with the format specified by the NSW Government's *Post-approval requirements for State Significant Mining Developments Annual Review Guideline* (NSW Government 2015). The key to the non-compliances, as derived from NSW Government (2015), is presented in *Table S3* below.

Table S2 Summary of Non-Compliances (to 30 June 2018)

Relevant Approval	Condition #	Condition Description (Summary)	Compliance Status ¹	Comment	Annual Review Report Reference
S09/01696	45b	Some exceedances of water quality criteria	Low	During the 2017/18 monitoring period, concentrations of a range of constituents in groundwater from monitoring bores adjacent to and downgradient of the ash repository were above the groundwater quality criteria, triggering further assessment.	Section 7.6 (Groundwater)
				For surface waters, intermittent exceedances of surface water quality criteria have been identified down gradient of the ash repository (at WX22), also triggering further assessment.	Section 7.4 (Surface Water)

1. Refer to *Table S3 Key to Non-Compliance Status (from NSW Government, 2015)* below for corresponding definitions.

Table S3

Key to Non-Compliance Status (from NSW Government, 2015)

Risk Level	Colour Code	Description
High	Non-compliant	Non-compliance with potential for significant environmental consequences, regardless of the likelihood of occurrence
Medium	Non-compliant	Non-compliance with: <ul style="list-style-type: none"> • potential for serious environmental consequences, but is unlikely to occur; or • potential for moderate environmental consequences, but is likely to occur
Low	Non-compliant	Non-compliance with: <ul style="list-style-type: none"> • potential for moderate environmental consequences, but is unlikely to occur; or • potential for low environmental consequences, but is likely to occur
Administrative non-compliance	Non-compliant	Only to be applied where the non-compliance does not result in any risk of environmental harm (e.g. submitting a report to government later than required under approval conditions)

A generally acceptable standard of environmental performance has been achieved during the reporting period as evidenced by the following:

- There were no surface water discharge events during the reporting period; and
- There were no incidents that caused or threatened material harm to the environment.

It is noted that non-compliances were recorded during the reporting period with respect surface water and groundwater. These are outlined further below.

In groundwater, elevated concentrations of various constituents above the water quality criteria (Environmental Goals), that are not considered to be the result of influences from background sources, were identified in the following areas:

- Adjacent to the ash repository, with respect to elevated concentrations of sulphate, chloride, boron, nickel and zinc and potentially cadmium and lead);
- Down gradient of the ash repository with respect to elevated concentrations of boron and nickel in groundwater from D1 and D19, and in lead in groundwater from D19; and
- Towards Neubecks Creek, with respect to elevated concentrations of EC, TDS, sulphate and boron in groundwater from D9.

In the surface waters of Neubecks Creek downgradient of the repository at WX22 exceedances of the water quality criteria (Environmental Goals) were identified for TDS, EC and sulphate on one occasion (February 2018) and for nickel on seven occasions. Further discussion of the non-compliances identified is presented in *Section 7*.

Based on these results, EnergyAustralia is undertaking further assessment and investigation of groundwater and surface water in the vicinity of the Mt Piper Ash Repository.

1. INTRODUCTION

Environmental Resources Management Pty Ltd (ERM) was engaged by EnergyAustralia NSW (“EA”) to prepare an Annual Environmental Monitoring Report (AEMR) for the Mount Piper Brine Conditioned Fly Ash Co-Placement Project at the Mount Piper Power Station facility located at 350 Boulder Road, Portland, New South Wales (the Site). Refer to *Figure 1* showing the location of the site.

Results from the monitoring program are used by EA to demonstrate compliance, and reports are disseminated to key stakeholders that include WaterNSW (formerly the NSW Sydney Catchment Authority (SCA)), NSW Environment Protection Authority (EPA), Lithgow City Council (LCC) and NSW Department of Planning and Environment (DPE).

This Mt Piper Brine in Ash Co-Placement AEMR has been prepared in accordance with Schedule 2, Conditions 44 and 45 of the Project Approval S90/01696. The AEMR has also been prepared in general accordance with the NSW Government’s *Post-approval requirements for State Significant Mining Developments Annual Review Guideline* dated October 2015.

It is noted that a number of items presented in the abovementioned guideline are not applicable to the Brine in Ash Co-Placement Project as the Conditions of Approval for the Project solely relate to surface water and groundwater monitoring, whilst the guideline relates to mining developments. Notwithstanding this, the guideline format has been generally used to inform the content of this AEMR where applicable.

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

1.1 PROJECT BACKGROUND

EnergyAustralia (EA) owns and operates Mt Piper Brine in Ash Co-Placement Project Area in accordance with Project Approval S90/01696. The Mt Piper Brine in Ash Co-Placement Project Area is located approximately 18 kilometres north-west of the city of Lithgow and is situated adjacent to the Lamberts North Ash Repository and approximately 200 m to the east of the Mt Piper Power Station. Refer to *Figure 2* for a plan showing the site setting.

In 1999, a Statement of Environmental Effects (SEE) was prepared to commence placement of water and brine conditioned ash in the Mt Piper Ash repository, as detailed in the report titled *Mount Piper Power Station, Brine Conditions Flyash Co-placement: Statement of Environmental Effects* (Pacific Power International, 1999). To facilitate a consent to increase to the power station's power generation capacity in June 2006, and therefore an increase in the associated ash generation, expansion of the Mt Piper ash repository was proposed in 2007, with a further statement of environmental effects undertaken and detailed in the report titled *Statement of Environmental Effects, Mount Piper Power Station, Extension of Brine Conditions Ash Placement Area* (Connell Wagner 2007). The expansion of the facility increased the footprint of the ash repository, further east of the previously existing ash repository (initial stage referred to as stage 1), with no changes to the final form elevation proposed. NSW Department of Planning (2008) granted a modification to Conditions of Approval S90/01696 for the expansion of the ash repository in 2008.

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 EA and augmented further based on our understanding of the project requirements:

- Review of surface water (2 sites measured weekly) and groundwater (10 sites measured monthly) quality and trace metal data at Mt Piper Power Station Brine Co-placement area for the reporting period;
- Review of the monthly changes including long-term trends in surface and groundwater concentrations;
- Assessment of the EA NSW groundwater data for the bore MPGM4/D19 for possible interaction with the Neubecks Creek water quality;
- Preparation of this report on potential effects on receiving surface water and groundwater, including:
 - Comparison of results with the approved surface water and groundwater trigger value environmental goals,
 - Comparison of results from monitoring with the predictions in the Environmental Assessment, Water Management & Monitoring Plan,
 - Trend assessment (comparison between years),
 - Summary and discussion of all available results and analyses from the Water Monitoring Programs associated with the Mt Piper Brine Co-Placement Area,

- Discussion of the aims of the Water Management Plan and to what degree these aims have been attained in the context of the results and analyses of the Water Monitoring Programs, and
- Presentation of actions taken, or intended to be taken, if any, to mitigate any adverse environmental impacts, and to meet the reasonable requirements of the relevant government authorities, i.e. the report will contain a section which reports on whether the recommendations from the previous report have been completed, and how and when they were addressed.

1.3

DOCUMENTATION REVIEWED

A review of information provided below has been undertaken as part of this Annual Environmental Monitoring Report and have been relied upon:

- Aurecon, September 2017. *Mt Piper Brine Conditioned Fly Ash Co-Placement Environmental Monitoring Report, Annual Environmental Monitoring Report 2016/17, Revision 3, 25 September 2017;*
- Connell Wagner, 21 June 2007. *Statement of Environmental Effects, Mount Piper Power Station, Extension of Brine Conditions Ash Placement Area.* Prepared by Environmental Services, Pacific Power International for Delta Electricity;
- Lend Lease Infrastructure, 2018a. Information regarding data for non-OEMP monitoring sites (other than SW3, B5 and NA5), brine composition data, amount of brine used for ash conditioning, height of groundwater bores, most recent ash placement survey, supplied via EnergyAustralia NSW, 1 August 2018;
- Lend Lease Infrastructure, 2018b. Information regarding ash repository details, forecast site operations, environmental performance, site rehabilitation status supplied via EnergyAustralia NSW, 13 August 2018;
- CEH Survey, 2018. *Lend Lease Services Pty Ltd, Mount Piper – Ash Placement, Survey: 21st June 2018.* Drawing No: MPA0618 (as surveyed), dated 21/06/18 (*Annex D*);
- Connell Wagner, 21 June 2007. *Statement of Environmental Effects, Mount Piper Power Station, Extension of Brine Conditions Ash Placement Area.* Prepared by Environmental Services, Pacific Power International for Delta Electricity;
- Connell Wagner, 26 September 2008, *Mt Piper Power Station Brine Conditions Flyash Co-placement Extension Water Management and Monitoring Plan, Delta Electricity Western, Revision 3 (Annex B);*

- Ecolab/Nalco Quality Assurance/Quality Control Program (Annex K);
- Environment Protection Licence (EPL) No. 13007 (last amended 20 December 2017) (Annex B);
- Laboratory data supplied by EnergyAustralia NSW for the reporting period (Annex K);
- Local climate data from Lithgow (Coerwull) Weather Station No: 063226 obtained from the Bureau of Meteorology (Annex C).
- NSW Department of Planning (2006) Conditions of Approval S90/01696 (Annex B);
- NSW Department of Primary Industries, Office of Water, *Statement of Conditions, Water Access Licence (WAL) No. 27428*, Reference Number 10AL116411. Statement of Conditions (as at 28 February 2018) (Annex B);
- NSW Department of Primary Industries, Office of Water, *Statement of Approval, Approval Number. 10CA11220* (as at 28 February 2018) (Annex B);
- Pacific Power International, August 1999. *Mount Piper Power Station, Brine Conditions Flyash Co-placement: Statement of Environmental Effects*. Prepared by Environmental Services, Pacific Power International for Delta Electricity;
- Pacific Power International, Environmental Services, August, 2000, *Mt Piper Power Station Brine Conditioned Flyash Co-placement - Water Management & Monitoring Plan*.

In addition to the above it is acknowledged that the information presented in Sections 1 to 6 and 8 to 10 of this report was prepared with input by EA NSW.

1.4 CONTACTS

The contact details for the key personnel responsible for the environmental management of the Mt Piper Brine in Ash Co-Placement Area are listed in Table 1 below.

Table 1 *Contact Details*

Contact Person	Organisation	Position	Telephone
Mr Ben Eastwood	EnergyAustralia NSW	NSW Environment Leader	(02) 6354 8111

APPROVALS

The operation of the Mt Piper Brine in Ash Co-Placement Project must comply with the statutory requirements outlined in *Table 2* below.

Table 2 *Summary of Approvals – Mt Piper Ash Repository*

Approval/Lease/Licence	Issue Date	Expiry Date	Details/Comments
Project Approval S09/01696	29 July 2005 (Renewed 26 November 2008)	26 November 2013	Granted by Minister for DoP, Section 75J of the EP&A Act.
Environment Protection Licence (EPL) No. 13007	20 December 2017	20 December 2022 (Review Date)	EPL held by EEA NSW for Mt Piper Power Station
Water Access Licence No. 27428	01 July 2001	-	Granted by DPI Water, under the <i>Water Management Act 2000</i>
Water Supply Work and Water Use Approval 10CA117220	01 July 2001	30 June 2031	Granted by DPI Water, under the <i>Water Management Act 2000</i>

2.1

CONDITIONS OF APPROVAL

The surface water and groundwater monitoring programs are required under conditions 44 and 45 of the NSW DPE (2006) Conditions of Approval document. Refer to *Annex B* for a copy of the conditions of approval. The Water Management and Monitoring Plan (Connell Wagner 2008) sets out the surface water and groundwater monitoring requirements. A review of the Water Management and Monitoring Plan will be performed following the completion of the independent assessment, which is currently in progress and will be reported separately to this AEMR.

2.2

ENVIRONMENT PROTECTION LICENCE

The Environment Protection Licence (EPL) primarily relates to the activities undertaken at the Mt Piper Power Station Facility, with the Scheduled Activity under the licence denoted as “Electricity Generation”. The licence includes the following condition which is relevant to the surface water and groundwater quality assessment:

“P1.2. The following points referred to in the table are identified in this licence for the purposes of the monitoring and/or the setting of limits for discharges of pollutants to water from the point.

Land and Water

<i>EPA Identification No.</i>	<i>Type of Monitoring Point</i>	<i>Type of Discharge Point</i>	<i>Location Description</i>
1	<i>Discharge to waters. Discharge quality and total volume monitoring.</i>	<i>Discharge to waters. Discharge quality and total volume monitoring.</i>	<i>Final holding pond monitoring station to Neubecks Creek, identified as "EPA ID 1" on a map provided to the EPA in a letter dated 12 December 2008.</i>

Refer to *Annex B* for a copy of the EPL for the site.

2.3 WATER ACCESS LICENCE

It is noted that the Water Access Licence and associated the Water Supply Work and Water Use Approval relate to the access of water for the operations at the Power Station facility and therefore are not directly relevant to the ash repository.

Refer to *Annex B* for copies of the Water Access Licence and Water Supply Work and Water Use Approval.

2.4 CHANGES TO APPROVALS DURING 2017/18

During the 2017/18 reporting period, EA NSW have advised that the Environmental Protection Licence was modified to enable the receipt of virgin excavated natural material and excavated natural material from within the Bathurst and Lithgow local government areas only, or from other locations in New South Wales with approval from the relevant consent authority.

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

All ash placement operations for Mt Piper Power Station, including the Brine in Ash Co-Placement area, 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 provider for EA NSW in all aspects of ash and dust management. The Mt Piper Brine in Ash Co-Placement Area is currently managed under an 'operate and maintain' contract with EA NSW.

A summary of operations at the Mt Piper Brine in Ash Co-Placement area for the 2017/18 reporting period is presented in *Table 3*.

Table 3 *Mt Piper – Operations Summary*

Activity	Previous Reporting Period 2016/17	This Reporting Period 2017/18	Next reporting period 2018/19 ¹
Ash delivered to site (T)	602,506	642,816	622,661
Brine co-placed (ML)	31.80	28.405	30.10
Total ash produced at Mt Piper (T)	814,208	843,459	828,834
Total Ash footprint (ha) ²	63.1	63.1	63.1
Area of repository capped (ha)	33.5	38.5	38.5

- Figures are based on average of previous years data as advised by EnergyAustralia NSW.
- 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

During the next reporting period for 2018/19 the following activities are proposed:

- Update of the current brine water co-disposal program to incorporate more brine product generated from the commissioning of the Water Treatment Plant. The increased intensity of brine products to be co-disposed with the fly ash will potentially reduce the available capacity for ash co-placement within the current approval area in a shorter timeframe than originally anticipated;
- Ash placement within the brine co-placement area will likely reach an average RL 969 m AHD. As part of the increase in height, more surface water piping and infrastructure to efficiently convey rainfall runoff to the two newly constructed 20 ML ponds at RL 940 m will be implemented; and
- The surface water management plan will be revised for all rainfall runoff collection to the two newly commissioned ponds.

3.1.1

Ash Placement and Geometry

The Mt Piper ash repository is located within the former Western Main open-cut mine void in the eastern area of the Mt Piper Power Station facility, in accordance with 1990 development consent and the 1989 Environmental Impact Statement (EIS) (Connell Wagner 2007). Connell Wagner (2007) noted that prior to the placement of ash in the mine void, the bottom of the mine void was covered with mine spoil to a minimum level of RL 908 mAHD in order to facilitate groundwater flow from the adjacent areas of the unmined Lithgow coal seam aquifer and mine goaf areas surrounding the Western Main open cut mine void.

Ash produced from the power station operations has been conditioned using either freshwater or brine since 1999 (Connell Wagner 2007 and PPI 1999). The conditioning of the ash occurs at the Mt Piper Power Station facility, and is transferred via trucks to ash repository for disposal (Connell Wagner 2008). The ash repository has approval for the placement of ash up to a RL of 980 m AHD, with the upper surface of the ash to be finished with 1 m of normal fly ash, following the contours of the fly ash placement plan approved by the Lithgow City Council in 1990 (Connell Wagner 2007). Under the Statement of Environmental Effects produced in 1999 and 2007 for the site, the brine conditioned ash is only approved for placement above an RL of 946 mAHD (Connell Wagner 2007), with water conditioned ash placed below this RL. Refer to *Figures 3.1 and 3.2* below from Connell Wagner (2007) which shows the approved ash repository geometry.

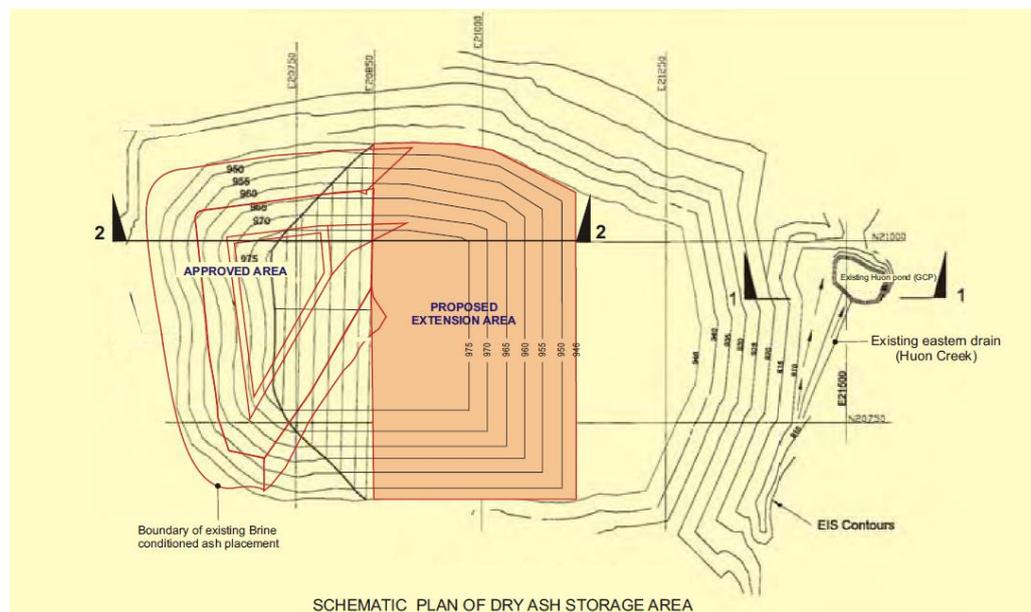


Figure 3.1 Mt Piper Ash Repository – Plan layout (from Connell Wagner 2007).

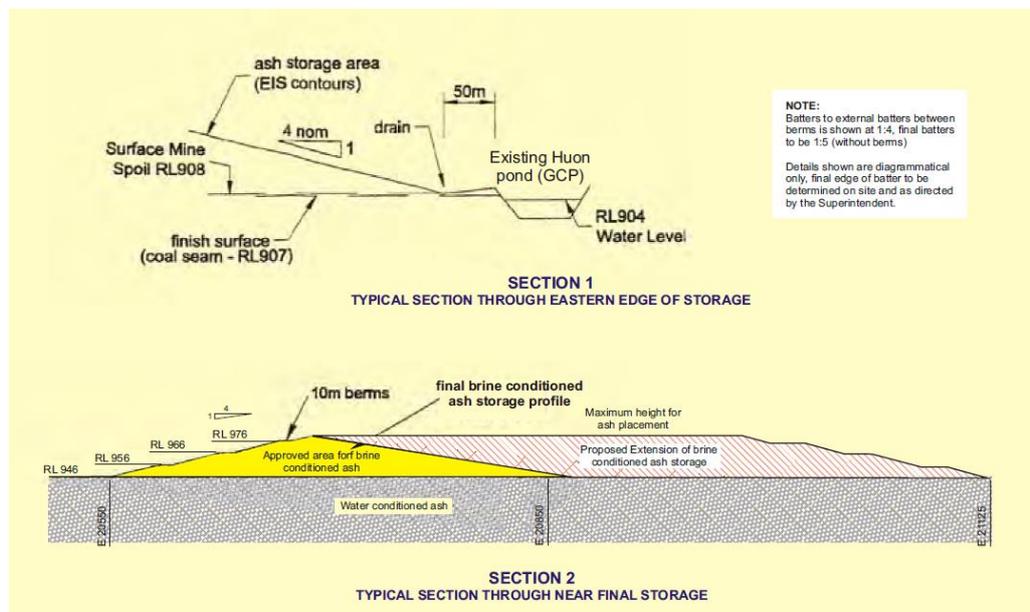


Figure 3.2 Mt Piper Ash Repository cross section through ash repository (from Connell Wagner 2007)

Brine and water conditioned ash continued to be deposited across Stages 1 and 2 of the ash repository during the 2017/18 reporting period, refer to *Figure 8* for a plan showing the areas where brine and fresh water conditioned ash were placed. Based on information supplied by EnergyAustralia NSW, a total of 642,816 Tonnes of ash was placed in the ash repository, with a total of 28.405 ML of brine used for ash conditioning. Refer to *Table 3* for the volumes of ash and *Table 4* for the volumes of brine utilised for the previous reporting period.

The ash repository elevations reported on 16 December 2016 were 965 m AHD to 967 m AHD in Stage I and between 944 and 960 m AHD in Stage II (Aurecon 2017). The current elevation of the top of the ash repository area as at 21 June 2018 was approximately 970 m AHD (CEH Survey 2018). Refer to *Annex D* for a copy of the latest ash repository survey plan for the 2017/18 reporting period.

Brine Volumes

Brine conditioning of fly ash mainly occurred between November 2017 and April 2018 with a total volume of 28.404 ML of brine used for conditioning across the reporting period. *Table 4* below summarises the volume of brine used for fly ash conditioning during each month of the reporting period.

Table 4 *Volume of Brine used for Conditioning per Month 2017/2018*

Month	Volume of Brine (ML)
October 2017	0.11
November 2017	6.046
December 2017	3.346
January 2018	0.001
February 2018	0.002
March 2018	6.112
April 2018	11.759
May 2018	1.028
Total	28.404

Brine composition data has been used to inform the surface water and groundwater results discussions below.

3.1.2 *Brine Composition*

Brine is the salty residue which is concentrated from the unwanted salts present in the cooling waters used at the site. Monitoring of the brine over time has shown that the concentration of salts in the brine increased between 1999 and 2003-2006 but decreased between 2003-2006 and 2017 as shown in *Table 1* in *Annex E*. The decreased salinity of the brine is attributable mainly to a number of the brine constituents as described below:

- Chloride concentration in the brine has decreased from an average of 23,889 mg/L in 2003-2006 to 10,390 mg/L in 2017 (44% decrease);
- Fluoride concentrations in the brine have decreased significantly from an average of average of 125.656 mg/L in 2003-2006 to 64.65 mg/L in 2017 (51% decrease);
- Boron concentrations in the brine have decreased from an average of 115,000 ug/L in 2003-2006 to 35,800 ug/L in 2017 (31% decrease);
- Manganese concentrations in the brine have decreased from an average of 34,000 ug/L in 2003-2006 to 7,210 ug/L in 2017 (21% decrease)

ACTIONS REQUIRED FROM PREVIOUS ANNUAL REVIEW

EnergyAustralia NSW have advised that the DPE were generally satisfied that the 2016-17 Mt Piper Brine in Ash AEMR adequately addressed the relevant requirements of the Project Approval, based on letter correspondence dated 29 September 2017. The letter correspondence also outlined three actions requested by the DPE (2017) regarding the AEMR, as detailed in *Table 5* below.

Table 5 *Actions Requested by DPE - 29 September 2017*

Item	Action required from 2016-17 AEMR	Requested by	Action taken	Where discussed in AEMR
1	Independent Assessment - A copy of the Independent assessment report be provided to the DP&E once completed.	DP&E	The Independent Assessment is currently being performed. Completed progress reports have been provided to DP&E. DP&E are being consulted with other agencies during the study.	Section 5
2	Water Management Plan - The Water Management Plan is to be updated and submitted to the DP&E for review within three months of the submission of the Independent Assessment Report.	DP&E	Awaiting completion of the Independent Assessment.	Section 5
3	Upload of report - the AEMR is to be uploaded to the EnergyAustralia website within one month of the date of the letter.	DP&E	EnergyAustralia have developed a project specific website for the Mt Piper Brine in Ash Repository. Last year's AEMR has been uploaded onto the website as required.	NA

ENVIRONMENTAL PERFORMANCE

Under the *Post-approval requirements for State Significant Mining Developments Annual Review Guideline*, EnergyAustralia NSW are required to report on the environmental outcomes achieved during the 2017/18 reporting period.

During the 2017/18 reporting period, the following environmental management measures were implemented:

- Installation and commissioning of two 20 ML lined dams to the south of the ash repository. The dams have been constructed in accordance with the Project Approval and approved water management plan;
- Installation of an additional water bore in the ash repository to remove excess water that may have accumulated in the subsurface ash; and
- Improvements to sprinkler management, in which a seasonally based irrigation target has been implemented. The mechanism for this is quality managed through the Inspection and Test Plan to ensure installation of the quality objectives. Thus, water for dust suppression is used more effectively and preserves the integrity of the ash surface.

An Independent Assessment of groundwater monitoring data was commissioned by EA NSW in 2017, and is currently ongoing. Following the completion of the independent assessment, the site Water Management Plan will be updated and submitted to the DPE.

6.1

WATER TAKE

Water for operations at Mt Piper Power Station, including Mt Piper Brine in Ash Co-Placement Project, is obtained from the Coxs River in accordance with Water Access Licence (WAL) No. 27428 and Water Supply Works and Water Use Approval 10CA117220. *Table 6* outlines details of the water taken under the WAL for operations during the previous water year (i.e. 1 July 2017 – 30 June 2018).

Table 6 Water Take – 2017/18

Water Licence #	Water Sharing Plan, Source and Management zone	Entitlement (ML)	Passive Take/ Inflows (ML)	Active pumping (ML)	Total
27428	Water Sharing Plan for Greater Metropolitan Region - Unregulated River Water Sources Upper Nepean and Upstream Warragamba Rivers Water Source Wywandy Management Zone	25,000	5,557	0	5,557

It is noted that the water accessed is primarily for the operation of the Mt Piper Power Station and is not utilised directly as part of the operation of the Mt Piper Ash Repository Facility.

7.1 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 below.

7.1.1 Climate

The climate data was sourced from the Bureau of Meteorology (BoM) (2018) Lithgow (Coerwull) Weather Station No: 063226, located approximately 16 km southeast from the Mt Piper Power Station. This is the closest operational weather station to the site with publically available data for the 2017/18 reporting period. A summary of the climate data is presented in *Table 7* below and a copy of the data is presented in *Annex C*.

Table 7 *Local Climate Data for 2017/18 (BoM 2018)*

Month	Rainfall Total (mm)	Min. Temperature (°C)	Max. Temperature (°C)
July 2017	6.2	-7.3	19.5
August 2017	45.8	-6.9	19.6
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

Data from Bureau of Meteorology Weather Station 63226.

The total rainfall for the 2017/18 reporting period was 492 mm, with a monthly average of 41 mm. This is lower than the monthly average reported for the 2016/17 monitoring period of 68 mm.

7.1.2

Geology

The Mount Piper Ash repository 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):

- Lidsdale 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.

7.1.3

Hydrogeology

The coal measures are considered to act as semi-confined aquifers given their low yields and hydraulic conductivities (SKM 2010).

Groundwater elevation contours suggest an easterly groundwater flow direction through the Mt Piper Ash Repository, tending north-easterly on the eastern side of the repository towards Neubecks Creek, with groundwater elevations in the vicinity of background groundwater monitoring bores D4 and D5 to the west of the repository in the order of 917.70 m AHD, declining to 910 m AHD to the south of the repository and 903.4 m AHD in the vicinity of Neubecks Creek. Refer to *Figures 5a to 5d* which shows groundwater elevation contours for each season.

Connell Wagner (2007) noted that prior to the placement of ash in the former mine void (now occupied by the ash repository), the bottom of the mine void was covered with mine spoil to a minimum level of RL 908 mAHD in order to facilitate groundwater flow from the adjacent areas of the unmined Lithgow coal seam aquifer and mine goaf areas surrounding the Western Main open cut mine void. Historically groundwater seepage from beneath the ash repository would be collected in the Groundwater Collection Basin located to the east of the Mt Piper Ash Repository (SKM 2010), *Figures 5a to 5d*. In 2012, this basin was filled in with mine workings as part of the construction of the adjacent Lamberts North ash repository.

7.1.4

Hydrology

The Mount Piper Power Station and ash storage area are within the catchment of Neubecks and Wangcol Creek, tributaries of the Coxs River. Neubecks Creek is located approximately 445 meters from the north-eastern edge of the ash storage area. Neubecks Creek joins Wangcol Creek which runs the length of the north-eastern edge of the ash storage area and gets as close as 250 meters from this edge. Wangcol Creek joins Coxs River approximately 3.16 km east of the Site.

Coxs River makes up part of the Warragamba water catchment, the largest of Sydney's 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.

7.2

ENVIRONMENTAL GOALS

7.2.1

Surface Water Environmental Goals

In order to assess for potential effects on surface water quality in receiving surface waters adjacent to the ash repository site, water quality trigger values set out in the *Water Monitoring and Management Plan* (Connell Wagner 2008) and modified by Aurecon (2017) have been adopted as Environmental Goals for the analytes. The Environmental Goals are considered to apply to the surface water monitoring sites the Final Holding Pond Weir (LMP01) and Neubecks Creek (WX22), as shown on *Figure 4*.

The Environmental Goals adopted have taken 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. In instances where the baseline values exceed the Environmental Goals, the baseline values have been adopted as Environmental Goals (and are referred to as Local Guidelines in discussions that follow). For surface waters the only analyte this applies to is zinc.

The Environmental Goals adopted for this assessment are as per Aurecon (2017) and are presented in *Table 1* in *Annex F*. Further to the above, Aurecon (2017) noted the Environmental Goals for cadmium, copper, lead, nickel and zinc were modified for the hardness of Neubecks Creek and therefore differed to the values adopted for groundwater (see *Section 7.2.2* below).

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.

An early warning is triggered when the post-brine placement 50th percentiles for the various water quality indicators at each of the surface water monitoring sites, exceeds the pre-placement 90th percentiles (Aurecon 2017).

7.2.2 *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, water quality trigger values set out the *Water Monitoring and Management Plan* (Connell Wagner 2008) and modified by Aurecon (2017) have been adopted as Environmental Goals for the analytes.

The Environmental Goals are generally based on the ANZECC water quality guidelines, which are applicable to receiving waters and not to groundwater; however, they form an appropriate basis for undertaking a conservative screening level assessment. The Environmental Goals have therefore been applied to the groundwater monitoring sites located upgradient of the ash repository, within the ash repository, adjacent to the ash repository and adjacent to Neubecks Creek with the objective of identifying where impacts above the Goals exist and to enable mitigation measures to be implemented if required.

Similar to the surface water approach, the 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 filling of this basin with compacted mine spoil in 2012 as part of the Lamberts North construction (Aurecon 2017). Baseline conditions were specifically established based on the 90th percentiles of the water quality dataset from monitoring undertaken at this location, as presented in Aurecon (2017). In instances where the baseline values exceed the Environmental Goals, the baseline values were adopted as Environmental Goals. For groundwater this includes iron, manganese, nickel and zinc. The Environmental Goals are consistent with the approach adopted by Aurecon (2017) and are presented in *Table 1* in *Annex G*.

As noted above for surface water, 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.

In addition to the Environmental Goals outlined above, an early warning is triggered when the post-brine placement 50th percentiles for the various water quality indicators at each of the surface water monitoring sites, exceeds the pre-placement 90th percentiles (Aurecon 2017).

7.2.3

Water Management and Monitoring Plan

Connell Wagner (2008) prepared the *Mt Piper Power Station Brine Conditions Fly-ash Co-placement Extension Water Management and Monitoring Plan*, which was an updated Water Management Plan to address the expansion of the Mt Piper Power Station Co-placement project area, hereafter referred to as the Water Management and Monitoring Plan (WMMP). The plan outlined the following key elements:

- A water cycle management plan describing the management of surface run off at the ash;
- Water cycle management with respect to the extension area; and
- Water monitoring program, including surface water and groundwater monitoring, including the Environmental Goals to be adopted.

In addition, the Water Management and Monitoring Plan also outlines a contingency plan in the event monitoring suggests groundwater contamination may be occurring.

Aims

The various measures outlined in the Water Management and Monitoring Plan seek to minimise the impacts that the brine conditioned ash disposal area could have on groundwater and therefore surface waters in the vicinity of the ash repository (Connell Wagner 2008). Further to this, the plan also aims to provide measures to identify early changes to water quality in order to provide sufficient time for investigations to be made (i.e. the early warning mechanism presented in *Section 7.2.3*).

Groundwater Model Predictions

The WMMP prepared by Connell Wagner (2008) outlined the following predictions with respect to the groundwater model:

- Initial modelling undertaken as part of the ash disposal Environmental Impact Statement (EIS) from 1989 indicated that the sub-surface drain, constructed of mine spoil at the base of the ash repository, would achieve the aim of preventing deposited ash from coming in contact with the groundwater. The placement of brine conditioned ash was expected to be approximately 37 m above the water table;
- The water table was predicted to rise by approximately 2 m as a result of ash placement within the repository, decreasing the distance between the brine conditioned ash and the local water table to be approximately 35 m;

- Small amounts of leachate are predicted to form as the result of rainfall infiltration into the brine conditioned ash deposit;
- Contaminant transport modelling undertaken by Merrick (2007) predicted that the leachate produced from the extended brine conditioned ash area is not expected to have a significant effect on water quality in the Eastern Drain, the Groundwater Collection Basin or Neubecks Creek; and
- Significant increases in the salts and trace metals are not expected in the long-term, and changes in the concentrations due to brine conditioned ash placement is considered unlikely.

7.3 SURFACE WATER ASSESSMENT

7.3.1 Objective

The objective of the surface water monitoring program is to assess compliance with the Site's Conditions of Approval S90/01696. The surface water quality indicators are also to comply with the Environmental Goals set out in Section 7.2.1. 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.

7.3.2 Surface Water Monitoring Locations and Frequency

A summary of the surface water monitoring site locations is presented in Table 8 below and shown on Figure 4.

Table 8 *Surface Water Monitoring Site Network and Frequency*

Site ID	Location Description	Monitoring Frequency
LMP01	Final Holding Pond Weir - Licence monitoring point is located north west of the Mt Piper Ash Repository in Neubecks Creek. This monitoring site is located in an upstream position relative to the Mt Piper Ash Repository.	Weekly ¹
WX22	Located in Neubecks Creek at a stream gauge to the east/down-stream of the Mt Piper Ash Repository and monitoring site LMP01. This monitoring site is also situated down-stream of monitoring bore D8.	Weekly ¹ /Monthly ²
<ol style="list-style-type: none"> 1. Selected field parameters monitored on a weekly basis (see Section 7.3.4) 2. Monitoring undertaken by analytical laboratory Nalco Water – Ecolab 		

Clean Water Ponds 1 and 2 (CW POND 1 and CW POND 2) and dirty water (LN POND) were also sampled and analysed intermittently throughout the reporting period. It is noted that these locations are not surface water monitoring points under the Conditions of Approval.

No changes to surface water monitoring locations, as required under the Conditions of Approval (detailed in *Section 2.1*), were noted during the 2017/18 monitoring period.

7.3.3 *Surface Water Monitoring Methodology*

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

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 *Section 7.3.4*.

7.3.4 *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 analysis (LMP01 only) and monthly field analysis;
- Electrical conductivity (EC) - monthly field analysis (WX22), weekly lab analysis (LMP01 only);
- Dissolved oxygen (DO) - monthly field analysis;
- Total dissolved solids (TDS) - monthly laboratory analysis;
- Temperature (°C) - monthly field analysis at WX22 only;
- Redox – field analysis on one occasion at LMP01 in May 2018;
- Total suspended solids (TSS) - weekly laboratory analysis (LMP01 only);
- Major anions including chloride, fluoride and alkalinity – monthly laboratory analysis;

- Sulfate (as SO₄) – weekly laboratory analysis (LMP01 only) and monthly laboratory analysis (WX22 only);
- 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), Cr (IV), Cu, Fe, Pb, Mn, Hg, Mo, Ni, Se, Ag, Vn and Zn) – monthly laboratory analysis.

The trace metals in surface water samples were unfiltered, except for iron and manganese. Since January, 2013, the concentrations of aluminium, copper and zinc concentrations on filtered water collected at both the Mt Piper Licence Discharge Point LDP1 and at the Neubecks Creek receiving water site, WX22 were determined.

Data QA/QC checks are performed by EnergyAustralia NSW 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 K* for a copy of the laboratory QA/QC program outline.

No field QC samples (i.e. rinsate, trip blanks or trip spikes) are collected during the field based programs. Further, no laboratory QC measures are implemented including laboratory duplicate, triplicate, internal RPDs, method blanks or spike data was not presented in the laboratory reports reviewed.

No specific QA/QA information was presented in the laboratory reports reviewed. Copies of the laboratory data are presented in *Annex K*.

7.3.5 *Surface Water Results*

A summary of the surface water analytical results obtained for the 2017/18 reporting period is presented in *Table 9* below. Tabulated results along with summary statistics for each monitoring point (minimum, maximum, 50th percentile and 90th percentile) are presented in *Annex F* and shown on *Figure 6a*.

Table 9

Surface Water Monitoring Results - 2017/18

Analyte/Location	Surface Water Concentration Range			
	Neubecks Creek (WX22)	Final Holding Pond Weir (LMP01)	Neubecks Creek at WX22 Pre-placement 90th Percentile ^a	Environmental Goal
pH (field)	6.59 - 7.49	6.6 - 8.0	6.7-7.8	6.5 - 8.0 ^k
pH (laboratory)	NA	7.2 - 8.2	6.7-7.8	6.5 - 8.0 ^k
Conductivity (µS/cm)	374 - 2,360	160 - 510	894	2200 ^c
TDS and Major Ions (mg/L)				
TDS	255 - 1,790	165 - 370	580	1500^d
Sulfate (as SO ₄)	75.3 - 1,130	31 - 140	332	1000^e
Chloride	14.6 - 164	5.07 - 16.7	22	350 ^f
Fluoride	0.08 - 0.158	0.071 - 0.293	0.338	1.5 ^f
Trace Metals (µg/L)				
Arsenic	<1	<1 - 2	<1	24 ^b
Barium	16 - 49	19 - 36	29	700 ^g
Beryllium	NA	<1	<1	100 ⁱ
Boron	<50 - 290	<50 - 230	90	370 ^b
Cadmium	<0.1	<0.1 - 0.1	<1	0.85 ^h
Chromium (total)	<1 - 9	<1 - 17	<1	2^h
Copper	<1 - 1	2 - 19	<1	3.5^h
Iron	162 - 714	59 - 1,260	281	300^f
Mercury	<0.04 - 0.04	<0.04 - <0.1	-	0.06 ^b
Manganese	101 - 2,140	56 - 293	720	1900^b
Molybdenum	<1 - 2	1 - 5	<1	10 ⁱ
Nickel	6 - 136	2 - 10	5	17^b
Lead	<1	<1 - 4	<1	5 ^b
Selenium	<0.2	0.3 - 0.6	<1	5 ^b
Silver	<1	<1	-	0.05^b
Zinc	7 - 93	6 - 50	116	116 ⁱ

Notes:

NA Not Available

All metals concentrations presented are from unfiltered samples, as per Aurecon (2017)

Shaded cell indicates exceedance of 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 Aurecon 2017.^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 by Aurecon (2017) 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.

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, downstream of the discharge from the holding pond. The Final Holding Pond Weir holds stormwater collected from the Mt. Piper Power Station facility. This monitoring location is located upstream of the Mt Piper Ash Repository. During the 2017/18 reporting period, discharge from the Final Holding Pond Weir did not occur.

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 8.0 standard pH units, with laboratory measured values reported between 7.2 and 8.2 standard pH units and 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 were only noted for pH data obtained from laboratory analysis. Laboratory determined pH values are potentially inaccurate due to this parameter's sensitivity to changes in temperature (among other factors) which can occur in the time between 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 160 and 510 $\mu\text{S}/\text{cm}$ and were generally consistent with laboratory determined values ranging between 257 and 484 $\mu\text{S}/\text{cm}$. The reported EC values were generally consistent¹ with Total Dissolved Solids (TDS) concentrations (measured monthly), which ranged from 165 mg/L to 370 mg/L. Field/laboratory EC and TDS values were all below the 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 13.5 mg/L and generally decreased over the monitoring period. No Environmental Goals are available 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. No Environmental Goals are available for TSS; and
- Turbidity generally ranged from 7.2 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. No Environmental Goals were available for turbidity.

¹ Based on approximate EC to TDS conversion factor of 0.65

Anions

Concentrations of anions including sulfate, chloride and fluoride were generally stable at LMP01 throughout the 2017/18 reporting period. All reported analyte concentrations were below the adopted Environmental Goals, as specified in *Section 7.2* above.

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

Metals

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

- Concentrations of chromium were generally reported at up to 4 µg/L throughout the period of reporting, with an anomalous detection of 17 µg/L during February 2018. The results exceeded the 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 to 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 Environmental Goal of 3.5 µg/L in August 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;
- Concentrations of iron ranging between 59 µg/L and 1,260 µg/L exceeded Environmental Goal of 300 µg/L trigger value in five out of twelve months of the monitoring period. These results are not influenced by the ash repository and are considered to be representative of background water quality; and
- Silver concentrations were reported below the limit of report (of <1 µg/L) for the entire monitoring period, noting that detection level, exceeded the ANZECC (2000) local guideline trigger level of 0.05 µg/L. No pre-placement trigger levels are available for silver.

Concentrations of aluminium, cobalt, strontium and vanadium were intermittently tested for and detected in the surface water samples collected from the LMP01, however no Environmental Goals were available for these parameters for comparison.

All Final Holding Pond Weir results were below the adopted ANZECC (2000) or Local Guideline trigger levels, with the exception of chromium (up to 17 µg/L) and iron (up to 1,260 µg/L), which intermittently exceeded these levels and copper (up to 19 µg/L) which consistently exceeded the ANZECC (2000) trigger value. The detections are considered to be related to the background water quality in the area given this site location is up-stream of the ash repository and is not impacted by the ash repository.

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 F*. This monitoring location is located down-stream of the Mt Piper Ash Repository.

Field Parameters

Field parameters monitored at WX22 are summarised below:

- pH (field) ranged from 6.59 to 7.49, 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 374 µS/cm and 2,360 µS/cm and were generally consistent with laboratory determined TDS values ranging between 255 and 1790 mg/L². In February 2018, EC and TDS values exceeded the Environmental Goals of 2,200 µS/cm and 1,500 mg/L, respectively;
- DO (field) ranged from 7.1 mg/L to 13.5 mg/L throughout the monitoring period. No Environmental Goals are available for DO;
- Turbidity ranged from 1 NTU to 14.7 NTU across the monitoring period and was generally variable. No Environmental Goals are available for turbidity; and
- Water temperatures recorded in the field ranged from 3 °C to 18.7 °C with the higher temperatures recorded coinciding with the warmer months of the year. No Environmental Goals are available for temperature.

² Based on approximate EC to TDS conversion factor of 0.65

Anions

All major and minor ions were below the Environmental Goals at WX22 with the exception of sulfate concentrations. Sulfate 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 Environmental Goal of 1,000 mg/L in February 2018.

Peaks in calcium, magnesium and sodium concentrations were noted in January and February 2018 where concentrations were as high as 152 mg/L, 133 mg/L, 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 where concentrations were as high as 12.8 mg/L, at least 7 mg/L higher than previous or subsequent sampling events.

Nitrate, total Kjeldahl nitrogen (TKN) and total nitrogen were detected in the surface water samples collected from WX22, however no Environmental Goals were available for these parameters for comparison.

Metals

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

- Chromium concentrations up to 9 µg/L were identified at WX22, exceeding the 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 between 162 µg/L to 714 µg/L and exceeded the 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 June 2018, but filtered iron concentrations in June 2018 were equal to the Environmental Goal. This result is considered unlikely to be a result of impacts of the ash repository;
- Manganese concentrations were generally reported at up to 582 µg/L, with spikes in concentrations above the 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 Environmental Goal. This result is 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 Environmental Goal of 17 µg/L in seven of the twelve months in September 2017 and from December 2017 to May 2018;
- Silver concentrations were all reported below the laboratory detection limit of <1 µg/L, with the detection level exceeding the local guideline trigger level of 0.05 µg/L. No pre-placement data are available for silver.

Concentrations of aluminium, strontium and vanadium were tested for and detected (except for vanadium) in the surface water samples collected from the WX22, however no Environmental Trigger Value Goals were available for these parameters for comparison.

7.4 *DISCUSSION*

7.4.1 *Early Warning*

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) and WX22 (downstream) is presented in *Table 10* below and shown on *Figure 6b*. As noted in Aurecon (2017) this assessment serves to provide an early indication of changes in water quality.

Table 10 *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	LMP01	
pH	6.98	7.8	6.7-7.8
Conductivity (µS/cm)	604	375	894
TDS (mg/L)	384	232	580
Sulfate (as SO ₄) (mg/L)	198	71	332
Chloride (mg/L)	41.1	11.3	22
Fluoride (mg/L)	0.097	0.166	0.338
Arsenic (µg/L)	0.5	0.5	<1
Barium (µg/L)	22	25	29
Beryllium (µg/L)	NA	0.5	<1
Boron (µg/L)	120	100	90
Cadmium (µg/L)	0.05	0.05	<1
Chromium (total) (µg/L)	0.5	1.3	<1
Copper (µg/L)	0.5	5	<1
Iron (µg/L)	354	359	281
Mercury (µg/L)	0.02	0.02	-
Manganese (µg/L)	309	166	720
Molybdenum (µg/L)	0.5	3	<1
Nickel (µg/L)	21	4	5
Lead (µg/L)	<1	0.5	<1
Silver (µg/L)	<1	<1	-
Selenium (µg/L)	<0.2	0.4	<1
Zinc (µg/L)	11	17	116

Notes

^a Neubecks Creek at WX22 Pre-placement 90th Percentile values for analytes cited in Aurecon (2017).

All metals concentrations presented are from unfiltered samples, as per Aurecon (2017)

Shaded cell indicates exceedance of the early warning indicator (Neubecks Creek at WX22 Pre-placement 90th Percentile)

Bold indicates result is 1 - <10 times the early warning indicator

Bold and italicised indicates result is >10 times the early warning indicator

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

The elevated concentrations (50th percentile for the 2017/18 period) of boron and iron 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 7.7*.

Concentrations of nickel were found to be higher in downstream site WX22 (21 µg/L) relative to up-stream location LMP01 (4 µg/L). It is noted that the reported levels of nickel at both locations are comparable to background groundwater levels at D4 and D5 (ranging between 17 to 57 µg/L).

Chloride concentrations (50th percentile) was found to be at least 3 times higher in down-stream monitoring location WX22 compared the background chloride 50th percentile results at LMP01.

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” and does not represent non compliance with project approval. However, as discussed below, these concentrations in have triggered the implementation of the independent assessment of groundwater and surface water conditions at the site.

7.4.2

Trend Analysis

A review of concentration trends with respect to key indicators including TDS, sulphate, chloride and nickel is presented below. These indicators were selected based on their exceedances above ANZECC (2000) Trigger Values 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 H*.

Chloride

Chloride concentrations have been consistently well below the 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.

TDS

TDS levels at LMP01 have remained relatively stable since 2010, consistently below the 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 Environmental Goal were identified in February 2014 and February 2018.

Sulfate

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

Nickel

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

General

All Neubecks Creek results at WX22 were generally below the adopted Environmental Goals (ANZECC (2000) or baseline conditions), with the exception of EC (up to 2,360 µS/cm), TDS (up to 1,790 mg/L), sulfate (up to 1,130 mg/L), chromium (up to 9 µg/L), manganese (up to 2,140 µg/L), iron (up to 714 µg/L) and nickel (up to 136 µg/L), which intermittently exceeded the 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). The elevated concentrations of manganese and nickel are also in part considered to be associated with background conditions, with detectable concentrations identified at LMP01. It is noted that the exceedances for manganese were intermittent during the 2017/18 monitoring period, with levels of manganese declining to below the adopted ANZECC (2000) trigger value in March 2018 and therefore not suggestive of long term increases in manganese concentrations at WX22.

Higher concentrations of EC, TDS and sulphate were reported in the same samples as peak concentrations of manganese and nickel during January and February 2018 in WX22, a relationship only evident during the 2017/18 reporting period. These concentration spikes may be associated with effects of seasonality, with rainfall reported as being highest in December 2017, just prior to these events (refer to *Section 7.1.1*).

7.5 **GROUNDWATER**

7.5.1 **Objective**

The objective of the groundwater monitoring program is to assess compliance with the Site’s Conditions of Approval S90/01696. The groundwater quality is assessed relative to the Environmental Goals set out in Section 7.2.

7.5.2 **Groundwater Monitoring Locations and Frequency**

A summary of the groundwater monitoring site locations is presented in Table 11 below and shown on Figure 4.

Table 11 *Groundwater Monitoring Network and Frequency*

Bore ID	Location Description	Screened Material ^a	Monitoring Frequency	Required under Monitoring Plan
MPGM4/D1	North eastern boundary of ash repository	Mudstone, sandstone and coal	Monthly ¹	Yes
MPGM4/D3	Northern boundary of ash repository	Silty sandstone	Monthly ¹	Yes
MPGM4/D4	Background/up-gradient of ash repository	Backfill of former open cut mine	Monthly ¹	Yes
MPGM4/D5	North western boundary of ash repository	Backfill of former open cut mine	Monthly ¹	Yes
MPGM4/D8	Down-gradient of ash repository, adjacent to Neubecks Creek	Alluvial deposits	Monthly ¹	Yes
MPGM4/D9	Down-gradient of ash repository, adjacent to Neubecks Creek	Alluvial deposits	Monthly ¹	Yes
MPGM4/D10	Inside of ash repository	Fill beneath the ash	Monthly ¹	Yes
MPGM4/D11	Inside of ash repository	Fill beneath the ash	Monthly ¹	Yes
MPGM4/D19	down-gradient of ash repository (Lamberts North Ash Repository)	Fill beneath the ash	Monthly ¹	No
MPGM4/D23	Inside of ash repository	Sandstone	Monthly ¹	No
Monitoring undertaken by analytical laboratory Nalco				

7.5.3

Groundwater Monitoring Methodology

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

EnergyAustralia NSW have advised that sample collection methodologies were consistent with that 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 7.5.4* below.

7.5.4

Groundwater Quality Dataset

EnergyAustralia NSW engaged Nalco Water – Ecolab (Nalco) to collect groundwater samples from the ten 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 analysis;
- Electrical conductivity (EC) - monthly field analysis;
- Total dissolved solids (TDS) - monthly laboratory analysis;
- Major anions including chloride, fluoride and alkalinity – monthly laboratory analysis;
- Sulfate (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), Cr (IV), Cu, Fe, Pb, Mn, Hg, Mo, Ni, Se, Ag, Vn and Zn) – monthly laboratory analysis.

The trace metals in groundwater samples were unfiltered, except for iron and manganese. Data QA/QC checks are performed by EnergyAustralia NSW.

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

No field QC samples (i.e. rinsate, trip blanks or trip spikes) are collected during the field based programs. Further, no laboratory QC measures are implemented including laboratory duplicate, triplicate, internal RPDs, method blanks or spike data was not presented in the laboratory reports reviewed.

No specific QA/QA information was presented in the laboratory reports reviewed. Copies of the laboratory data are presented in *Annex K*.

7.5.5 *Groundwater Results*

7.5.6 *Groundwater Levels and Inferred Flow Direction*

Water levels in all groundwater wells were stable across the monitoring period. Groundwater elevation contours suggest a south-easterly groundwater flow direction through the Mt Piper Ash Repository, tending north-easterly on the eastern side of the repository towards Neubecks Creek, with groundwater elevations in the vicinity of D4 and D5 to the west of the repository in the order of 917.70 m AHD, declining to 910 mAHD to the south of the repository and 903.4 m AHD in the vicinity of Neubecks Creek (based on April 2018 data). The groundwater flow direction has remained relatively consistent throughout the monitoring period based on hydrographs prepared for each season. Groundwater elevation contour plans are presented in *Figures 5a to 5d*.

Standing water levels and water elevations calculated for each well is shown in *Table 2* in *Annex G*.

Refer to *Annex I* for hydrographs for each of the key areas. These show water level variations over the monitoring period were generally less than 1.5 metres with the exception of D19 which showed a decreasing trend from 909.12 mAHD in December 2017 to 907.52 mAHD in June 2018. The potential causes of this decline in groundwater level are being evaluated as part of the independent assessment.

7.5.7 *Groundwater Analytical Results Summary*

A summary of the groundwater analytical results obtained for the 2017/18 reporting period is presented in *Table 12* below. The results are also presented on *Figure 7a*.

Table 12 Summary of Groundwater Concentrations - 2017/18 Reporting Period

Analyte/Location	Groundwater Concentration Range				Groundwater Collection Basin Pre-Ash Placement 90 th Percentile ^a	Environmental Goal ^{a,b,c,e}
	Up-gradient/ Background ¹	On-Site/Inside Ash Repository ²	Adjacent to Ash Repository ³	Down- gradient/ Adjacent to Neubecks Creek ⁴		
pH	3.21 - 5.97	5.48 - 6.22	5.36 - 6.11	5.18 - 5.99	-	6.5 - 8.0^a
Conductivity (µS/cm)	910 - 1,300	3,430 - 11,230	850 - 7,120	204 - 3,500	1576	2,600^a
TDS (mg/L)	656 - 1,020	2,360 - 9,760	458 - 6,120	181 - 2,900	1306	1,500^a
Sulphate (as SO ₄) (mg/L)	386 - 652	1,580 - 5,640	293 - 4,050	70.8 - 1,860	824	1,000^a
Chloride (mg/L)	9.22 - 25.3	191 - 1,060	24.8 - 693	3.4 - 264	31.5	350^a
Arsenic (µg/L)	<1 - 61	<1 - 11	<1 - 21	<1 - 1	1	24^b
Silver (µg/L)	<1	<1	<1	<1	<1	0.05^b
Barium (µg/L)	11 - 23	14 - 30	11 - 74	23 - 71	37	700 ^f
Beryllium (µg/L)	NA	NA	NA	NA	1	100 ^a
Boron (µg/L)	25 - 130	300 - 5,320	<50 - 3,370	<50 - 960	244	370^b
Cadmium (µg/L)	<0.1 - 1	<0.1 - 9.7	<0.1 - 0.6	<0.1 - 0.3	2	2^{d,e}
Chromium (total) (µg/L)	<1 - 3	<1 - 101	<1 - 122	0.5 - <1	1	5^d
Copper (µg/L)	<1 - 7	<1 - 4	<1 - 23	<1 - 5	1	5^a
Fluoride (mg/L)	0.084 - 0.210	<0.1 - 0.935	<0.1 - 0.153	<0.1 - 1.2	0.435	1.5 ^d
Iron (µg/L)	36,700 - 144,000	1,340 - 113,000	42 - 65,400	34 - 24,700	664	664^e
Mercury (µg/L)	<0.04	<0.04 - 0.1	<0.04 - 0.09	<0.04 - 0.05	<0.1	0.06 ^c
Manganese (µg/L)	672 - 10,400	2,100 - 21,000	302 - 21,200	36 - 16,800	5704	5,704 ^e
Molybdenum (µg/L)	<1	<1 - 4	<1 - 4	<1 - 5	1	10 ^a
Nickel (µg/L)	17 - 57	296 - 1,340	1 - 1,330	18 - 436	550.9	550.9 ^e
Lead (µg/L)	<1 - 28	<1 - 7	<1 - 94	<1 - 1	1	5^f
Selenium (µg/L)	<0.2 - 0.4	<0.2 - 4.3	<0.2 - 5	<0.2 - 0.1	2	5 ^c
Zinc (µg/L)	21 - 251	115 - 1,420	<5 - 618	35 - 164	908	908^e

- Notes:
1. Monitoring wells up-gradient of ash repository: MPGM4/D4 and MPGM4/D5
 2. Monitoring wells inside the ash repository MPGM4/D10, MPGM4/D11 and MPGM4/D23 targeting the southern coal mine groundwater inflows to the area between the southern brine placement and bore D10.
 3. Monitoring wells at boundary of the ash repository MPGM4/D1, MPGM4/D3 and MPGM4/D19.
 4. Monitoring wells adjacent to Neubecks Creek MPGM4/D8 (north of Neubecks Creek) and MPGM4/D9 (south of Neubecks Creek).
- Shaded and bold cells indicate exceedance of Environmental Goals.

a Criteria from Aurecon (2017) adopted.

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

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

d NHMRC (2011) Australian Drinking Water Guidelines

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

f NHMRC (2008) Guidelines for Managing Risks in Recreational Waters

7.5.8

Background Groundwater Quality

Data obtained from background bores D4 and D5 located to the north west of the ash repository, in an up-hydraulic gradient position are outlined below. The criteria pertinent to this assessment is the Environmental Goal (ANZECC (2000) or baseline conditions), which apply to the point of discharge to the surface waters.

Field Parameters

Field parameters monitored are summarised below:

- pH (field) ranged from 3.21 to 5.97, indicating slightly acidic to acid conditions throughout the reporting period. The low pH levels are potentially due to the presence of iron pyrites (Connell Wagner 2007). The pH levels remained generally stable at D4 and D5, however were consistently lower than the Environmental Goal range of 6.5 – 8.0 standard pH units;
- EC (field) levels ranged between 910 and 1,300 $\mu\text{S}/\text{cm}$, remaining generally stable throughout the monitoring period, and below the Environmental Goal of 2,600 $\mu\text{S}/\text{cm}$. These EC levels were slightly higher than the laboratory determined TDS concentrations ranging between 656 mg/L and 1,020 mg/L. It is noted that these levels were also below the Environmental Goal of 2,000 mg/L.

Major and Minor Ions

All chloride, sulphate and fluoride concentrations were below the Environmental Goals throughout the reporting period.

Concentrations of calcium, magnesium, sodium and potassium were detected at concentrations above the laboratory limit of reporting, however no Environmental Goals were available for comparison. It is noted that the concentrations of the major cations were generally higher in D5 relative to D4.

Metals

Throughout the reporting period elevated concentrations of various metals were identified at concentrations above the adopted Environmental Goals (the ANZECC (2000) or baseline conditions).

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

- Arsenic concentrations reported were between <1 and 61 µg/L and were above both Environmental Goals (1 µg/L pre-placement level and 24 µg/L ANZECC (2000)/Local Guideline) throughout the reporting period in D4 only and only marginally above the pre-placement level in nine out of twelve months in D5;
- Concentrations of copper ranged between <1 µg/L and 7 µg/L, exceeding the Environmental Goal of 5 µg/L in August 2017 only;
- Iron concentrations (up to 144,000 µg/L) consistently exceeded the Environmental Goal of 664 µg/L throughout the period of monitoring at D4 and D5. Concentrations of iron were generally higher in D4 than D5 with the maximum concentration in D5 reported at 65,100 µg/L and the minimum concentration in D4 reported at 92,400 µg/L;
- Lead concentrations up to 28 µg/L were reported in D4 only, consistently exceeding the Environmental Goal of 5 µg/L throughout the period of reporting. Lead concentrations were below laboratory detection limits at D5; and
- Manganese concentrations up to 10,400 µg/L were above the Environmental Goal (5,740 µg/L) at D5 throughout the monitoring period. Manganese concentrations were all less than 840 µg/L at D4, below the Environmental Goals.
- All silver concentrations were below the laboratory reporting limit of <1 µg/L, with this detection level marginally above the Environmental Goal of 0.5 µg/L.

Vanadium was also tested for in the groundwater samples collected from D4 and D5, however no Environmental Goals were available for comparison. Aluminium also lacks an Environmental Goal. Concentrations of aluminium were reported as being significantly higher in D4 compared to D5 with a generally decreasing trend noted over the monitoring period in D4.

These exceedances are considered unlikely to be a result of impacts of the ash repository as D4 and D5 are located upstream of the ash repository and are considered to represent background conditions around the ash repository. Therefore, these concentrations are considered background.

Groundwater Quality Inside Ash Repository

Data obtained from groundwater bores considered to be situated within the ash repository area is summarised below. Bores in this area include D10 located immediately south of the ash repository, D11 to the east and D23 targeting the southern coal mine groundwater inflows to the area between the southern brine placement and bore D10. The criteria pertinent to this assessment is the Environmental Goal (ANZECC (2000) or baseline conditions), which apply to the point of discharge to the surface waters.

Field Parameters

Field parameters monitored at D10, D11 and D23 are summarised below:

- pH (field) ranged from 5.48 to 6.22, indicating slightly acidic to neutral conditions throughout the reporting period. The pH levels remained generally stable, however were consistently lower than the Environmental Goal range of 6.5 – 8.0 standard pH units through the reporting period;
- EC (field) levels ranged between 3,430 and 11,230 $\mu\text{S}/\text{cm}$, consistently exceeding the Environmental Goal of 2,600 $\mu\text{S}/\text{cm}$ throughout the period of reporting. Higher EC concentrations were noted in D10 and D11 (both $>7,530$ $\mu\text{S}/\text{cm}$) relative to D23 (maximum of 5,150 $\mu\text{S}/\text{cm}$). A slight decline in EC levels was noted in EC in D10 in March 2018.
- The reported EC levels were generally comparable with laboratory determined TDS concentrations ranging between 2,360 mg/L and 9,760 mg/L and consistently above the Environmental Goal (2,000 mg/L). TDS concentrations were more variable in D10 when compared to the other locations, although a decline was noted in D11 in November 2017 of 5,670 mg/L, greater than 3,000 mg/L lower than the previous or subsequent results.

Major and Minor Ions

Most major and minor ions were below the trigger levels throughout the monitoring period. The following exceedance of Environmental Goals were noted:

- Chloride concentrations up to 1,060 mg/L were identified at levels exceeding the Environmental Goals of 350 mg/L throughout the reporting period in D10 and D11. Chloride concentrations were generally lower in D23 (up to 322 mg/L) and only found above the pre-placement levels throughout the reporting period;

- Sulphate concentrations ranged between 1,580 mg/L and 5,640 mg/L and were above the Environmental Goal of 1,000 mg/L) in all months of the monitoring period for all bores in this area; and

Concentrations of calcium, magnesium, sodium and potassium were detected at concentrations above the laboratory limit of reporting, however no Environmental Goals were available for comparison. Calcium, magnesium concentrations were generally higher in D11 when compared to the other locations. Magnesium, sodium, and potassium concentrations were more variable in D10 with troughs noted in August 2017 and March 2018. Alkalinity was more variable in D11 and D23 but stable in D10.

Metals

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

- Boron concentrations were between 300 µg/L and 5,320 µg/L and were above Environmental Goals of 370 µg /L in all months of the monitoring period in all locations in except for D23 in February 2018 (300 µg/L), where boron was below the Environmental Goal. Boron concentrations were generally much lower in D23 relative to D10 or D11 located closer the Mt Piper ash repository;
- Cadmium concentrations ranged from <0.1 µg/L to 9.7 µg/L were above the Environmental Goal of 2 µg /L in D10 in all months of the monitoring period but below the Environmental Goals in both D11 and D23 throughout the monitoring period. Troughs in cadmium concentrations were noted in D10 in July 2017 and March 2018;
- Chromium (total) concentrations were generally between <1 µg/L and 28 µg/L and exceeded the Environmental Goal of 5 µg/L in groundwater from D10 in September 2017 only and in groundwater from D23 in six out of twelve months of the monitoring period. A peak in chromium concentrations was noted in groundwater from D23 in April 2018 of 101 µg/L. Chromium concentrations in groundwater from D11 did not exceed Environmental Goals;
- Iron concentrations were between 1,340 and 113,000 µg/L and were above the Environmental Goal of 664 µg/L in groundwater from bores in this area throughout the reporting period. Iron concentrations were higher in D11 than D10 or D23 and were very variable with concentrations ranging from 29,300 µg/L to 113,000 µg/L;

- Concentrations of lead up to 7 µg/L were reported in this area, exceeding the Environmental Goal of 5 µg/L on six occasions. All lead concentrations were below laboratory reporting limits in groundwater from D11;
- Manganese concentrations ranged between 2,100 µg/L and 21,000 µg/L, throughout the reporting period with the highest manganese concentrations noted in D11 (minimum of 16,000 µg/L) in comparison to the other locations in this area (maximum 9,270 µg/L). The results exceeded the Environmental Goal of 5,704 µg/L in D10 and D11 throughout the reporting period, with the exception of D10 where a marginally lower concentration of 5,370 µg/L was reported in August 2017. Manganese concentrations were below the Environmental Goals in groundwater from D23 throughout the reporting period;
- Nickel concentrations ranged from 296 µg/L to 1,340 µg/L and exceeded the Environmental Goal of 550.9 µg/L in D10 and D11 in all months of the monitoring period. Nickel concentrations in D23 were all less than 460 µg/L and therefore below the Environmental Goal
- Mercury concentrations were consistently reported below the laboratory detection limit of <0.04 µg/L, with one detection at 0.1 µg/L reported at D10 in September 2017 only. This detection was found to exceed the Environmental Goal of 0.06 µg /L. This detection is considered to be anomalous as it is inconsistent with prior and subsequent monitoring events;
- All silver concentrations were below the laboratory reporting limit of <1 µg/L, with this detection level marginally above the Environmental Goal of 0.5 µg/L; and
- Zinc concentrations ranged from 115 to 1,420 µg/L and generally exceeding the Environmental Goal of 908 µg/L in D10 only, from September 2017 to June 2018 except March 2018. Zinc concentrations were below the Environmental Goals in groundwater from D11 and D23.

Concentrations of aluminium and vanadium were not tested for every month and detected in the groundwater samples collected from D10, D11 and D23, however no Environmental Goals were available for these parameters for comparison. Aluminium concentrations were stable in groundwater from D10 and D11 but a peak was noted in D23 in March 2018 of 1,540 µg/L, 1,000 µg/L higher than the previous month. Vanadium concentrations were consistently reported below laboratory detection limits.

7.5.10

Groundwater Quality Immediately Adjacent to Ash Repository

Data obtained from groundwater water monitoring bores D1, D3 and D19 located immediately adjacent to the ash repository are outlined below. The criteria pertinent to this assessment is the Environmental Goal (ANZECC (2000) or baseline conditions) adopted, which apply to the point of discharge to the surface waters.

Field Parameters

Field parameters monitored at D1, D13 and D19 are summarised below:

- pH (field) ranged from 5.36 to 6.11, indicating slightly acidic to acid conditions throughout the reporting period. The pH levels remained generally stable in all monitoring wells in this area, however were consistently lower than the Environmental Goal range of 6.5 – 8.0 standard pH units;
- EC (field) levels ranged between 850 $\mu\text{S}/\text{cm}$ to 7,120 $\mu\text{S}/\text{cm}$, exceeding the Environmental Goal of 2,600 $\mu\text{S}/\text{cm}$, in D1 (located to the north-east of the ash repository and D19 (to the west of the ash repository) only. The laboratory determined TDS concentrations ranging between 458 mg/L and 6,120 mg/L, exhibited a similar relationship, consistently exceeding Environmental Goal of 2,000 mg/L.

Major and Minor Ions

Exceedance of Environmental Goals were noted for chloride and sulphate, as outlined below:

- Chloride concentrations ranged from 24.8 to 693 mg/L and consistently exceeded the Environmental Goal of 350 mg/L at D1 and during most of the reporting period at D19 (on 8 of the 12 occasions), exceeding only pre-placement trigger level of 31.5 mg/L from November 2017 to February 2018. Chloride concentrations in groundwater from D3 were only above the pre-placement levels in September 2017 and June 2018;
- Concentrations of sulphate ranged between 293 and 4,050 mg/L and exceeded the Environmental Goal of 1,000 mg/L in groundwater from D1 and D19 consistently throughout the reporting period. A slight decline in sulphate concentrations was noted in groundwater from D19 in January 2018 (1,060 mg/L); and
- Concentrations of calcium, magnesium, sodium and potassium were detected at concentrations above the laboratory limit of reporting, however no Environmental Goals were available for comparison. Overall, the major cation and anion concentrations were generally lower in D3 when compared to D1 and D19. Calcium, magnesium, sodium and potassium concentrations were generally stable across the monitoring period in D1 and D3. A decline was noted in calcium, magnesium, sodium, potassium and alkalinity concentrations in D19 from November 2017 to February 2018.

Metals

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

- Concentrations of boron were reported at up to 3,370 µg/L in this area, exceeding the Environmental Goal of 370 µg /L at D1 and D19 throughout the period. A trough in boron concentrations was noted in D19 from November 2017 to February 2018 with a minimum concentration of 950 µg/L. All boron concentrations were below the adopted Environmental Goals at D3;
- Chromium concentrations were generally between <1 µg/L and 44 µg/L, with a peak concentration of 122 µg/L identified in D19 in August 2017. Chromium levels exceeded the Environmental Goal of 5 µg /L throughout the majority of the reporting period at D19;
- Copper concentrations ranged between <1 and 12 µg/L and exceeded the Environmental Goal of 5 µg /L intermittently throughout the reporting period in D19 only. A peak in copper concentrations was noted in D19 in May and June 2018 of 19 µg/L and 23 µg/L, respectively;
- Iron concentrations were reported up to 65,400 µg/L adjacent to the ash repository, exceeded Environmental Goal of 664 µg/L in all months of the monitoring period in all locations except from November 2017 to February 2018 in D19 where significantly lower concentration <140 µg/L were identified;
- Lead concentrations generally ranged from <1 µg/L to 30 µg/L, with peak concentration was noted in June 2018 in D19 of 94 ug/L. Concentrations were above the Environmental Goal of 5 µg /L in D19 throughout majority of the reporting period;
- Concentrations of manganese (up to 21,200 µg/L) and nickel (up to 1,330 µg/L) exceeded both Environmental Goals (5,704 µg/L for manganese and 550.9 µg/L for nickel) throughout the monitoring period in D1 and D19, except from November 2017 to February 2018 in D19 where a trough was noted over these months (similar to iron);
- Mercury concentrations were consistently reported below the laboratory detection limit of <0.04 µg/L, with one detection at 0.09 µg/L reported at D3 in June 2018 only. This detection was found to exceed the Environmental Goal of 0.06 µg /L and is potentially anomalous as it is inconsistent with all prior monitoring events;
- Selenium concentrations ranged from <0.2 µg/L to 5 µg/L equal to the Environmental Goal of 5 µg/L in D19 only in December 2017; and

- All silver concentrations were below the laboratory reporting limit of <1 µg/L, with this detection level marginally above the Environmental Goal of 0.5 µg/L.

Concentrations of aluminium and vanadium were intermittently tested for and detected in the groundwater samples collected from D1, D3 and D19, however no Environmental Trigger Value Goals were available for these parameters for comparison. A trough in aluminium concentrations was noted in D19 from October 2017 to March 2018 with 1,000 µg/L lower than previous or subsequent sampling events.

7.5.11 *Groundwater Quality Adjacent to Neubecks Creek*

Data obtained from groundwater bores D8 and D9 located adjacent to Neubecks Creek is summarised below. The criteria pertinent to this assessment are the Environmental Goals (ANZECC (2000) or baseline conditions), which apply to the point of discharge to the surface waters.

Physical Parameters

Physical parameters monitored are summarised below:

- pH (field) ranged from 5.18 to 5.99, indicating slightly acidic conditions throughout the reporting period. The pH levels remained generally stable, however were consistently lower than the Environmental Goal range of 6.5 – 8.0 standard pH units;
- EC (field) levels ranged between 204 and 3,500 µS/cm, remaining generally stable throughout the monitoring period. The EC results exceeded the Environmental Goal of 2,600 µS/cm, almost consistently throughout the reporting period at D9. A generally increasing trend in EC concentrations was noted in both bores from November 2017; and
- Laboratory determined TDS concentrations ranged between 181 mg/L and 2,900 mg/L, with these levels found exceed the Environmental Goal of 2,000 mg/L in bore D9 only.

Major and Minor Ions

Exceedance of Environmental Goals were noted for sulfate only, at D9 (up to 1,860 mg/L) while sulfate in D8 was below the Environmental Goals. A generally increasing sulfate concentration trend was noted in D9 over the monitoring period.

Concentrations of calcium, magnesium, sodium and potassium were detected at concentrations above the laboratory limit of reporting, however no Environmental Goals were available for comparison. Calcium, magnesium,

sodium, potassium and alkalinity concentrations were higher in D9 (south side of Neubecks Creek) when compared to D8 and were noted to be generally increasing over the monitoring period while calcium, magnesium, sodium and potassium concentrations in D8 were relatively stable over the monitoring period.

Metals

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

- Concentrations of boron (up to 960 µg/L) and manganese (up to 16,800 µg/L) at D9 exceeded the Environmental Goals (of 370 µg/L and 5,740 µg/L, respectively) through the entire reporting period. A generally increasing trend was noted in boron and manganese concentrations in D9 throughout the reporting period and since 2012. Boron and manganese did not exceed the Environmental Goals in D8.
- Concentrations of copper were reported at up to 5 µg/L, with in the May 2018 monitoring result (5 µg/L) at D8 found to be equal to the Environmental Goal;
- Iron concentrations exceeded the Environmental Goal of 664 µg/L at D9 almost consistently throughout the reporting period and at D8 in July 2017, May 2018 and June 2018. A variable but increasing trend in iron concentrations is noted in D9 over the monitoring period; and
- All silver concentrations were below the laboratory reporting limit of <1 µg/L, with this detection level marginally above the Environmental Goal of 0.5 µg/L.

Aluminium and vanadium were also tested throughout the reporting period, however no Environmental Goals were available for these parameters for comparison. Aluminium concentrations peaked at a concentration of 1,030 µg/L in D8 in October 2017 declining after this time. All vanadium results were reported below laboratory detection limits.

Background Groundwater Quality

Elevated levels of metals including arsenic, copper, iron, lead and manganese and acidic pH levels were identified in background bores D4 and D5 above the Environmental Goals or baseline conditions. As these bores are located in an up-gradient position relative to the ash repository site, the low pH levels and elevated metal concentrations are considered to be associated with regionally elevated levels in the area, noting that areas up-gradient of the ash repository have been highly disturbed by historical regional mining activities. Low pH levels were also evident, with Connell Wagner (2007) noting that the low pH levels are due to the presence of iron pyrites.

Inside the Ash Repository

Aurecon (2017) has previously noted that bores D10 and D11 are used for early warning on potential effects on receiving waters. As noted above, the elevated concentrations of anions including chloride, sulphate, and metals including boron, cadmium, chromium, lead, nickel, manganese, iron and zinc were identified at or above the Environmental Goals, noting that these levels only apply to the surface water point of discharge. Low pH levels were also evident in this area below the Environmental Goal, however slightly higher than background which is potentially due to the ash placement. The detections of chromium, manganese and iron are considered to be related to the background water quality in the area, based on the background groundwater monitoring well results (from D4 and D5) which reported concentrations that were a similar order of magnitude.

Concentrations of sulphate, chloride, boron, cadmium, lead, nickel and zinc, exceeding the Environmental Goals, are considered to be elevated relative to background data from groundwater bores D4 and D5. Connell Wagner (2007), reported elevated levels of sulphate, boron, nickel, zinc, manganese and iron previously in this area based on pre-placement ash data from bore B904 (operational between 1997 and 2000), which have been influenced by goaf underground mine workings to the south of this area. However, it is noted that concentrations of sulphate, chloride, boron, nickel and zinc and potentially cadmium and lead indicate a distinctly different composition relative to the background bores and the 90th percentile pre-placement data from historical bore B904 as noted above (from Aurecon 2017). In consideration of the brine composition (refer to *Annex E*), which also contains elevated levels of these constituents, groundwater in this area is potentially influenced by leaching of brine into the underlying water table.

Adjacent to the Ash Repository

Elevated levels of copper (up to 23 µg/L), chromium (up to 122 µg/L), iron (up to 65,400 µg/L) and manganese (up to 21,000 µg/L) intermittently exceeded the Environmental Goals. These detections are considered to be related to the background water quality in the area, based on the background groundwater monitoring well results (from D4 and D5) which reported concentrations that were a similar order of magnitude.

Concentrations of boron and nickel at D1 and D19, and lead at D19 exceeded the Environmental Goals and are not considered to be the result of influences from background sources. These elevated results are instead considered to represent changes to water quality relative to background and pre-ash placement levels. As noted earlier, these analytes (except lead) reflect major constituents of brine which has been used in ash conditioning in the repository and are therefore potentially associated with leaching of brine conditioned ash on-site.

Adjacent to Neubecks Creek

Elevated levels of the analytes EC and TDS, sulphate, boron, copper, iron and manganese and low pH levels were reported above the Environmental Goals. Low pH levels and elevated copper, iron and manganese concentrations are considered to be associated with background concentrations, consistent with data from upgradient monitoring wells D4 and D5. The elevated EC and TDS, sulphate, and boron were only identified in groundwater from D9 (south side of Neubecks Creek) above the Environmental Goals and are potentially associated with leaching of brine conditioned ash co-placement on-site. There was no strong evidence of changes 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 13* below and the results are also presented on *Figure 7b*.

Table 13 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	
	Up-gradient		Inside Ash Repository			Adjacent to Repository			Down-gradient		
	D4	D5	D10	D11	D23	D1	D3	D19	D8		D9
pH	3.34	5.94	5.54	6.145	5.76	5.89	6.05	5.845	5.36	5.91	-
Conductivity (µS/cm)	980	1,290	10,240	9,865	3,960	5,525	915	6,325	501.5	3,050	1,576
TDS (mg/L)	847	974	8,360	8,975	3,145	4,875	587	5,130	370	2,325	1,306
Sulphate (as SO ₄) (mg/L)	472	609	5,020	4,830	1,880	2,520	315	3,110	216	1,560	824
Chloride (mg/L)	10.5	23.95	891	949	246	603.5	30.05	505	16.85	160.5	31.5
Fluoride (mg/L)	0.1485	0.119	0.435	0.096	0.141	0.075	0.0585	0.0835	0.0205	0.068	0.435
Arsenic (µg/L)	50	1	0.5	9	1	8	0.5	10	0.5	0.5	1
Barium (µg/L)	12	17	16	17.5	18	33	21.5	19	36	32	37
Beryllium (µg/L)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1
Boron (µg/L)	25	110	3,565	2,855	440	2,005	50	2,560	130	790	244
Cadmium (µg/L)	0.75	0.05	6.4	0.05	0.3	0.05	0.05	0.2	0.05	0.1	2
Chromium (total) (µg/L)	3	0.5	0.5	1.25	10.5	0.75	0.75	26	0.5	0.5	1
Copper (µg/L)	2	0.5	1	0.5	2	0.5	0.5	5	1	0.75	1
Iron (µg/L)	120,500	53,450	4,605	87,400	12,350	42,850	11,200	28,750	286.5	15,700	664
Mercury (µg/L)	0.02	0.02	0.02	0.02	-	0.02	0.02	0.02	0.02	0.02	<0.1
Manganese (µg/L)	756	8,490	8,155	17,500	2,345	18,100	723	12,850	626	13,150	5,704
Molybdenum (µg/L)	0.5	0.5	0.5	1	3	0.5	0.5	3	0.5	2	1
Nickel (µg/L)	21	52	974.5	929.5	375	1,115	4	963.5	63	338.5	550.9
Lead (µg/L)	22	0.5	4.5	0.5	2	0.5	0.5	21	0.5	0.5	1
Selenium (µg/L)	0.3	0.3	3.6	0.2	0.3	0.1	0.1	0.8	0.1	0.1	2
Silver (µg/L)	0.5	0.5	0.5	0.5	-	0.5	0.5	0.5	0.5	0.5	<1
Zinc (µg/L)	224	24	1,035	139.5	428.5	117.5	6	455.5	85	120	908

^a Groundwater Collection Basin Pre-Ash Placement 90th Percentile from Aurecon (2017)

Shaded cells value equals or exceeds the trigger level

Bold indicates result equals exceeds 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.

Up-gradient of the ash repository, the 50th percentile concentrations of arsenic, chromium (total), copper, iron and manganese from the 2017/18 reporting period were identified at levels above the pre-placement trigger levels. These levels are considered to represent background levels of these metals in the region.

Inside the ash repository a clear change in the groundwater chemistry is visible, with increases evident in the 50th percentile concentrations for EC, TDS, sulphate, chloride, boron, chromium (to a degree), 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 ash repository. Increased concentrations of cadmium, fluoride, lead, selenium and zinc were also evident in this area, but in the vicinity of D10 only. This is potentially associated with influences on groundwater quality from the south (outside of the ash repository footprint), where goaf mine workings have been noted as influences on groundwater quality (Connell Wagner 2007).

Similarly, adjacent to the ash repository elevated 50th percentile concentrations for EC, TDS, sulphate, chloride, boron, nickel and lead were identified at D1 and D19 to the south-west and west of the ash repository. It is noted that bore D3 appeared to show little to no influence from the ash repository, which is consistent with this bore's location in a cross-hydraulic gradient location relative to the ash repository.

Down-gradient bores D8 and D9 have identified elevated boron, molybdenum (relative minor change evident), sulphate, iron, manganese, chloride, TDS and EC with 50th percentile results for the 2017/18 reporting period exceeding the 90th percentile pre-placement levels. Elevated concentrations of iron and manganese are considered to be associated with background groundwater quality with the reported levels comparable to those identified at D4 and D5. The elevated levels of boron, sulphate, chloride, TDS and EC suggest a change in water quality in the vicinity of Neubecks Creek and down gradient of the ash repository.

7.6.2

Trend Analysis

A review of concentration trends with respect to key indicators including EC, TDS, sulphate, chloride, boron, iron, manganese is presented below. These indicators were selected based on their exceedances above ANZECC (2000) Trigger Values and the observed increase down-gradient of the ash repository. Graphs were generated for selected bores from the inside of the ash repository (D10 and D11), adjacent to the ash repository (D1) and adjacent to Neubecks Creek (D9) and reviewed as part of the trend analysis as presented in *Annex I*.

Electrical Conductivity

EC in D11 has been increasing since at least September 2015. EC in D9 was below that recorded in D1, D10 and D11 and just above the local guideline trigger. However, EC has been above the pre-placement trigger levels since at least September 2015. An increasing trend in EC in D9 was noted from November 2017. EC in D10 has been variable over time but generally higher than recorded for D1, D9 and D11.

TDS

A generally increasing trend in TDS concentrations was noted for D1, D10 and D11 since January 2010 especially between 2010 and 2012. TDS concentrations have generally been more variable since November 2013. TDS concentrations in D9 have not been increasing recently but are still above the pre-placement trigger levels.

Sulfate

A large increase in sulfate concentrations was noted in December 2017 in D11 and concentrations continue to rise. Increasing sulfate concentrations trend are also present in D1 and D10. Sulfate concentrations in D9 have been generally stable since November 2013 but an increasing trend was noted during this monitoring round.

Chloride

Generally increasing chloride trends were noted for D1, D10 and D11 most notably from the end of October 2013. In D10, chloride concentrations slowed their increase from September 2015. Chloride concentrations were generally stable in D9 from November 2013 to May 2018; however, a spike in concentration was noted in the last round of sampling during this monitoring period in June 2018 where chloride concentration was the highest since at least January 2010 when the earliest data was available.

Boron

Boron concentrations have generally been variable over time especially in D1 and D10. A significant increase in boron concentrations was noted in D11 in November 2013. Boron concentrations have been generally lower in D9; however, they have increased since December 2016 and have been above both trigger levels since April 2013.

Iron

Increases in iron concentrations were noted from November 2013 in D1 and D11 but are highly variable over time. Iron concentrations in D9 and D10 generally increased from November 2013 but peaked in November 2014 and have been generally stable since then with a possible decrease but remaining highly variable. The differences identified in D10 are potentially associated with influences on groundwater quality from the south (outside of the ash repository footprint), where goaf mine workings have been noted as influences on groundwater quality (Connell Wagner 2007).

Manganese

Manganese concentrations have been generally increasing over time in D1, D9, D10 and D11. The rate of increase decreased from approximately July 2014 in D9 and D10 and January 2015 in D1 and D11. Concentrations have been highly variable since then. A possible decrease in manganese concentrations was noted in D1 and D11 since March 2018. However, a significant increase in manganese concentrations to their highest point since at least January 2010 was noted in D9 in September 2017 with a peak in March 2018. As noted earlier, D10 is potentially being influenced by groundwater from the south of the site, rather than the ash repository itself, and therefore the changes in manganese are not uniform in D10 and D9.

7.6.3 Water Management and Monitoring Plan

As noted previously, the Water Management and Monitoring Plan seeks to minimise the impacts that the brine conditioned ash disposal area could have on groundwater and therefore surface waters in the vicinity of the ash repository (Connell Wagner 2008). Further to this, the plan also aims to provide measures to identify early changes to water quality in order to provide sufficient time for investigations to be made.

The surface water and groundwater results suggest an increase in groundwater concentrations for selected analytes which is not consistent with the groundwater modelling predictions presented in Connell Wagner (2008). Whilst the results of the monitoring program have identified early changes to the water quality, the water management measures are potentially not adequate to limit brine leaching into the sub-surface groundwater.

With respect to surface waters, elevated concentrations of chloride, sulphate, manganese and nickel are in part considered to be associated with overall changes in quality down-stream of the ash repository, with some contribution from background conditions.

It is noted that the exceedances for manganese and nickel were intermittent, with levels declining after an initial peak in January/February 2018, and in the case of manganese to below the adopted ANZECC (2000) trigger value. Further to this, spikes in EC, TDS, and sulphate were also reported at the time of peak concentrations of manganese and nickel during January and February 2018 in WX22, with rainfall reported as being its highest (in December 2017), just prior to these events (refer to *Section 7*). The early warning assessment, suggests a potential change in the surface water quality down-stream of the ash repository based on the chloride and nickel 50th percentile results.

The assessment of groundwater conditions identified a change in the groundwater quality inside the ash repository and immediately adjacent to the ash repository. These changes have triggered an independent groundwater assessment, as noted below. Adjacent to Neubecks Creek, elevated levels of pH, copper, iron and manganese are evident in groundwater monitoring well D9 located on the south side Neubecks Creek, and considered to be associated with background concentrations, consistent with data from up hydraulic gradient monitoring wells D4 and D5. The elevated EC and TDS, sulphate, boron identified in this area (at D9 only above Environmental Goals) are potentially associated with brine conditioned ash placement.

We understand that EnergyAustralia NSW have commissioned an independent assessment with respect to changes in water quality, which is being addressed separately to this AEMR.

As per the *Annual Review Guideline*, the Annual Review should incorporate a summary of the rehabilitation performance of the operation against the rehabilitation targets. Refer to *Table 14* below for a summary of site rehabilitation works.

Table 14 *Summary of Site Rehabilitation Works - Mt Piper Ash Repository 2017/18*

Area Type	Previous Reporting Period	This Reporting Period	Next Reporting Period
Total footprint ¹	71.2	71.2	71.2
Total active disturbance ²	51.3	51.3	51.3
Land being prepared for rehabilitation ³	25.3	25.3	25.3
Land under active rehabilitation ⁴	19.9	19.9	19.9
Completed rehabilitation ⁵	0	0	0

1 Total footprint includes Brine in Ash, MPA1 (fresh ash Placement) & Lamberts North. Noting that the latter locations are not relevant to this AEMR.

2 Includes all areas ultimately requiring rehabilitation including water management infrastructure, ash placement areas, access roads.

3 Includes the sum of disturbed land that is under the following rehab phases - decommissioning, landform establishment and growth medium development

4 Includes areas undergoing rehab and being managed to achieved relinquishment (i.e. areas that have been revegetated but are actively being managed).

5 Areas that require formal sign-off by the DPE that the area has successfully met the rehab land use objectives.

The rehabilitation works for the next reporting period include a trial using blended materials to open up the capping profile to facilitate rainfall infiltration to support vegetation establishment. Trials will be undertaken to augment the site conditions where materials cannot be made available through resource recovery exemptions.

In addition to the above two 20 ML lined dams have recently been installed and commissioned to the south of the ash repository to accept brine water or clean water from the capped areas of the ash repository.

A new groundwater bore (BBH5A) has been installed adjacent to B5 to continuously pump water from within the ash repository. It has been operational since 26 June 2018 and estimates indicate that the volume of groundwater removed to date has been minimal. Details will be available in the next reporting period.

9.1 COMMUNITY ENGAGEMENT

A Community Reference Group (CRG), comprising representatives from the local community and EA NSW, was established in 2007, has the objective of sharing information and ideas between interested parties and engaging with and building relations with the local community. The CRG meets on a quarterly basis to discuss matters relating to operations at Mt Piper (and Wallerawang) Power Station, including activities at the ash repositories. During the reporting period EA NSW held CRG meetings on the following occasions:

- 23 August 2017;
- 7 December 2017; and
- 14 March 2018.

The CRG meeting minutes are publicly available via the Mt Piper and Wallerawang Community page on EA NSW's website³.

9.2 COMMUNITY CONTRIBUTIONS

Mt. Piper Power Station and the associated Mt. Piper Brine in Ash Co-Placement Area has contributed to the economy of the district and State through the purchase of materials and services from local and regional suppliers, and by direct and indirect employment. EA NSW continues to support a number of community groups and organisations through in-kind support and financial sponsorship programs. During the reporting period, EA NSW had the opportunity to support up to 60 different community organisations and events during the reporting period. A comprehensive list of these organisations and events are included in *Annex J*.

9.3 COMMUNITY COMPLAINTS

During the 2017-18 reporting period, no complaints were recorded in relation to activities at Mt Piper Brine in Ash Co-Placement Area. Please refer to *Annex J* for further details on how EA NSW deal with complaints

³ www.energyaustralia.com.au

INDEPENDENT AUDIT

There was no independent environmental audit undertaken during the reporting period. There is no requirement under Project Approval S90/01696 to perform an independent audit on the Mt Piper Brine in Ash Co-Placement Project activities.

Despite this, the Mt Piper Brine in Ash Co-Placement Project is subject to EA NSW's internal environmental audit and inspection schedule.

INCIDENTS AND NON-COMPLIANCES

EA NSW have advised that there were no reportable incidents, official cautions, warning letters, penalty notices or prosecution proceedings by any regulatory body made via LendLease during the reporting period.

There were no environmental incidents recorded during the 2017-18 reporting period.

ACTIVITIES TO BE COMPLETED IN THE NEXT REPORTING PERIOD

The following activities will be occurring in the next reporting period:

- Rehabilitation works for the next reporting period include trial using blended materials to open up the capping profile to facilitate rainfall infiltration to support vegetation establishment. Trials will be undertaken to augment the site conditions where materials cannot be made available through resource recovery exemptions.
- The increase in height will require more surface water piping and infrastructure to efficiently convey rainfall runoff to the newly constructed 20 ML ponds at RL 940 m.
- The surface water management plan will be revised to accommodate the newly commissioned ponds.

12.1**RECOMMENDATIONS**

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

- The results of the surface water and groundwater assessment indicate changes to the water quality conditions at and surrounding the site. It is recommended that further consideration of the changed water quality conditions is made. EA NSW have advised that an independent assessment is in progress;
- Re-evaluation of the Environmental Goals set is recommended to establish an updated set of risk based targets. In particular it is noted that the drinking water guidelines referenced in ANZECC (2000) and consequently the Environmental Goals based on NHMRC (1996) Drinking Water Guidelines, have been superseded by the Australian Drinking Water Guidelines 6 in 2011 (revised October 2017, NHMRC 2011). It is recommended that this should form part of the independent assessment;
- Stream flow conditions are reported at the time of surface water sampling, including gauge height and description or photo of stream condition. This would assist in evaluating whether surface water samples were obtained in periods of high or low flows;

- It is recommended that the trigger mechanism in the Water Monitoring and Management Plan be developed further to include associated actions to be taken in the event of a non-compliance with the Environmental Goals. The Water Monitoring and Management plan should be revised and updated following the outcome of independent groundwater assessment;
- Metals analysis for groundwater samples is presented as total metals (unfiltered). It is recommended that field filtration of groundwater samples for metals be undertaken as the field preservation of unfiltered samples could potentially result in an overestimation of metals concentrations if excessive sediment is present in the sample obtained; and
- Review of field based and laboratory QA/QC measures is recommended.

Australian and New Zealand Environment and Conservation Council (ANZECC) (2000) National Water Quality Management Strategy. Paper No. 4. Australian and New Zealand Guidelines for Fresh and Marine Water Quality, Volume 1: The Guidelines (Chapter 1-7).

Aurecon, 2017. Mt Piper Brine Conditioned Fly Ash Co-Placement Environmental Monitoring Report, Annual Environmental Monitoring Report 2016/17, Revision 3, 25 September 2017;

Bureau of Meteorology, 2018. Local climate data from Lithgow (Coerwull) Weather Station No: 063226.

Connell Wagner, 21 June 2007. Statement of Environmental Effects, Mount Piper Power Station, Extension of Brine Conditions Ash Placement Area. Prepared by Environmental Services, Pacific Power International for Delta Electricity;

CEH Survey, 2018. Lend Lease Services Pty Ltd, Mount Piper – Ash Placement, Survey: 21st June 2018. Drawing No: MPA0618 (as surveyed), dated 21/06/18;

Connell Wagner, 2007. Statement of Environmental Effects, Mount Piper Power Station, Extension of Brine Conditions Ash Placement Area. Prepared by Environmental Services, Pacific Power International for Delta Electricity, 21 June 2007;

Connell Wagner, 2008, Mt Piper Power Station Brine Conditions Flyash Co-placement Extension Water Management and Monitoring Plan, Delta Electricity Western, Revision 3, 26 September 2008;

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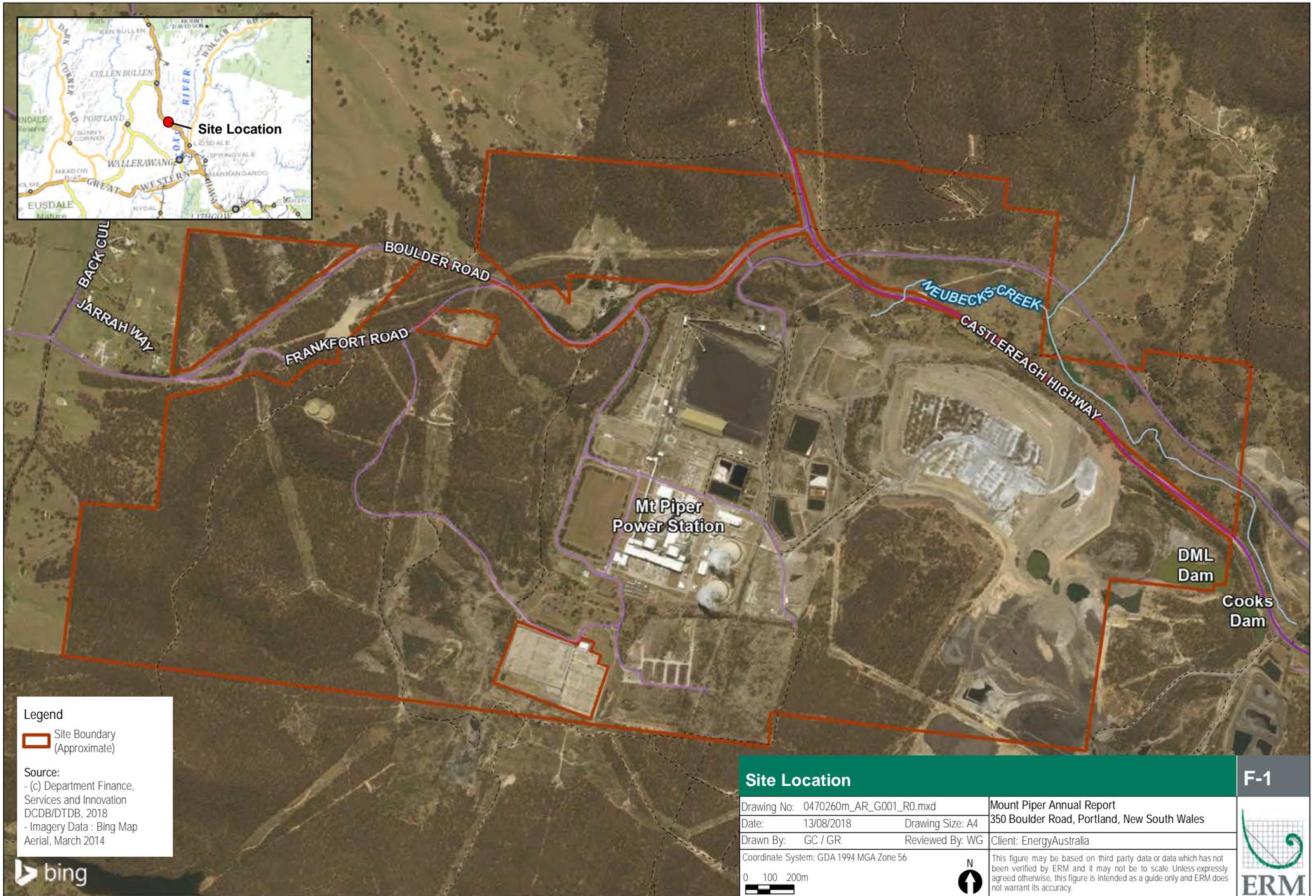
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Figures

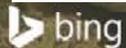


Legend

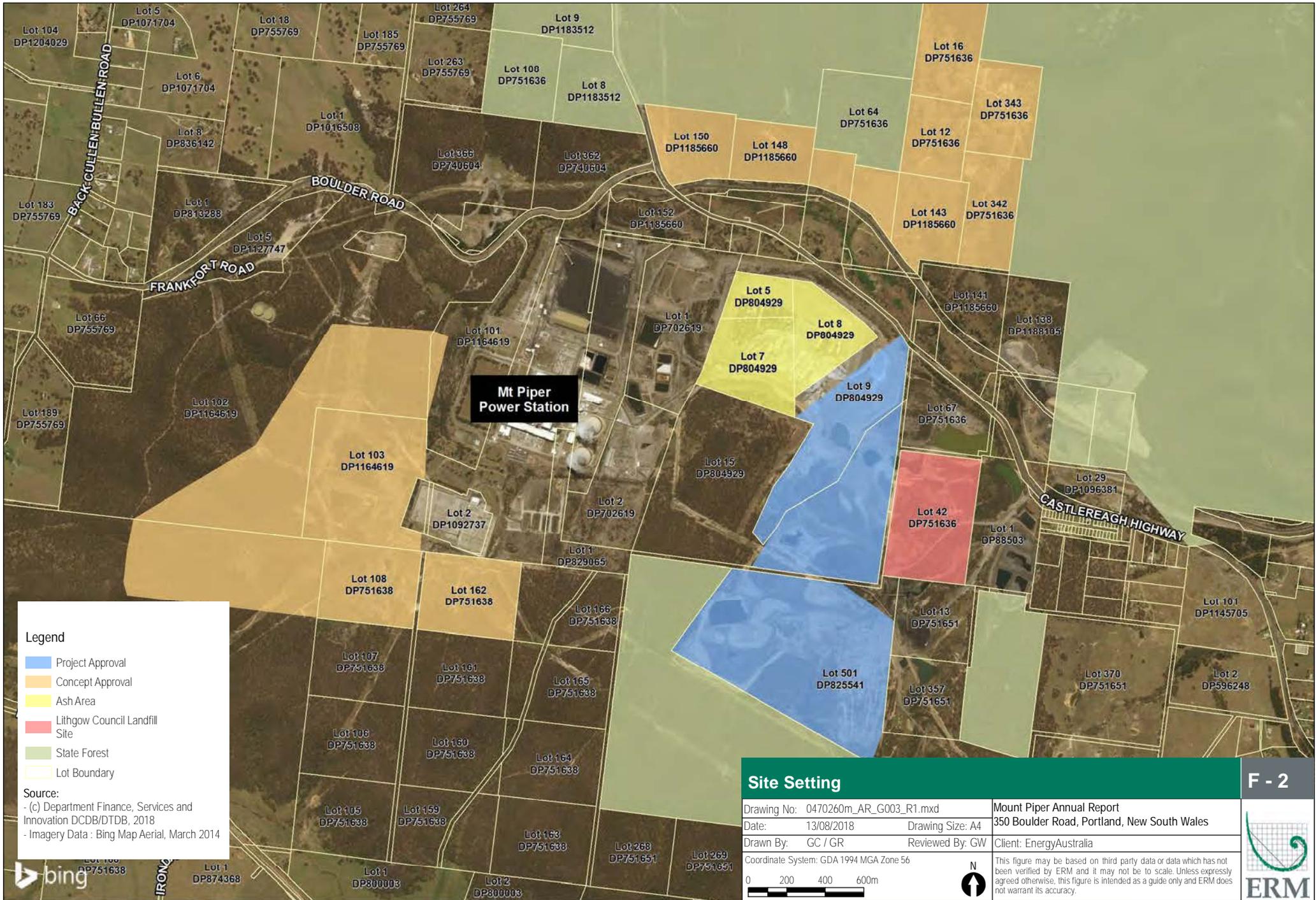
Site Boundary (Approximate)

Source:

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



Site Location		F-1
Drawing No: 0470260m_AR_G001_R0.mxd	Mount Piper Annual Report	
Date: 13/08/2018	350 Boulder Road, Portland, New South Wales	
Drawn By: GC / GR	Client: EnergyAustralia	
Reviewed By: WG		
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

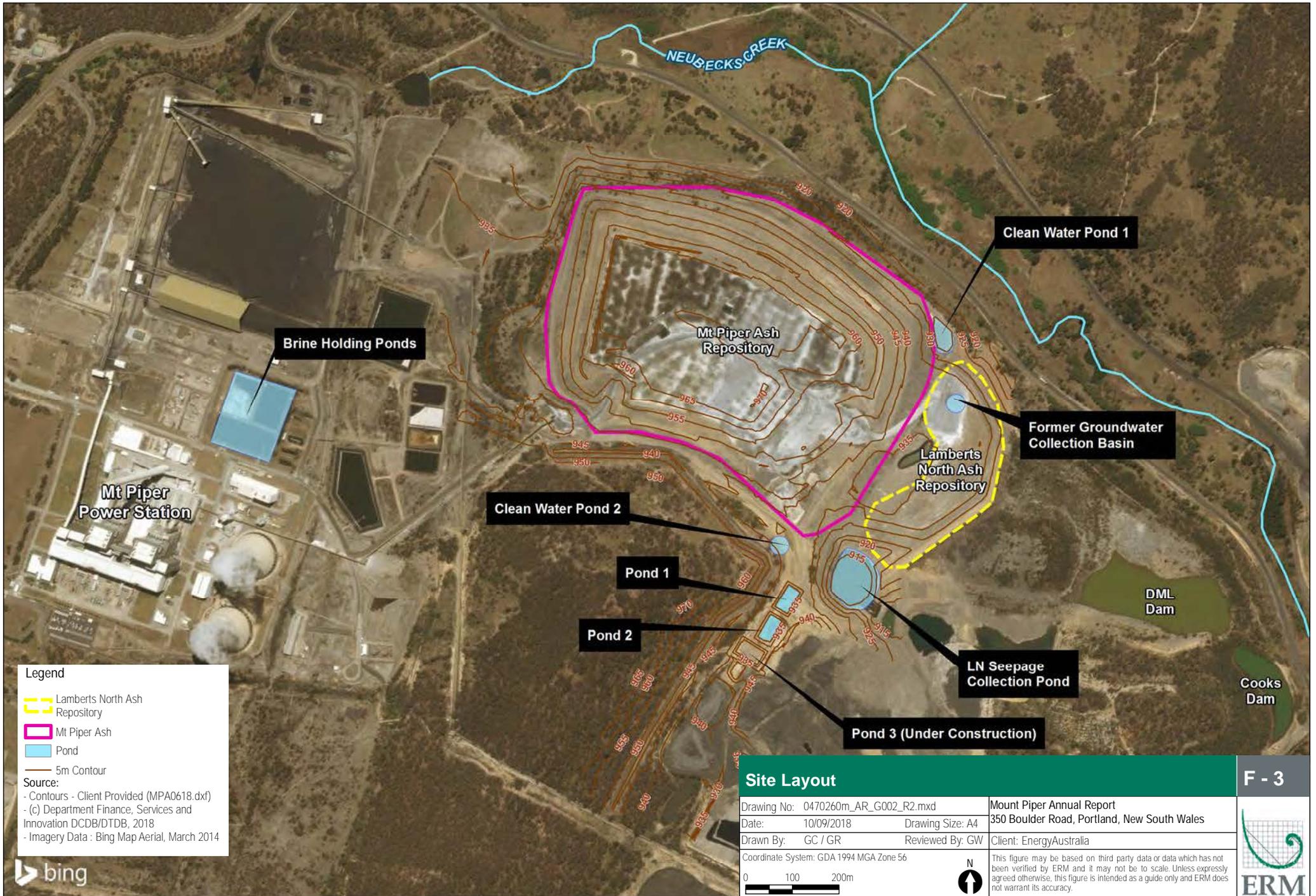
- Project Approval
- Concept Approval
- Ash Area
- Lithgow Council Landfill Site
- State Forest
- Lot Boundary

Source:

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

Site Setting		F - 2
Drawing No: 0470260m_AR_G003_R1.mxd	Mount Piper Annual Report	
Date: 13/08/2018	Drawing Size: A4	350 Boulder Road, Portland, New South Wales
Drawn By: GC / GR	Reviewed By: GW	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

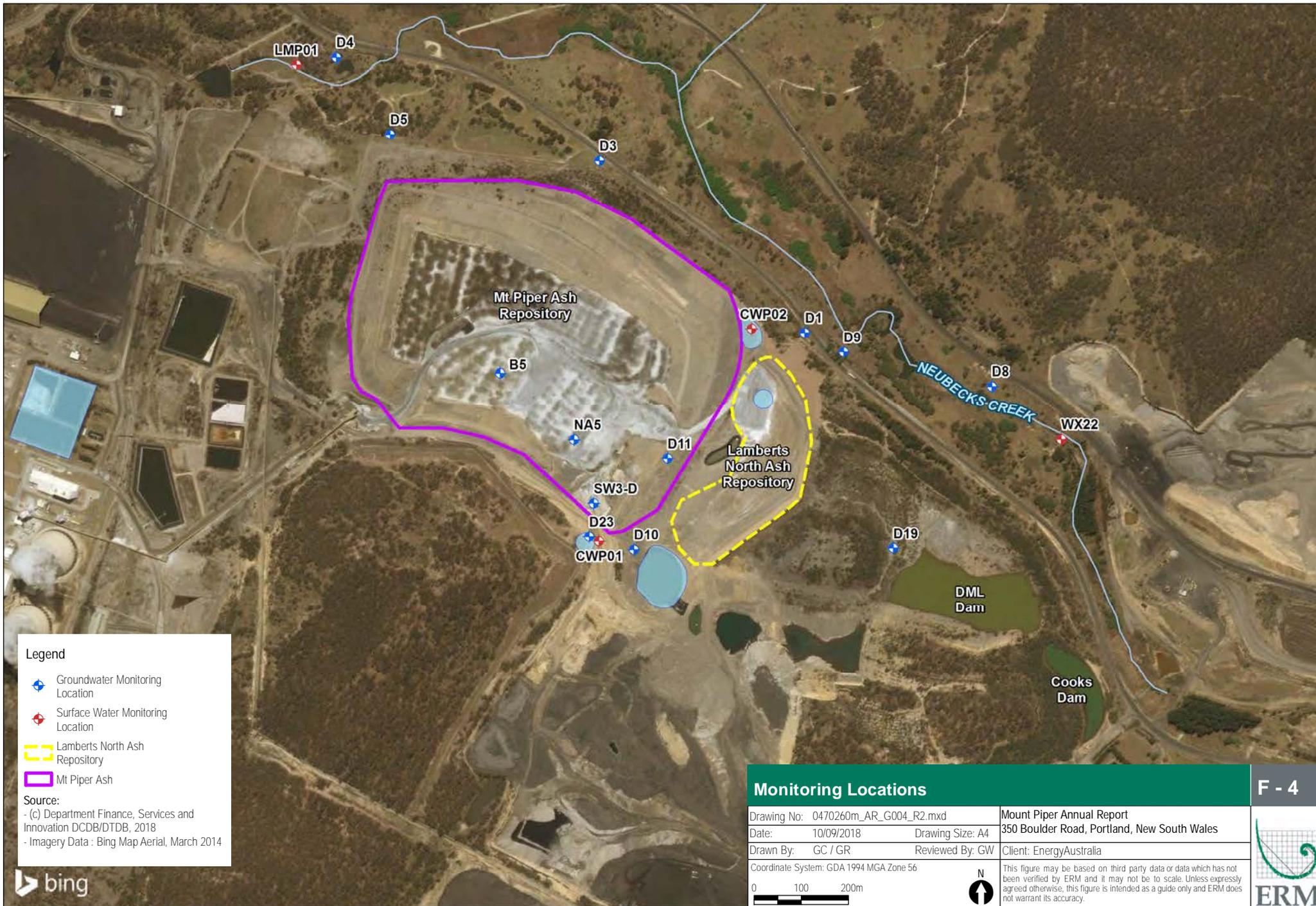
- Lamberts North Ash Repository
- Mt Piper Ash
- Pond
- 5m Contour

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

Drawing No: 0470260m_AR_G002_R2.mxd	Mount Piper Annual Report		
Date: 10/09/2018	Drawing Size: A4		350 Boulder Road, Portland, New South Wales
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.



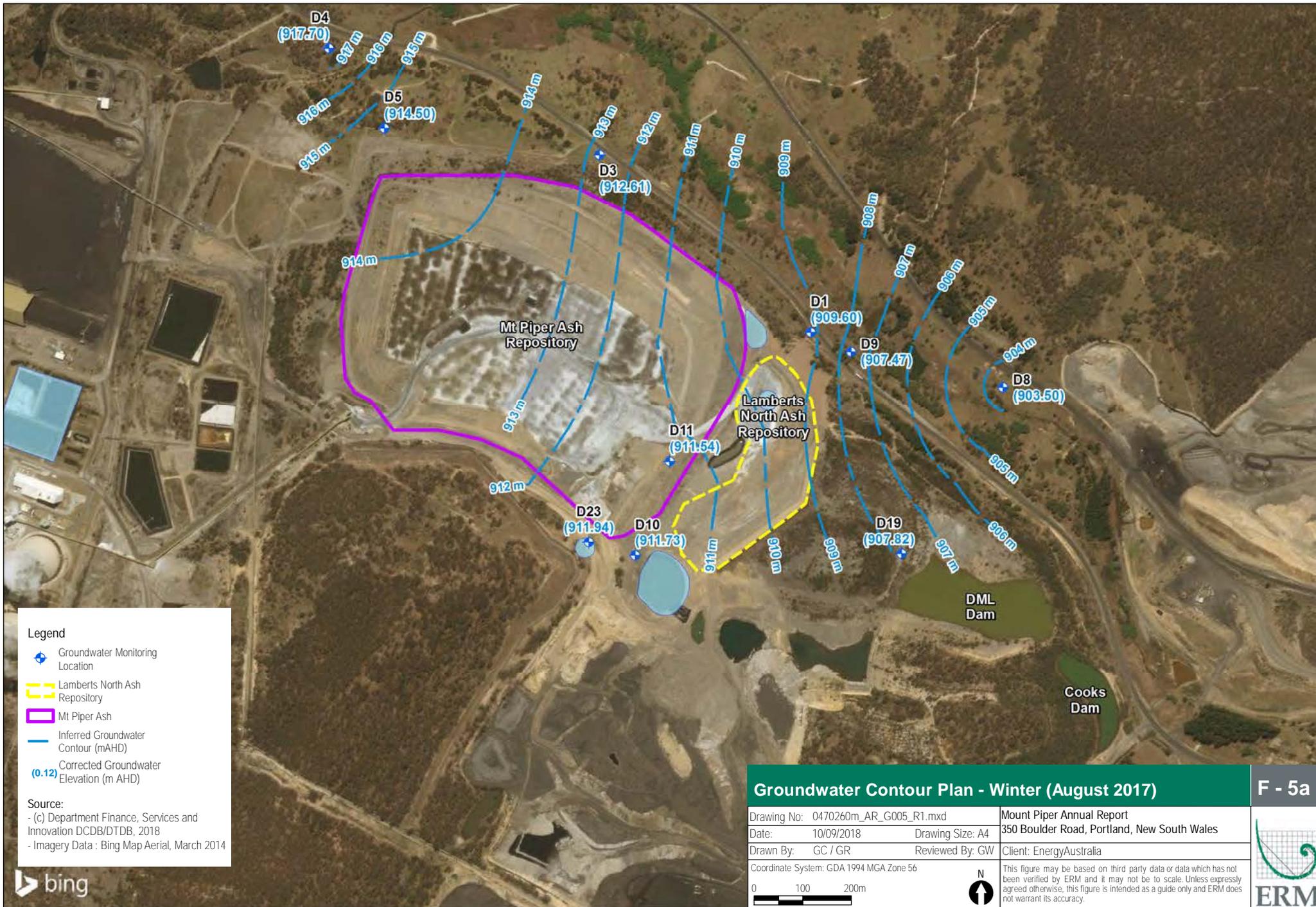
Legend

- Groundwater Monitoring Location
- 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

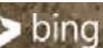
Monitoring Locations		F - 4
Drawing No: 0470260m_AR_G004_R2.mxd	Mount Piper Annual Report	
Date: 10/09/2018	Drawing Size: A4	350 Boulder Road, Portland, New South Wales
Drawn By: GC / GR	Reviewed By: GW	Client: EnergyAustralia
Coordinate System: GDA 1994 MGA Zone 56		This figure may be based on third 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 Location
-  Lamberts North Ash Repository
-  Mt Piper Ash
-  Inferred Groundwater Contour (mAHD)
-  (0.12) 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 - Winter (August 2017)

F - 5a

Drawing No: 0470260m_AR_G005_R1.mxd	Mount Piper Annual Report
Date: 10/09/2018	350 Boulder Road, Portland, New South Wales
Drawn By: GC / GR	Reviewed By: GW
Client: EnergyAustralia	

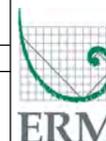
Mount Piper Annual Report
 350 Boulder Road, Portland, New South Wales
 Client: EnergyAustralia

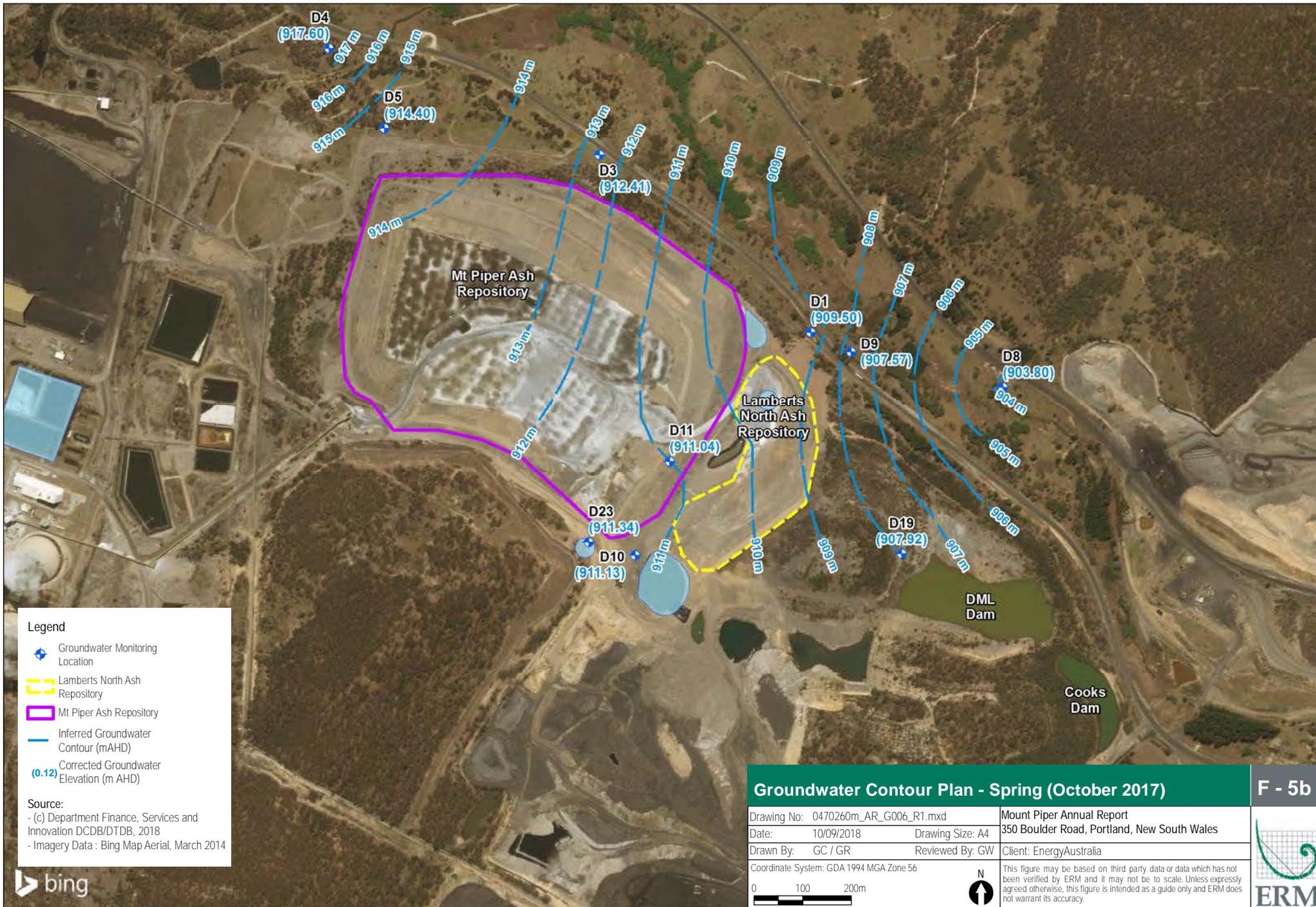
Coordinate System: GDA 1994 MGA Zone 56

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

-  Groundwater Monitoring Location
-  Lamberts North Ash Repository
-  Mt Piper Ash Repository
-  Inferred Groundwater Contour (mAHD)
-  (0.12) 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 - 5b

Drawing No: 0470260m_AR_G006_R1.mxd

Mount Piper Annual Report

Date: 10/09/2018

Drawing Size: A4

350 Boulder Road, Portland, New South Wales

Drawn By: GC / GR

Reviewed By: GW

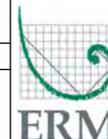
Client: EnergyAustralia

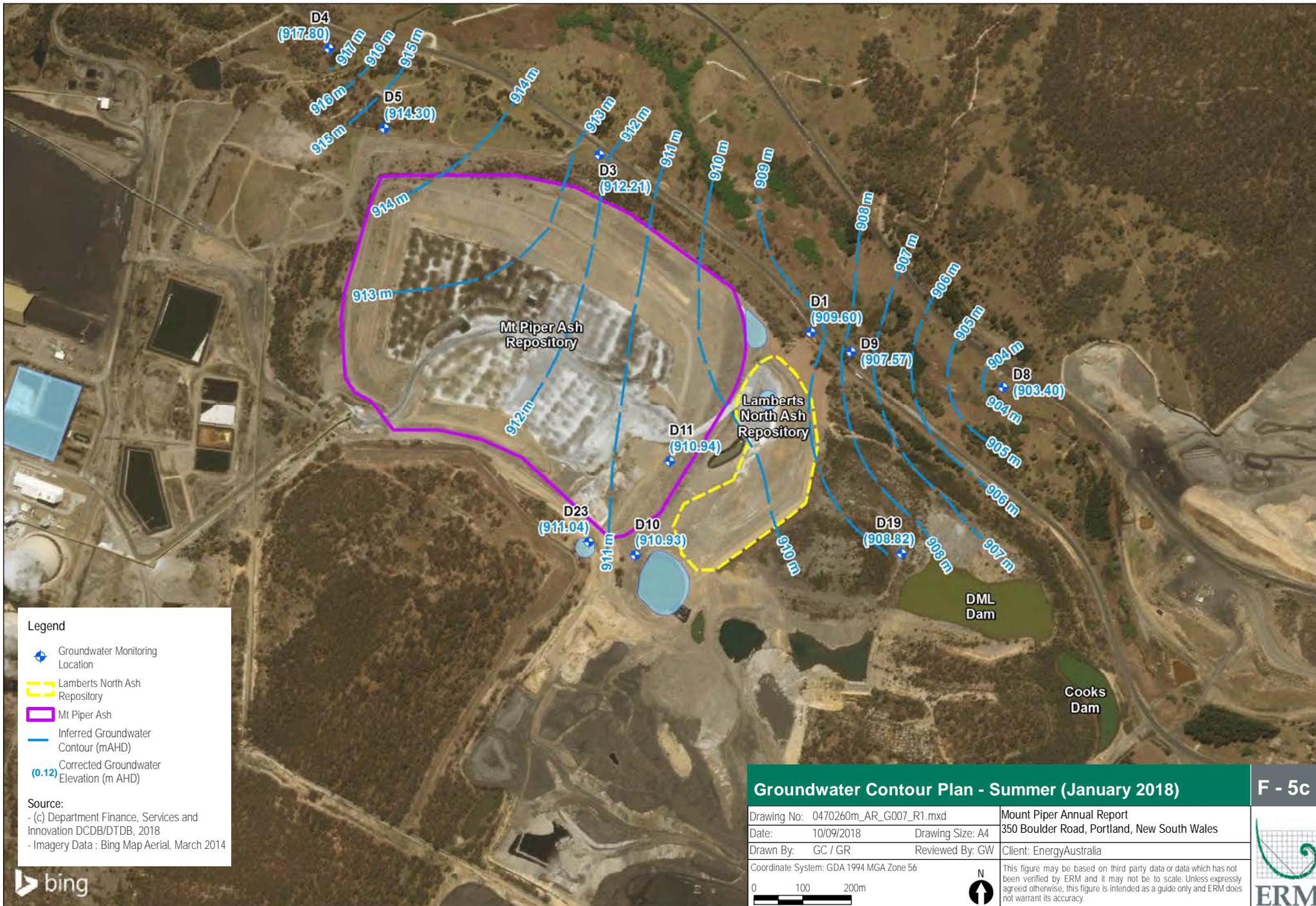
Coordinate System: GDA 1994 MGA Zone 56

0 100 200m



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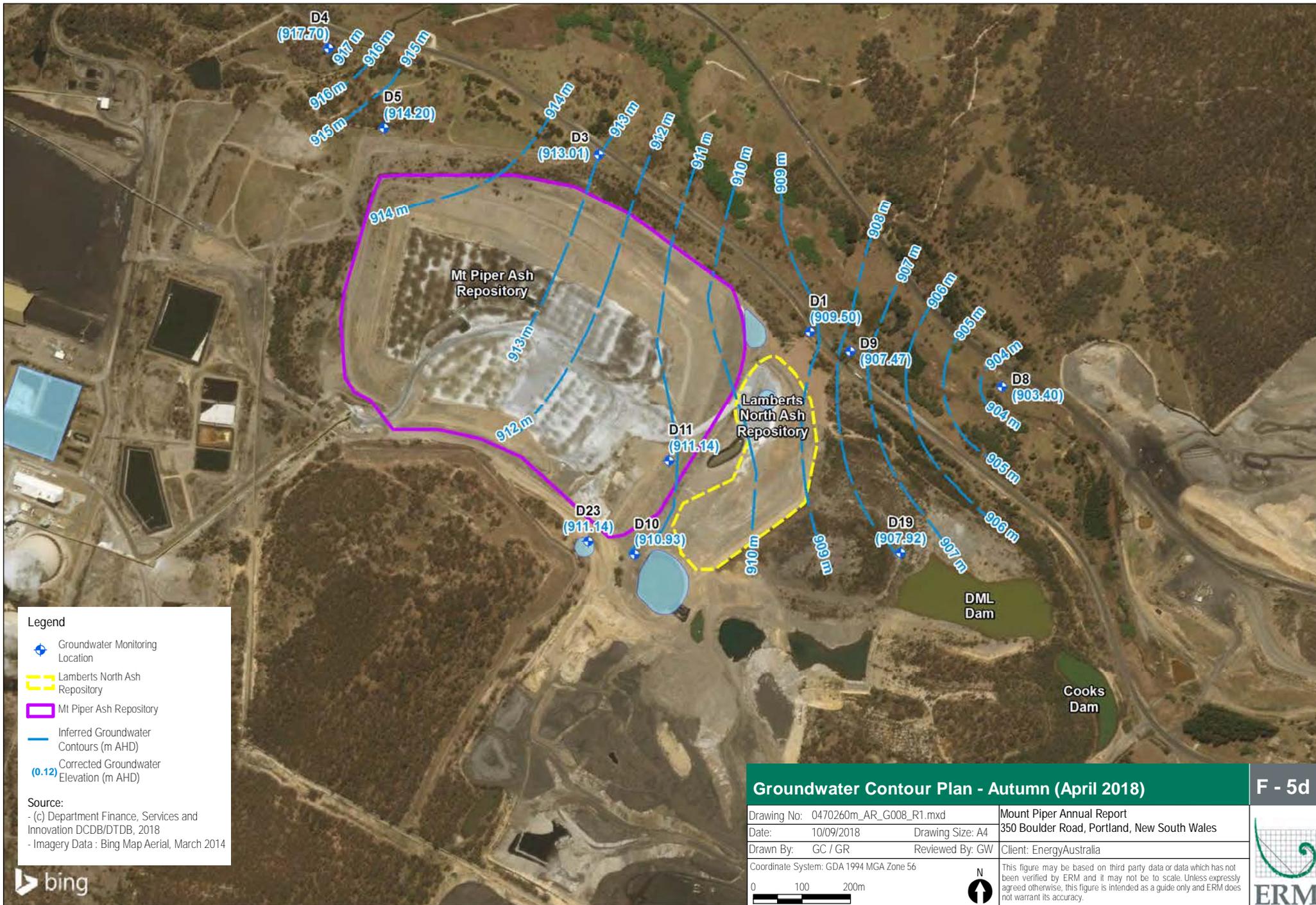
Legend

- Groundwater Monitoring Location
- Lamberts North Ash Repository
- Mt Piper Ash
- Inferred Groundwater Contour (mAHD)
- (0.12) 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 - Summer (January 2018) **F - 5c**

Drawing No: 0470260m_AR_G007_R1.mxd	Mount Piper Annual Report
Date: 10/09/2018	350 Boulder Road, Portland, New South Wales
Drawn By: GC / GR	Client: EnergyAustralia
Reviewed By: GW	
Coordinate System: GDA 1994 MGA Zone 56	
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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.	



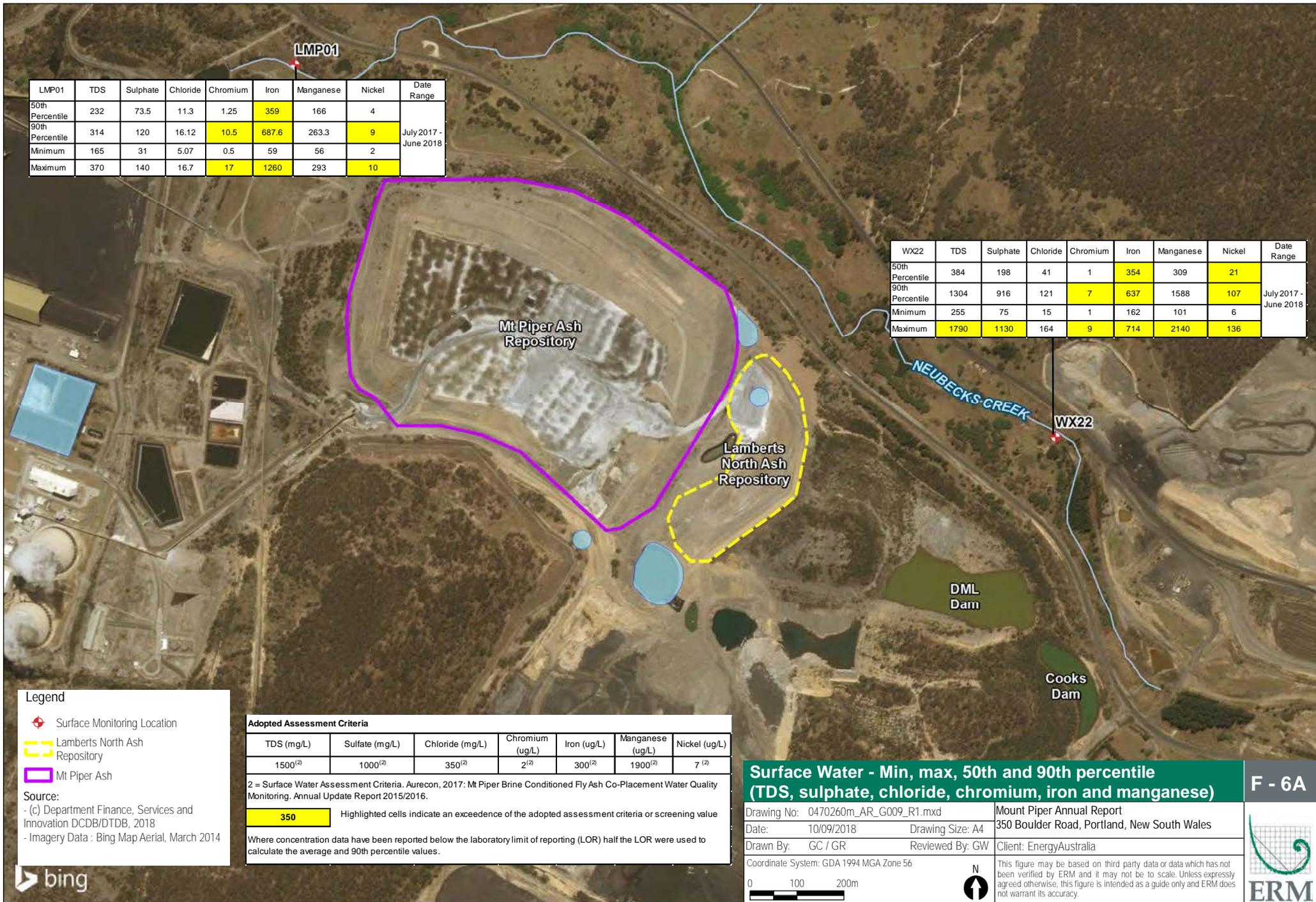
Legend

- Groundwater Monitoring Location
- Lamberts North Ash Repository
- Mt Piper Ash Repository
- Inferred Groundwater Contours (m AHD)
- (0.12) 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 - 5d
Drawing No: 0470260m_AR_G008_R1.mxd	Mount Piper Annual Report	
Date: 10/09/2018	Drawing Size: A4	350 Boulder Road, Portland, New South Wales
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.



LMP01	TDS	Sulphate	Chloride	Chromium	Iron	Manganese	Nickel	Date Range
50th Percentile	232	73.5	11.3	1.25	359	166	4	July 2017 - June 2018
90th Percentile	314	120	16.12	10.5	687.6	263.3	9	
Minimum	165	31	5.07	0.5	59	56	2	
Maximum	370	140	16.7	17	1260	293	10	

WX22	TDS	Sulphate	Chloride	Chromium	Iron	Manganese	Nickel	Date Range
50th Percentile	384	198	41	1	354	309	21	July 2017 - June 2018
90th Percentile	1304	916	121	7	637	1588	107	
Minimum	255	75	15	1	162	101	6	
Maximum	1790	1130	164	9	714	2140	136	

Legend

- Surface 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

TDS (mg/L)	Sulfate (mg/L)	Chloride (mg/L)	Chromium (ug/L)	Iron (ug/L)	Manganese (ug/L)	Nickel (ug/L)
1500 ⁽²⁾	1000 ⁽²⁾	350 ⁽²⁾	2 ⁽²⁾	300 ⁽²⁾	1900 ⁽²⁾	7 ⁽²⁾

2 = Surface Water Assessment Criteria. Aurecon, 2017: Mt Piper Brine Conditioned Fly Ash Co-Placement Water Quality Monitoring. Annual Update Report 2015/2016.

350 Highlighted cells indicate an exceedence of the adopted assessment criteria or screening value

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 (TDS, sulphate, chloride, chromium, iron and manganese) **F - 6A**

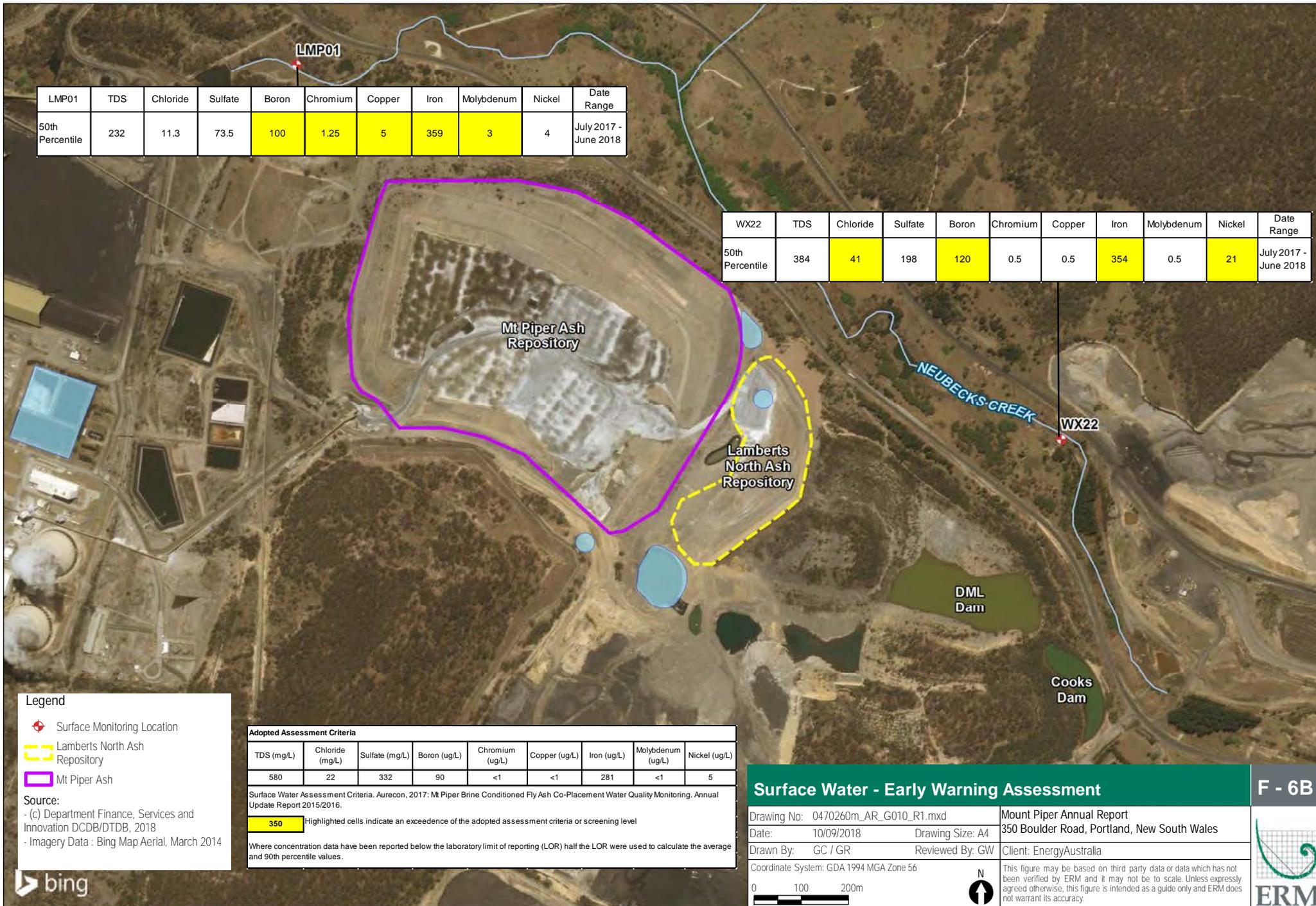
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Date: 10/09/2018	350 Boulder Road, Portland, New South Wales
Drawn By: GC / GR	Client: EnergyAustralia
Reviewed By: GW	

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.





LMP01	TDS	Chloride	Sulfate	Boron	Chromium	Copper	Iron	Molybdenum	Nickel	Date Range
50th Percentile	232	11.3	73.5	100	1.25	5	359	3	4	July 2017 - June 2018

WX22	TDS	Chloride	Sulfate	Boron	Chromium	Copper	Iron	Molybdenum	Nickel	Date Range
50th Percentile	384	41	198	120	0.5	0.5	354	0.5	21	July 2017 - June 2018

Legend

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

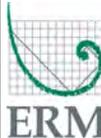
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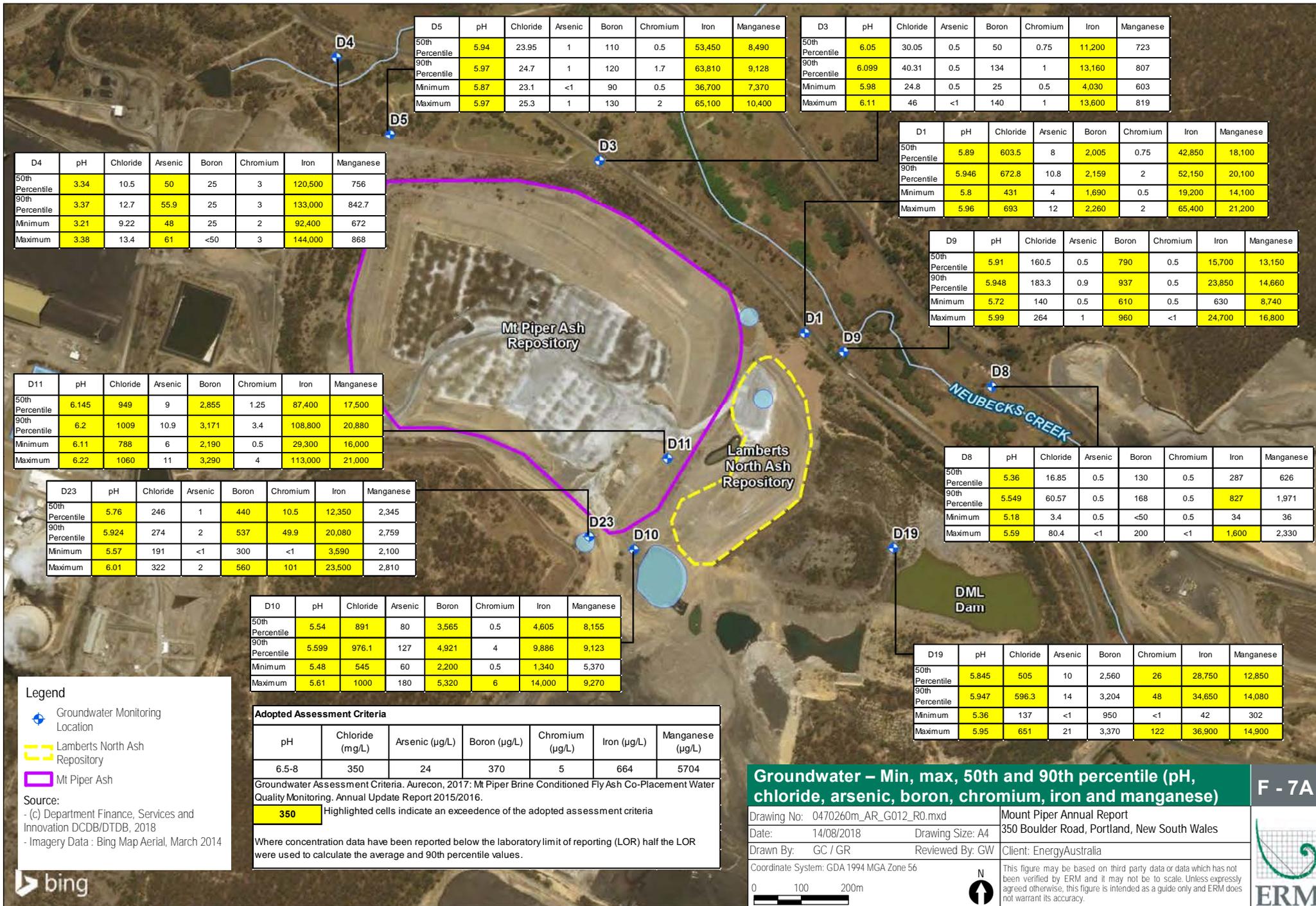
- (c) Department Finance, Services and Innovation DCDB/DTDB, 2018
- Imagery Data : Bing Map Aerial, March 2014

Adopted Assessment Criteria									
TDS (mg/L)	Chloride (mg/L)	Sulfate (mg/L)	Boron (ug/L)	Chromium (ug/L)	Copper (ug/L)	Iron (ug/L)	Molybdenum (ug/L)	Nickel (ug/L)	
580	22	332	90	<1	<1	281	<1	5	
Surface Water Assessment Criteria. Aurecon, 2017: Mt Piper Brine Conditioned Fly Ash Co-Placement Water Quality Monitoring. Annual Update Report 2015/2016.									
350	Highlighted cells indicate an exceedence of the adopted assessment criteria or screening level								
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_AR_G010_R1.mxd	Mount Piper Annual Report
Date: 10/09/2018	350 Boulder Road, Portland, New South Wales
Drawn By: GC / GR	Client: EnergyAustralia
Reviewed By: GW	
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.





D4	pH	Chloride	Arsenic	Boron	Chromium	Iron	Manganese
50th Percentile	3.34	10.5	50	25	3	120,500	756
90th Percentile	3.37	12.7	55.9	25	3	133,000	842.7
Minimum	3.21	9.22	48	25	2	92,400	672
Maximum	3.38	13.4	61	<50	3	144,000	868

D5	pH	Chloride	Arsenic	Boron	Chromium	Iron	Manganese
50th Percentile	5.94	23.95	1	110	0.5	53,450	8,490
90th Percentile	5.97	24.7	1	120	1.7	63,810	9,128
Minimum	5.87	23.1	<1	90	0.5	36,700	7,370
Maximum	5.97	25.3	1	130	2	65,100	10,400

D3	pH	Chloride	Arsenic	Boron	Chromium	Iron	Manganese
50th Percentile	6.05	30.05	0.5	50	0.75	11,200	723
90th Percentile	6.099	40.31	0.5	134	1	13,160	807
Minimum	5.98	24.8	0.5	25	0.5	4,030	603
Maximum	6.11	46	<1	140	1	13,600	819

D1	pH	Chloride	Arsenic	Boron	Chromium	Iron	Manganese
50th Percentile	5.89	603.5	8	2,005	0.75	42,850	18,100
90th Percentile	5.946	672.8	10.8	2,159	2	52,150	20,100
Minimum	5.8	431	4	1,690	0.5	19,200	14,100
Maximum	5.96	693	12	2,260	2	65,400	21,200

D9	pH	Chloride	Arsenic	Boron	Chromium	Iron	Manganese
50th Percentile	5.91	160.5	0.5	790	0.5	15,700	13,150
90th Percentile	5.948	183.3	0.9	937	0.5	23,850	14,660
Minimum	5.72	140	0.5	610	0.5	630	8,740
Maximum	5.99	264	1	960	<1	24,700	16,800

D11	pH	Chloride	Arsenic	Boron	Chromium	Iron	Manganese
50th Percentile	6.145	949	9	2,855	1.25	87,400	17,500
90th Percentile	6.2	1009	10.9	3,171	3.4	108,800	20,880
Minimum	6.11	788	6	2,190	0.5	29,300	16,000
Maximum	6.22	1060	11	3,290	4	113,000	21,000

D8	pH	Chloride	Arsenic	Boron	Chromium	Iron	Manganese
50th Percentile	5.36	16.85	0.5	130	0.5	287	626
90th Percentile	5.549	60.57	0.5	168	0.5	827	1,971
Minimum	5.18	3.4	0.5	<50	0.5	34	36
Maximum	5.59	80.4	<1	200	<1	1,600	2,330

D23	pH	Chloride	Arsenic	Boron	Chromium	Iron	Manganese
50th Percentile	5.76	246	1	440	10.5	12,350	2,345
90th Percentile	5.924	274	2	537	49.9	20,080	2,759
Minimum	5.57	191	<1	300	<1	3,590	2,100
Maximum	6.01	322	2	560	101	23,500	2,810

D10	pH	Chloride	Arsenic	Boron	Chromium	Iron	Manganese
50th Percentile	5.54	891	80	3,565	0.5	4,605	8,155
90th Percentile	5.599	976.1	127	4,921	4	9,886	9,123
Minimum	5.48	545	60	2,200	0.5	1,340	5,370
Maximum	5.61	1000	180	5,320	6	14,000	9,270

D19	pH	Chloride	Arsenic	Boron	Chromium	Iron	Manganese
50th Percentile	5.845	505	10	2,560	26	28,750	12,850
90th Percentile	5.947	596.3	14	3,204	48	34,650	14,080
Minimum	5.36	137	<1	950	<1	42	302
Maximum	5.95	651	21	3,370	122	38,900	14,900

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						
pH	Chloride (mg/L)	Arsenic (µg/L)	Boron (µg/L)	Chromium (µg/L)	Iron (µg/L)	Manganese (µg/L)
6.5-8	350	24	370	5	664	5704
350	Highlighted cells indicate an exceedence of the adopted assessment criteria					

Groundwater Assessment Criteria. Aurecon, 2017: Mt Piper Brine Conditioned Fly Ash Co-Placement Water Quality Monitoring. Annual Update Report 2015/2016.

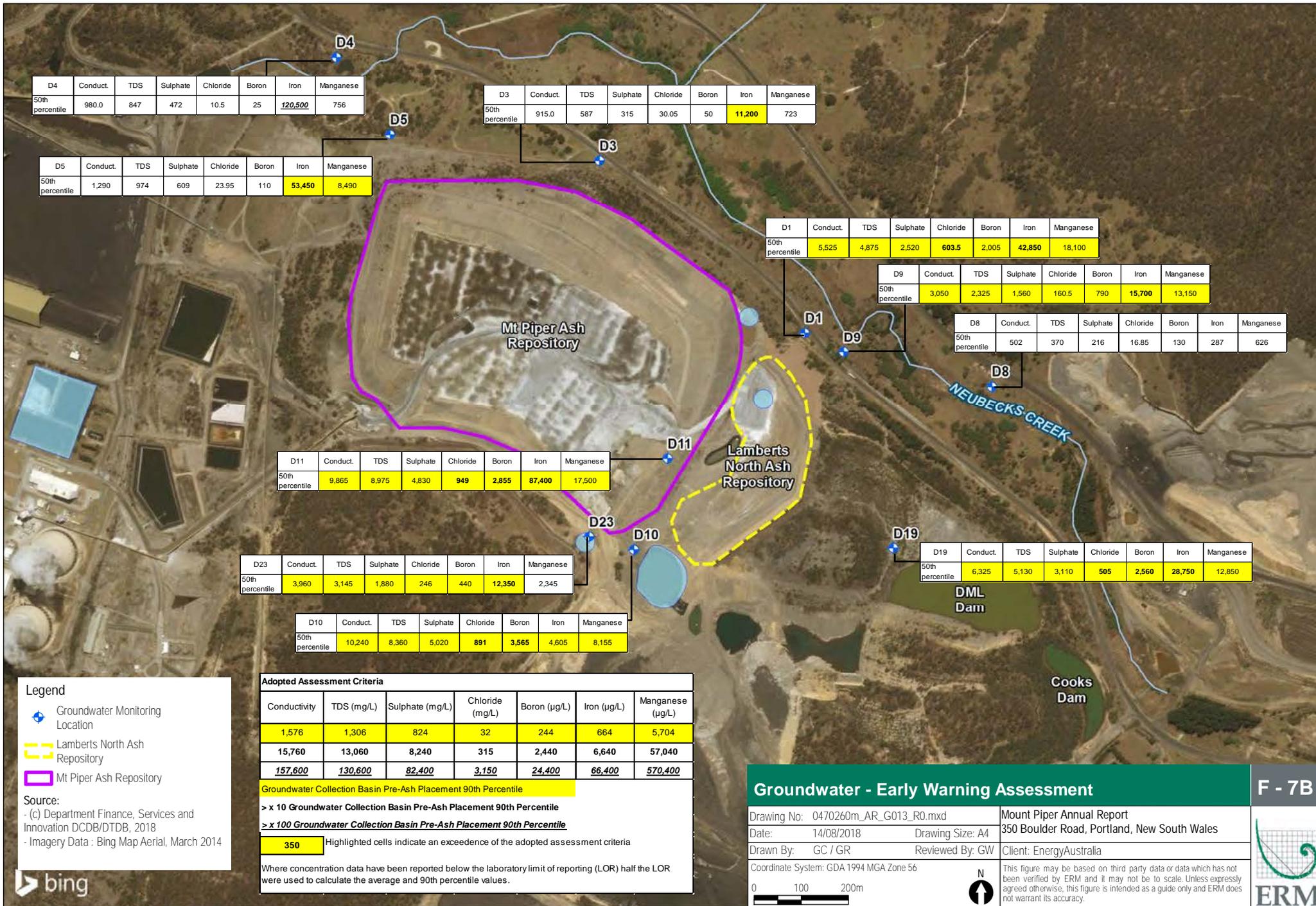
Where concentration data have been reported below the laboratory limit of reporting (LOR) half the LOR were used to calculate the average and 90th percentile values.

Groundwater – Min, max, 50th and 90th percentile (pH, chloride, arsenic, boron, chromium, iron and manganese) **F - 7A**

Drawing No: 0470260m_AR_G012_R0.mxd	Mount Piper Annual Report
Date: 14/08/2018	350 Boulder Road, Portland, New South Wales
Drawn By: GC / GR	Client: EnergyAustralia
Reviewed By: GW	
Coordinate System: GDA 1994 MGA Zone 56	

0 100 200m

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D4	Conduct.	TDS	Sulphate	Chloride	Boron	Iron	Manganese
50th percentile	980.0	847	472	10.5	25	120,500	756

D3	Conduct.	TDS	Sulphate	Chloride	Boron	Iron	Manganese
50th percentile	915.0	587	315	30.05	50	11,200	723

D5	Conduct.	TDS	Sulphate	Chloride	Boron	Iron	Manganese
50th percentile	1,290	974	609	23.95	110	53,450	8,490

D1	Conduct.	TDS	Sulphate	Chloride	Boron	Iron	Manganese
50th percentile	5,525	4,875	2,520	603.5	2,005	42,850	18,100

D9	Conduct.	TDS	Sulphate	Chloride	Boron	Iron	Manganese
50th percentile	3,050	2,325	1,560	160.5	790	15,700	13,150

D8	Conduct.	TDS	Sulphate	Chloride	Boron	Iron	Manganese
50th percentile	502	370	216	16.85	130	287	626

D11	Conduct.	TDS	Sulphate	Chloride	Boron	Iron	Manganese
50th percentile	9,865	8,975	4,830	949	2,855	87,400	17,500

D23	Conduct.	TDS	Sulphate	Chloride	Boron	Iron	Manganese
50th percentile	3,960	3,145	1,880	246	440	12,350	2,345

D10	Conduct.	TDS	Sulphate	Chloride	Boron	Iron	Manganese
50th percentile	10,240	8,360	5,020	891	3,565	4,605	8,155

D19	Conduct.	TDS	Sulphate	Chloride	Boron	Iron	Manganese
50th percentile	6,325	5,130	3,110	505	2,560	28,750	12,850

- 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						
Conductivity	TDS (mg/L)	Sulphate (mg/L)	Chloride (mg/L)	Boron (µg/L)	Iron (µg/L)	Manganese (µg/L)
1,576	1,306	824	32	244	664	5,704
15,760	13,060	8,240	315	2,440	6,640	57,040
157,600	130,600	82,400	3,150	24,400	66,400	570,400

Groundwater Collection Basin Pre-Ash Placement 90th Percentile

> **x 10** Groundwater Collection Basin Pre-Ash Placement 90th Percentile

> **x 100** Groundwater Collection Basin Pre-Ash Placement 90th Percentile

350 Highlighted cells indicate an exceedence of the adopted assessment criteria

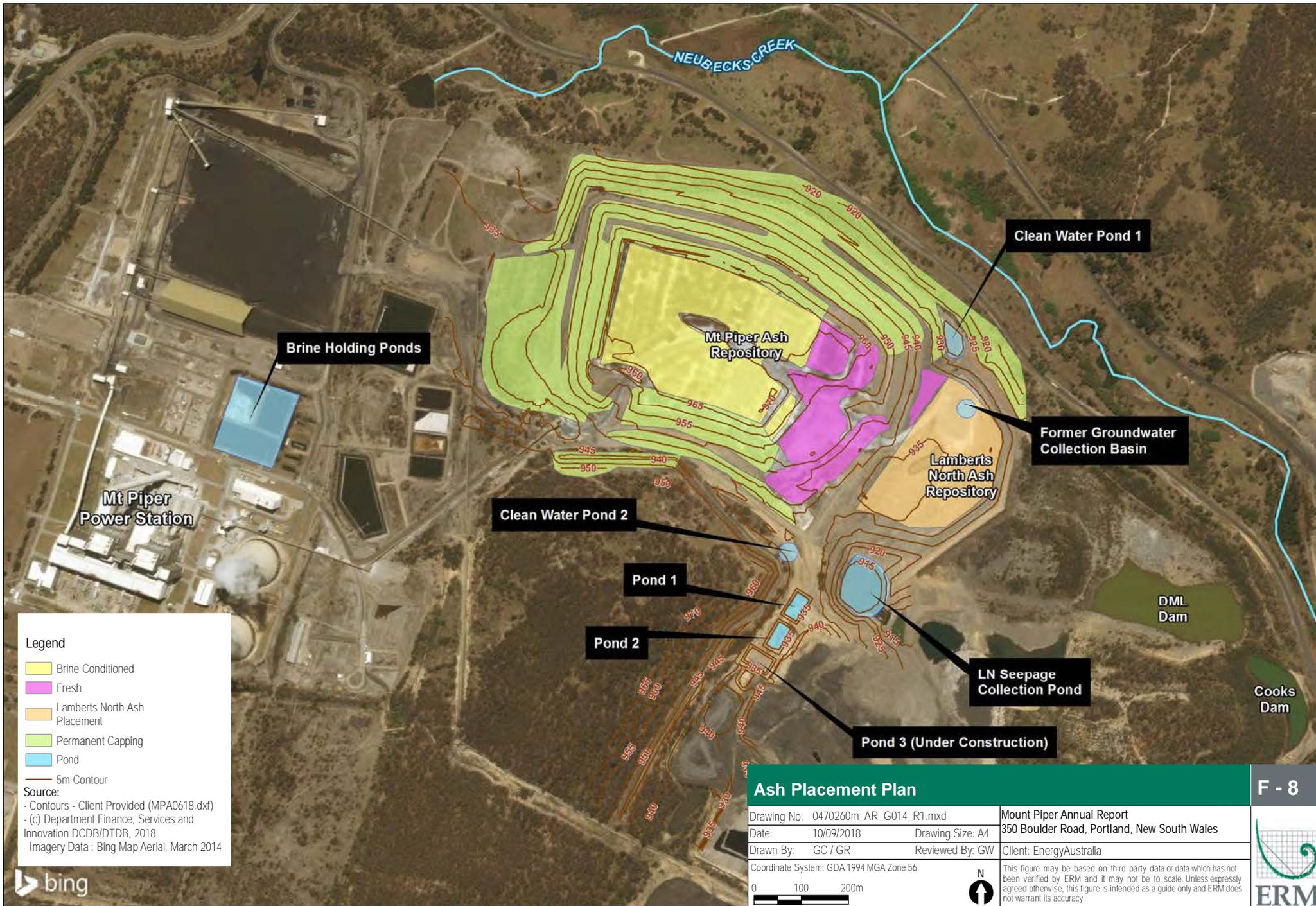
Where concentration data have been reported below the laboratory limit of reporting (LOR) half the LOR were used to calculate the average and 90th percentile values.

Groundwater - Early Warning Assessment

F - 7B

Drawing No: 0470260m_AR_G013_R0.mxd	Mount Piper Annual Report
Date: 14/08/2018	350 Boulder Road, Portland, New South Wales
Drawn By: GC / GR	Client: EnergyAustralia
Reviewed By: GW	
Coordinate System: GDA 1994 MGA Zone 56	
0 100 200m	
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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 16 July 2018 and 18 September 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

eB4872

New South Wales Government

Department of Environment and Planning



47223

The Secretary,
The Electricity Commission of
New South Wales,
T. & G. Tower,
Park & Elizabeth Streets,
SYDNEY, N.S.W. 2001.

Remington Centre
175 Liverpool Street, Sydney NSW
Box 3927 G.P.O. Sydney NSW
DX 15 Sydney

Telephone (02) 237 9111 Ext. 7578

Contact Mr. R. Power

Our reference 80/10060
Pt. 2

Your reference
47223 PD/AH

4th July, 1982

ATTENTION MR. ROLLINSON

Dear Sir,

Development Application by the Electricity Commission of
New South Wales to erect a Power Station at Mt. Piper -
Determination of Development Application.

I refer to the above matter and to my telephone conversation
of even date with Mr. Rollinson of your Commission.

2. It is confirmed that the Minister has determined the
Development Application, by giving consent to that application
subject to certain conditions.

3. Enclosed please find a copy of the Instrument of Consent
for the Commission's records.

Yours faithfully,

R.L. Pincini
(R.L. Pincini)
Secretary

2 AUG 1982
Power Dept. E

DEPARTMENT OF ENVIRONMENT AND PLANNING
OF NEW SOUTH WALES

PROPOSED MT. PIPER POWER STATION

CONSENT TO A DEVELOPMENT APPLICATION REFERRED FOR
DETERMINATION PURSUANT TO SECTION 101 OF THE
ENVIRONMENTAL PLANNING AND ASSESSMENT ACT, 1979.

APPLICANTS NAME
AND ADDRESS:

The Electricity Commission
of New South Wales
(hereinafter called the
"Applicant"),
T. & G. Tower,
Park and Elizabeth Streets,
SYDNEY. N.S.W. 2000

WHEREAS:

- (a) The Minister for Planning and Environment (hereinafter called the "Minister") gave a Direction in writing (hereinafter called the "Direction") in accordance with Section 101(1) of the Environmental Planning and Assessment Act, 1979, (hereinafter called the "Act") dated the 19th February, 1981, to the Council of the City of Greater Lithgow (hereinafter called the "Council") to refer to the Secretary of the Department of Environment and Planning (hereinafter called the "Department") for determination by the Minister any development application specified in the Direction;
- (b) A development application (hereinafter called the "application") for the development of a power station to be known as Mt. Piper Power Station (hereinafter called the "proposed development") on land delineated by red edging on the plan annexed hereto and marked with the letter "A" (hereinafter called the "land") and being an application to which the Direction applies was received by the Council from the applicant and referred to the Secretary of the Department in accordance with Section 101(2) of the Act; and
- (c) The persons referred to in Section 101(3) of the Act have not required to be afforded the opportunity of a hearing as provided in Section 101(4) of the Act, before the Minister determines the application;

Now, I, the Minister for Planning and Environment, in accordance with Section 101(6) of the Act, do hereby determine the application for the proposed development by granting consent to that application for the proposed development as described in the Environmental Impact Statement (hereinafter called the "Statement") entitled "Mt. Piper Power Station Environmental Impact Statement", dated August, 1980, and "Mt. Piper Power Station Environmental Impact Statement Supplementary Information", dated August, 1980, subject to the following conditions:-

- (1) That the applicant shall, prior to the commencement of construction of the proposed development, obtain from the State Pollution Control Commission (hereinafter called the "Commission") all necessary approvals under the Clean Air Act, 1961, the Clean Waters Act, 1970 and the Noise Control Act, 1975;

- 2 -

- (2) That the applicant shall meet the reasonable requirements of all public authorities having statutory responsibilities in respect of the construction and operation of the power station;
- (3) That the applicant shall prepare and submit to the Council, development applications supported by environmental impact statements (prepared in accordance with the Environmental Planning and Assessment Act and Regulations) in respect of any new coal mines required to provide fuel for the proposed development, and any other designated development associated with the project, prior to the letting of appropriate contracts for these developments;
- (4) That the applicant shall prepare and submit for the approval of the Commission plans of the proposed desalination plant, including the nature of the salt residues anticipated therefrom, together with evidence of the environmental acceptability of the proposals for the disposal of same;
- (5) That the applicant shall submit to the Department of Mineral Resources a report setting out the reasons for the suitability of the Neubecks Creek site for the construction of the proposed ash disposal dam with particular reference to the stability of the structure, the alienation of mineable coal and the possibility of mining such coal prior to construction of the dam;
- (6) That the applicant shall inform the Department should it be decided not to construct the Neubecks Creek ash disposal dam and seeks its prior approval to the development of an alternative site which will include consideration of the question of possible sterilization of coal reserves;
- (7) That the applicant shall submit to the Commission results of site investigations and studies of existing ground water quality and ground water flows in the catchment of the proposed Neubecks Creek ash disposal dam, together with an assessment of the potential for any increase in acid drainage to the Cox's River from changes to ground water flow that may result from the construction and operation of the dam;
- (8) That the applicant shall prepare and implement a monitoring programme to the satisfaction of the Commission relative to the quantity and quality of the Neubecks Creek ash disposal dam discharge water and of waters in Neubecks Creek downstream of the power station and make any arrangements required by the Commission to alleviate any significant adverse effects should they arise;
- (9) That the applicant shall submit to the Commission the results of studies into the pyritic content of its initial coal resources, and of the acid generating potential of run-off from its proposed coal stockpiles for the proposed development;
- (10) That the applicant shall, prior to commencement of construction of the proposed development, prepare and submit to the Commission comprehensive plans of work necessary, and proposed policies for the controlling of those works for the management of water flowing from the site to watercourses during the period of construction of the proposed development;

- 3 -

- (11) That the applicant shall prepare and submit to the Commission proposals environmentally acceptable to the Commission for the disposal of any carbonaceous material encountered during the preparation of the power station site; x
- (12) That the applicant shall submit to the Department and to the Commission a report on the current status of the construction and operation of the existing developments known as the Wallerawang Reservoir and the Lilyvale Reservoir, and on action taken and proposed, having regard to the Commission's conditions of approval to the applicant's water supply scheme for its existing development known as Wallerawang Unit B and other power station needs;
- (13) That the applicant shall implement a monitoring programme to the satisfaction of the Commission, of the meteorology in respect of the land the subject of the proposed development;
- (14) That the applicant shall implement a monitoring programme, to the satisfaction of the Commission, relative to the ground-level concentrations of sulphur dioxide, nitrogen oxide and suspended dust resulting from the operations of the proposed development and the applicant's existing development known as Wallerawang Power Station. Such monitoring programme shall be commenced at least one year before the commissioning of the proposed development;
- (15) That the applicant shall prepare and implement to the satisfaction of the Commission, a monitoring programme relative to the sulphur dioxide content of the flue gas and opacity of the stack emissions;
- (16) That the applicant shall, to the satisfaction of the Commission, carry out an appropriate study programme into the meteorology of the area the subject of the proposed development to assist in the final determination of the stack height;
- (17) That the applicant shall carry out, to the satisfaction of the Commission, wind tunnel tests modelling buildings; cooling towers and terrain to assist in final determination of the stack height;
- (18) That the applicant shall prepare and implement, to the satisfaction of the Commission, relative to air particulate concentrations consequent to the coal stockpile and make suitable arrangements to alleviate any significant adverse effects should they arise;
- (19) That the applicant shall, prior to any site works being carried out, submit to the Department of Mineral Resources, its proposals for the restoration and rehabilitation of any coal mining operations on the lands the subject of the proposed development which mines are the responsibility of the applicant; x
- (20) That the applicant shall undertake to preserve vegetation on the escarpment to the south of the lands the subject of the proposed development and on the rocky outcrops and canyons in the north of the proposed Neubecks Creek ash disposal area; x

- 4 -

- (21) That the applicant shall, prior to any site works being carried out, submit to the National Parks and Wildlife Service, the archaeological, flora and fauna reports referred to in the Statement. Further, the applicant shall consider, in conjunction with the Blue Circle Southern Cement Company, implementing any reasonable advice that that Service may provide; X
- (22) That the applicant shall obtain the approval of the Department of Main Roads to proposals for:
- (a) intersections of the power station access road and Boulder Road;
 - (b) crossings for water supply;
 - (c) furnace and fly ash disposal pipelines; and
 - (d) coal conveyor crossing with Trunk Road No.55;
- (23) That the applicant shall negotiate with the Council and any other public authority having an interest in the proposed development with a view to meeting any reasonable requirements relative to the proposed development, and shall refer any disputed matters to the Department before determining them. In particular, the applicant shall meet the requirements of the Council as set out in Appendix 2 of the Department's Environmental Impact Assessment Report dated March, 1981, except for those matters involving the provision of an appropriate monetary contribution from the applicant which shall be the subject of negotiations between the Council and the applicant and which shall take into account the value of relevant preinvestment by the applicant;
- (24) That the applicant shall co-operate with the Inter-Departmental Committee formed to oversight the social impact studies relevant to Local Environmental Studies and to Local Environmental Plans for Greater Lithgow and which will include a review of the social impacts of development proposals in the Lithgow area;
- (25) That the applicant shall report to the Department, as soon as it is able, to confirm the accommodation, infrastructure and transport requirements of personnel engaged in the construction and operation of the power station in order that appropriate action can be taken to plan and provide for all necessary facilities required;
- (26) That the applicant shall provide evidence to the Department that the location of the buildings of the proposed development and associated facilities will not without good reason alienate part of the coal reserves of Clutha Development Pty. Ltd. and that it has satisfied all reasonable claims of the Company in that regard;
- (27) That the granting of this consent to the proposed development shall not relieve the applicant from any future condition or contribution which may be required by the Council in respect of any of the following:-
- (a) the development of coal mines by the applicant for the purposes of or in association with the generation of electricity at the proposed development;
 - (b) an expansion of the proposed development; or
 - (c) any other development by the applicant;

electricity at the proposed development;

(b) an expansion of the proposed development; or

(c) any other development

- 4 -

- (21) That the applicant shall, prior to any site works being carried out, submit to the National Parks and Wildlife Service, the archaeological, flora and fauna reports referred to in the Statement. Further, the applicant shall consider, in conjunction with the Blue Circle Southern Cement Company, implementing any reasonable advice that that Service may provide; X
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- (a) intersections of the power station access road and Boulder Road;
 - (b) crossings for water supply;
 - (c) furnace and fly ash disposal pipelines; and
 - (d) coal conveyor crossing with Trunk Road No.55;
- (23) That the applicant shall negotiate with the Council and any other public authority having an interest in the proposed development with a view to meeting any reasonable requirements relative to the proposed development, and shall refer any disputed matters to the Department before determining them. In particular, the applicant shall meet the requirements of the Council as set out in Appendix 2 of the Department's Environmental Impact Assessment Report dated March, 1981, except for those matters involving the provision of an appropriate monetary contribution from the applicant which shall be the subject of negotiations between the Council and the applicant and which shall take into account the value of relevant preinvestment by the applicant;
- (24) That the applicant shall co-operate with the Inter-Departmental Committee formed to oversee the social impact studies relevant to Local Environmental Studies and to Local Environmental Plans for Greater Lithgow and which will include a review of the social impacts of development proposals in the Lithgow area;
- (25) That the applicant shall report to the Department, as soon as it is able, to confirm the accommodation, infrastructure and transport requirements of personnel engaged in the construction and operation of the power station in order that appropriate action can be taken to plan and provide for all necessary facilities required;
- (26) That the applicant shall provide evidence to the Department that the location of the buildings of the proposed development and associated facilities will not without good reason alienate part of the coal reserves of Clutha Development Pty. Ltd. and that it has satisfied all reasonable claims of the Company in that regard;
- (27) That the granting of this consent to the proposed development shall not relieve the applicant from any future condition or contribution which may be required by the Council in respect of any of the following:-
- (a) the development of coal mines by the applicant for the purposes of or in association with the generation of electricity at the proposed development;
 - (b) an expansion of the proposed development; or
 - (c) any other development

- 5 -

(28) That the applicant shall:-

(a) forthwith, take all necessary steps to effect the expeditious transfer to the Council of:-

(i) all those pieces or parcels of land situate at Wallerawang in the City of Greater Lithgow, Parish of Lidsdale and County of Cook, being part of Lot 2, in Deposited Plan 618280, as delineated by red edging on the plan annexed hereto and marked with the letter "B", being part of the estate known as the "Barton Estate", and having an area of 67.38 hectares or thereabouts, and being known as the "Wallerawang East Site"; and

(ii) all those pieces or parcels of land situate at Wallerawang in the City of greater Lithgow, Parish of Lidsdale and County of Cook, being part of Lot 2, in Deposited Plan 618280, as delineated by red and yellow edging on the plan referred to in (i) above and having an area of 124.4 hectares or thereabouts, and being known as the Wallerawang South site; and

(b) upon the transfer to it by the Council of all those pieces or parcels of land situate at Wallerawang in the City of Greater Lithgow, Parish of Lidsdale, and County of Cook, being the land shown in Deposited Plan 443235 (but excluding thereout right of easements for electricity transmission line resumed by Government Gazette of 6th March, 1959, Folio 665), as delineated by orange edging on the plan referred to in (i) above and having an area of 4.279 hectares, or thereabouts, and described as the "Heel Street Site", make that site available to the Council

Provided that the transactions referred to in (a)(i), (ii), and (b) above shall be in accordance with the terms and conditions agreed to between the applicant and the Council as set forth in letters dated 20th October, 1981, and 3th November, 1981, respectively, copies of which are annexed hereto and marked with the letters "C" and "D" respectively;

(29) That the applicant shall, to the Council's satisfaction, provide access roads, parking areas, landscaping, and boat ramps at the Wallerawang Dam generally in accordance with the Council's Development Plan, a copy of which is annexed hereto and marked with the letter "E" X

Provided that the applicant shall use its best endeavours to complete such works and facilities in order that they may be available for use not later than 1st December, 1982, or such further time as the Council may agree.

(30) That the applicant shall, upon the preparation and adoption by the Council of a Development Plan for the Lillyvale Dam Foreshores, negotiate with the Council the carrying out of works in accordance with the Development Plan, as required by the Council; X

(31) That the applicant shall carry out to the satisfaction of the Council all necessary works to effect the upgrading of the Boulder Road from its intersection with the Mudgee Road to the point of deviation of preferred route for the crossing of the Wallerawang-Gwabegar Railway line

- 6 -

- (32) That the applicant shall contribute the sum of \$350,000.00 towards the upgrading of the Wallerawang-Gwabegar Railway line crossing and the extension of such upgrading from that crossing to the intersection of Wallerawang Road and Cullen Street, Portland. Such money to be advanced to match the Council's design and construction programme in respect of all works west of the north-eastern extremity of Portland;
- (33) This approval does not relieve the applicant of the obligation to obtain any other approval required under the Local Government Act, 1919, as amended, or the Ordinances (including approval of building plans) or any other Act.

(80-10060 Part 2)

Signed at Sydney this
1982

First day of *April*,

Eric Bedford
ERIC BEDFORD
Minister for Planning
and Environment

ATTACHMENT 1

ENVIRONMENTAL PLANNING AND ASSESSMENT ACT 1979

NOTICE OF AMENDMENT OF A DEVELOPMENT CONSENT GRANTED UNDER SECTION 101 OF THE ENVIRONMENTAL PLANNING AND ASSESSMENT ACT 1979 PURSUANT TO SECTION 102 OF THE ACT

I, the Minister for Planning, pursuant to Section 102 of the Environmental Planning and Assessment Act, 1979, being satisfied that the development to which the modified development consent will relate is substantially the same development, and there being no objectors to the original development application, modify the consent referred to in Schedule 1 as set out in Schedule 2.



DAVID HAY
Minister for Local Government and
Minister for Planning

sydney, *18th March,* 1991.

(File 80/10060(Z)4)

SCHEDULE 1

Consent granted by the Minister for Planning and Environment on 1 April 1982 in respect of a development application made by the Applicant, the Electricity Commission of New South Wales, to the Greater Lithgow City Council for construction and operation of a power station known as the Mount Piper Power Station.

SCHEDULE 2

The Applicant may construct and operate a temporary storage facility for brine waste in accordance with the application dated 8 October 1990 and "Mount Piper Power Station Temporary Storage of Brine Waste: Supporting Environmental Information Document" dated August, 1990, where modified by the following:

- (a) Citation of the development. On page one of the Instrument of Consent, after "The proposed development described in the Environmental Impact Statement dated August, 1980", insert the matter:

"as modified by the works set out in figures 1 and 2 attached to this Notice of Amendment".
- (b) Renumber Condition 33 to 34.
- (c) Insert new Condition 33, "Temporary Brine Waste Disposal - The applicant shall construct the temporary brine waste disposal facilities in conformity with the environmental protection measures and general specifications set out in Section 2 of the "Supporting Environmental Information Document" accompanying the application.
- (d) Insert new Condition 35, "This consent expires on 30 June 1996."

APPENDIX 2

ADVICE RECEIVED FROM GREATER LITHGOW CITY COUNCIL
DATED 9TH FEBRUARY, 1981.

84/1/1016 JWR:PS

9TH FEBRUARY, 1981.

The Secretary,
Electricity Commission of N.S.W.,
G.P.O. Box 5257,
SYDNEY N.S.W. 2001.

ATTENTION: Mr. G. Coulter

Dear Sir,

Mount Piper Power Station

At the meeting held on 6th February, 1981 between Mr. G. Coulter (Electricity Commission), Mr. R. Mortleman (Premiers' Department), M/s. J. Thompson (Department of Environment and Planning) and the undersigned it was felt that a Development Application should be submitted to Council for The Mount Piper Power Station. It was agreed that the Department of Environment and Planning would advise the Commission of this requirement and that Council would in turn advise the Commission of the conditions that should apply to the development.

In order that early consideration may be given to Council's requirements, I have included a list of conditions which Council believes should be incorporated in the Minister's consent.

The Council is of the opinion that its requirements are reasonable and that the Commission should make a contribution towards infrastructure costs associated with the development. In addition it is felt, because of the population growth associated with the project, that the Commission should contribute to the social and recreational amenities of the community.

Having regard to the size and the impact of the Mount Piper Power Station the requirements are no greater than would be applied to any private development.

CONDITIONS OF APPROVAL:1. Social & Economic Infrastructure:

The Environment Impact Statement lacks evaluation of the social and economic impact of the proposal on the City of Greater Lithgow, and in particular Wallerawang and Portland. It is essential that an urgent assessment of the social and economic impact of the development is undertaken.

It is considered the discussions between

- Premiers' Department
- The Electricity Commission
- Mining Companies
- Department of Environmental Planning
- Department of Youth and Community Services
- Greater Lithgow City Council

should take place regarding the social impact study. The financing of such a study shall not be the responsibility of Council. It should be noted that the Department of Youth and Community Services has offered Council a grant of \$25,000 for a social impact study.

2. Recreation & Leisure

The Portland and Wallerawang townships are lacking in community facilities i.e. Senior Citizens Centres, Halls; Child Care Centres, Recreation Centres, parks and the like.

The Mount Piper Power Station will increase the population of the area and thus additional demands will be placed on Council to provide adequate Recreation and Leisure facilities.

Council is matching a government grant of \$75,000 to assist in the provision of a community recreation centre in Portland. The cost of this centre is estimated at \$450,000.

It is considered that the Electricity Commission should contribute the balance of funds, \$300,000, for the recreation centre. The contribution of funds by the Electricity Commission will ensure the construction of the centre.

The Council also seeks a contribution towards the development of the foreshores of the Wallerawang Dam and Lilyvale Dam.

Wallerawang Dam - Council has adopted a plan for the development of the foreshores at an estimated cost of \$186,000. Council seeks a contribution from the Commission on a dollar for dollar basis.

Lilyvale Dam - Officers of the Commission have indicated that consent will be granted to Council to enable the Dam to be used for recreational purposes.

Council seeks a contribution from the Commission on a dollar for dollar basis once the parties have agreed on a development plan for the area.

3. Transport & Roads:

Council believes that certain roads leading to the power station site should be upgraded to cater for the additional traffic that will be generated by the development.

Mudgee Road T.R.55: - The Commission with the concurrence of the Department of Main Roads will be required to:-

- Relocate and upgrade the intersection of the Boulder Road and Mudgee Road (T.R.55).
- Widen Mudgee Road (T.R.55) between Springvale Lane (1.5 kilometres) and its intersection with Main Road 53i to Cullen Bullen.

Boulder Road: - Council will require that the Boulder Road and certain Portland streets be upgraded, at no cost to Council, to the intersection of Wallerawang Road and Cullen Street.

Council will require that plans and specifications of the required upgrading be submitted to the City Engineer for approval.

4. Accommodation for Construction Employees:

Sites for temporary camps have been selected by Council, and it is required that all camps be constructed on the pre-selected sites.

Council's concurrence with sites selected should be determined prior to Development Application being submitted.

If an alteration of site is required by the Electricity Commission, Council consent is required prior to the relocation of the camp site.

Council's development approval will be needed prior to the construction of any camp site. Temporary camps will be constructed to a standard determined by Council. This standard will include the need for water and sewerage and the camps will be of a much higher standard than those existing in the area.

x 5. Landscaping & Planting:

To achieve unity in design and coherence in layout it is necessary to supplement the bare form of buildings with a more natural and visually pleasing environment.

Council will require the Electricity Commission to submit a landscaping plan for approval. This plan must include:-

- An appraisal of the site.
- The purpose of the landscaping.
- Tree planting programme.
- Time phasing of the landscaping.
- Types of flora to be planted.
- Alternative landscaping uses.

6. Aesthetics:

It is understood that with a project of this nature and immensity it is difficult to construct the station so as to make it unobtrusive to the surrounding environment.

However, Council will require that office blocks, outbuildings, service sheds, and the like be constructed of a material that has a non-reflective nature in an effort to produce a structure that has a planned and positive approach towards landscape and environmental quality.

7. Public Transport:

The Council will require the Commission to negotiate with existing public transport authorities in an effort to establish a suitable transport network to the power station from surrounding areas.

The transportation network would be planned to cover the transportation of workers as well as goods.

8. Off-Street Car Parking:

Council will require that off-street car parking be supplied at the rate of 0.75 spaces per worker. (i.e. 750 spaces for 1,000 workers). The Commission should give consideration to planning the location of parking area(s), and the benefits of having strategically placed smaller parking lots in preference to one massive parking area.

The car parking area(s) will be required to be treated with landscaping and as such should be included with landscaping plan.

Parking area(s) will be required to be sealed, adequately drained and have marked spaces 2.5 x 5.5.

9. Other Authorities:

Council will require that all the requirements of other Government Bodies be adhered to.

10. Internal Accessways:

Council will require all internal accessways being sealed with heavy delivery and service traffic being separated from employees private cars. A plan of the internal road layout should be submitted to Council.

11. Fencing:

Council will require the site as a whole being fenced with a suitable form of man-proof fencing.

12. Pollution Control:

Pollution control will be dealt with under condition (9) and when the requirements of the State Pollution Control Commission, Department of Environment and Planning, Water Resources Commission and Soil Conservation Service are known these will be imposed as conditions. Further, stations will be required to be licensed in accordance with necessary acts in respect to pollution control.

13. Local Services & Utilities:

The proposed power station will place a heavy burden on local services and utilities. High capacity water, and waste disposal equipment will be required to enable the station to function properly.

Council will require the Commission to negotiate with the Department of Public Works and Lithgow Council to ensure these services and utilities are installed in the optimum manner.

14. Housing:

At this time Greater Lithgow is faced with a very severe shortage of housing. Because the City has been in a no growth situation for many years there is only a very minor house construction industry in the City. It will be necessary to establish both land development and housing at a rate not previously known in this area.

It is noted that the Commission will require approximately 390 houses for permanent staff employed at the Power Station and supporting coal mines.

The Commission and Council have been negotiating on the subject of housing, including finance and land availability and it appears that a satisfactory agreement will be reached.

15. Water:

The Commission has indicated that Council will be able to use Lilyvale Dam as a short term solution to Council's water needs.

16. Transmission Lines and Routes:

Council understands the need for transmission lines radiating from Power Stations.

As there will be two (2) stations in close proximity to each other, it is considered that the Commission should give consideration to the planning of Transmission Line Corridors.

These corridors would be of sufficient width and area to accommodate future lines, and have the effect of containing Transmission Lines to a single corridor instead of radiating in all directions and rendering certain lands useless for future development.

17. Apprenticeship & Staff Training Facilities:

Council will require the continued provision of staff training facilities by the Commission, such as the apprenticeship training facility situated in Hartley Valley Road, Lithgow.

Compliance with the conditions listed will benefit the local community, the Electricity Commission and its employees.

A copy of this letter will be submitted to the Department of Environment and Planning.

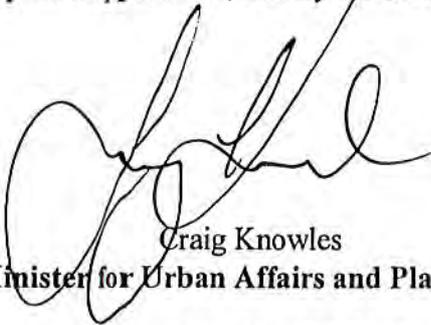
Yours faithfully,

(J.W. RAYNER),
TOWN CLERK

ENVIRONMENTAL PLANNING AND ASSESSMENT ACT, 1979

**NOTICE OF AMENDMENT OF DEVELOPMENT CONSENT GRANTED
UNDER SECTION 101 OF THE ENVIRONMENTAL PLANNING AND
ASSESSMENT ACT 1979 PURSUANT TO SECTION 102 OF THE ACT**

I, the Minister for Urban Affairs and Planning, pursuant to Section 102 of the Environmental Planning and Assessment Act, 1979, being satisfied that the development to which the development consent as modified will relate is substantially the same development, and there being no prejudice to objectors to the original development application, modify the consent referred to in Schedule 1 as set out in Schedule 2.


Craig Knowles
Minister for Urban Affairs and Planning

Sydney, 21/6/ June 1996

File No. S90/01696/004

SCHEDULE 1

Consent granted by the Minister for Planning and Environment on 1 April, 1982, in respect of a development application made by the Applicant, Electricity Commission of New South Wales, to the Greater Lithgow City Council for construction and operation of a power station known as the Mount Piper Power Station, as modified by the Minister for Planning on 18 March, 1991.

SCHEDULE 2

1. Renumber Condition 34 as Condition 37.
 2. Delete Condition 35 of the development consent.
 3. Insert new Conditions 34, 35 and 36 to the development consent as follows:
 34. Temporary storage of brine at the power station shall cease by 30 June 2000.
 35. The storage capacity of the brine storage ponds shall not be exceeded at any time. Brine reduction initiatives and monitoring of the brine production rate and remaining storage capacity must be undertaken as appropriate to ensure this condition is met.
 36. The applicant shall forward a summary progress report and field test results of the long term brine management investigation to the Catchment Services Unit of Sydney Water Corporation annually prior to finalisation of the long term brine management solution.
-

ENVIRONMENTAL PLANNING AND ASSESSMENT ACT, 1979

NOTICE OF AMENDMENT OF A DEVELOPMENT CONSENT GRANTED UNDER SECTION 101 OF THE UNAMENDED ENVIRONMENTAL PLANNING AND ASSESSMENT ACT 1979 PURSUANT TO SECTION 96(2) OF THE AMENDED ACT.

I, the Minister for Urban Affairs and Planning, in pursuance of section 96(2) of the Environmental Planning and Assessment Act, 1979, being satisfied that the development to which the development consent as modified will relate, is substantially the same development, and there being no prejudice to objectors to the original development application, modify the consent referred to in Schedule 1 as set out in Schedule 2.



Craig Knowles MP
Minister for Urban Affairs and Planning

Sydney, 18.1.1999.

File No. S90/01696/005

SCHEDULE 1

Consent granted by the then Minister for Planning and Environment on 1 April 1982, in respect of a development application made by the Applicant, Electricity Commission of New South Wales, to the Greater Lithgow City Council for construction and operation of a power station known as the Mount Piper Power Station, as modified on 18 March 1991 and 21 June 1996.

SCHEDULE 2

1. Renumber Condition 37 as Condition 38.
2. Replace the existing Condition 1 with the following:
 - 1 That the Applicant, prior to commencement of construction of the proposed development or any subsequent modification, obtain from the Environment Protection Authority (EPA) all necessary statutory pollution control approvals and licences under the Pollution Control Act 1970, Clean Air Act 1961, Clean Waters Act 1970, Waste Minimisation and Management Act 1995 and/or any other Act as advised by the EPA.

NOTICE OF AMENDMENT OF A DEVELOPMENT CONSENT GRANTED UNDER SECTION 101 OF THE UNAMENDED ENVIRONMENTAL PLANNING AND ASSESSMENT ACT 1979 PURSUANT TO SECTION 96(2) OF THE AMENDED ACT.

I, the Minister for Urban Affairs and Planning, pursuant to Section 96(2) of the amended Environmental Planning and Assessment Act 1979, modify the development consent referred to in Schedule 1 in the manner set out in Schedule 2 (S90/01696).

Andrew Refshauge MP
Deputy Premier
Minister for Urban Affairs and Planning
Minister for Aboriginal Affairs
Minister for Housing

Sydney, 3 April 2000

ABBREVIATIONS AND INTERPRETATION

The Director-General	Director-General of the Department of Urban Affairs and Planning
The Council	Lithgow City Council
The Applicant	Delta Electricity
DLWC	Department of Land and Water Conservation
EPA	New South Wales Environment Protection Authority
SCA	Sydney Catchment Authority
The Site	Mount Piper Power Station
Relevant Authority	EPA, DLWC or SCA

SCHEDULE 1

Development consent granted by the Minister for Planning and Environment on 1 April 1982, in respect of a development application made by the Applicant, the Electricity Commission of New South Wales, to the Greater Lithgow City Council for construction and operation of a power station known as the Mount Piper Power Station, as modified on 18 March 1991 and 21 June 1996 and 18 January 1999.

Modification Approval

Section 96(2) of the *Environmental Planning and Assessment Act 1979*

I, the Executive Director, Major Project Assessments Division of the Department of Planning, in accordance with the Instrument of Delegation issued by the Minister for Planning, on 19 December 2007, pursuant to section 96(2) of the *Environmental Planning and Assessment Act 1979*, modify the development consent referred to in Schedule 1 in the manner set out in Schedule 2.



Chris Wilson
Executive Director
Major Project Assessments
As delegate for the Minister for Planning

Sydney 23 MARCH 2008 File No: S90/01696

SCHEDULE 1

- Development consent:** granted by the Minister for Planning and Environment on 1 April 1982.
- In respect of:** Lot 1 DP 325532, Lot 1 DP 400022, Lot 15 DP 626299, Part Lot 191 DP 629212, Lot 2 DP 702619, Lots 362 and 366 DP 740604, Part Lot 10 and Lots 18, 59, 260 and 261 DP 751636, Part Lot 1 DP 803655, Lots 1-7 and Part Lot 13 DP 804929, Lot 1 DP 813288, Lot 1 DP 816420, Lots 40, 41 and 46-52 DP 827626, Lot 1 DP 829065, Lot 21 DP 832446 and Lot 1 DP 920999.
- For the following:** The construction and operation of a power station known as Mount Piper Power Station
- Modification Application:** Modification of the development consent to extend the brine and ash co-placement area.
-

SCHEDULE 2

The development consent is modified by:

1) Inserting the following conditions immediately after Condition 38

Extension of the Existing Brine and Ash Co-placement Area

- 38 A Notwithstanding the provisions of Condition No. 38, the brine and ash co-placement area may be extended and shall be undertaken generally in accordance with the *Statement of Environmental Effects: Mount Piper Power Station Extension of Brine Conditioned Ash Placement Area*, prepared by Connell Wagner Pty Ltd and dated June 2007. This includes:
- I. The extended area must lie within the existing ash placement area;
 - II. Co-placement activities in the proposed extended area must use existing facilities and methods;
 - III. The placement of brine conditioned ash may only occur between the levels of RL 946 metres (the end-point of the water conditioned ash layer) and RL 980 metres.
- 38 B The groundwater and surface water monitoring programs required by Condition No. 40 and 41 apply to the extension of the brine and ash co-placement area, permitted by Condition 38 A.
- 38 C The Applicant must update the Water Management Plan (WMP) required by Condition No. 43, and obtain the approval of the Director-General for the update, prior to undertaking any works permitted by Condition No. 38 A. In determining whether to grant approval, the Director-General must consult with the Department of Environment and Climate Change, the Sydney Catchment Authority, the Department of Water and Energy, and Council.
- 38 D The spray irrigation system of the ash disposal area must be automated to operate when conditions indicate the potential for dust movement to occur, with a manual override function, in order to reduce the likelihood of non-compliant dust emissions from the ash placement area. The implementation of the automated system must occur no later than 30 June 2008 or as otherwise agreed by the Director-General.

2) Replace Condition 47 with the following:

- 47 The Groundwater Modelling Report shall be an update of the groundwater modelling presented in the *Mount Piper Power Station Extension of Brine Conditioned Ash Placement Area - Statement of Environmental Effects* (dated June 2007). The report must also employ the results and analyses of the Water Monitoring Programs to calibrate the groundwater contaminant transport model. The Groundwater Modelling Report shall be prepared by a qualified person approved by the Director-General or relevant Authority.

SCHEDULE 2

Delete Condition 34 of the development consent.

Re-number Condition 38 as Condition 49.

Insert the following Conditions 38 to 48, inclusive.

- 38) The Applicant shall carry out modifications to the development generally in accordance with the Statement of Environmental Effects (SEE) dated August 1999, prepared by Environmental Services, Pacific Power International for Delta Electricity, and as modified by the following conditions. Any alteration, variation or extension of the development shall require the further consent of the Minister for Urban Affairs and Planning.
- 39) The Applicant shall, prior to the first placement of brine-conditioned flyash, apply to the EPA for a modification to the EPA licence for the Site. The licence modification shall address conditions for the continued on-site storage of brine, the placement of brine-conditioned flyash, and any reasonable requirements of the EPA.

WATER MONITORING PROGRAMS

- 40) The Applicant shall, at least one month prior to the first placement of brine-conditioned flyash, consult with the EPA, DLWC and SCA to establish the requirements for Water Monitoring Programs for groundwater and surface water. The Water Monitoring Programs shall:
 - (i) be based on the monitoring programs presented in the Statement of Environmental Effects for this modification;
 - (ii) include water quality testing at a minimum frequency of every three months;
 - (iii) be at the expense of the Applicant.
- 41) The Applicant shall expand the groundwater and surface water monitoring programs, including, if so required, the establishment of additional groundwater monitoring bores and surface water sampling points, in accordance with any reasonable requirements of the EPA, DLWC or SCA.
- 42) The Applicant shall, prior to the construction or operation of any monitoring bore on or in the vicinity of the development, consult with DLWC regarding the licensing of any bore on or in the vicinity of the development, under the provisions of the *Water Act 1912*.

WATER MANAGEMENT PLAN

- 43) At least one month prior to the placement of brine-conditioned flyash, or within such further period as the Director-General may agree, the Applicant shall prepare and submit for the approval of the EPA, the Sydney Catchment Authority, DLWC, Council, and the Director-General, a Water Management Plan (WMP) which shall include, but not be limited to:
 - a) Details of the monitoring programs for surface water and groundwater required under conditions 40 and 41.
 - b) Details of measures to be employed to control surface water run-off from the site.

- c) Contingency plans for the mitigation of environmental impacts should run-off or leachate from the site be found to be negatively impacting on natural surface water or groundwater.
- d) Brine management objectives and strategies, with specific reference to measures aimed at reducing the volume of brine produced at the Mount Piper Power Station.

ENVIRONMENTAL MONITORING REPORT

- 44) The Applicant shall provide to the Director-General, EPA, DLWC SCA and Council, an Environmental Monitoring Report (EMR) on a yearly basis, with the first EMR to be submitted no later than six months after the first placement of brine-conditioned flyash on-site. The Applicant shall agree to Council making the Environmental Monitoring Reports available on request for public inspection.
- 45) The Environmental Monitoring Report shall include, but not be limited to:
 - (a) a summary and discussion of all available results and analyses from Water Monitoring Programs;
 - (b) a discussion of the aims of the Water Management Plan and to what degree these aims have been attained in the context of results and analyses of the Water Monitoring Programs;
 - (c) actions taken, or intended to be taken, if any, to mitigate any adverse environmental impacts; and to meet the reasonable requirements of the Director-General, EPA, DLWC, Sydney Catchment Authority or Council.

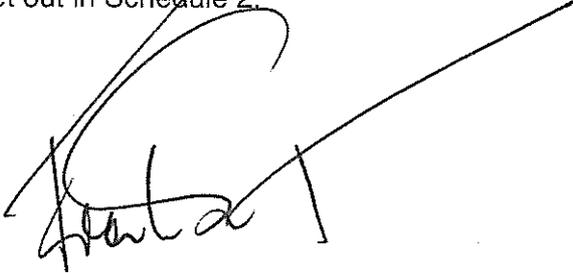
GROUNDWATER MODELLING

- 46) The Director-General, EPA, DLWC, SCA or Council may, based on the results and analyses presented in the Environmental Monitoring Report, or any other information that may be reasonably interpreted as indicating significant impacts on the groundwater quality in the vicinity of the Site as a result of the placement of brine-conditioned flyash, request the preparation of a Groundwater Modelling Report.
- 47) The Groundwater Modelling Report shall be an update of the groundwater modelling presented in the Statement of Environmental Effects for this modification and will employ the results and analyses of the Water Monitoring Programs to calibrate the groundwater contaminant transport model. The Groundwater Modelling Report shall be prepared by a qualified person approved by the Director-General or relevant Authority.
- 48) The Applicant shall comply with any reasonable requirement of the Director-General, DLWC, EPA, SCA or Council with regard to the content or scope of the Groundwater Modelling Report, or actions to be taken in response to the results of the report.

Modification Approval

Section 96(2) of the *Environmental Planning and Assessment Act 1979*

I, the Minister for Planning, pursuant to section 96(2) of the *Environmental Planning and Assessment Act 1979*, modify the development consent referred to in Schedule 1 in the manner set out in Schedule 2.



Frank Sartor MP
Minister for Planning

Sydney

3 June 2006

File No: S90/01696

SCHEDULE 1

- Development consent:** granted by the Minister for Planning and Environment on 1 April 1982.
- In respect of:** Lot 1 DP 325532, Lot 1 DP 400022, Lot 15 DP 626299, Part Lot 191 DP 629212, Lot 2 DP 702619, Lots 362 and 366 DP 740604, Part Lot 10 and Lots 18, 59, 260 and 261 DP 751636, Part Lot 1 DP 803655, Lots 1-7 and Part Lot 13 DP 804929, Lot 1 DP 813288, Lot 1 DP 816420, Lots 40, 41 and 46-52 DP 827626, Lot 1 DP 829065, Lot 21 DP 832446 and Lot 1 DP 920999.
- For the following:** The construction and operation of a power station known as the Mount Piper Power Station
- Modification Application:** Modification of the development consent to increase the capacity of the power station in two phases:
- initially operating the power station at a capacity factor of up to 90%, to generate up to a nominal capacity of 1400 megawatts; and
 - undertaking equipment upgrade works or replacements to provide a nominal capacity of 1500 megawatts when operating at a capacity factor of up to 90%.
-

SCHEDULE 2

The development consent is modified by:

1) inserting the following immediately after existing condition 49:

Expansion and Upgrade of the Power Station

50. The Applicant is permitted to upgrade and expand the development in two stages:
- a) stage 1 being the operation of the development at a capacity factor of up to 90%, to generate up to a nominal capacity of 1400 megawatts; and
 - b) stage 2 being the implementation of equipment upgrade works or replacements to provide a nominal capacity of 1500 megawatts when operating at a capacity factor of up to 90%.
51. Expansion and upgrade of the development, as defined under condition 50 of this consent shall be undertaken generally in accordance with *Statement of Environmental Effects: Mount Piper Power Station Units 1 and 2 Upgrade*, prepared by Connell Wagner PPI and dated December 2005.

Air Quality Impacts

52. The Applicant shall design, construct, commission, operate and maintain the expanded and upgraded development to ensure that the concentration of each pollutant listed in Table 1 does not exceed the maximum allowable discharge concentration for that pollutant when measured at discharge monitoring point 11 and 12 (as defined under the Environment Protection Licence (No. 766) for the site). For the purpose of monitoring and determining compliance with this condition, "dioxins and furans" shall be polychlorinated dibenzo-p-dioxins (PCDD) and polychlorinated dibenzofurans (PCDF), presented as 2,3,7,8-tetrachloro-dibenzo-p-dioxin (TCDD) equivalent and calculated in accordance with the procedures included in Part 4, clause 29 of the *Protection of the Environment Operations (Clean Air) Regulation 2002*.

Table 1 – Maximum Allowable Discharge Concentration Limits (Air)

Pollutant	Maximum Allowable Discharge Concentration Limit	Reference Conditions
Nitrogen dioxide (NO _x) or nitric oxide (NO) or both	1500 mgm ⁻³	dry, 273K, 101.3 kPa, 7% O ₂
Sulfuric acid mist (H ₂ SO ₄) or sulfur trioxide (SO ₃), or both, as (SO ₃)	100 mgm ⁻³	dry, 273K, 101.3 kPa, 7% O ₂
Solid particles	50 mgm ⁻³	dry, 273K, 101.3 kPa, 7% O ₂
Total fluoride	50 mgm ⁻³	dry, 273K, 101.3 kPa, 7% O ₂
Chlorine	200 mgm ⁻³	dry, 273K, 101.3 kPa, 7% O ₂
Hydrogen chloride	100 mgm ⁻³	dry, 273K, 101.3 kPa, 7% O ₂
Total of Sb, As, Cd, Pb, Hg, Be, Cr, Co, Mn, Ni, Se, Sn and V	1 mgm ⁻³	dry, 273K, 101.3 kPa, 7% O ₂
Cadmium	0.2 mgm ⁻³	dry, 273K, 101.3 kPa, 7% O ₂
Mercury	0.2 mgm ⁻³	dry, 273K, 101.3 kPa, 7% O ₂
Dioxins and furans	0.1 ngm ⁻³	I-TEQ, dry, 273K, 101.3 kPa, 11% O ₂
Total volatile organic compounds	40 mgm ⁻³ (as VOC) or 125 mgm ⁻³ (as CO)	dry, 273K, 101.3 kPa, 7% O ₂

53. The Applicant shall determine the pollutant concentrations and emission parameters specified in Table 2 below, at discharge monitoring points 11 and 12 (as defined under the Environment Protection Licence (No. 766) for the site), and employing the sampling

and analysis method specified. Monitoring shall be undertaken at the frequency specified in the Table.

Table 2 –Pollutant and Parameter Monitoring (Air)

Pollutant/ Parameter	Units of Measure	Frequency	Method
Nitrogen oxides	gm ⁻³	continuously	CEM-2
Sulfur dioxide	mgm ⁻³		CEM-2
Solid particles	mgm ⁻³		TM-15
Sulfuric acid mist and sulfur trioxide (as SO ₃)	mgm ⁻³		TM-3
Chlorine	mgm ⁻³		TM-7 & TM-8
Total fluoride	mgm ⁻³		TM-9
Hydrogen chloride	mgm ⁻³		TM-7 & TM-8
Total of Sb, As, Cd, Pb, Hg, Be, Cr, Co, Mn, Ni, Se, Sn and V	mgm ⁻³		TM-12, TM-13 & TM-14
Cadmium	mgm ⁻³	quarterly during the first 12 months following commissioning of Stage 1 and Stage 2, then annually or as otherwise specified by Environment Protection Licence conditions thereafter	
Mercury	mgm ⁻³		TM-12, TM-13 & TM-14
Copper	mgm ⁻³		TM-12, TM-13 & TM-14
Dioxins and furans	ngm ⁻³		TM-18
Carbon dioxide	%		TM-24
Oxygen	%		CEM-3
Dry gas density	kgm ⁻³		TM-23
Moisture content	%		TM-22
Molecular weight of stack gases	gmol ⁻¹		TM-23
Temperature	°C		TM-2
Velocity	ms ⁻¹		TM-2
Volumetric flowrate	m ³ s ⁻¹		TM-2

54. Notwithstanding conditions 52 and 53, nothing in this consent relieves the Applicant from the requirement to comply with the Environment Protection Licence for the site issued under the *Protection of the Environment Operations Act 1997*. In the event that the Environment Protection Licence for the site is modified from time to time to be inconsistent with or more stringent than the requirements of this consent, the requirements of the Licence shall prevail over this consent to the extent of any such inconsistency.

Air Quality Performance Verification

55. Within 90 days of commissioning Stage 2 of the expanded and upgraded development, or as may be directed by the Director-General, and during a period in which the upgraded and expanded development is operating under design loads and normal operating conditions, the Applicant shall undertake a program to confirm the air emission performance of the development and update air quality modelling. The program shall include, but not necessarily be limited to:
- point source emission sampling and analysis subject to the requirements listed under condition 54;
 - an update of the air quality impact assessment presented in *Statement of Environmental Effects: Mount Piper Power Station Units 1 and 2 Upgrade*, prepared by Connell Wagner PPI and dated December 2005, using actual air emission data collected under a). The assessment shall be undertaken strictly in accordance with the methods outlined in *Approved Methods and Guidance for the Modelling and Assessment of Air Pollutants in New South Wales* (DEC, 2005) and to meet the requirements of the DEC with respect to updating the air quality impact assessment;

- c) a comparison of the results of the air quality impact assessment required under b) above, and the predicted air quality impacts detailed in *Statement of Environmental Effects: Mount Piper Power Station Units 1 and 2 Upgrade*, prepared by Connell Wagner PPI and dated December 2005; and
- d) a comparison of the results of the air quality impact assessment required under b) above, and the impact assessment criteria detailed in *Approved Methods and Guidance for the Sampling and Analysis of Air Pollutants in New South Wales* (EPA, 2005).

A report providing the results of the program shall be submitted to the Director-General and the DEC with 28 days of completion of the testing required under a).

Construction Environmental Management

56. Prior to the commencement of construction of each Stage of the expanded and upgraded development, the Applicant shall prepare and implement a Construction Environmental Management Protocol to outline environmental management practices and procedures to be followed during the construction of the development. The Protocol(s) shall be prepared in accordance with *Guideline for the Preparation of Environmental Management Plans* (DIPNR 2004) and shall focus on the management of erosion and sedimentation, dust, heavy vehicle movements and noise during the construction works.
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Statement of Approval

as at 28 February 2014

issued under *Water Management Act 2000*.

Approval Number	10CA117220
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Approval Holder (See note 1)	EnergyAustralia NSW Pty Ltd	ABN: 67 139 819 642
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Contact Details	
Name	EnergyAustralia NSW Pty Ltd
Customer ID	1139922
Contact Address	EnergyAustralia NSW Pty Ltd Locked Bag 1 Portland NSW 2847

Approval Details	
Status (See note 2)	Current
Water Source	Upper Nepean and Upstream Warragamba Water Source (hereafter described as 'this water source')
Water Management Area	Wywandy
Kind of Approval	Water Supply Work and Water Use
Date of Commencement of Conditions	1 July 2011
Expiry Date	30 June 2031
Authorised Water Supply Works	This approval is for the authorised water supply works described in Schedule 1
Authorised Water Use	Power Generation as described in Schedule 1
Conditions	This approval is subject to the conditions set out in Schedule 1
Dictionary	Schedule 2

Notes	<ol style="list-style-type: none">1. Pursuant to section 106 of the <i>Water Management Act 2000</i>, an approval is taken to be held by, and for the benefit of, each successive landholder for the time being of the land specified in the approval as the land benefited by the approval. Pursuant to section 106 (3) of the <i>Water Management Act 2000</i>, a major utility is taken to be a landholder of land in respect of which a water management work approval held by it is in force.2. The status of an approval may change. An approval may be "current", in addition an approval is no longer in force if it has "expired", been "surrendered", "suspended" or "cancelled".3. During periods of severe water shortages, the Minister may suspend part or all of the provisions of a management plan under section 49A of the <i>Water Management Act 2000</i>. Whilst an order under s49A is in force, depending on the terms of the order, the mandatory conditions applying to this approval may be affected. The Approval Holder must comply with any notification issued by the Minister under section 60 of the <i>Water Management Act 2000</i>.4. See Dictionary in Schedule 2 to interpret words and expressions used in this approval.5. A requirement to notify the Minister in writing or to provide information or data to the Minister, under this approval, is satisfied by making the notification or providing the information or data in writing to the administrative contact detailed on this Statement.
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NOTICE OF CHANGE OF HOLDER OR CONTACT

1. The NSW Office of Water is to be advised of any change of Approval Holder. This will occur whenever there is a change of ownership of works shown in this approval. The advice should be accompanied by evidence of transfer of ownership of the works.
2. If the Approval Holder wishes to nominate a new contact person a written statement signed by the holder should be submitted to the NSW Office of Water.
3. The contact person should advise the NSW Office of Water of any change of mailing address as soon as possible.

Administrative contact details

All correspondence and notifications in relation to compliance with the conditions of this approval must be addressed to:

Manager Water Regulation Hunter/ Sydney/
South Coast
NSW Office of Water
PO Box 3720
PARRAMATTA NSW 2124

Schedule 1 – Conditions

INTRODUCTION

Under section 100 (1) (a) of the *Water Management Act 2000* this approval is subject to such conditions as are from time to time required to be imposed on the approval by the Water Sharing Plan for the Greater Metropolitan Region Unregulated River Water Sources 2011 (hereinafter referred to as the Water Sharing Plan). Under section 102 (1) of the *Water Management Act 2000* this approval is also subject to such other conditions as the Minister may impose on the approval after it has been granted, including conditions relating to the protection of the environment.

The Operating Protocol referenced in this approval is a set of agreed documents between the Approval Holder and the Minister. The Operating Protocol takes into account the complex nature of operations and procedures that the Approval Holder needs to undertake to implement the requirements of this approval. The Operating Protocol is subordinate to the approval and does not constitute a regulatory instrument.

AUTHORISED WATER SUPPLY WORKS

1. The Approval Holder is authorised to construct and use the water supply works listed below and further described in Attachment 1 of this Schedule (‘the authorised water supply works’) to capture, store, extract, use and release water in accordance with the Water Sharing Plan or any direction from the Minister.

- Lilyvale Dam (Lake Lyell)
- Wallerawang Dam (Lake Wallace)
- Thompsons Creek Dam (Thompsons Creek Reservoir)
- Sawyers Swamp Creek Ash Dam

Note 1: Under section 90 (2) of the *Water Management Act 2000* the term ‘construct’ is defined to include install, maintain, repair, alter or extend the work.

2. The use and operation of the authorised water supply works are subject to the conditions of this approval.
3. Notwithstanding condition one (1) of this approval, the Approval Holder is not authorised to do anything to the authorised water supply works which would change the capacity of the works as described in Attachment 1 of this Schedule to affect the flow, volume, quality and behaviour of the water, without the written approval of the Minister.

Note 1: To amend an approval the process in section 107 of the *Water Management Act 2000* must be followed.

4. The Approval Holder must not use the authorised water supply works to take water under an access licence unless in compliance with the access rules for the taking of water as specified in the relevant access licence conditions.
5. Subject to the conditions of this approval, the Approval Holder is authorised to use water for the purpose of Power Generation.
6. The Approval Holder must not take any water using any work authorised by this approval if the water allocation account of the access licence under which the water is to be taken, is or will go into debit.

ENVIRONMENTAL MANAGEMENT

Environmental Flow Releases from Lilyvale Dam (Lake Lyell) when Storages are greater than or equal to 50,000 megalitres

7. Notwithstanding conditions nine (9) and fourteen (14) of this approval, the Approval Holder must ensure, when the daily inflows into Lake Lyell are less than or equal to 13.6 ML/day, that the daily release of water which is equal to the daily inflows is made from Lilyvale Dam.

Note 1: The release requirements may be temporarily altered under circumstances described in the Operating Protocol.

8. Notwithstanding conditions nine (9) and fourteen (14) of this approval, the Approval Holder must ensure, when the daily inflows into Lake Lyell are greater than 13.6 ML/day, that a daily release of water which is equal to 13.6 ML/day plus twenty five percent of the daily inflow volume above 13.6 ML/day is made from Lilyvale Dam.

Note 1: Note 1 from condition seven (7) of this approval applies.

Environmental Flow Releases from Lilyvale Dam (Lake Lyell) when Storages are less than 50,000 megalitres

9. The Approval Holder is not required to make releases under conditions seven (7), eight (8) and thirteen (13) of this approval when the total active storage in Lake Lyell, Lake Wallace and Thompsons Creek Reservoir is less than 50,000 megalitres.
10. The Approval Holder must ensure, when the total active storage in Lake Lyell, Lake Wallace and Thompsons Creek Reservoir has been less than 50,000 megalitres continuously for less than six months, that a daily release of water is made which is equal to the lesser of daily inflows to Lake Lyell and 9 ML/day.

Note 1: Note 1 from condition seven (7) of this approval applies.

11. The Approval Holder must ensure, when the total active storage in Lake Lyell, Lake Wallace and Thompsons Creek Reservoir has been less than 50,000 megalitres continuously for six months or more, that a daily release of water is made which is equal to the lesser of daily inflows to Lake Lyell and 5 ML/day.

Note 1: Note 1 from condition seven (7) of this approval applies.

12. The Approval Holder must notify the Minister before the total active storage in Lake Lyell, Lake Wallace and Thompsons Creek Reservoir either falls below or rises above 50,000 megalitres. The Approval Holder must provide a statement of its use of water allocated from the Fish River Water Supply Scheme, including the following:
 - a) minimum annual quantity allocated that water year;
 - b) amount of water used from the allocation to that time; and
 - c) any demand management restrictions that apply at the time under the scheme.

Annual Channel Maintenance Flow Releases from Lilyvale Dam (Lake Lyell)

13. Notwithstanding condition nine (9) of this approval, if in any water year a flow of 800 ML/day or more has not occurred for a period of at least one hour at the Coxs River at Lithgow, Gauging Station Number 212011, the Approval Holder must release an annual channel maintenance flow which is equal to the lesser of:
 - a) a release rate of 800 ML/day; or
 - b) the maximum released rate obtainable from the outlet valves when fully open;

for a period of two hours continuously from Lake Lyell in accordance with procedures and a timeframe determined in writing by the Minister.

Note 1: The release must be stepped up and down to mimic the trigger event hydrograph as per the procedures described in the operating protocol.

14. The Approval Holder is not required to make releases under conditions seven (7) and eight (8) of this approval when an annual channel maintenance flow release is being made in accordance with condition thirteen (13) of this approval.

Methods to Determine Inflows and Releases from Lilyvale Dam (Lake Lyell)

15. For the purposes of conditions seven (7) to fourteen (14) of this approval, the Approval Holder must calculate the volume of water released by a method approved in writing by the Minister taking into account flows measured at the Coxs River at Lithgow, Gauging Station Number 212011, or such alternative flow reference points as determined in writing by the Minister.
16. For the purposes of conditions seven (7) to fourteen (14) of this approval, the Approval Holder must calculate daily inflows into Lake Lyell by a method approved in writing by the Minister taking into account:
 - a) flows measured at the Coxs River at upstream of Lake Lyell, Gauging Station Number 212058) and Farmers Creek at Mount Walker, Gauging Station Number 212042), or such alternative flow reference points as determined in writing by the Minister; or
 - b) changes in water storage levels, net evaporation, other losses and outflows.

Environmental Flow Releases from Lake Wallace

17. The Approval Holder must ensure a daily release of water is made from Lake Wallace which is equal to or greater than 0.7 ML/day. This release requirement may also be met by water released below the Lake Wallace dam wall from the Wallerawang Power Station cooling towers.

Environmental Flow Releases from Thompsons Creek Reservoir

18. The Approval Holder must ensure a daily release of water is made from Thompsons Creek Reservoir in accordance with the following:
 - a) between 1 September and 30 April inclusive, a daily release of water must be made which is equal to or greater than 0.8 ML/day;
 - b) between 1 May and 31 August inclusive, a daily release of water must be made which is equal to or greater than 0.3 ML/day; and

- c) the volume of water released must be calculated by a method approved in writing by the Minister taking into account flows measured at the v notch weirs at Thompson Creek Reservoir, or such alternative flow reference points as determined in writing by the Minister.

Environmental Flow Releases from Spilling Storages

19. The Approval Holder is not required to make daily releases of water under conditions seven (7) to eighteen (18) of this approval when the storage is spilling at a rate that equals or exceeds the release requirement.

Banked Environmental Flow Rules for Lilyvale Dam

20. The Approval Holder must create and manage a banked environmental flow account for Lilyvale Dam.
21. The Approval Holder must ensure that the difference between the recorded release and the required release is set aside in Lilyvale Dam and credited to the banked environmental flow account in accordance with the requirements of the Minister, where releases have been altered or were not required for the following reasons:
 - a) the release requirements cannot be met due to an emergency situation and the Approval Holder notifies the Minister in writing within seven (7) days of becoming aware of the emergency;
 - b) the Minister is satisfied that the release requirements cannot be met due to water supply work capacity constraints or necessary maintenance, refurbishment or modification work that has the potential to temporarily affect the flow rate or behaviour of water for a period of more than twenty four (24) hours and has granted permission in writing; or
 - c) the Minister requires an alternate release to be made due to an emergency situation or a maintenance activity and has notified this in writing.

Note 1: The circumstances referred to in condition twenty one (21) of this approval are further outlined in the Operating Protocol.

22. The Approval Holder must ensure that water required to be credited to the banked environmental flow account under condition twenty one (21) of this approval is released from Lilyvale Dam in accordance with any written direction from the Minister.
23. The Approval Holder must ensure that the volume of water credited to the banked environmental flow account is:
 - a) debited by the amount of a release made in accordance with condition twenty two (22) of this approval;
 - b) reset to zero if any water is spilling from Lilyvale Dam; and
 - c) reduced at a rate of one percent of the volume of water remaining in the banked environmental flow account per day.

Note 1: The one percent reduction rate accounts for evaporation and other losses, and mitigates potential risks to the reliability of the potable water supply as a result of the long-term storage of banked environmental water.

24. The Approval Holder must ensure that any reductions made in accordance with condition twenty three (23) of this approval are limited so that the banked environmental flow account does not have a negative balance.

Fire Fighting Releases

25. If the Approval Holder is required to make a release of water from any of the water supply works authorised by this approval for fire fighting purposes, the Approval Holder must notify the Minister in writing within seven (7) days of the release specifying the date, time and approximate volume of water released.

Note 1: A rural fire brigade may take and use water from any water source, and any water supply work under the management of a water supply authority in accordance with section 26 of the *Rural Fires Act 1997*.

MONITORING

Water Quantity Monitoring

26. The Approval Holder must have metering equipment installed that meets the following requirements:
- the metering equipment must measure and record the flow of all water taken through the authorised water supply works with less than 5% error;
 - the metering equipment must comply with the NSW Interim Water Meter Standards (issued by the NSW Office of Water) as may be updated or replaced from time to time;
 - the metering equipment must be operated and maintained in a proper and efficient manner at all times;
 - the metering equipment must be sited and installed at a place in the pipe, channel or conduit between the water source and the first discharge outlet. There must be no flow of water into or out of the pipe, channel or conduit between the water source and the metering equipment; and
 - any other requirements as to type, standard or other criteria for the metering equipment specified by the Minister by notice in writing.

Note 1: The Minister may direct the Approval Holder to install, repair, replace or to properly maintain metering equipment under section 326 of the *Water Management Act 2000*.

Note 2: Details of the Approval Holder's water quantity monitoring equipment and agreed procedures are described in the Operating Protocol.

27. The Approval Holder must keep a Logbook and record the following in the Logbook:
- each date on which water was taken under the access licence;
 - the access licence number of the access licence under which water was taken on that date;
 - the volume of water taken on that date;
 - the volume of water released as environmental flow on that date;
 - the volume of water released as spill on that date;
 - the data and calculations to determine the daily environmental flow release requirements;
 - the total system storage and volume/level of each storage;
 - where metering equipment has been installed for use in connection with the authorised water supply works, the meter reading before water is taken; or the start time and end time of extraction and the flow rate during extraction;

- i) confirmation that the environmental flow protection conditions do not apply at the time of extraction; and
- j) any other information required to be recorded in the Logbook under the rules of the Water Sharing Plan.

Note 1: A “Logbook” means a record, kept in hard copy or electronic form, which accurately records all information required to be kept for this approval. The requirement of this condition will be met when the Approval Holder continues to measure, record and report its extractions, inflows and outflows (releases) as agreed using Citect and described under the Operating Protocol.

Note 2: Spill volume calculations are based on the difference between the inflows and measured releases and extractions, and supported and verified by operational release strategies. Accurate outlet rating curves are available for a range of combinations of valves and storage heights allowing a full range of flows to be delivered.

- 28. The Approval Holder must produce the Logbook to the Minister for inspection, when requested.
- 29. The Approval Holder must retain the information required to be recorded in the Logbook for five (5) years from the date to which that information relates.
- 30. The Approval Holder must monitor and record daily inflows to, storage volumes of, releases and extractions from, its authorised water supply works and flows at the locations listed in Attachment 3 of this Schedule in accordance with the Operating Protocol approved by the Minister.

Access to Data

- 31. The Approval Holder must make data available to the Minister regarding flows at flow reference points at a frequency and time determined by the Minister.
- 32. The Approval Holder must make data publicly available at the earliest time that is practically possible and no later than 9:00 am regarding details of any releases from its storages for environmental and other purposes, and details of any run of river transfers, planned for the next twenty four (24) hours.

Water Quality Monitoring

- 33. The Approval Holder must monitor the effectiveness of environmental flow releases on river health parameters including water quality, ecological and geomorphological parameters to the satisfaction of the Minister.

Measurement and Data Quality Standards

- 34. The Approval Holder must undertake all monitoring, data management and reporting consistent with appropriate quality assurance and quality control procedures, to the satisfaction of the Minister. The Approval Holder may include data of acceptable quality from other sources to meet the monitoring requirements of this approval.

REPORTING

Water Quantity Report

35. The Approval Holder must, by or on the 15th day of each month submit a water quantity report for the previous month to the Minister. The report must be provided in electronic format and must contain, but need not be limited to, the following:
- a) total daily inflows to storages;
 - b) total daily environmental and other releases from storages;
 - c) total daily extractions;
 - d) storage levels;
 - e) banked environmental flow account transactions;
 - f) a summary of notified events including emergencies, variations from release requirements, failure to measure releases or extractions in accordance with the requirements, and
 - g) stream flow and river height data recorded at the gauging stations listed in Attachment 3 of this Schedule.

Note 1: This requirement will be satisfied by the Approval Holder providing the NSW Office of Water with the monthly environmental flow spreadsheet as outlined in the Operating Protocol.

Event Notification

36. The Approval Holder must notify the Minister in writing at the earliest practical possible opportunity following any event, but not exceeding seven (7) working days that has caused or is likely to cause, deviation to any of the conditions of this approval. The notification must include, but need not be limited to, the following information:
- a) whether the event has resulted in deviation to any of the approval conditions (at the date of the notification) and details of any altered release;
 - b) the date, time and location of the event, or works involved;
 - c) the cause and nature of the event, including details of any environmental harm or damage that may have occurred;
 - d) any action taken where it was necessary to avoid harm; and
 - e) any action that was, or will be taken to prevent a recurrence of the event.

Note 1: An event may include accident, equipment failure or any other such cause outside of the Approval Holder's effective control and planned events such as maintenance and refurbishment, which are described in the Operating Protocol.

37. The Approval Holder must comply with any requirements and take any actions specified by the Minister for the management of the event, and continue to report to the Minister to the satisfaction of those, or updated, requirements and actions, for as long as the event continues.

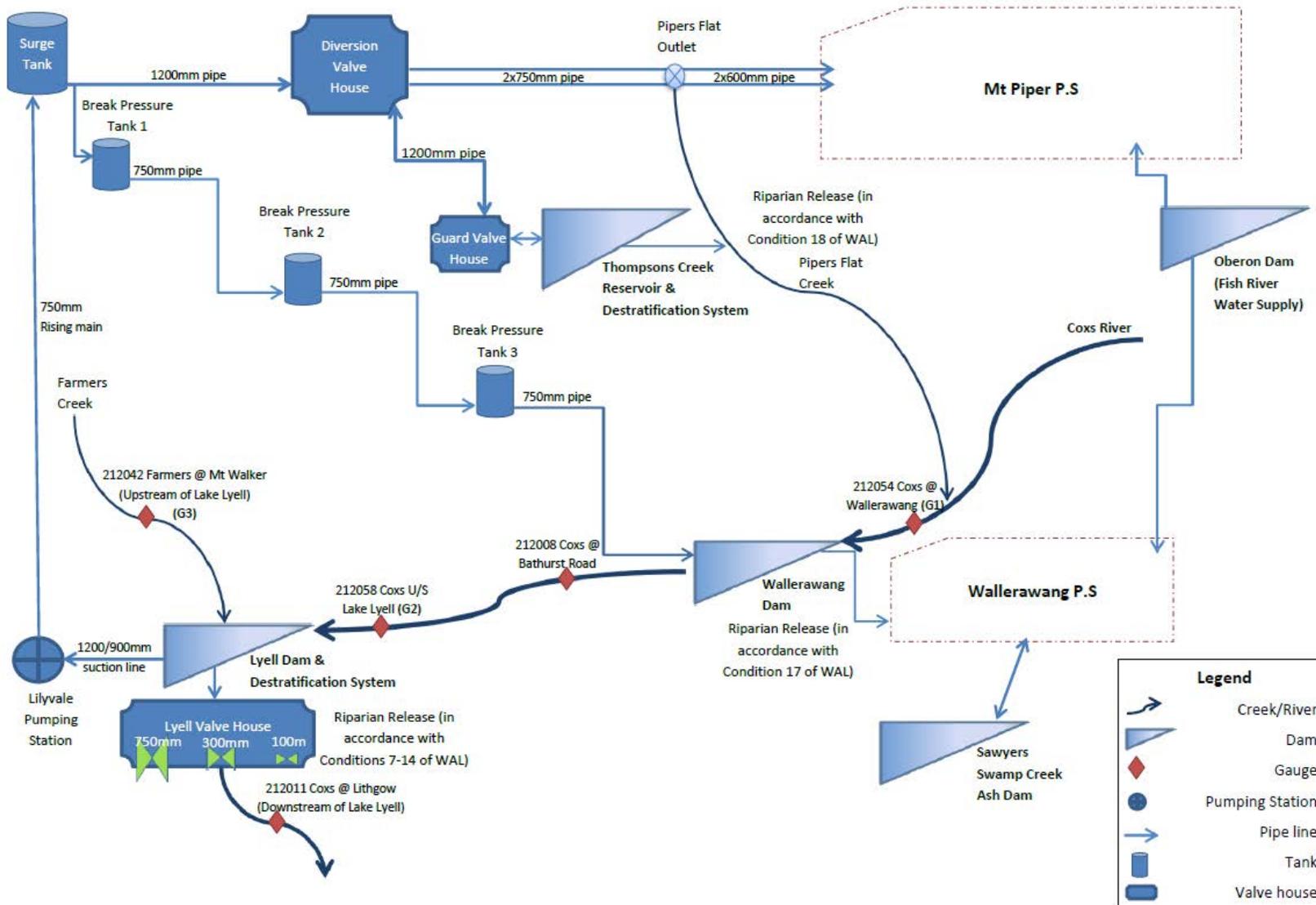
Annual Compliance Report

38. The Approval Holder must, by 30 November each year, submit an Annual Compliance Report for the preceding water year in electronic format to the satisfaction of the Minister. The report must contain, but need not be limited to, the following:
- a) an introduction, including an overview of the Approval Holder's water management activities associated with this water source;
 - b) updated maps to scale, depicting the location of this water source and the authorised water supply works listed in Attachment 1 and gauging stations listed in Attachment 3 of this Schedule;
 - c) detailed analysis of all data for environmental and any other flow releases and water extractions, including banked environmental flows, any releases made for fire fighting purposes, comparisons with data from previous years and an interpretation of the results;
 - d) results and interpretation/discussion of results of the ecological monitoring programs required by condition thirty three (33) of this approval;
 - e) evidence verifying that all monitoring, recording and assessment was conducted using appropriate quality assurance and control standards;
 - f) evidence verifying that the devices used for measuring and recording extractions and releases were subject to appropriate quality assurance and complied with appropriate or mandatory standards;
 - g) a summary of all notifiable events, including any non-compliance with the conditions of this approval;
 - h) performance reporting against any of the remaining conditions of this approval; and
 - i) an electronic appendix that includes all raw data used in the preparation of this report.

Provision of Data and Information

39. The Minister may, from time to time, request data arising from the operation of the authorised water supply works to undertake its resource management functions. Within one (1) month of the Minister making such a request, the Approval Holder must provide the required data.

SCHEDULE 1 – ATTACHMENT 1: SCHEMATIC OF AUTHORISED WATER SUPPLY WORKS



SCHEDULE 1 – ATTACHMENT 2: DESCRIPTION OF AUTHORISED WATER SUPPLY WORKS

The following tables provide detailed information on the authorised water supply works used by the Approval Holder within this water source.

	Lilyvale Dam (Lake Lyell)	Wallerawang Dam (Lake Wallace)	Thompsons Creek Dam (Thompsons Creek Reservoir)
Description	Concrete faced earth and rock-fill dam with concrete spillway	105 m long central semi-gravity concrete spillway section with earth fill spur embankments	Zoned earth and rock fill with riprap upstream face
Use	Water storage for electricity generation	Water storage for electricity generation	Water storage for electricity generation
Location*	-33.526961°S, 150.081847°W	-33.424386°S, 150.079122°W	-33.42829°S, 149.998484°W
Wall Height (m)	49.5	14.3	63.5
Crest Length (m)	200	600	1,911
Spillway	Dual 40 meter wide concrete ogee crests with flip buckets, design flow approx. 5,900 m ³ /s (509,760 ML/d)	Concrete crest	Concrete nib to unlined natural watercourse
FSL (m AHD)	785.5	871.5	1,033
Total capacity (ML)	34,192	4,004	27,500
Operational Capacity (ML)	32,109	2,206	27,500
Outlet Works	1,200 mm conduit from outlet tower	500 mm ductile bypass riparian	Non-selective submerged intake tower with trash racks
Diversion Works	750 mm rising main from 4 pumps with design flow 95 ML/d	4 pumps (total capacity 55.3 ML/d) and pipeline to storage tank	1,220 mm mild steel cement lined pipe with welded joints, gravity feed to Mount Piper Power Station
Flow/Level Measurement Device	Vega ultrasonic height recorder	Vega ultrasonic height recorder	Calibrated staff gauge

	Sawyers Swamp Creek Ash Dam
Description	Ash dam: Large zoned earth fill dam Coffer dam: Earth dam with concrete spillway for diverting upstream flows Diversion dams: Two small earth dams used for diverting flows from northern gullies into the coffer dam
Use	For storage of ash and station wash-down water
Location	-33.387629°S, 150.101137°W
Wall Height (m)	Ash dam: 40 Coffer dam: 6 Diversion dams: Nominal
Crest Length (m)	Ash dam: 900 Coffer dam: 150 Diversion dams: Nominal
Spillway	Ash dam: Broad crested concrete 30 m Coffer dam: Concrete (10 m) with fuse plug Diversion dams: No spillway
FSL (m AHD)	Ash dam: 941.6 Coffer dam: 946 Diversion dams: No storage
Total capacity (ML)	Ash dam: 8,500 Coffer dam: No significant storage Diversion dams: No storage
Operational Capacity (ML)	Ash dam: 1,197 ML Coffer dam: Nil Diversion dams: Nil
Outlet Works	Ash dam: 600 mm offtake syphon Coffer dam: No outlet works Diversion dams: No outlet works
Diversion Works	Ash dam: 600 mm HDPE pipe and open canal Coffer dam: 900 mm earth encased concrete pipe and 5 m wide earth bypass channel for diverting water to downstream of the ash dam Diversion dams: 150 mm HDPE and 300 mm 'rib loc' HDPE diversion pipes diverting fresh water from northern gullies into coffer dam
Flow/Level Measurement Device	Ash dam: Calibrated staff gauge Coffer dam: No measurement Diversion dams: No measurement

SCHEDULE 1 – ATTACHMENT 3: GAUGING STATIONS

Gauging Station Number	Gauging Station Location	Stream
212011	Coxs River at Lithgow (Downstream of Lake Lyell)	Coxs River
212042	Farmers Creek at Mt Walker (Upstream of Lake Lyell)	Farmers Creek
212054	Coxs River at Wallerawang (Upstream of Lake Wallace)	Coxs River
212058	Coxs River Upstream of Lake Lyell	Coxs River

Note 1: The following gauging stations are not required by the water supply work and use approval but are used by the Approval Holder for background information:

- Coxs River at Bathurst Road Gauge downstream of Lake Wallace, Gauging Station Number 212008 (Coxs River)
- Coxs River at Island Hill, Gauging Station Number 212045 (Coxs River)
- Neubecks Creek upstream of Wallerawang, Gauging Station Number 212055 (Neubecks Creek)

Schedule 2 – Dictionary

Words and expressions that appear in this approval have the meanings set out in this Dictionary. Words and expressions defined in this Dictionary that appear in the Dictionary of the Water Management Act 2000 (WMA) are the same. A reference in this Dictionary to a section is a reference to a section of the WMA.

Access licence means an access licence referred to in section 56.

Altered water release events are water releases that vary from the water release rates required under this approval.

Approval means a water supply work approval and water use approval.

Blowdown Water means water released from Wallerawang Power Station No. 7 and No. 8 Cooling Towers and under EnergyAustralia's Environment Protection Licence issued by the Office of Environment and Heritage.

Emergency may include an event that is pending, or an event that has already occurred but could not be reasonably foreseen or scheduled, including occurrences such as:

- a) major infrastructure failures, or
- b) a water contamination incident that may place the Approval Holder in serious breach of either its Operating Licence or the *Protection of the Environment Operations Act 1997* (NSW), or
- c) declared disasters or any other event considered by the Ministerial Corporation to constitute an actual or potential emergency.

Environment includes all aspects of the surroundings of human beings, whether affecting them as individuals or in their social groupings.

Full Supply Level (FSL) means the normal maximum water level of a water storage when not affected by floods.

Megalitre (ML) means one megalitre, which is equivalent to 1,000,000 litres.

Minister means the Minister responsible for the *Water Management Act 2000*. The Minister may delegate functions under section 389.

Outlet (works) (conduit) means infrastructure built to control the release of water from a water impoundment or distribution system.

Percentile (flow rate) is the flow rate that is exceeded for that percentage of the relevant unit of time (usually year). The value of the percentile varies depending on the period length analysed. For example, the 95th percentile is the flow that is exceeded 95 percent of the time.

River includes:

- a) any watercourse, whether perennial or intermittent and whether comprising a natural channel or a natural channel artificially improved, and
- b) any tributary, branch or other watercourse into or from which a watercourse referred to in paragraph (a) flows, and
- c) anything declared by the regulations to be a river,

whether or not it also forms part of a lake or estuary, but does not include anything declared by the regulations not to be a river.

Spill means the uncontrolled discharge of water from an impoundment to the natural watercourse when the storage level rises above the full supply level.

Total active storage means the entire volume of water in the water storage at Full Supply Level minus the volume of dead storage capacity.

Unregulated river means a river that is not declared by the Minister to be a regulated river.

Water allocation means the water to which the holder of an access licence is entitled from time to time under the licence, as recorded in the water allocation account for the licence.

Water management area means an area of land that is constituted as a water management area by an order in force under section 11.

Water source means the whole or any part of:

- a) one or more rivers, lakes or estuaries; or
- b) one or more places where water occurs naturally on or below the surface of the ground;
and includes the coastal waters of the State.

Water supply work means:

- a) a work (such as a water pump or water bore) that is constructed or used for the purpose of taking water from a water source;
- b) a work (such as a tank or dam) that is constructed or used for the purpose of:
 - i. capturing or storing rainwater run-off; or
 - ii. storing water taken from a water source;
- c) a work (such as a water pipe or irrigation channel) that is constructed or used for the purpose of conveying water to the point at which it is to be used;
- d) any work (such as a bank or levee) that has the effect of diverting away from a water source any overflow from the water source; or
- e) any work (such as a weir) that has the effect of impounding water in a water source; including a reticulated system of such works, and includes all associated pipes, sluices, valves and equipment, but does not include:
 - i. any work (other than a water supply work under the control or management of the Sydney Water Corporation, the Hunter Water Corporation or a local water utility) that receives water from a water supply work under the control or management of the Sydney Water Corporation, the Hunter Water Corporation or a local water utility; or
 - ii. any work declared by the regulations not to be a water supply work.

Water supply work approval means an approval referred to in section 90 (2).

Water year means a year commencing 1 July.

ABBREVIATIONS

ABN	Australian Business Number
AHD	Australian Height Datum (elevation relative to standardised mean sea level)
FSL	Full Supply Level (as designed)
GPS	Global Positioning System
m	Metre
ML	Megalitre
ML/d	Megalitres per day
NSW	New South Wales

Appendix 1 – Operating Protocol

An Operating Protocol has been developed by EnergyAustralia in consultation with the NSW Office of Water. The Operating Protocol is in the process of being updated and will be included in the Water Supply Work and Water Use Approval soon.

Appendix 2 – Monitoring Manual

A Monitoring Manual has been developed by EnergyAustralia in consultation with the NSW Office of Water. The Monitoring Manual is in the process of being updated and will be included in the Water Supply Work and Water Use Approval soon.



Statement of Conditions

as at 28 February 2014

issued under *Water Management Act 2000*

**Water Access Licence
Number**

27428

Reference Number

10AL116411

Contact Details

Name EnergyAustralia NSW Pty Ltd

Customer ID 1139922

Contact Address EnergyAustralia NSW Pty Ltd
Locked Bag 1
Portland NSW 2847

Licence Details

Status Current

Category Major Utility [Power generation]

Date of Commencement 1 July 2011

Tenure Type Specific Purpose

Share Component 25,000 megalitres per year

Extraction Management Unit Upper Nepean and Upstream Warragamba

Water Source Upper Nepean and Upstream Warragamba Water Source

Water Sharing Plan Greater Metropolitan Region Unregulated River Water Sources 2011

Extraction Zone Wywandy

Conditions Schedule 1

Notes:

1. The extraction component of this access licence may be amended by the Minister in accordance with the water sharing plan for the water source specified on this licence.
2. A requirement to notify the Minister in writing is satisfied by making a notification in writing to the address shown on this Statement.

Administrative contact details

All correspondence and notifications in relation to compliance with the conditions of this licence must be addressed to:

Manager Water Regulation Hunter/ Sydney/ South
Coast
NSW Office of Water
PO Box 3720
PARRAMATTA NSW 2124

Schedule 1 – Conditions

INTRODUCTION

Under section 66 (1) (a) of the *Water Management Act 2000* this access licence is subject to such conditions as are from time to time required to be imposed on the access licence by the Water Sharing Plan for the Greater Metropolitan Region Unregulated River Water Sources 2011 (hereinafter referred to as the Water Sharing Plan). Under section 66 (1) (b) of the *Water Management Act 2000* this access licence is subject to such other conditions as the Minister may impose on the licence as the Minister thinks fit, including conditions relating to the protection of the environment.

CONDITIONS

1. The Licence Holder must not take water under this access licence other than in compliance with the conditions of the water supply work and water use approval nominated by this licence. The nominated water supply work and water use approval for this licence is 10CA117220.
2. The volume of water taken by the Licence Holder under this access licence must not exceed 23,000 megalitres per year for that water year.
3. Notwithstanding condition two (2) of this approval, if in any water year the Licence Holder's volume of water available from the Fish River Water Supply Scheme is reduced by 30 percent or more relative to the full entitlement, the volume of water taken by the Licence Holder under this access licence must not exceed 25,000 megalitres for that water year.

Note 1: EnergyAustralia NSW entitlement in the Fish River Water Supply Scheme is 8,184 megalitres per year. A reduction of 30 percent from the full entitlement equates to 5,729 megalitres per year.

4. The Licence Holder must not take any water from the Coxs River under this access licence unless the Licence Holder has first used all available mine water from its storages for the purpose of power generation.

Note 1: To meet the requirements of this condition, EnergyAustralia NSW must account for water taken from sources other than the Coxs River prior to accounting for water taken from the Coxs River, under this access licence.

Note 2: Mine water discharged directly into the Coxs River and then extracted for consumption by EnergyAustralia NSW will be debited against its water allocation.

Note 3: Mine water received directly to EnergyAustralia NSW via pipework will not be accounted for in its water allocation.

5. The Licence Holder must not take water using the works authorised by the nominated water supply work and water use approval in excess of its annual share component.
6. The Licence Holder must ensure water allocations remaining in the access licence account are not carried over from one water year to the next.
7. The Licence Holder must not take any water using the works authorised by the nominated water supply work and water use approval if the water allocation account of this licence is, or will go into debt in any water year.

8. The Licence Holder must keep a Logbook and record the following in the Logbook:
- a) each date on which water was taken under the access licence;
 - b) the volume of water taken on that date;
 - c) the water supply work and water use approval number of the water supply work used to take the water on that date;
 - d) the purpose or purposes for which the water was taken on that date;
 - e) confirmation that environmental flow protection conditions do not apply at the time of extraction; and
 - f) any other information required to be recorded in the Logbook under the rules of the Water Sharing Plan.

Note 1: A “Logbook” means a record, kept in hard copy or electronic form, which accurately records all information required to be kept for this licence.

9. The Licence Holder must produce the Logbook to the Minister for inspection, when requested.
10. The Licence Holder must retain the information required to be recorded in the Logbook for 5 years from the date to which that information relates.
11. The Licence Holder must notify the Minister in writing at the earliest practical opportunity following any event, but not exceeding seven (7) working days that has caused, or is likely to cause, deviation to any of the conditions of this licence. The notification must include, but need not be limited to, the following information:
- a) whether the event has resulted in deviation to any of the licence conditions (at the date of the notification) and details of any altered releases;
 - b) the date, time and location of the event, or works involved;
 - c) the cause and nature of the event, including details of any environmental harm or damage that may have occurred;
 - d) any action taken where it was necessary to avoid harm; and
 - e) any action that was, or will be taken to prevent a recurrence of the event.
12. Notwithstanding conditions one (1) to eleven (11) of this licence, the Licence Holder must comply with any other conditions required to implement the provisions of the Water Sharing Plan.

Environment Protection Licence



Licence - 13007

Licence Details

Number:	13007
Anniversary Date:	01-January

Licensee

ENERGYAUSTRALIA NSW PTY LTD
 LEVEL 33, 385 BOURKE STREET
 MELBOURNE VIC 3000

Premises

MOUNT PIPER POWER STATION
 350 BOULDER ROAD
 PORTLAND NSW 2847

Scheduled Activity

Electricity Generation

Fee Based Activity

Scale

Generation of electrical power from coal	> 4000 Gwh generated
--	----------------------

Region

South - Bathurst
 Lvl 2, 203-209 Russell Street
 BATHURST NSW 2795
 Phone: (02) 6332 7600
 Fax: (02) 6332 7630
 PO Box 1388 BATHURST
 NSW 2795

Environment Protection Licence



Licence - 13007

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Environment Protection Licence



Licence - 13007

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Environment Protection Licence

Licence - 13007



Information about this licence

Dictionary

A definition of terms used in the licence can be found in the dictionary at the end of this licence.

Responsibilities of licensee

Separate to the requirements of this licence, general obligations of licensees are set out in the Protection of the Environment Operations Act 1997 ("the Act") and the Regulations made under the Act. These include obligations to:

- ensure persons associated with you comply with this licence, as set out in section 64 of the Act;
- control the pollution of waters and the pollution of air (see for example sections 120 - 132 of the Act); and
- report incidents causing or threatening material environmental harm to the environment, as set out in Part 5.7 of the Act.

Variation of licence conditions

The licence holder can apply to vary the conditions of this licence. An application form for this purpose is available from the EPA.

The EPA may also vary the conditions of the licence at any time by written notice without an application being made.

Where a licence has been granted in relation to development which was assessed under the Environmental Planning and Assessment Act 1979 in accordance with the procedures applying to integrated development, the EPA may not impose conditions which are inconsistent with the development consent conditions until the licence is first reviewed under Part 3.6 of the Act.

Duration of licence

This licence will remain in force until the licence is surrendered by the licence holder or until it is suspended or revoked by the EPA or the Minister. A licence may only be surrendered with the written approval of the EPA.

Licence review

The Act requires that the EPA review your licence at least every 5 years after the issue of the licence, as set out in Part 3.6 and Schedule 5 of the Act. You will receive advance notice of the licence review.

Fees and annual return to be sent to the EPA

For each licence fee period you must pay:

- an administrative fee; and
- a load-based fee (if applicable).

Environment Protection Licence

Licence - 13007



The EPA publication “A Guide to Licensing” contains information about how to calculate your licence fees. The licence requires that an Annual Return, comprising a Statement of Compliance and a summary of any monitoring required by the licence (including the recording of complaints), be submitted to the EPA. The Annual Return must be submitted within 60 days after the end of each reporting period. See condition R1 regarding the Annual Return reporting requirements.

Usually the licence fee period is the same as the reporting period.

Transfer of licence

The licence holder can apply to transfer the licence to another person. An application form for this purpose is available from the EPA.

Public register and access to monitoring data

Part 9.5 of the Act requires the EPA to keep a public register of details and decisions of the EPA in relation to, for example:

- licence applications;
- licence conditions and variations;
- statements of compliance;
- load based licensing information; and
- load reduction agreements.

Under s320 of the Act application can be made to the EPA for access to monitoring data which has been submitted to the EPA by licensees.

This licence is issued to:

ENERGYAUSTRALIA NSW PTY LTD
LEVEL 33, 385 BOURKE STREET
MELBOURNE VIC 3000

subject to the conditions which follow.

Environment Protection Licence

Licence - 13007



1 Administrative Conditions

A1 What the licence authorises and regulates

A1.1 This licence authorises the carrying out of the scheduled activities listed below at the premises specified in A2. The activities are listed according to their scheduled activity classification, fee-based activity classification and the scale of the operation.

Unless otherwise further restricted by a condition of this licence, the scale at which the activity is carried out must not exceed the maximum scale specified in this condition.

Scheduled Activity	Fee Based Activity	Scale
Electricity Generation	Generation of electrical power from coal	> 4000 Gwh generated

A2 Premises or plant to which this licence applies

A2.1 The licence applies to the following premises:

Premises Details
MOUNT PIPER POWER STATION
350 BOULDER ROAD
PORTLAND
NSW 2847
LOT 1 DP 325532, LOT 1 DP 400022, LOT 191 DP 629212, LOT 1 DP 702619, LOT 2 DP 702619, LOT 362 DP 740604, LOT 366 DP 740604, LOT 18 DP 751636, LOT 59 DP 751636, LOT 1 DP 800003, LOT 2 DP 800003, LOT 1 DP 803655, LOT 5 DP 804929, LOT 7 DP 804929, LOT 8 DP 804929, LOT 1 DP 813288, LOT 40 DP 827626, LOT 41 DP 827626, LOT 42 DP 827626, LOT 46 DP 827626, LOT 47 DP 827626, LOT 48 DP 827626, LOT 49 DP 827626, LOT 50 DP 827626, LOT 51 DP 827626, LOT 52 DP 827626, LOT 1 DP 829065, LOT 1 DP 920999, LOT 1 DP 999329, LOT 2 DP 999329, LOT 3 DP 999329, LOT 4 DP 999329, LOT 5 DP 999329, LOT 5 DP 1092737, LOT 6 DP 1092737, LOT 7 DP 1092737, LOT 6 DP 1127747

A3 Other activities

A3.1 This licence applies to all other activities carried on at the premises, including:

Ancillary Activity
Chemical storage
Coal works
Crushing, grinding or separating
Sewage treatment
Waste storage

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A4 Information supplied to the EPA

A4.1 Works and activities must be carried out in accordance with the proposal contained in the licence application, except as expressly provided by a condition of this licence.

In this condition the reference to "the licence application" includes a reference to:

- a) the applications for any licences (including former pollution control approvals) which this licence replaces under the Protection of the Environment Operations (Savings and Transitional) Regulation 1998; and
- b) the licence information form provided by the licensee to the EPA to assist the EPA in connection with the issuing of this licence.

2 Discharges to Air and Water and Applications to Land

P1 Location of monitoring/discharge points and areas

P1.1 The following points referred to in the table below are identified in this licence for the purposes of monitoring and/or the setting of limits for the emission of pollutants to the air from the point.

Air

EPA identification no.	Type of Monitoring Point	Type of Discharge Point	Location Description
2	Discharge to air. Air emissions monitoring.	Discharge to air. Air emissions monitoring.	Mt Piper Power Station Boiler 1, identified as "EPA ID 2" on a map provided to the EPA in a letter dated 12 December 2008.
3	Discharge to air. Air emission monitoring.	Discharge to air. Air emission monitoring.	Mt Piper Power Station Boiler 2, identified as "EPA ID 3" on a map provided to the EPA in a letter dated 12 December 2008.
4	Weather monitoring		Mount Piper Power Station Weather Station, identified as "EPA ID 4" on a map provided to the EPA in a letter dated 12 December 2008.

P1.2 The following points referred to in the table are identified in this licence for the purposes of the monitoring and/or the setting of limits for discharges of pollutants to water from the point.

P1.3 The following utilisation areas referred to in the table below are identified in this licence for the purposes of the monitoring and/or the setting of limits for any application of solids or liquids to the utilisation area.

Water and land

EPA Identification no.	Type of Monitoring Point	Type of Discharge Point	Location Description
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1	Discharge to waters. Discharge quality and total volume monitoring.	Discharge to waters. Discharge quality and total volume monitoring.	Final holding pond monitoring station to Neubecks Creek, identified as "EPA ID 1" on a map provided to the EPA in a letter dated 12 December 2008.
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3 Limit Conditions

L1 Pollution of waters

L1.1 Except as may be expressly provided in any other condition of this licence, the licensee must comply with section 120 of the Protection of the Environment Operations Act 1997.

L2 Load limits

L2.1 The actual load of an assessable pollutant discharged from the premises during the reporting period must not exceed the load limit specified for the assessable pollutant in the table below.

Note: An assessable pollutant is a pollutant which affects the licence fee payable for the licence.

L2.2 The actual load of an assessable pollutant must be calculated in accordance with the relevant load calculation protocol.

Assessable Pollutant	Load limit (kg)
Arsenic (Air)	
Benzo(a)pyrene (equivalent) (Air)	
Coarse Particulates (Air)	
Fine Particulates (Air)	
Fluoride (Air)	
Lead (Air)	
Mercury (Air)	
Nitrogen Oxides (Air)	
Salt (Enclosed Water)	
Selenium (Enclosed Water)	
Sulfur Oxides (Air)	
Total suspended solids (Enclosed Water)	

L3 Concentration limits

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- L3.1 For each monitoring/discharge point or utilisation area specified in the table\ below (by a point number), the concentration of a pollutant discharged at that point, or applied to that area, must not exceed the concentration limits specified for that pollutant in the table.
- L3.2 Where a pH quality limit is specified in the table, the specified percentage of samples must be within the specified ranges.
- L3.3 To avoid any doubt, this condition does not authorise the pollution of waters by any pollutant other than those specified in the table\.
- L3.4 Air Concentration Limits

POINT 2,3

Pollutant	Units of measure	100 percentile concentration limit	Reference conditions	Oxygen correction	Averaging period
Mercury	milligrams per cubic metre	0.2			
Chlorine	milligrams per cubic metre	200			
Type 1 and Type 2 substances in aggregate	milligrams per cubic metre	1.0			
Dioxins & Furans	nanograms per cubic metre	0.1			
Volatile organic compounds	milligrams per cubic metre	40			
Hydrogen chloride	milligrams per cubic metre	100			
Solid Particles	milligrams per cubic metre	50			
Sulfuric acid mist and sulfur trioxide (as SO ₃)	milligrams per cubic metre	100			
Cadmium	milligrams per cubic metre	0.2			
Nitrogen Oxides	grams per cubic metre	1.5			
Total Fluoride	milligrams per cubic metre	50			

- L3.5 The monitoring results undertaken under reference bases and collected in compliance with condition M2.1 can be used to determine compliance with the 100% concentration limits specified in condition L3.4.
- L3.6 Monitoring at points 2 and 3 must be undertaken under the following reference basis for the pollutants specified in condition L3.4:

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a) For sulphuric acid mist and/or sulphur trioxide, Chlorine, Hydrogen chloride, Total Fluoride, Hazardous substances, Cadmium, and Mercury: dry, 273 K, 101.3 kPa.

b) For Nitrogen oxides and Solid particles: dry, 273 K, 101.3 kPa, 7% O₂.

L3.7 The concentration of an impurity contained in the solid alternative fuel must not exceed the concentration specified for that impurity in the table.

Impurity	Units of measure	100% concentration limit
Type 1 and Type 2 substances in aggregate	milligrams per kilogram	350

L4 Waste

L4.1 The licensee must not cause, permit or allow any waste generated outside the premises to be received at the premises for storage, treatment, processing, reprocessing or disposal or any waste generated at the premises to be disposed of at the premises, except as expressly permitted by the licence.

L4.2 Only the following types of waste generated at the premises may be disposed of at the premises:

- Ash
- Mill pyrites
- Demineralisation and polisher plant effluents
- Chemical clean solutions
- Cooling tower sediments
- Ion exchange resins
- Fabric filter bags
- Brine conditioned fly ash
- Biomass co-firing ash
- Settling pond sediments
- Oil and grit trap sediments

L4.3 The wastes listed in condition L4.2 must only be disposed of to the ash disposal area at Mount Piper Power Station.

L4.4 The licensee is permitted to receive the following wastes generated outside the premises for storage, treatment, processing, reprocessing or disposal:

1) Waste water from the Wallerawang Power Station water treatment plant processes, including ash return water.

L5 Potentially offensive odour

L5.1 No condition in this licence identifies a potentially offensive odour for the purposes of section 129 of the Protection of the Environment Operations Act 1997.

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Note: Section 129 of the Protection of the Environment Operations Act 1997 provides that the licensee must not cause or permit the emission of any offensive odour from the premises but provides a defence if the emission is identified in the relevant environment protection licence as a potentially offensive odour and the odour was emitted in accordance with the conditions of a licence directed at minimising odour.

4 Operating Conditions

O1 Activities must be carried out in a competent manner

O1.1 Licensed activities must be carried out in a competent manner.

This includes:

- a) the processing, handling, movement and storage of materials and substances used to carry out the activity; and
- b) the treatment, storage, processing, reprocessing, transport and disposal of waste generated by the activity.

O2 Maintenance of plant and equipment

O2.1 All plant and equipment installed at the premises or used in connection with the licensed activity:

- a) must be maintained in a proper and efficient condition; and
- b) must be operated in a proper and efficient manner.

O3 Dust

O3.1 The premises must be maintained in a condition which minimises or prevents the emission of dust from the premises.

5 Monitoring and Recording Conditions

M1 Monitoring records

M1.1 The results of any monitoring required to be conducted by this licence or a load calculation protocol must be recorded and retained as set out in this condition.

M1.2 All records required to be kept by this licence must be:

- a) in a legible form, or in a form that can readily be reduced to a legible form;
- b) kept for at least 4 years after the monitoring or event to which they relate took place; and
- c) produced in a legible form to any authorised officer of the EPA who asks to see them.

M1.3 The following records must be kept in respect of any samples required to be collected for the purposes of this licence:

- a) the date(s) on which the sample was taken;
- b) the time(s) at which the sample was collected;
- c) the point at which the sample was taken; and

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d) the name of the person who collected the sample.

M2 Requirement to monitor concentration of pollutants discharged

M2.1 For each monitoring/discharge point or utilisation area specified below (by a point number), the licensee must monitor (by sampling and obtaining results by analysis) the concentration of each pollutant specified in Column 1. The licensee must use the sampling method, units of measure, and sample at the frequency, specified opposite in the other columns:

M2.2 Air Monitoring Requirements

POINT 2,3

Pollutant	Units of measure	Frequency	Sampling Method
Carbon dioxide	percent	Yearly	TM-24
Chlorine	milligrams per cubic metre	Yearly	TM-7 & TM-8
Copper	milligrams per cubic metre	Yearly	TM-12, TM-13 & TM-14
Dioxins & Furans	nanograms per cubic metre	Yearly	TM-18
Dry gas density	kilograms per cubic metre	Yearly	TM-23
Hydrogen chloride	milligrams per cubic metre	Yearly	TM-7 & TM-8
Moisture content	percent	Yearly	TM-22
Molecular weight of stack gases	grams per gram mole	Yearly	TM-23
Nitrogen Oxides	grams per cubic metre	Quarterly	Special Method 2
Oxygen (O ₂)	percent	Yearly	CEM-3
Solid Particles	milligrams per cubic metre	Yearly	TM-15
Sulfuric acid mist and sulfur trioxide (as SO ₃)	milligrams per cubic metre	Yearly	TM-3
Sulphur dioxide	milligrams per cubic metre	Quarterly	TM-4
Temperature	degrees Celsius	Yearly	TM-2
Total Fluoride	milligrams per cubic metre	Yearly	TM-9
Type 1 and Type 2 substances in aggregate	milligrams per cubic metre	Yearly	TM-12, TM-13 & TM-14
Velocity	metres per second	Yearly	TM-2
Volatile organic compounds	milligrams per cubic metre	Yearly	TM-19
Volumetric flowrate	cubic metres per second	Yearly	TM-2

M2.3 For the purpose of the table above, Special Method 2 means sampling in accordance with TM-11 and

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include recording of the respective boiler MW Load at time of sampling, to enable reporting under condition R1.10.

M2.4 Water and/ or Land Monitoring Requirements

POINT 1

Pollutant	Units of measure	Frequency	Sampling Method
Conductivity	microsiemens per centimetre	Monthly during discharge	Representative sample
pH	pH	Monthly during discharge	Representative sample
Total suspended solids	milligrams per litre	Monthly during discharge	Representative sample

M2.5 Samples taken pursuant to a requirement in this licence to monitor the volume, mass or concentration of pollutants, must be analysed and reported in accordance with the laboratory accreditation requirements set out in section 2.1.3 of the Load Calculation Protocol.

Note: The Load Calculation Protocol is the Protocol referred to in clause 21 of the Protection of the Environment (General) Regulation 2009. A copy of the Protocol was published in the NSW Government Gazette on 25 June 2009 and can be purchased from the Environment Protection Authority or viewed at <http://www.epa.nsw.gov.au>.

M3 Testing methods - concentration limits

M3.1 Monitoring for the concentration of a pollutant emitted to the air required to be conducted by this licence must be done in accordance with:

- any methodology which is required by or under the Act to be used for the testing of the concentration of the pollutant; or
- if no such requirement is imposed by or under the Act, any methodology which a condition of this licence requires to be used for that testing; or
- if no such requirement is imposed by or under the Act or by a condition of this licence, any methodology approved in writing by the EPA for the purposes of that testing prior to the testing taking place.

Note: The *Protection of the Environment Operations (Clean Air) Regulation 2010* requires testing for certain purposes to be conducted in accordance with test methods contained in the publication "Approved Methods for the Sampling and Analysis of Air Pollutants in NSW".

M3.2 Subject to any express provision to the contrary in this licence, monitoring for the concentration of a pollutant discharged to waters or applied to a utilisation area must be done in accordance with the Approved Methods Publication unless another method has been approved by the EPA in writing before any tests are conducted.

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M4 Weather monitoring

M4.1 For licence monitoring point 4 (weather monitoring), the licensee must monitor (by sampling and obtaining results by analysis) the parameters specified in Column 1. The licensee must use the units of measure, frequency, averaging period and sampling method specified opposite in the other columns.

Parameter	Units of Measure	Frequency	Averaging Period	Sampling Method
Air temperature	oC	Continuous	1 hour	AM-4
Wind Direction	-	Continuous	15 minute	AM-2 & AM-4
Wind speed	m/s	Continuous	15 minute	AM-2 & AM-4
Sigma Theta	o	Continuous	15 minute	AM-2 & AM-4
Rainfall	mm	Continuous	24 hour	AM-4
Siting	-	-	-	AM-1 & AM-4
Measurement	-	-	-	AM-1 & AM-4

M5 Recording of pollution complaints

M5.1 The licensee must keep a legible record of all complaints made to the licensee or any employee or agent of the licensee in relation to pollution arising from any activity to which this licence applies.

M5.2 The record must include details of the following:

- a) the date and time of the complaint;
- b) the method by which the complaint was made;
- c) any personal details of the complainant which were provided by the complainant or, if no such details were provided, a note to that effect;
- d) the nature of the complaint;
- e) the action taken by the licensee in relation to the complaint, including any follow-up contact with the complainant; and
- f) if no action was taken by the licensee, the reasons why no action was taken.

M5.3 The record of a complaint must be kept for at least 4 years after the complaint was made.

M5.4 The record must be produced to any authorised officer of the EPA who asks to see them.

M6 Telephone complaints line

M6.1 The licensee must operate during its operating hours a telephone complaints line for the purpose of receiving any complaints from members of the public in relation to activities conducted at the premises or by the vehicle or mobile plant, unless otherwise specified in the licence.

M6.2 The licensee must notify the public of the complaints line telephone number and the fact that it is a complaints line so that the impacted community knows how to make a complaint.

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- M6.3 The preceding two conditions do not apply until 3 months after:
- the date of the issue of this licence or
 - if this licence is a replacement licence within the meaning of the Protection of the Environment Operations (Savings and Transitional) Regulation 1998, the date on which a copy of the licence was served on the licensee under clause 10 of that regulation.

M7 Requirement to monitor volume or mass

M7.1 For each discharge point or utilisation area specified below, the licensee must monitor:

- the volume of liquids discharged to water or applied to the area;
 - the mass of solids applied to the area;
 - the mass of pollutants emitted to the air;
- at the frequency and using the method and units of measure, specified below.

POINT 1

Frequency	Unit of Measure	Sampling Method
Continuous	kilolitres per week	Weir structure and level sensor

M8 Other monitoring and recording conditions

M8.1 The licensee must monitor (by sampling and obtaining results by analysis) the concentration of each pollutant specified in Column 1 contained in any solid alternative fuel, and the Calorific Value (MJ/kg) of the fuel. The licensee must use the units of measure, and sample at the frequency specified opposite in the other columns:

Parameter	Units of measure	Frequency
Antimony	milligrams per kilograms	Per batch, as processed
Arsenic	milligrams per kilograms	Per batch, as processed
Beryllium	milligrams per kilograms	Per batch, as processed
Cadmium	milligrams per kilograms	Per batch, as processed
Chlorine	%	Per batch, as processed
Chromium (total)	milligrams per kilograms	Per batch, as processed
Cobalt	milligrams per kilograms	Per batch, as processed
Copper	milligrams per kilograms	Per batch, as processed
Flourine	%	Per batch, as processed
Lead	milligrams per kilograms	Per batch, as processed
Manganese	milligrams per kilograms	Per batch, as processed
Mercury	milligrams per kilograms	Per batch, as processed
Nickel	milligrams per kilograms	Per batch, as processed
Selenium	milligrams per kilograms	Per batch, as processed

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Sulfur	%	Per batch, as processed
Tin	milligrams per kilograms	Per batch, as processed
Vanadium	milligrams per kilograms	Per batch, as processed

6 Reporting Conditions

R1 Annual return documents

- R1.1 The licensee must complete and supply to the EPA an Annual Return in the approved form comprising:
- a Statement of Compliance; and
 - a Monitoring and Complaints Summary.

At the end of each reporting period, the EPA will provide to the licensee a copy of the form that must be completed and returned to the EPA.

- R1.2 An Annual Return must be prepared in respect of each reporting period, except as provided below.

Note: The term "reporting period" is defined in the dictionary at the end of this licence. Do not complete the Annual Return until after the end of the reporting period.

- R1.3 Where this licence is transferred from the licensee to a new licensee:
- the transferring licensee must prepare an Annual Return for the period commencing on the first day of the reporting period and ending on the date the application for the transfer of the licence to the new licensee is granted; and
 - the new licensee must prepare an Annual Return for the period commencing on the date the application for the transfer of the licence is granted and ending on the last day of the reporting period.

Note: An application to transfer a licence must be made in the approved form for this purpose.

- R1.4 Where this licence is surrendered by the licensee or revoked by the EPA or Minister, the licensee must prepare an Annual Return in respect of the period commencing on the first day of the reporting period and ending on:
- in relation to the surrender of a licence - the date when notice in writing of approval of the surrender is given; or
 - in relation to the revocation of the licence - the date from which notice revoking the licence operates.

- R1.5 The Annual Return for the reporting period must be supplied to the EPA by registered post not later than 60 days after the end of each reporting period or in the case of a transferring licence not later than 60 days after the date the transfer was granted (the 'due date').

- R1.6 Where the licensee is unable to complete a part of the Annual Return by the due date because the licensee was unable to calculate the actual load of a pollutant due to circumstances beyond the licensee's control, the licensee must notify the EPA in writing as soon as practicable, and in any event not later than the due date. The notification must specify:
- the assessable pollutants for which the actual load could not be calculated; and
 - the relevant circumstances that were beyond the control of the licensee.

- R1.7 The licensee must retain a copy of the Annual Return supplied to the EPA for a period of at least 4 years after the Annual Return was due to be supplied to the EPA.

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R1.8 Within the Annual Return, the Statement of Compliance must be certified and the Monitoring and Complaints Summary must be signed by:

- a) the licence holder; or
- b) by a person approved in writing by the EPA to sign on behalf of the licence holder.

R1.9 A person who has been given written approval to certify a certificate of compliance under a licence issued under the Pollution Control Act 1970 is taken to be approved for the purpose of this condition until the date of first review of this licence.

Further information to be reported in the Annual Return

R1.10 The Annual Return must also include the following information:

1. To validate the SSEF-PEMS for Nitrogen oxides approved by the EPA on 27 February 2008, the licensee must provide a report that plots the quarterly Nitrogen oxide concentration sampling results required by condition M2.1, against the historical Nitrogen oxide CEMS data curve for boiler units 1 and 2 at Mount Piper Power Station, and
2. The licensee must report any exceedance of any discharge limit, standard, or concentration set by a condition of this licence. The report must include the sample results or the exceedance and indicate the name of the testing laboratory, parameter(s) monitored, the limit, standard, or concentration exceeded, the date of the exceedance and the results of any analysis.

R2 Notification of environmental harm

R2.1 Notifications must be made by telephoning the Environment Line service on 131 555.

R2.2 The licensee must provide written details of the notification to the EPA within 7 days of the date on which the incident occurred.

Note: The licensee or its employees must notify all relevant authorities of incidents causing or threatening material harm to the environment immediately after the person becomes aware of the incident in accordance with the requirements of Part 5.7 of the Act.

R3 Written report

R3.1 Where an authorised officer of the EPA suspects on reasonable grounds that:

- a) where this licence applies to premises, an event has occurred at the premises; or
 - b) where this licence applies to vehicles or mobile plant, an event has occurred in connection with the carrying out of the activities authorised by this licence,
- and the event has caused, is causing or is likely to cause material harm to the environment (whether the harm occurs on or off premises to which the licence applies), the authorised officer may request a written report of the event.

R3.2 The licensee must make all reasonable inquiries in relation to the event and supply the report to the EPA within such time as may be specified in the request.

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- R3.3 The request may require a report which includes any or all of the following information:
- a) the cause, time and duration of the event;
 - b) the type, volume and concentration of every pollutant discharged as a result of the event;
 - c) the name, address and business hours telephone number of employees or agents of the licensee, or a specified class of them, who witnessed the event;
 - d) the name, address and business hours telephone number of every other person (of whom the licensee is aware) who witnessed the event, unless the licensee has been unable to obtain that information after making reasonable effort;
 - e) action taken by the licensee in relation to the event, including any follow-up contact with any complainants;
 - f) details of any measure taken or proposed to be taken to prevent or mitigate against a recurrence of such an event; and
 - g) any other relevant matters.
- R3.4 The EPA may make a written request for further details in relation to any of the above matters if it is not satisfied with the report provided by the licensee. The licensee must provide such further details to the EPA within the time specified in the request.

7 General Conditions

G1 Copy of licence kept at the premises or plant

- G1.1 A copy of this licence must be kept at the premises to which the licence applies.
- G1.2 The licence must be produced to any authorised officer of the EPA who asks to see it.
- G1.3 The licence must be available for inspection by any employee or agent of the licensee working at the premises.

G2 Signage

- G2.1 The location of EPA point number(s) 1 to 4 must be clearly marked by signs that indicate the point identification number used in this licence and be located as close as practical to the point.

8 Special Conditions

E1 Solid Alternative Fuel

- E1.1 For the purpose of this licence, Solid Alternative Fuel means timber products that are either:
- Biomass that is sustainably harvested as defined in "Greenhouse Gas Emissions from Electricity Supplied in NSW: Emissions Workbook, October 2000, Ministry of Energy and Utilities"; or
 - Recycled timber products obtained from the manufacturing, construction and demolition sources that comply with the fuel specification L3.4 for hazardous substances; or
 - In accordance with Regulation 8 (Special requirements - wood waste) of Division 2.2 (Eligible renewable

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energy sources) in Part 2 of the Renewable Energy (Electricity) Regulation 2001 and Renewable Energy (Electricity) Act 2000.

E1.2 Solid Alternative Fuel may only be fed to the boiler during coal firing.

E1.3 Solid Alternative Fuel may only be fed to the boiler at a feed rate of less than or equal to 5% weight of the coal feed rate.

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Dictionary

General Dictionary

3DGM [in relation to a concentration limit]	Means the three day geometric mean, which is calculated by multiplying the results of the analysis of three samples collected on consecutive days and then taking the cubed root of that amount. Where one or more of the samples is zero or below the detection limit for the analysis, then 1 or the detection limit respectively should be used in place of those samples
Act	Means the Protection of the Environment Operations Act 1997
activity	Means a scheduled or non-scheduled activity within the meaning of the Protection of the Environment Operations Act 1997
actual load	Has the same meaning as in the Protection of the Environment Operations (General) Regulation 2009
AM	Together with a number, means an ambient air monitoring method of that number prescribed by the <i>Approved Methods for the Sampling and Analysis of Air Pollutants in New South Wales</i> .
AMG	Australian Map Grid
anniversary date	The anniversary date is the anniversary each year of the date of issue of the licence. In the case of a licence continued in force by the Protection of the Environment Operations Act 1997, the date of issue of the licence is the first anniversary of the date of issue or last renewal of the licence following the commencement of the Act.
annual return	Is defined in R1.1
Approved Methods Publication	Has the same meaning as in the Protection of the Environment Operations (General) Regulation 2009
assessable pollutants	Has the same meaning as in the Protection of the Environment Operations (General) Regulation 2009
BOD	Means biochemical oxygen demand
CEM	Together with a number, means a continuous emission monitoring method of that number prescribed by the <i>Approved Methods for the Sampling and Analysis of Air Pollutants in New South Wales</i> .
COD	Means chemical oxygen demand
composite sample	Unless otherwise specifically approved in writing by the EPA, a sample consisting of 24 individual samples collected at hourly intervals and each having an equivalent volume.
cond.	Means conductivity
environment	Has the same meaning as in the Protection of the Environment Operations Act 1997
environment protection legislation	Has the same meaning as in the Protection of the Environment Administration Act 1991
EPA	Means Environment Protection Authority of New South Wales.
fee-based activity classification	Means the numbered short descriptions in Schedule 1 of the Protection of the Environment Operations (General) Regulation 2009.
general solid waste (non-putrescible)	Has the same meaning as in Part 3 of Schedule 1 of the Protection of the Environment Operations Act 1997

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flow weighted composite sample	Means a sample whose composites are sized in proportion to the flow at each composites time of collection.
general solid waste (putrescible)	Has the same meaning as in Part 3 of Schedule 1 of the Protection of the Environment Operations Act 1997
grab sample	Means a single sample taken at a point at a single time
hazardous waste	Has the same meaning as in Part 3 of Schedule 1 of the Protection of the Environment Operations Act 1997
licensee	Means the licence holder described at the front of this licence
load calculation protocol	Has the same meaning as in the Protection of the Environment Operations (General) Regulation 2009
local authority	Has the same meaning as in the Protection of the Environment Operations Act 1997
material harm	Has the same meaning as in section 147 Protection of the Environment Operations Act 1997
MBAS	Means methylene blue active substances
Minister	Means the Minister administering the Protection of the Environment Operations Act 1997
mobile plant	Has the same meaning as in Part 3 of Schedule 1 of the Protection of the Environment Operations Act 1997
motor vehicle	Has the same meaning as in the Protection of the Environment Operations Act 1997
O&G	Means oil and grease
percentile [in relation to a concentration limit of a sample]	Means that percentage [eg.50%] of the number of samples taken that must meet the concentration limit specified in the licence for that pollutant over a specified period of time. In this licence, the specified period of time is the Reporting Period unless otherwise stated in this licence.
plant	Includes all plant within the meaning of the Protection of the Environment Operations Act 1997 as well as motor vehicles.
pollution of waters [or water pollution]	Has the same meaning as in the Protection of the Environment Operations Act 1997
premises	Means the premises described in condition A2.1
public authority	Has the same meaning as in the Protection of the Environment Operations Act 1997
regional office	Means the relevant EPA office referred to in the Contacting the EPA document accompanying this licence
reporting period	For the purposes of this licence, the reporting period means the period of 12 months after the issue of the licence, and each subsequent period of 12 months. In the case of a licence continued in force by the Protection of the Environment Operations Act 1997, the date of issue of the licence is the first anniversary of the date of issue or last renewal of the licence following the commencement of the Act.
restricted solid waste	Has the same meaning as in Part 3 of Schedule 1 of the Protection of the Environment Operations Act 1997
scheduled activity	Means an activity listed in Schedule 1 of the Protection of the Environment Operations Act 1997
special waste	Has the same meaning as in Part 3 of Schedule 1 of the Protection of the Environment Operations Act 1997
TM	Together with a number, means a test method of that number prescribed by the <i>Approved Methods for the Sampling and Analysis of Air Pollutants in New South Wales</i> .

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TSP	Means total suspended particles
TSS	Means total suspended solids
Type 1 substance	Means the elements antimony, arsenic, cadmium, lead or mercury or any compound containing one or more of those elements
Type 2 substance	Means the elements beryllium, chromium, cobalt, manganese, nickel, selenium, tin or vanadium or any compound containing one or more of those elements
utilisation area	Means any area shown as a utilisation area on a map submitted with the application for this licence
waste	Has the same meaning as in the Protection of the Environment Operations Act 1997
waste type	Means liquid, restricted solid waste, general solid waste (putrescible), general solid waste (non - putrescible), special waste or hazardous waste

Mr Darryl Clift

Environment Protection Authority

(By Delegation)

Date of this edition: 01-January-2009

End Notes

- 1 Licence varied by correction to Load Limits table, issued on 07-Jan-2009, which came into effect on 07-Jan-2009.
- 2 Licence varied by notice 1110821, issued on 21-Jan-2010, which came into effect on 21-Jan-2010.
- 3 Licence varied by notice 1118174, issued on 20-Aug-2010, which came into effect on 20-Aug-2010.
- 4 Licence varied by notice 1516460 issued on 19-Aug-2013
- 5 Licence transferred through application 1516748 approved on 29-Aug-2013 , which came into effect on 02-Sep-2013

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Mt Piper Power Station Brine Conditioned Flyash Co-placement Extension Water Management and Monitoring Plan

Delta Electricity Western

26 September 2008
Reference 7053 01 EC
Revision 3

Document Control



Document ID: O:\17053\MOUNT PIPER WQ 2440\MTPIPER + BRINEWATER MGT PLAN\MT PIPER BRINE-ASH EXPANSION WMP C DE & GM AND DOP COMM.DOC

Rev No	Date	Revision Details	Typist	Author	Verifier	Approver
0	20/03/08	Draft	BRH	BRH	GM	LK
1	15/04/08	Final Draft	BRH	BRH	GM	LK
2	5/05/08	Final Report with DE comments	BRH	BRH	GM	LK
3	26/09/08	Revised Final Report with DoP comments	BRH	BRH	GM	CV

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- Attachment 2: Modification of the Mt Piper Power Station Development Consent to allow Brine Conditioned Ash Placement in the Ash Placement Area, 3rd April, 2000
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- Attachment 4: Modification of the Development Consent for Extension of the Existing Brine and Ash Co-placement Area, April, 2008
- Attachment 5: Bilfinger Berger Services Ash Placement Area - Daily Inspection Record Sheet

Summary

A Statement of Environmental Effects (SEE) was prepared for extension of the Mount Piper Power Station brine co-placement project area (Connell Wagner, 2007a) due to space limitations in the currently approved area and to allow for increased brine production resulting from the approved upgrade of the power station from 1,320 MW to 1,500 MW (Connell Wagner, 2005). In accordance with the requirements of the Development Consent, the Water Management Plan (WMP) for the existing brine co-placement area has been updated to include the expanded area. The updated WMP includes:

- a water monitoring program for surface and groundwater monitoring at the ash disposal site and receiving waters;
- the requirements for an annual environmental monitoring report;
- strategies for reduction of brine production, and
- requirements for an update of the groundwater modelling, based upon the monitoring data.

The updated WMP contains a water cycle management plan that describes how surface runoff will be managed to prevent contamination of groundwater and surface water from the brine conditioned ash placement area. A contingency plan is also described in the event that monitoring suggests surface or groundwater contamination may be occurring.

1. Introduction

Mount Piper Power Station obtained development approval from the Department of Urban Affairs and Planning (DUAP) on 3rd April, 2000 for the co-placement of brine conditioned flyash in the existing ash placement area. The existing brine/ash placement, as described in the PPI (1999) Statement of Environmental Effects (SEE), allows brine produced in the treatment of the cooling tower blowdown and other waste waters, to be disposed on site with acceptable environmental effects.

A Water Management Plan (WMP) was prepared, as required under Clause 43 of Schedule 2 attached to the original brine conditioned ash co-placement consent (see Attachment 2). This plan, and storage of brine conditioned ash within the ash placement area, has been in operation since November, 2000.

In 2006, the Department of Planning approved an application to upgrade the nominal capacity of the power station from 1,320 MW to 1,500 MW on 3rd June, 2006 (Attachment 3). This was described in a SEE for the project (Connell Wagner PPI, 2005).

Due to space limitations in the currently approved area and to provide for increased brine production due to the upgrade, Delta Electricity proposes to extend the existing brine and ash co-placement area at Mount Piper Power Station. The environmental effects of the proposal were examined in a SEE (Connell Wagner, 2007a) which was submitted in support of an application to modify the ash disposal area. The modification was approved by the Department of Planning on 23rd March 2008 (Attachment 4). The area involved is shown in Figure 1.

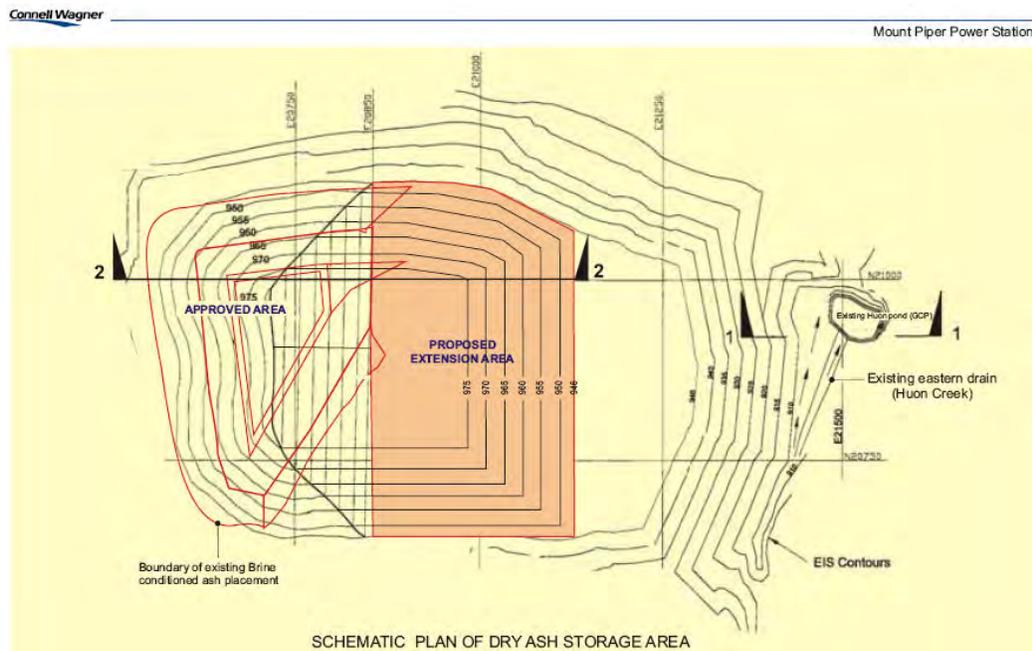


Figure 1. Existing and Approved Extension to the Brine Conditioned Ash Placement Area

The extension shown in Figure 1 will provide adequate volume for placement of brine conditioned ash for the remaining life of the ash placement facility. The existing and proposed extension areas are also overlaid on Figure 5 to show the relation between the monitoring points and the two areas.

The development consent for the extension required that the existing Water Management and Monitoring Plan (WMP) be updated and approved by the Director-General prior to undertaking extension of the brine conditioned ash placement area. The update must include details of:

- the increased catchment area;
- extension of drains, and
- the additional detention pond and/or storage areas.

This WMP addresses the water cycle management on the site, including strategies for reduction of brine production. It also includes a water monitoring program for surface and groundwater monitoring at the ash disposal site and receiving waters. The requirement for an annual environmental monitoring report is also included in the WMP.

Should the water quality monitoring indicate significant effects of the brine placement, groundwater modelling would be undertaken and the report is required to be an update of the modelling presented in the Connell Wagner (2007) SEE. The model is required to be calibrated using the water quality monitoring data.

The WMP for the extended brine placement area was updated by modifying the original Water Management and Monitoring Plan (PPI 2000), as required by the 2007 SEE and the 2008 approval conditions. The aim of the WMP is to minimise the effect of the placement of brine conditioned ash on local natural waters. It outlines the existing water quality, describes surface water and groundwater management strategies and documents the surface water and groundwater monitoring programs. Contingency plans in the event of runoff or leachate having an effect upon natural surface water or groundwater quality are also presented.

It is expected that the WMP will be integrated with the Repository Site Management Plan for the brine conditioned ash area (BBS, 2007). The site is administered by Bilfinger Berger Services Pty Ltd (BBS) for the power station. The Mount Piper Environment Section will be responsible for monitoring and will request Bilfinger Berger Services to implement the contingency plan, if required.

2. Current Water Cycle Management and Water Quality

2.1 Water Cycle Management

The Mount Piper Power Station and ash storage area are located within the catchment of Neubecks Creek, a tributary of the Coxs River, which is a Sub-catchment of the Warragamba Catchment. Water cycle management practices in the Mount Piper Power Station ash placement area direct surface runoff from the external batters away from the deposited ash into drains and clean water collection ponds (Figure 2). External runoff is also directed to the Eastern Drain (called Huon Creek), which flows into settling ponds or the local Huon Mine void called the Groundwater Collection Basin (GCB).

Surface water management of runoff from within the existing brine conditioned ash and proposed extension placement areas are outlined in Figure 2. The normal water conditioned ash runoff is directed to dirty water storage ponds, runoff from the brine area to the brine dirty water ponds and clean water diversion to a detention pond. Details of the existing brine runoff system and proposed brine dam are also shown in Figure 2. Collected water will only be used for dust suppression within the ash and brine placement area.

2.2 Surface Water Quality

Surface water in the nearby Neubecks Creek is characterised by elevated concentrations of sulphate, iron and manganese. This reflects the nature of the local geology, which includes out-cropping coal seams, some of which have been mined in this area (Connell Wagner, 2007b). Attachment 1 provides a summary of the existing surface and groundwater quality in and near the ash disposal area.

Water quality in Neubecks Creek is relatively poor and variable due to catchment inputs and stream flows. The median stream flow is only about 3.7 ML/day.

2.3 Groundwater Quality

Groundwater management is an essential part of the water cycle management for the ash disposal area. Groundwater flows travel from west of the ash disposal area to the Eastern Drain, which enters the Huon mine void. Limited flow occurs between the mine void and Neubecks Creek (Merrick, 2007).

The local groundwater is elevated in salts, mainly sulphate, and iron and manganese as well as some trace elements such as lead and zinc. The trace elements such as zinc and lead are due to local mineralisations originating from an old copper, lead and zinc open-cut mine to the north-west of the ash disposal site. The groundwater has low pH due to the presence of iron pyrites. Oxidation of the iron pyrites, by groundwater passing through the area, results in very high concentrations of iron and sulphate.

Poor water quality is also present in underground mine goaf areas to the south of the site. This has affected the water quality in the Groundwater Collection Basin in recent years (Connell Wagner, 2007b). The goaf areas are the underground mine areas where coal pillars between former mine headings have been partially mined and the roof allowed to collapse. The water quality is characterised by elevated concentrations of boron and sulphate as well as iron, manganese, nickel and zinc.

The groundwater concentrations of trace metals are much lower at background bores located away from the old mine area. Due to the localised nature of the various ore bodies and coal mines in the area, the groundwater water quality is highly variable between sampling bores. The relevant background bores are used to represent background conditions for comparison with the ash placement area down-gradient bores (see Attachment 1).

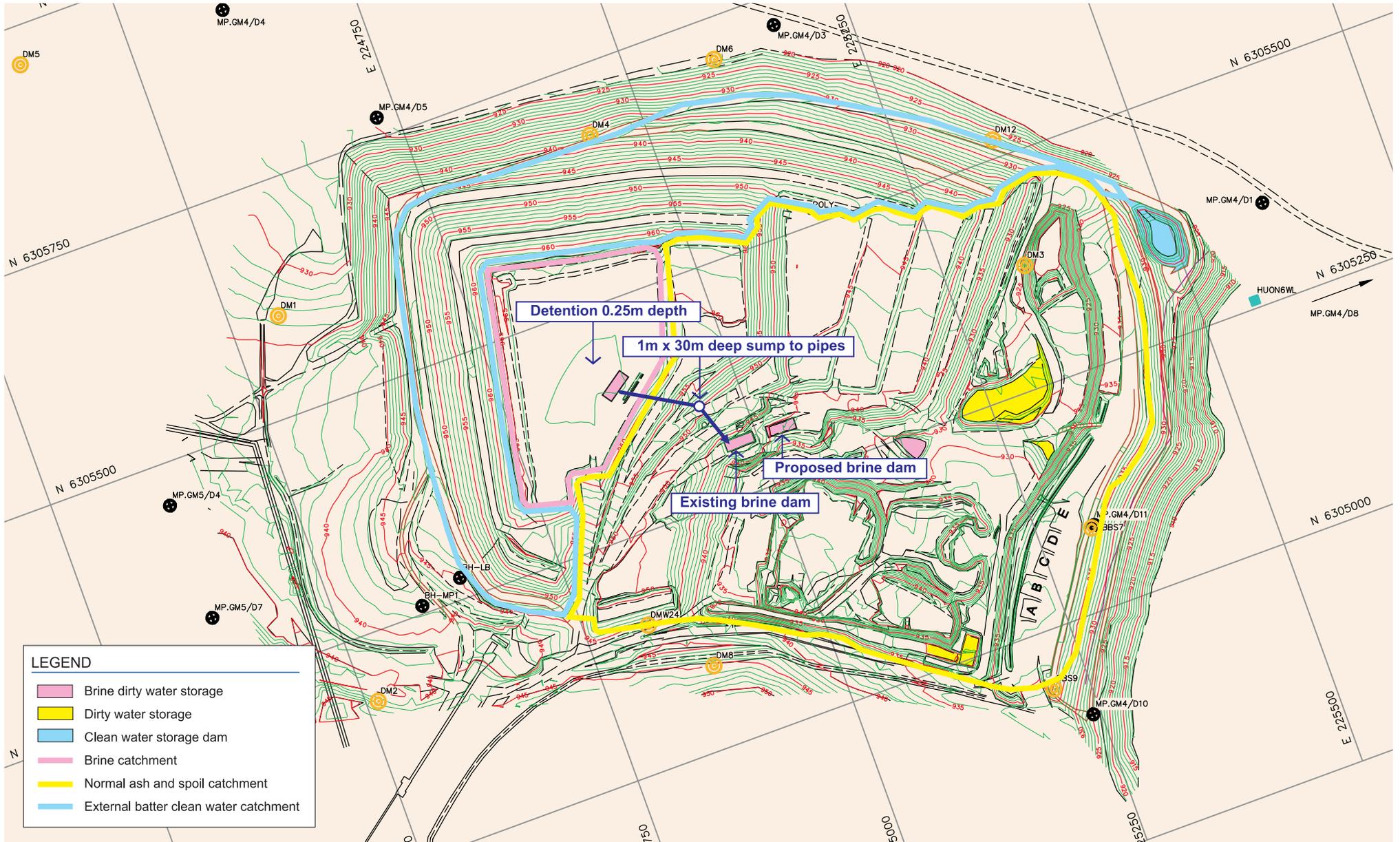


Figure 2
Mt Piper Power Station Ash Placement Area Contours in April, 2008 with brine area, dirty water and Clean Water runoff ponds and Proposed Extension Area Brine Dam

3. Planned Extended Area Water Cycle Management

Management of surface runoff for the existing brine conditioned ash placement is described in the following section. A similar arrangement will be used for the extended area.

3.1 Existing Surface Runoff

The brine-conditioned flyash placement area is managed to control surface runoff to minimise contamination of the local groundwater and surface water. As can be seen in Figure 3, the brine conditioned flyash is placed in layers and the external batters are capped with one metre of normal flyash to prevent leaching of the brine by runoff into surface waters outside the placement area.

At the completion of a placement stage, the normal flyash capping is covered with spoil and revegetated, in accordance with the Bilfinger Berger Services Repository Site Management Plan (BBS, 2007). In this way, the brine conditioned ash deposit is segregated from the surrounding environment by an envelope of water conditioned ash and spoil capping, as originally approved for the ash placement proposal. The location of the ash disposal area is such that the risk of surface runoff entering natural water courses is minimal.

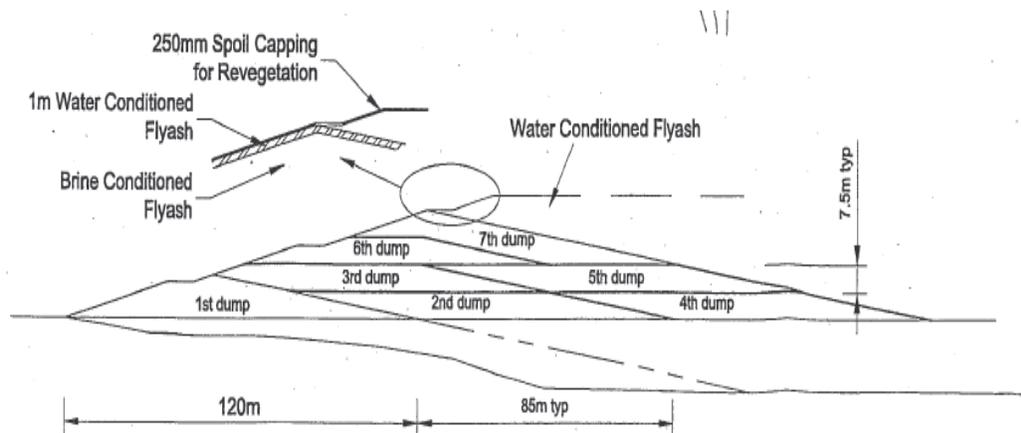


Figure 3. Schematic of Water Conditioned Ash External Batter Placement for Containment of Brine Conditioned Ash Placement (from PPI, 1999)

The annual “Long term average rainfall” measured at Lithgow is 870mm (Forster 1999). The brine/ash pilot field test showed that the majority of the rainfall is evaporated from the ash surface, resulting in an average of only 5% of the annual rainfall appearing as surface runoff.

Surface runoff from within the existing brine conditioned ash placement area is as shown in Figure 4. A surface slope of 2% directs the rainfall runoff to a wide detention pond in the centre of the deposit, which has a maximum depth of 0.25m. Water collected in this pond is directed to a 30m long, 1m deep sump which then directs water to the lined 300m³ Brine Dam. Inspections of the system are undertaken daily to ensure its integrity during the placement period. A variety of other components are checked during these inspections as detailed in the BBS Ash Placement Area Daily Inspection Sheet (Attachment 5).

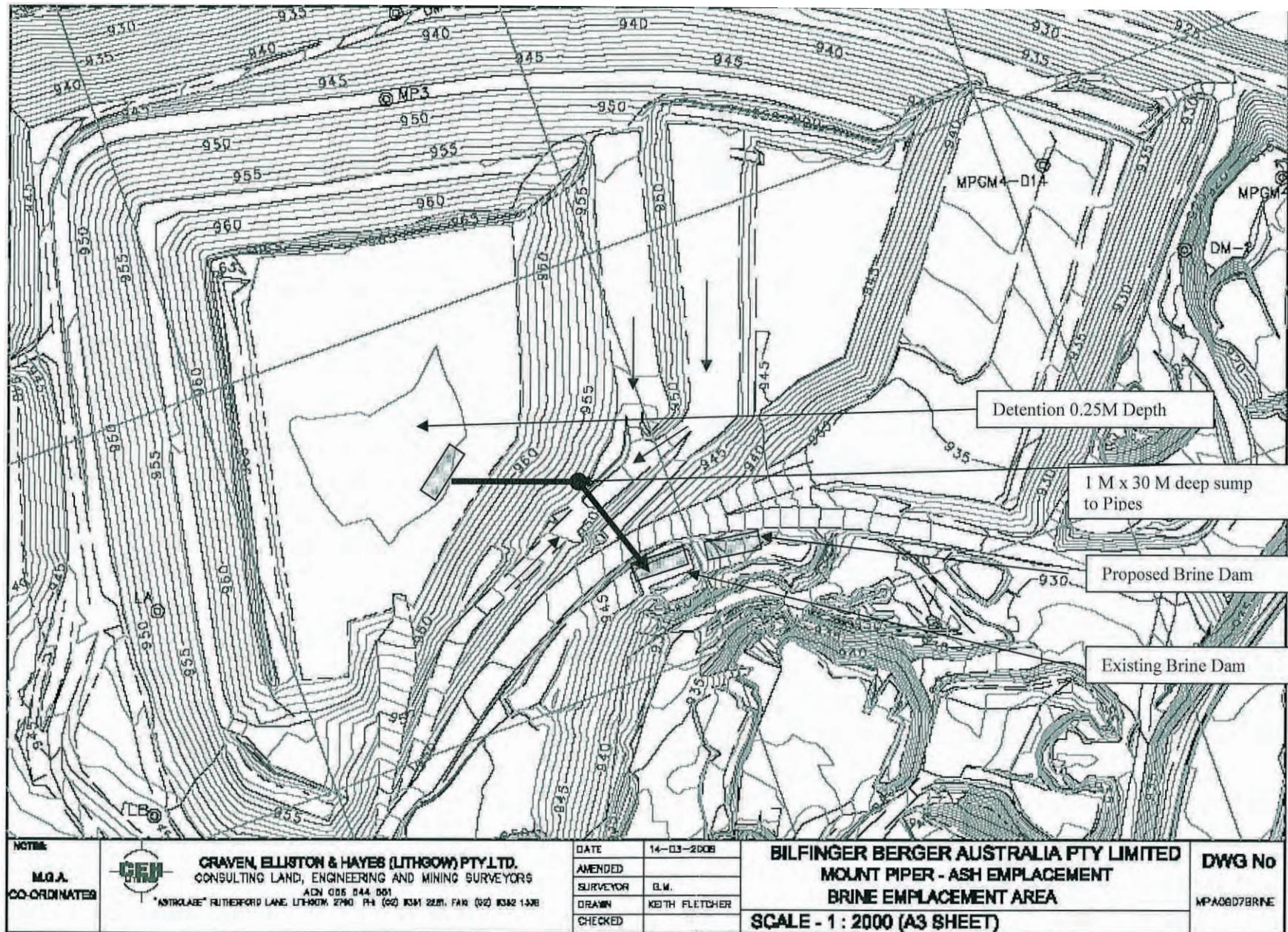
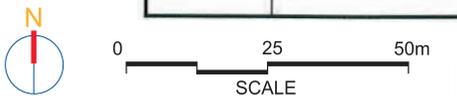


Figure 4

Existing Brine Conditioned Ash Placement Area Rainfall Runoff System



The lined Brine Dam was sized at 300m³ to collect 1 in 10 year storm events from individual ash placement stage areas. This was estimated based upon the 90th percentile of 100 years of monthly rainfall data and taking 5% of surface runoff from the area of the placement. Storm intensity runoff calculation showed that the original pond size was conservative so the larger size was used.

Water collected in the dam is reused for dust suppression by spraying onto the ash/brine area. In this way the size of the pond can be kept to a minimum. The dam will be kept empty as far as possible to reduce the possibility of an overflow. In the unlikely event that the dam was to overflow, the water would drain to the dirty water storage dams where it could be pumped back to the brine placement area. The contingency plans in Section 5 would then be adopted with regards to increased monitoring frequency for the detection of seepage, and the treatment of any confirmed contaminated water in the Groundwater Collection Basin.

3.2 Extended Area Surface Runoff

The design of the extended brine conditioned ash placement area drainage system, to manage external and internal runoff, will be similar to that used for the existing area. The existing detention pond will be extended into the expanded area as required, maintaining a similar configuration to that shown in Figure 4. The 30m long, 1m deep sump for collection of runoff will be moved as required. Water from the sump will be directed to the existing lined Brine Dam as well as an additional Brine Dam in the extended area. As the configuration for extended area will be similar to that for the existing placement, the size of the second Brine Dam will also be 300m³, as depicted in Figure 4.

The design of the drainage system will be suited to the extended placement area and the planned design is expected to be similar to that shown in Figure 4.

3.3 Surface Runoff at Completion of Brine Placement

Once placement of brine conditioned ash ceases, the area will be covered with normal ash and the Brine Dam will be decommissioned. All areas will be rehabilitated and free draining. Runoff from the rehabilitated areas will be diverted to the main site drainage system for clean runoff (Figure 2).

3.4 Groundwater

Protection of natural groundwater is an essential part of the water cycle management. Measures outlined in this management plan seek to minimise the impact that the ash disposal area could have on local groundwater and in turn surface water.

The location of the ash disposal area was chosen to minimise the formation of leachates and its infiltration into the local groundwater. Groundwater modelling carried out for the original 1989 ash disposal EIS (ECNSW, 1989) indicated that a sub-surface drain, constructed of mine spoil, to prevent the deposited ash from coming in contact with the groundwater in the mine void would achieve this aim. The brine conditioned flyash proposal has the brine conditioned ash deposit placed on top of the ash deposit, some 37m above the water table.

Brine-conditioned flyash will not come into contact with the local groundwater table. The water table is predicted to rise by about 2m as a result of ash placement. The local groundwater should therefore be some 35 m below the brine conditioned ash disposal area (Merrick and Tammetta, 1999 and Merrick, 2007).

As the compacted flyash has a low porosity, only very small amounts of leachate are predicted to be formed as a result of rainfall infiltration into the brine conditioned ash deposit. The brine in ash field trial (Forster, 1999) found that the rainfall infiltration was only about 5 mm per year, equivalent to less than 1% of the annual average rainfall. Recent contaminant transport modelling (MERRICK, 2007) has indicated that the leachate produced from the extended brine conditioned ash area is not expected to

have a significant effect on water quality in the Eastern Drain, the Groundwater Collection Basin or Neubecks Creek.

4. Water Monitoring Program

Water quality monitoring provides important feedback for water cycle management in the ash disposal area. The monitoring program has been designed to supply sufficient information to give an accurate picture of the state of the water cycle management so that decisions can be made as to whether changes in local water quality are due to the placement of brine conditioned ash or other activities within the area. The aim is to identify water quality changes at an early stage so the causes can be investigated. In the event that changes are expected to be due to the brine co-placement, decisions can be made regarding corrective actions.

The original April, 2000 Development Approval conditions No. 40 and 41 (Attachment 2) and the recent approval to modify the development (Attachment 4) requires the Department of Planning to consult with the DECC, Department of Water and Energy (DWE), Sydney Catchment Authority (SCA) and Lithgow Council regarding proposed changes to the existing groundwater and surface water monitoring program, before approval of an updated Water Quality Management Plan (WQMP) can be granted.

4.1 Water Quality Guidelines

The local guidelines used are the pre-placement 90th percentile or the ANZECC (2000) guidelines for protection of freshwater (see Connell Wagner, 2007b and Attachment 1). It should be noted that modelling indicates that significant increases of salts and trace metals are not expected in the long-term, so changes in concentrations due to the brine conditioned ash placement are unlikely.

4.2 Groundwater

The groundwater monitoring bores, shown in Figure 5, have been used to monitor effects of the existing brine conditioned placement area. Due to the placement of water conditioned ash, the pre-brine conditioned ash bores MP3, B901 and B904 have been capped before being covered by ash. The background bore MP1 has been dry since brine conditioned ash placement began but is uncapped because it is monitored each quarter for water content. The more recent bores MPGM4/D12, D13 and D14 have also been capped before being covered by ash and recently bores D10 and D11 have been capped and covered with mine spoil. Therefore, changes in water quality in the seepage detection bores and the Groundwater Collection Basin will continue to be used to monitor the effects of brine conditioned ash placement in the ash placement area. In addition, vibrating wire piezometers (which only monitor water level) have been placed around the location of the covered bore D14 (see Figure 5) to provide early warning of increasing groundwater elevation and therefore possible brine leachates from the extended brine placement area. Where a significant increase in groundwater elevation is detected by a vibrating wire piezometer, a bore will be drilled through the ash. Free water in the bore will be analysed for water quality and ash core samples collected and analysed for moisture and salts in leachate tests. However, due to the water conditioned ash placement, there is no possibility of installing more groundwater monitoring bores inside the ash placement area.

It is proposed that, as well as installing additional vibrating wire piezometers in the expanded brine placement area (see Section 4.2.2), the water quality in the Groundwater Collection Basin and the existing monitoring bores outside the ash placement area, shown in Figure 5, will be used to monitor the extended brine conditioned placement area. The vibrating wire piezometers, Groundwater Collection Basin and remaining bores are sufficient for monitoring purposes.

If, for some reason, expansion of the existing groundwater and surface water monitoring programs becomes necessary, it will be undertaken with consultation and in accordance with reasonable requirements of DOP, in consultation with DECC, DWE, SCA and Lithgow Council. To avoid any confusion, it should be noted that Attachment 2 refers to the DLWC and that DWE replaces any reference to the former DLWC.

Extensive groundwater monitoring has been ongoing on at least a quarterly basis around the ash disposal site since 1985 to characterise the water quality and hydraulic characteristics of the area. The locations of the bores were selected according to the ANZECC (1995) principles of up-gradient and down-gradient bores. The bores were placed inside and adjacent to the ash disposal area for early warning of leachates originating from the ash/brine deposit. In addition, bores have been established further away to allow detection of groundwater movements toward the Groundwater Collection Basin and Neubecks Creek and to monitor background conditions. The location of the bores are shown in Figure 5.

The existing groundwater monitoring program will be continued under the WMP with sampling undertaken every three months at all of the groundwater monitoring boreholes. The parameters monitored in the bores are: water depth before bailing (to Australian Height Datum, AHD), conductivity (calibrated YSI meter), pH, sulphate, chloride and trace elements listed in Attachment 1 that are relevant to the ANZECC (2000) guidelines. As discussed in attachment 1, groundwater bore MPM4/D5 (Figure 5) is used as the background bore due to its consistent results.

Bores are bailed 24 hours before sampling and if the bore has high recharge it is bailed a minimum of three times the bore volume.

All water quality analyses are undertaken in accordance with DECC approved methods (EPA 2004). Detection limits are set so that accurate measurements can be obtained at a level relevant to specific guidelines. In some cases, this may be as low as 1/10th the guideline concentration.

The results from the sampling, including core samples as required, will be presented in the annual Environmental Monitoring Report (EMR), as set out in the following section describing Data Management and Assessment.



LEGEND	
★	Prefix <i>MPGM</i>
● (orange)	Covered groundwater bores
● (yellow)	Uncovered groundwater bores
◆ (yellow)	Surface water sampling
▲ (red)	Piezometer

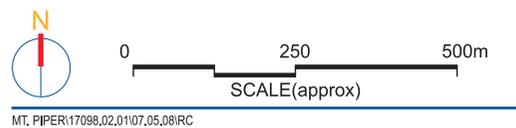


Figure 5
Mount Piper Power Station Ash and Brine Co-placement Area Groundwater and Surface Water Quality Monitoring Sites

4.2.1 Data Management and Assessment

As the data is received from the laboratory it is compared with the existing data base for outliers and exceedence of guideline concentrations. A trace element outlier is defined using the ANZECC (2000) procedure, which is if a data point is equal to, or greater than, three times the standard deviation of the database away from the database mean. If this occurs, the laboratory is requested to repeat the test. If the outlier is above the guideline concentration, an investigation is undertaken to determine if the result is real or due to sample contamination. Such data is not deleted from the database until an investigation of the likely causes of the outlier can recommend that it be deleted.

The water quality data is graphed over time to show trends at the background and receiving water groundwater and surface water monitoring sites. Chloride is used as a tracer for brine leachates because the local area is highly mineralised and it is difficult to distinguish the origin of other trace elements. The chloride concentration provides an early warning of leaching from the brine conditioned ash deposit. Chloride is also unlikely to undergo chemical alteration in the groundwater.

If concentrations increase above background and approach the relevant local guidelines and it can be reasonably expected to due the brine placement area, when the local mineralisations and background conditions are taken into account, the contingency plan, described in the following sections will be implemented.

4.2.2 Seepage Monitoring

In addition to groundwater bores, vibrating wire piezometers (VWP) have been installed within the ash disposal area to detect rainfall infiltration and seepage, if any, from the brine conditioned flyash deposit. The first VWP will be installed in the extended area after placement of the first layer is completed. The VWP will be sunk to a suitable depth to indicate whether there is seepage from the brine conditioned flyash placement. If the VWP's indicate that seepage is occurring, the sampling frequency of the outside bores will be increased, as required, to provide feedback for management of the brine conditioned flyash placement area. The VWPs will be monitored regularly and leachates analysed for the presence of salts, such as conductivity measurements.

4.2.3 Groundwater Model Verification

The DA conditions (Attachment 4) require that the next Groundwater Modelling Report is to be an update the groundwater modelling presented in the Mount Piper Power Station Extension of Brine Conditioned Ash Placement Area - Statement of Environmental Effects (dated June 2007). The report is also required to use the results and analyses from the water quality monitoring to calibrate the groundwater contaminant transport model.

The contaminant transport modelling undertaken for extension of the existing brine conditioned ash placement area SEE was calibrated using the current water level and water quality database. In order to calibrate the model for the extended area, it will be re-run once sufficient data has been collected after brine conditioned flyash placement has started in the extended area.

The time required to collect sufficient data to do this is uncertain. Modelling suggests it is in the order of 40 years, which is after the life of ash placement. However, calibration could be undertaken once the leachate plume (as indicated by chloride concentrations) reaches the sub-surface drain, below the placed ash, on the bottom of the mine void, or when some significant change in water quality has occurred that may indicate leachates originating from the brine conditioned ash area have reached the groundwater.

4.3 Surface Water

Surface water quality monitoring involves the water quality at the Mt Piper Power Station licensed discharge point (LDP006), in Neubecks Creek at the stream gauging station, site WX22 and the GCB.

The sampling sites are shown in Figure 5. Stream flows are recorded at WX22 by DWE and provided to Mt Piper Power Station when requested. The WX22 site in Neubecks Creek is located downstream of the ash and brine co-placement areas for monitoring of water quality changes relative to the upstream site at LDP006.

Surface water quality monitoring is currently undertaken on a three monthly basis, except at WX22 which has been monthly since October, 2007, and consistent with the requirements of the original April, 2000 Development Consent. This sampling frequency will be maintained at the surface water quality monitoring sites. Characteristics measured and methods used, such as conductivity (calibrated YSI meter), will be consistent with those used for the groundwater bores (see Section 4.2 and Attachment 1). Data management and assessment will continue to be the same as for groundwater data management.

5. Contingency Plans

In the unlikely event that the brine runoff collection dam was to overflow, the water would drain to the dirty water storage dams where it could be pumped back to the brine placement area. The following contingency plans would then be adopted.

In the event that monitoring indicates the contaminant concentrations in the Groundwater Collection Basin void or Neubecks Creek have increased, and are approaching the relevant locally derived ANZECC guideline concentrations, the monitoring results will be examined to determine if:

- the increase can reasonably be expected to be due the brine placement area, when the local mineralisations and background conditions are taken into account, and
- there has been a significant and consistent exceedence of the relevant locally derived ANZECC guideline concentration for any of the water quality characteristics.

Should the review of the data suggest the increase is potentially caused by the brine/ash deposit, the following actions/risk assessments will be undertaken:

- The Groundwater Collection Basin , Neubecks Creek and all the groundwater bores will be re-sampled, as soon as the increase is evident, to determine if the increase is real and to determine the cause. The frequency of sampling will be increased to monthly until the matter is resolved;
- The runoff Brine Dam liner will be re-checked for leaks. Any leaks that are detected will be repaired;
- The integrity of the surface runoff collection systems in the brine conditioned ash placement area, which are regularly checked, will be inspected to ensure runoff has not bypassed the detention pond, sump and dam and repaired, if necessary, as part of site maintenance activities;
- The rate of seepage of leachates from the co-placement area will be regularly monitoring by the vibrating wire piezometers installed in each stage of the brine conditioned ash placement area. The piezometers would be expected to detect seepage well before it reached the mine spoil below;
- If the water quality in the Groundwater Collection Basin is shown to have the potential to affect the water quality in Neubecks Creek, it will be pumped out and sprayed on the ash placement area. Leachates in the vibrating wire piezometers will be checked to determine if this is the cause of changes to the water quality in the Groundwater Collection Basin;
- A groundwater investigation, including modelling, will be undertaken to determine if the cause of the water quality change in the Groundwater Collection Basin is due to brine leachate from the ash/brine deposit;
- The placement of brine conditioned flyash will be temporarily suspended pending the outcome of the above investigations. The brine storage ponds have the capacity to store 40ML of brine. Therefore there is ample time to undertake an investigation (predicted annual brine production is 8 to 16 ML).
- Should the source of contaminant concentrations be identified as the brine/ash deposits, an investigation will be carried out to determine how to overcome the problem;
- The relevant stakeholders (SCA, DWE, Lithgow City Council and DECC) will be notified and involved in discussions on actions needed to rectify the situation. The Department of Planning will be provided with evidence of this consultation process and details of any increase in contaminants and the remediation measures undertaken;
- Once an acceptable solution is devised and approved, co-placement would then recommence, following approval by the relevant Authorities.

Approval for the discharge of brine via the Wollongong sewage treatment plant was previously granted by DUAP, as a contingency to the on site brine/ash placement. Ocean disposal involves trucking the brine to the sewage plant where it is mixed with sewage to give a dilution of about 300 to 1, giving a total dilution of 20,000 times once the sewage and brine are diluted in the 'mixing zone' of the ocean outfall.

In the unlikely event that the above situation was to occur when there was inadequate capacity in brine storage ponds, additional temporary storage could be arranged on site or surplus brine could be transported to Wollongong for ocean disposal.

Should leaks be detected from the brine storage ponds, through regular monitoring of the adjacent bores (shown in Figure 5) or as a result of special investigations, the storage of the brine could be transferred to another pond at the Power Station while the defective liner is repaired. Construction of a temporary storage area could also be considered if the adjacent ponds were not suitable for storage.

6. Brine Management Strategies

As far as is practicable, Mount Piper Power station is operated so that the production, handling and storage of the brine is minimised and its management is carried out in a responsible manner.

Several strategies for minimising brine production at Mt Piper Power Station have been investigated. The most effective method is to use a greater proportion of the Fish River water supply allocation and to reduce the use of the more saline Coxs River supply. This has limited brine production, even when the power station was operated at near full capacity. The current prolonged drought has limited access to the Fish River water supply and increased the salinity of the Coxs River supply, so the volume of brine production has increased in recent years. The extended area of brine conditioned ash placement has taken this effect into account for future co-placement requirements.

Other brine reduction strategies being used include recycling of plant wastewater and using cooling tower water to condition ash. The option to discharge brine via at the Wollongong sewage treatment is available as a contingency plan in the event that on site disposal of brine conditioned flyash is interrupted or suspended.

The handling of brine at the site is carried out to prevent any release into the surrounding environment. Brine conditioning of the flyash occurs within the paved power station area, away from the ash disposal area, to prevent any brine or brine contaminated material entering natural waterways. The fly ash conditioning plant area is protected by drainage systems that collect and pump drainage water to settling basins from where the water is recycled for appropriate uses. The brine conditioned flyash is transported to the designated disposal area by conveyor.

The pump to transport the brine to the ash conditioning plant is located adjacent to the brine holding ponds, and any drainage from the pump area is directed back to the brine ponds. The pipeline is fully welded HDPE and ABS pipe, located above ground to ensure that the possibility of an undetected leak is minimised.

The site layout ensures that any spill of brine is intercepted at the earliest point. The drainage system is backed up by the Mt Piper Final Holding Pond, so that in the unlikely event of leaked brine, it can be collected and pumped back to the water treatment plant.

The brine storage ponds are double lined to minimise the risk of leaks and local groundwater contamination. Groundwater bores have been installed adjacent to the ponds and are monitored quarterly to provide early warning of leaks in the outer liner. The groundwater is monitored for pH, chloride, sulphate, conductivity and total dissolved solids. In addition, trace metals are sampled quarterly to confirm the local guidelines are not exceeded.

During storage of the brine in the holding ponds, some solids settle as the settled material cannot be slurried with the brine for mixing with the fly ash. The material is periodically excavated as required and transported to the ash storage area in sealed trucks, where it is deposited in the brine conditioned ash placement area. The brine sludge is spread in thin layers and covered by a layer of brine conditioned fly ash in the manner described in the "Mount Piper Power Station Brine Conditioned Flyash Co-placement - Statement of Environmental Effects" (PPI 1999). These solids will continue to be spread in a thin layer in the designated brine conditioned flyash disposal area as necessary.

7. References

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Merrick, NP, 2006. Mount Piper Power Station Brine-Conditioned Flyash Co-placement: Groundwater Modelling. AccessUTS report (the University of Technology Sydney, National Centre for Groundwater Management) for Connell Wagner on behalf of Delta Electricity.

PPI, 1999. Mt Piper Power Station Brine Conditioned Flyash Co-placement Statement of Environmental Effects. Prepared for Delta Electricity by Pacific Power International, August, 1999.

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Attachment 1

Table 1. Existing Surface and Groundwater Quality in and Near the Ash Disposal Area

Element (mg/L)	Ash Disposal Area		Background ** MPGM4/D5	Neubecks Creek *** WX22	ANZECC (2000) Guidelines #	
	B901 and MPGM4/D12	GCB			Groundwater	Freshwater
Al	14.05	-	-	-		0.055
Ag	0.001	0.00067	0.001	<0.001	0.00005	0.00005
ALK	68	132	42	54		
As	0.008	0.001	0.001	0.001	0.024	0.024
B	1.84	0.790	0.151	0.049	0.37	0.370
Ba	0.022	0.025	0.022	0.026	0.7	0.7+++
Be	0.002	0.001	0.001	0.001	0.100	0.100
Cd	0.016	0.001	0.001	0.001	0.002	0.001
Cl	28	38	27	19	350	350+
COND (uS/cm)	1370	1499	1117	316	2600^	2200
Cr	0.001	0.001	0.003	0.001	0.005	0.001
Cu	0.011	0.001	0.002	0.001	0.005	0.0025
F	2.37	0.095	0.175	0.246	1.5	1.5+++
Fe-filtered	13.12	0.163	56.3	0.089	0.664	0.3+++
Hg	0.000113	0.000120	<0.00012	0.00017	0.00006	0.00006
Mn-filtered	7.47	4.29	8.41	0.575	5.704	1.900
Mo	0.002	0.003	0.003	0.003	0.01	0.01+
NFR	99	-	-			10.0
Ni	1.483	0.356	0.083	0.013	0.5509	0.017
Pb	0.003	0.001	0.004	0.001	0.005	0.005
pH	6.2	7.3	6.0	7.1	6.5-8.0	6.5-8.0
Se	0.002	0.001	0.001	0.001	0.005	0.005
SO4	753	762	586	90	1000	1000++
TDS	1232	1216	910	220	2000	1500^
Zn	1.050	0.077	0.085	0.061	0.908	0.116

* average of bores B901 and MPGM4/D12 in ash placement area

** bore MPGM4/D5 upgradient of ash disposal area and between ash disposal area and Neubecks Creek

^ 2000 mg/L TDS/0.77 for groundwater; 0.68 x 2200 uS/cm low land river conductivity protection of aquatic life

ANZECC (2000) guidelines for protection of freshwaters, livestock, irrigation water or drinking water. Local guideline based upon 90th percentile (**shown in bold**) – see text.

Cadmium, Chromium, Copper, lead, nickel and zinc adjusted for effects of hardness: Current Ca, Mg in GCB 147, 113 mg/L; in Neubecks Creek 19.7, 11.8 mg/L, respectively

Note: Chromium is for CrVI only and not adjusted for hardness

+ Irrigation water moderately tolerant crops; irrigation. Note: Molybdenum drinking is 0.05 mg/L

++ Livestock

+++ Drinking water

Attachment 2

Modification of the Mt Piper Power Station Development Consent to allow
Brine Conditioned Ash Placement in the Ash Placement Area, 3rd April, 2000

**NOTICE OF AMENDMENT OF A DEVELOPMENT CONSENT GRANTED UNDER
SECTION 101 OF THE UNAMENDED ENVIRONMENTAL PLANNING AND
ASSESSMENT ACT 1979 PURSUANT TO SECTION 96(2) OF THE AMENDED
ACT.**

I, the Minister for Urban Affairs and Planning, pursuant to Section 96(2) of the amended Environmental Planning and Assessment Act 1979, modify the development consent referred to in Schedule 1 in the manner set out in Schedule 2 (S90/01696).

Andrew Refshauge MP
Deputy Premier
Minister for Urban Affairs and Planning
Minister for Aboriginal Affairs
Minister for Housing

Sydney, 3 April 2000

ABBREVIATIONS AND INTERPRETATION

The Director-General	Director-General of the Department of Urban Affairs and Planning
The Council	Lithgow City Council
The Applicant	Delta Electricity
DLWC	Department of Land and Water Conservation
EPA	New South Wales Environment Protection Authority
SCA	Sydney Catchment Authority
The Site	Mount Piper Power Station
Relevant Authority	EPA, DLWC or SCA

SCHEDULE 1

Development consent granted by the Minister for Planning and Environment on 1 April 1982, in respect of a development application made by the Applicant, the Electricity Commission of New South Wales, to the Greater Lithgow City Council for construction and operation of a power station known as the Mount Piper Power Station, as modified on 18 March 1991 and 21 June 1996 and 18 January 1999.

SCHEDULE 2

Delete Condition 34 of the development consent.

Re-number Condition 38 as Condition 49.

Insert the following Conditions 38 to 48, inclusive.

- 38) The Applicant shall carry out modifications to the development generally in accordance with the Statement of Environmental Effects (SEE) dated August 1999, prepared by Environmental Services, Pacific Power International for Delta Electricity, and as modified by the following conditions. Any alteration, variation or extension of the development shall require the further consent of the Minister for Urban Affairs and Planning.
- 39) The Applicant shall, prior to the first placement of brine-conditioned flyash, apply to the EPA for a modification to the EPA licence for the Site. The licence modification shall address conditions for the continued on-site storage of brine, the placement of brine-conditioned flyash, and any reasonable requirements of the EPA.

WATER MONITORING PROGRAMS

- 40) The Applicant shall, at least one month prior to the first placement of brine-conditioned flyash, consult with the EPA, DLWC and SCA to establish the requirements for Water Monitoring Programs for groundwater and surface water. The Water Monitoring Programs shall:
 - (i) be based on the monitoring programs presented in the Statement of Environmental Effects for this modification;
 - (ii) include water quality testing at a minimum frequency of every three months;
 - (iii) be at the expense of the Applicant.
- 41) The Applicant shall expand the groundwater and surface water monitoring programs, including, if so required, the establishment of additional groundwater monitoring bores and surface water sampling points, in accordance with any reasonable requirements of the EPA, DLWC or SCA.
- 42) The Applicant shall, prior to the construction or operation of any monitoring bore on or in the vicinity of the development, consult with DLWC regarding the licensing of any bore on or in the vicinity of the development, under the provisions of the *Water Act 1912*.

WATER MANAGEMENT PLAN

- 43) At least one month prior to the placement of brine-conditioned flyash, or within such further period as the Director-General may agree, the Applicant shall prepare and submit for the approval of the EPA, the Sydney Catchment Authority, DLWC, Council, and the Director-General, a Water Management Plan (WMP) which shall include, but not be limited to:
 - a) Details of the monitoring programs for surface water and groundwater required under conditions 40 and 41.
 - b) Details of measures to be employed to control surface water run-off from the site.

- c) Contingency plans for the mitigation of environmental impacts should run-off or leachate from the site be found to be negatively impacting on natural surface water or groundwater.
- d) Brine management objectives and strategies, with specific reference to measures aimed at reducing the volume of brine produced at the Mount Piper Power Station.

ENVIRONMENTAL MONITORING REPORT

- 44) The Applicant shall provide to the Director-General, EPA, DLWC SCA and Council, an Environmental Monitoring Report (EMR) on a yearly basis, with the first EMR to be submitted no later than six months after the first placement of brine-conditioned flyash on-site. The Applicant shall agree to Council making the Environmental Monitoring Reports available on request for public inspection.
- 45) The Environmental Monitoring Report shall include, but not be limited to:
 - (a) a summary and discussion of all available results and analyses from Water Monitoring Programs;
 - (b) a discussion of the aims of the Water Management Plan and to what degree these aims have been attained in the context of results and analyses of the Water Monitoring Programs;
 - (c) actions taken, or intended to be taken, if any, to mitigate any adverse environmental impacts; and to meet the reasonable requirements of the Director-General, EPA, DLWC, Sydney Catchment Authority or Council.

GROUNDWATER MODELLING

- 46) The Director-General, EPA, DLWC, SCA or Council may, based on the results and analyses presented in the Environmental Monitoring Report, or any other information that may be reasonably interpreted as indicating significant impacts on the groundwater quality in the vicinity of the Site as a result of the placement of brine-conditioned flyash, request the preparation of a Groundwater Modelling Report.
- 47) The Groundwater Modelling Report shall be an update of the groundwater modelling presented in the Statement of Environmental Effects for this modification and will employ the results and analyses of the Water Monitoring Programs to calibrate the groundwater contaminant transport model. The Groundwater Modelling Report shall be prepared by a qualified person approved by the Director-General or relevant Authority.
- 48) The Applicant shall comply with any reasonable requirement of the Director-General, DLWC, EPA, SCA or Council with regard to the content or scope of the Groundwater Modelling Report, or actions to be taken in response to the results of the report.

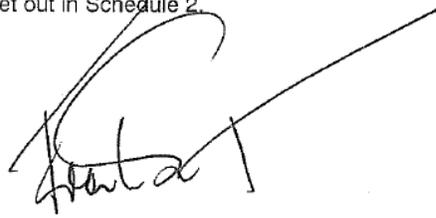
Attachment 3

Modification of the Development Consent to Increase the Capacity of Mt Piper Power Station
3rd June, 2006

Modification Approval

Section 96(2) of the *Environmental Planning and Assessment Act 1979*

I, the Minister for Planning, pursuant to section 96(2) of the *Environmental Planning and Assessment Act 1979*, modify the development consent referred to in Schedule 1 in the manner set out in Schedule 2.



Frank Sartor MP
Minister for Planning

Sydney

3 June 2006

File No: S90/01696

SCHEDULE 1

Development consent:	granted by the Minister for Planning and Environment on 1 April 1982.
In respect of:	Lot 1 DP 325532, Lot 1 DP 400022, Lot 15 DP 626299, Part Lot 191 DP 629212, Lot 2 DP 702619, Lots 362 and 366 DP 740604, Part Lot 10 and Lots 18, 59, 260 and 261 DP 751636, Part Lot 1 DP 803655, Lots 1-7 and Part Lot 13 DP 804929, Lot 1 DP 813288, Lot 1 DP 816420, Lots 40, 41 and 46-52 DP 827626, Lot 1 DP 829065, Lot 21 DP 832446 and Lot 1 DP 920999.
For the following:	The construction and operation of a power station known as the Mount Piper Power Station
Modification Application:	Modification of the development consent to increase the capacity of the power station in two phases: <ul style="list-style-type: none">initially operating the power station at a capacity factor of up to 90%, to generate up to a nominal capacity of 1400 megawatts; andundertaking equipment upgrade works or replacements to provide a nominal capacity of 1500 megawatts when operating at a capacity factor of up to 90%.

SCHEDULE 2

The development consent is modified by:

- 1) inserting the following immediately after existing condition 49:

Expansion and Upgrade of the Power Station

50. The Applicant is permitted to upgrade and expand the development in two stages:
 a) stage 1 being the operation of the development at a capacity factor of up to 90%, to generate up to a nominal capacity of 1400 megawatts; and
 b) stage 2 being the implementation of equipment upgrade works or replacements to provide a nominal capacity of 1500 megawatts when operating at a capacity factor of up to 90%.
51. Expansion and upgrade of the development, as defined under condition 50 of this consent shall be undertaken generally in accordance with *Statement of Environmental Effects: Mount Piper Power Station Units 1 and 2 Upgrade*, prepared by Connell Wagner PPI and dated December 2005.

Air Quality Impacts

52. The Applicant shall design, construct, commission, operate and maintain the expanded and upgraded development to ensure that the concentration of each pollutant listed in Table 1 does not exceed the maximum allowable discharge concentration for that pollutant when measured at discharge monitoring point 11 and 12 (as defined under the Environment Protection Licence (No. 766) for the site). For the purpose of monitoring and determining compliance with this condition, "dioxins and furans" shall be polychlorinated dibenzo-p-dioxins (PCDD) and polychlorinated dibenzofurans (PCDF), presented as 2,3,7,8-tetrachloro-dibenzo-p-dioxin (TCDD) equivalent and calculated in accordance with the procedures included in Part 4, clause 29 of the *Protection of the Environment Operations (Clean Air) Regulation 2002*.

Table 1 – Maximum Allowable Discharge Concentration Limits (Air)

Pollutant	Maximum Allowable Discharge Concentration Limit	Reference Conditions
Nitrogen dioxide (NO ₂) or nitric oxide (NO) or both	1500 mgm ⁻³	dry, 273K, 101.3 kPa, 7% O ₂
Sulfuric acid mist (H ₂ SO ₄) or sulfur trioxide (SO ₃), or both, as (SO ₃)	100 mgm ⁻³	dry, 273K, 101.3 kPa, 7% O ₂
Solid particles	50 mgm ⁻³	dry, 273K, 101.3 kPa, 7% O ₂
Total fluoride	50 mgm ⁻³	dry, 273K, 101.3 kPa, 7% O ₂
Chlorine	200 mgm ⁻³	dry, 273K, 101.3 kPa, 7% O ₂
Hydrogen chloride	100 mgm ⁻³	dry, 273K, 101.3 kPa, 7% O ₂
Total of Sb, As, Cd, Pb, Hg, Be, Cr, Co, Mn, Ni, Se, Sn and V	1 mgm ⁻³	dry, 273K, 101.3 kPa, 7% O ₂
Cadmium	0.2 mgm ⁻³	dry, 273K, 101.3 kPa, 7% O ₂
Mercury	0.2 mgm ⁻³	dry, 273K, 101.3 kPa, 7% O ₂
Dioxins and furans	0.1 ngm ⁻³	I-TEQ, dry, 273K, 101.3 kPa, 11% O ₂
Total volatile organic compounds	40 mgm ⁻³ (as VOC) or 125 mgm ⁻³ (as CO)	dry, 273K, 101.3 kPa, 7% O ₂

53. The Applicant shall determine the pollutant concentrations and emission parameters specified in Table 2 below, at discharge monitoring points 11 and 12 (as defined under the Environment Protection Licence (No. 766) for the site), and employing the sampling

and analysis method specified. Monitoring shall be undertaken at the frequency specified in the Table.

Table 2 –Pollutant and Parameter Monitoring (Air)

Pollutant/ Parameter	Units of Measure	Frequency	Method
Nitrogen oxides	gm ⁻³	continuously	CEM-2
Sulfur dioxide	mgm ⁻³		CEM-2
Solid particles	mgm ⁻³		TM-15
Sulfuric acid mist and sulfur trioxide (as SO ₂)	mgm ⁻³		TM-3
Chlorine	mgm ⁻³		TM-7 & TM-8
Total fluoride	mgm ⁻³		TM-9
Hydrogen chloride	mgm ⁻³		TM-7 & TM-8
Total of Sb, As, Cd, Pb, Hg, Be, Cr, Co, Mn, Ni, Se, Sn and V	mgm ⁻³		TM-12, TM-13 & TM-14
Cadmium	mgm ⁻³	quarterly during the first 12 months following commissioning of Stage 1 and Stage 2, then annually or as otherwise specified by Environment Protection Licence conditions thereafter	
Mercury	mgm ⁻³		TM-12, TM-13 & TM-14
Copper	mgm ⁻³		TM-12, TM-13 & TM-14
Dioxins and furans	ngm ⁻³		TM-18
Carbon dioxide	%		TM-24
Oxygen	%		CEM-3
Dry gas density	kgm ⁻³		TM-23
Moisture content	%		TM-22
Molecular weight of stack gases	gmol ⁻¹		TM-23
Temperature	°C		TM-2
Velocity	ms ⁻¹		TM-2
Volumetric flowrate	m ³ s ⁻¹		TM-2

54. Notwithstanding conditions 52 and 53, nothing in this consent relieves the Applicant from the requirement to comply with the Environment Protection Licence for the site issued under the *Protection of the Environment Operations Act 1997*. In the event that the Environment Protection Licence for the site is modified from time to time to be inconsistent with or more stringent than the requirements of this consent, the requirements of the Licence shall prevail over this consent to the extent of any such inconsistency.

Air Quality Performance Verification

55. Within 90 days of commissioning Stage 2 of the expanded and upgraded development, or as may be directed by the Director-General, and during a period in which the upgraded and expanded development is operating under design loads and normal operating conditions, the Applicant shall undertake a program to confirm the air emission performance of the development and update air quality modelling. The program shall include, but not necessarily be limited to:
- point source emission sampling and analysis subject to the requirements listed under condition 54;
 - an update of the air quality impact assessment presented in *Statement of Environmental Effects: Mount Piper Power Station Units 1 and 2 Upgrade*, prepared by Connell Wagner PPI and dated December 2005, using actual air emission data collected under a). The assessment shall be undertaken strictly in accordance with the methods outlined in *Approved Methods and Guidance for the Modelling and Assessment of Air Pollutants in New South Wales* (DEC, 2005) and to meet the requirements of the DEC with respect to updating the air quality impact assessment;

- c) a comparison of the results of the air quality impact assessment required under b) above, and the predicted air quality impacts detailed in *Statement of Environmental Effects: Mount Piper Power Station Units 1 and 2 Upgrade*, prepared by Connell Wagner PPI and dated December 2005; and
- d) a comparison of the results of the air quality impact assessment required under b) above, and the impact assessment criteria detailed in *Approved Methods and Guidance for the Sampling and Analysis of Air Pollutants in New South Wales* (EPA, 2005).

A report providing the results of the program shall be submitted to the Director-General and the DEC with 28 days of completion of the testing required under a).

Construction Environmental Management

56. Prior to the commencement of construction of each Stage of the expanded and upgraded development, the Applicant shall prepare and implement a Construction Environmental Management Protocol to outline environmental management practices and procedures to be followed during the construction of the development. The Protocol(s) shall be prepared in accordance with *Guideline for the Preparation of Environmental Management Plans* (DIPNR 2004) and shall focus on the management of erosion and sedimentation, dust, heavy vehicle movements and noise during the construction works.
-

Attachment 4

Modification of the Development Consent for Extension of the
Existing Brine and Ash Co-placement Area, April, 2008



NSW GOVERNMENT
Department of Planning

Contact: Swati Sharma
Phone: (02) 9228 6221
Fax: (02) 9228 6355
Email: swati.sharma@planning.nsw.gov.au

Mr Stephen Saladine
Delta Electricity
350 Boulder Road
PORTLAND NSW 2847

Our ref: S90/01696

Dear Mr Saladine

Expansion of the Existing Brine and Ash Co-placement Area, Mount Piper Power Station, Lithgow (MOD-77-9-2007-i)

On 23 March 2008, the Executive Director, Major Project Assessments Division of the Department, approved the Modification Application for the expansion of the existing brine and ash co-placement area of the Mount Piper Power Station. I have attached a copy of the Executive Director's approval for your information. The Executive Director's approval can also be viewed on the Department's website under "Notices of Determination" in the "Major Project Assessments" section.

If you are dissatisfied with this decision, section 96(6) of the *Environmental Planning and Assessment Act 1979*, gives you a right to appeal to the Land and Environment Court.

If you have any enquiries about the proposal, please contact Swati Sharma on 9228 6221 or via email at swati.sharma@planning.nsw.gov.au.

Yours sincerely

A handwritten signature in black ink, appearing to read 'S. Jeffries', is written over the typed name and title. To the right of the signature, the date '28/03/08' is handwritten.

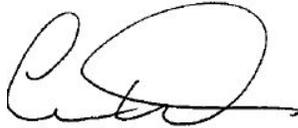
Scott Jeffries
Director
Major Infrastructure Assessments

Bridge St Office 23-33 Bridge St Sydney NSW 2000 GPO Box 39 Sydney NSW 2001
Telephone (02) 9228 6111 Facsimile (02) 9228 6191 DX 10181 Sydney Stock Exchange
Website www.planning.nsw.gov.au

Modification Approval

Section 96(2) of the *Environmental Planning and Assessment Act 1979*

I, the Executive Director, Major Project Assessments Division of the Department of Planning, in accordance with the Instrument of Delegation issued by the Minister for Planning, on 19 December 2007, pursuant to section 96(2) of the *Environmental Planning and Assessment Act 1979*, modify the development consent referred to in Schedule 1 in the manner set out in Schedule 2.



Chris Wilson
Executive Director
Major Project Assessments
As delegate for the Minister for Planning

Sydney 23 MARCH 2008

File No: S90/01696

SCHEDULE 1

Development consent:	granted by the Minister for Planning and Environment on 1 April 1982.
In respect of:	Lot 1 DP 325532, Lot 1 DP 400022, Lot 15 DP 626299, Part Lot 191 DP 629212, Lot 2 DP 702619, Lots 362 and 366 DP 740604, Part Lot 10 and Lots 18, 59, 260 and 261 DP 751636, Part Lot 1 DP 803655, Lots 1-7 and Part Lot 13 DP 804929, Lot 1 DP 813288, Lot 1 DP 816420, Lots 40, 41 and 46-52 DP 827626, Lot 1 DP 829065, Lot 21 DP 832446 and Lot 1 DP 920999.
For the following:	The construction and operation of a power station known as Mount Piper Power Station
Modification Application:	Modification of the development consent to extend the brine and ash co-placement area.

SCHEDULE 2

The development consent is modified by:

1) Inserting the following conditions immediately after Condition 38

Extension of the Existing Brine and Ash Co-placement Area

- 38 A Notwithstanding the provisions of Condition No. 38, the brine and ash co-placement area may be extended and shall be undertaken generally in accordance with the *Statement of Environmental Effects: Mount Piper Power Station Extension of Brine Conditioned Ash Placement Area*, prepared by Connell Wagner Pty Ltd and dated June 2007. This includes:
- I. The extended area must lie within the existing ash placement area;
 - II. Co-placement activities in the proposed extended area must use existing facilities and methods;
 - III. The placement of brine conditioned ash may only occur between the levels of RL 946 metres (the end-point of the water conditioned ash layer) and RL 980 metres.
- 38 B The groundwater and surface water monitoring programs required by Condition No. 40 and 41 apply to the extension of the brine and ash co-placement area, permitted by Condition 38 A.
- 38 C The Applicant must update the Water Management Plan (WMP) required by Condition No. 43, and obtain the approval of the Director-General for the update, prior to undertaking any works permitted by Condition No. 38 A. In determining whether to grant approval, the Director-General must consult with the Department of Environment and Climate Change, the Sydney Catchment Authority, the Department of Water and Energy, and Council.
- 38 D The spray irrigation system of the ash disposal area must be automated to operate when conditions indicate the potential for dust movement to occur, with a manual override function, in order to reduce the likelihood of non-compliant dust emissions from the ash placement area. The implementation of the automated system must occur no later than 30 June 2008 or as otherwise agreed by the Director-General.

2) Replace Condition 47 with the following:

- 47 The Groundwater Modelling Report shall be an update of the groundwater modelling presented in the *Mount Piper Power Station Extension of Brine Conditioned Ash Placement Area - Statement of Environmental Effects* (dated June 2007). The report must also employ the results and analyses of the Water Monitoring Programs to calibrate the groundwater contaminant transport model. The Groundwater Modelling Report shall be prepared by a qualified person approved by the Director-General or relevant Authority.

Attachment 5:
Bilfinger Berger Services Ash Placement Area - Daily Inspection Record Sheet

ASH PLACEMENT AREA - DAILY INSPECTION RECORD SHEET

Site : MT PIPER



Date:

Inspected by:

Wind Speed, Direction and Temperature						
Wind speed	Nil	Light	Moderate	Strong	Reading	Comment
Windspeed meter reading (km/hr)						
Temperature reading (deg celcius)						
Wind direction						
Irrigation Rates						
Weather Conditions	>25° >20km/hr	15-24° <20km/hr	15° <20km/hr	Pump start time	Pump stop time	Total Irrigation Hrs
Sprinkler hours/day	10	8	6			
Rainfall (mm)						
On the Pad (mm)				Ref APA log		
At the crib hut (mm)						
On the western batter (mm)						
Water Usage (Pumps and meters)						
Pump	Service area	Hours		Volume (L)	Comment	
Return Water Pump Blue	NA pads					
Return Water Pump Yellow	Brine area					
HP Pump	Bottom ash & haul roads					
HP Pump at silo	To calculate APA use					
Water at the bins	Fly ash moisture content					
Water cart fill point	Gravity					
Water cart fill point	Pump					
Piezometer Readings						
BH2/1:			BH2/2:			
BH3/1:			BH3/2:			
BH4/1:			BH4/2:			
BH5/1:			BH5/2:			
Environmental conditions						
			OK (y/n)		Comment	
Bottom ash tipping area						
Emergency pad						
Working pad						
Perimeter drains in place & functioning						
Internal haul road drains						

Mt Piper Power Station Brine Conditioned Flyash Co-placement Extension Water Management and Monitoring Plan
Delta Electricity Western

Brine dam (s)		
Surface water drainage on pads		
Water seepage through bund wall (external perimeter)		
Presence of fugitive dust		
If dust present: how much?		
Which areas dusting up?		
Sprinkler operation		
Number of water carts operating		
Actions - Notes - General		

Annex C

BoM Data

Daily Weather Observations for Lithgow, New South Wales for July 2017
 Prepared at 13:00 UTC on Thursday 12 July 2018 IDCJDW2075.201707
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 Observations were drawn from Lithgow (Coerwull) (station 063226)

Date	Minimum	Maximum	Rainfall (mm)	Evaporative Sunshine (h)	Direction	Speed of wind (km/h)	Time of day	9am Temp (°C)	9am relative humidity (%)	9am cloud (%)	9am wind direction	9am wind speed (km/h)	9am MSL pressure (hPa)	3pm Temp (°C)	3pm relative humidity (%)	3pm cloud (%)	3pm wind direction	3pm wind speed (km/h)	3pm MSL pressure (hPa)
1/07/2017	-7.3	11.3	0					-1.1	90	0		Calm							
2/07/2017	-6.1	12.7	0					1.9	69	2		Calm							
3/07/2017	-4.7	11.9	0					6	80	5	NNW		11						
4/07/2017	6.2	13.7	2					9.7	52	0	NW		11						
5/07/2017	6.5	12.9	0					9.3	64	5	NW		7						
6/07/2017	5.1	10	0					6	73	7	SW		11						
7/07/2017	-3.4	11.4	0					5.4	65	2	NW		11						
8/07/2017	3.3	9.5	0					6.4	69	4	W		19						
9/07/2017	3.6	10.1	0					5.6	65	2	WSW		22						
10/07/2017	-1.8	10.2	0					4.1	81	2	NW		7						
11/07/2017	-5.7	10.1	0					0.6	83	0		Calm							
12/07/2017	-3.5	10	0					4.8	82	4	SE		7						
13/07/2017	-0.6	12.7	0					3.9	95	8	NNW		11						
14/07/2017	-0.8	13.9	0					9.5	63	6	NNW		15						
15/07/2017	2.8	11.5	0					6.1	88	7	NW		7						
16/07/2017	-5.1	11.8	0					2	68	0		Calm							
17/07/2017	-2.7	12.5	0					5.9	78	5	NNW		15						
18/07/2017	0.7	15.1	0					10.7	62	3	NW		15						
19/07/2017	3.5	8.1	0.4					3.9	86	8	W		11						
20/07/2017	2.5	7.2	0.6					4.2	68	2	NW		19						
21/07/2017	-3.8	11.6	0.2					1.9	66	0	N		4						
22/07/2017	-7.3	12.3	0.2					1.5	70	0		Calm							
23/07/2017	-3.1	14.8	0					8.5	41	0	NW		11						
24/07/2017	5.5	12.6	0					8.3	73	5	W		19						
25/07/2017	-2.5	14	0					7.4	67	1	SW		22						
26/07/2017	6.2	12.6	1.4					8	80	6	NW		11						
27/07/2017	-3.3	13.9	0.4					2.1	67	3		Calm							
28/07/2017	2	11	1					6.7	76	7	NW		7						
29/07/2017	-4.5	16.1	0					4.5	41	0	SW		4						
30/07/2017	1.6	19.5	0					14.4	28	3	NNW		22						
31/07/2017	5.3	10.7	0					6.9	89	8		Calm							

Daily Weather Observations for Lithgow, New South Wales for August 2017
 Prepared at 13:00 UTC on Wednesday 11 July 2018 IDCJDW2075.201708
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 Observations were drawn from Lithgow (Cooerwull) (station 063226)

Date	Minimum	Maximum	Rainfall (m)	Evaporatic	Sunshine (h)	Direction	cSpeed of n	Time of m:	9am Temp	9am relati	9am cloud	9am wind	9am wind	9am MSL p	3pm Temp	3pm relati	3pm cloud	3pm wind	3pm wind	3pm MSL pressure (hPa)
1/08/2017	2	12.5	8					5.1	80	2	SSW			7						
2/08/2017	-4.9	11.9	0					1.9	69	0			Calm							
3/08/2017	-1.1	11.8	0					7	90	7	ESE			11						
4/08/2017	4.7	7.8	12.6					5.2	81	7	WNW			22						
5/08/2017	4.7	11.2	0					7.4	62	5	W			26						
6/08/2017	5.5	12.8	0					9.8	52	2	WNW			30						
7/08/2017	5.9	9.4	0.2					7.2	62	6	WNW			22						
8/08/2017	3.1	9.1	2.4					4.8	66	3	WSW			19						
9/08/2017	2.9	13.1	0					6	72	1	NNW			11						
10/08/2017	-1.4	17.4	0					11.4	44	3	NNW			15						
11/08/2017	10.6	15.3	0					13.9	29	3	W			15						
12/08/2017	4.8	13.7	0					7.2	60	1	SW			26						
13/08/2017	-1	14.7	0					8.4	68	0	SW			15						
14/08/2017	-3.6	16	0					7.6	72	1	WNW			4						
15/08/2017	1.9	19.6	0					12.4	48	7	NW			15						
16/08/2017	10.5	12.6	0					10.6	25	8	W			22						
17/08/2017	5.6	14.2	4.4					9.7	52	1	NW			28						
18/08/2017	3.4	6.2	4.2					4.5	73	6	WSW			28						
19/08/2017	1.4	7.4	4.4					2.7	72	3	SW			22						
20/08/2017	-6.9	11.8	0					2.3	56	0			Calm							
21/08/2017	-1.6	10.1	0					6.1	79	8	NNW			11						
22/08/2017	-1.5	15.7	0					8.4	59	0	N			4						
23/08/2017	-2.4	17.4	0					10.7	61	1	ENE			7						
24/08/2017	-2.3	11.8	0					7.2	69	1	NW			7						
25/08/2017	1.6	11.3	7.6					4.4	62	5	SE			4						
26/08/2017	-3.9	13.9	0.2					6	80	0	N			7						
27/08/2017	-1.1	9.1	0					4.2	72	4	SW			19						
28/08/2017	-5.4	10.3	1.8					3.4	59	0	S			11						
29/08/2017	-4.9	12.2	0					5.9	54	1	E			4						
30/08/2017	-3.3	12.6	0					4.6	61	0	W			7						
31/08/2017	-2.3	11.6	0					5.1	63	0	SSE			11						

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 (Cooerwull) (station 063226)

Date	Minimum	Maximum	Rainfall (m)	Evaporative Sunshine (h)	Direction	Speed of wind (km/h)	Time of day	9am Temp (°C)	9am relative humidity (%)	9am cloud cover (%)	9am wind direction	9am wind speed (km/h)	9am MSL pressure (hPa)	3pm Temp (°C)	3pm relative humidity (%)	3pm cloud cover (%)	3pm wind direction	3pm wind speed (km/h)	3pm MSL pressure (hPa)
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 (Cooerwull) (station 063226)

Date	Minimum	Maximum	Rainfall (mm)	Evaporative Sunshine (h)	Direction	Speed of wind (km/h)	Time of rain (min)	9am Temp (°C)	9am relative humidity (%)	9am cloud (%)	9am wind direction	9am wind speed (km/h)	9am MSL pressure (hPa)	3pm Temp (°C)	3pm relative humidity (%)	3pm cloud (%)	3pm wind direction	3pm wind speed (km/h)	3pm MSL pressure (hPa)
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 IDCIDW2075.201712

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Observations were drawn from Lithgow (Cooerwull) (station 063226)

Date	Minimum	Maximum	Rainfall (m)	Evaporative Sunshine (h)	Direction	Speed of wind (km/h)	Time of day	9am Temp	9am relative humidity (%)	9am cloud (%)	9am wind direction	9am wind speed (km/h)	9am MSL pressure (hPa)	3pm Temp	3pm relative humidity (%)	3pm cloud (%)	3pm wind direction	3pm wind speed (km/h)	3pm MSL pressure (hPa)
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 (Cooerwull) (station 063226)

Date	Minimum	Maximum	Rainfall (m)	Evaporative	Sunshine (h)	Direction	Speed of wind (km/h)	Time of day	9am Temp (°C)	9am relative humidity (%)	9am cloud (%)	9am wind direction	9am wind speed (km/h)	9am MSL pressure (hPa)	3pm Temp (°C)	3pm relative humidity (%)	3pm cloud (%)	3pm wind direction	3pm wind speed (km/h)	3pm MSL pressure (hPa)
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 IDCJDW2075.201802
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 Observations were drawn from Lithgow (Cooerwull) (station 063226)

Date	Minimum	Maximum	Rainfall (m)	Evaporative Sunshine (h)	Direction	Speed of wind (km/h)	Time of sunrise (m)	9am Temp	9am relative humidity (%)	9am cloud cover (%)	9am wind direction	9am wind speed (km/h)	9am MSL pressure (hPa)	3pm Temp	3pm relative humidity (%)	3pm cloud cover (%)	3pm wind direction	3pm wind speed (km/h)	3pm MSL pressure (hPa)
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 IDCJDW2075.201803
 Copyright 2003 Commonwealth Bureau of Meteorology
 Observations were drawn from Lithgow (Cooerwull) (station 063226)

Date	Minimum	Maximum	Rainfall (m)	Evaporative Sunshine (h)	Direction	cSpeed of nTime of m:9am Temp9am relati9am cloud9am wind 9am wind 9am MSL p 3pm Temp3pm relati3pm cloud3pm wind 3pm wind 3pm MSL pressure (hPa)
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 (Cooerwull) (station 063226)

Date	Minimum	Maximum	Rainfall (m)	Evaporative Sunshine (h)	Direction	Speed of wind (km/h)	Time of sunrise (m)	9am Temp	9am relative humidity (%)	9am cloud (%)	9am wind direction	9am wind speed (km/h)	9am MSL pressure (hPa)	3pm Temp	3pm relative humidity (%)	3pm cloud (%)	3pm wind direction	3pm wind speed (km/h)	3pm MSL pressure (hPa)
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 IDCIDW2075.201805
 Copyright 2003 Commonwealth Bureau of Meteorology
 Observations were drawn from Lithgow (Cooerwull) (station 063226)

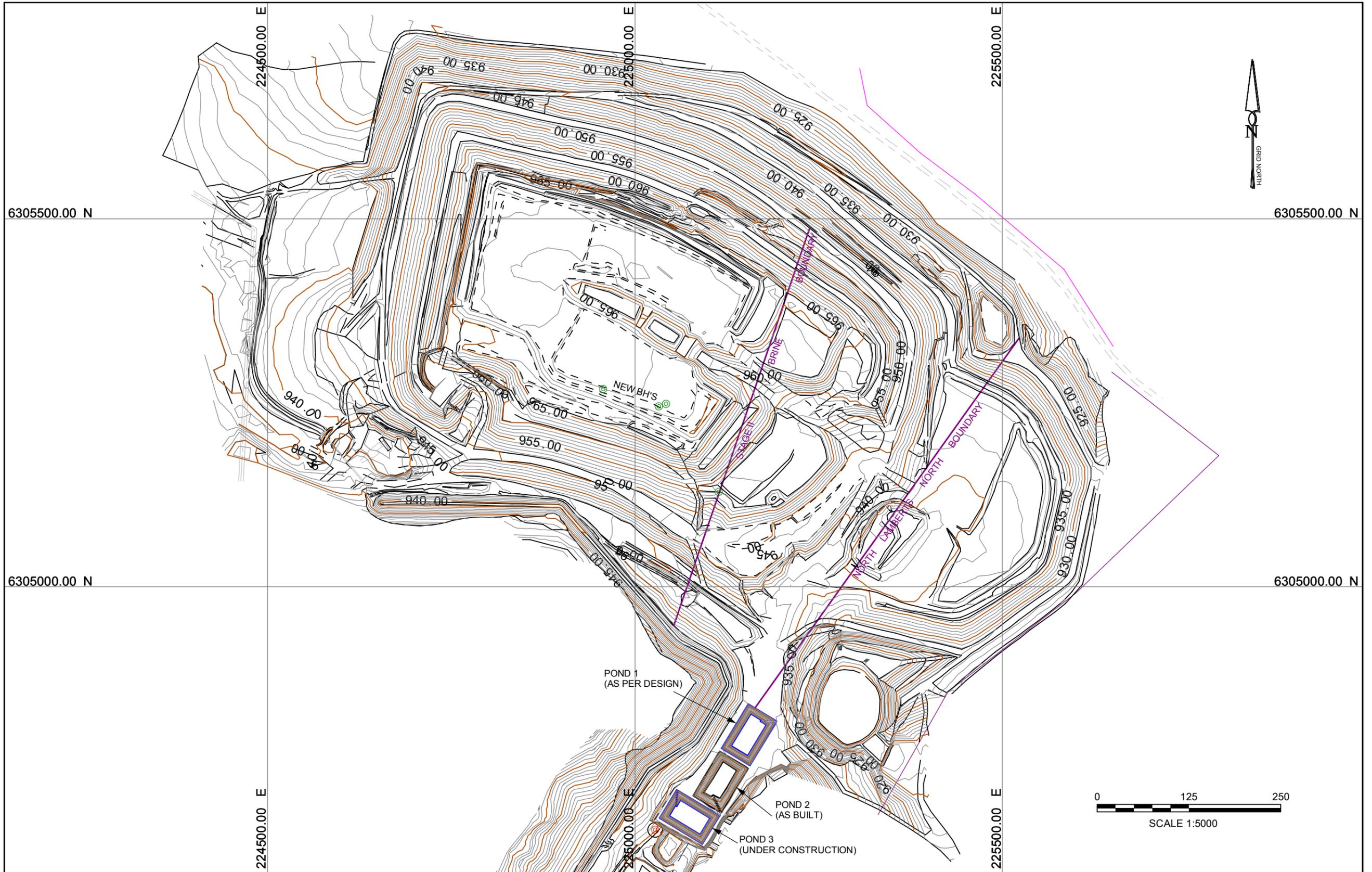
Date	Minimum	Maximum	Rainfall (m)	Evaporatic	Sunshine (h)	Direction	cSpeed of n	Time of m:	9am Temp	9am relati	9am cloud	9am wind	9am wind	9am MSL p	3pm Temp	3pm relati	3pm cloud	3pm wind	3pm wind	3pm MSL pressure (hPa)
1/05/2018	1.6	20.4	0.2					10.9	83	2	NNW			7						
2/05/2018	5	19	0					9.6	89	8			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
 Copyright 2003 Commonwealth Bureau of Meteorology
 Observations were drawn from Lithgow (Cooerwull) (station 063226)

Date	Minimum	Maximum	Rainfall (m)	Evaporation	Sunshine (h)	Direction	cSpeed of n	Time of m:	9am Temp	9am relati	9am cloud	9am wind	9am wind	9am MSL p	3pm Temp	3pm relati	3pm cloud	3pm wind	3pm wind	3pm MSL pressure (hPa)
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						

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

Brine Composition Data

ANNEX E BRINE COMPOSITION

Table E1 Brine Composition Average Data

Parameter	Values from 1999 SEE Average ^b	2003 - 2006 Average ^b	July 2017 - Dec 2017 Average ^a
mg/L			
pH	7.9	8.1	7.9
Cond (us/cm)	63,664	127,982	88,556
TDS	116,650	137,170	118,500
Alk (CaCO ₃)	1,360	1,346	976
Cl	19,864	23,889	10,390
SO ₄	49,670	66,767	67,378
Na	25,678	30,103	37,400
K	4,258	7,362	3,460
Ca	645	606	780
Mg	5,480	9,010	4,010
ug/L			
As	409 ^{^^^}	143	438
Ag	1.4 ^{^^}	<50	10
Ba	272*	30	1,000
Be	17 [^]	5.8	-
B	73,560*	115,000	35,800
Cd	19+	42	5.3
Cr ***	49+	<50	1,050
Cu	7,858*	7,197	12,400
F	21,178*	125,656	64,650
Fe	833*	-	1,580
Hg	1.35 ^{^^}	-	0.04
Mn	17,530*	34,000	7,210
Mo	2,600 ^{^^}	-	-
Ni	4,187*	4,017	3,880
Pb	6 ^{^^}	-	10
Se	245*	-	130
Zn	2,020*	-	1,050

a Brine composition data provided by EA on 01 August 2018;

b Connell Wagner (2007). Statement of Environmental Effects, Mount Piper Power Station, Extension of Brine Conditions Ash Placement Area. Prepared by Environmental Services, Pacific Power International for Delta Electricity, 21 June 2007.

Notations relate to Average Trace element values, from 1999 Statement of Environmental Effects including:

* mostly 10 - 15 analyses (sources Hodgson, 1999) - AWT, 1996

** EPA (1999a) ^ one analysis ^^ 3 analyses ^^^ 5 analyses + 6 analyses

*** Total chromium reported (CrVI <25ug/l)

Annex F

Tabulated Surface Water Data

				Field Parameters					Physical Parameters					Major Anions and Cations																							
				Disolved Oxygen (Field)	Disolved Oxygen (Field) (Filtered)	Electrical Conductivity (Field)	Redox (Field)	Temperature (Field)	pH (Lab)	Electrical Conductivity (Lab)	Total Dissolved Solids (TDS)	Total Suspended Solids (TSS)	Turbidity	Codium	Calcium (Filtered)	Magnesium	Magnesium (Filtered)	Sodium	Sodium (Filtered)	Potassium	Acetate (Filtered)	Chloride	Chloride (Filtered)	Sulfate (as SO4)	Sulfate (as SO4) (Filtered)	Total Alkalinity (as CaCO3)	Carbonate Alkalinity (as CaCO3)	Bicarbonate Alkalinity (as CaCO3)	Hydroxide Alkalinity (as CaCO3)	Permeability Alkalinity (CaCO3)	Anions (Total)	Cations (Total)	ionic Balance				
				mg/L	mg/L	uS/cm	mV	°C	pH units	uS/cm	mg/L	mg/L	NTU	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L		
ANZECC (2000) or Local Guidelines - Surface Water																																					
Neubecks Creek at WX22 Pre-placement 90th Percentile																																					
Field ID	Sampled Date-Time	SampleCode	LocCode	Matrix Type																																	
LDP01	13/02/2018	5398567	LDP01	Surf Water					7.8	200		22																									
LDP01	14/02/2018	5398991	LDP01	Surf Water	7.39	7	297				165	26	32.9	24.1		11.2		19.4		5.15		5.25		45.3													
LDP01	20/02/2018	5409972	LDP01	Surf Water					8	300		46																									
LDP01	27/02/2018	5430667	LDP01	Surf Water					7.6	300		73																									
LDP01	6/03/2018	5432001	LDP01	Surf Water					7.3	220		85																									
LDP01	13/03/2018	5443735	LDP01	Surf Water					7.6	260		15																									
LDP01	14/03/2018	5444182	LDP01	Surf Water	7.23	7.5	264				175	23	33.8	23.5		9.32		13.6		3.76		5.84		54.5													
LDP01	20/03/2018	5455507	LDP01	Surf Water					7.6	310		14																									
LDP01	27/03/2018	5469147	LDP01	Surf Water					7.6	310		31																									
LDP01	4/04/2018	5482233	LDP01	Surf Water					7.2	330		16																									
LDP01	10/04/2018	5494744	LDP01	Surf Water					7.9	350		10																									
LDP01	17/04/2018	5508599	LDP01	Surf Water					7.9	370																											
LDP01	19/04/2018	5509477	LDP01	Surf Water	7.13	8.4	382																														
LDP01	19/04/2018	LDP01_19 Apr 18	LDP01	Surf Water	7.9		370				320	8	7.5	25.4		12.7		25		4.2		10.6		82		103		103.00									
LDP01	24/04/2018	5524900	LDP01	Surf Water					7.9	380		15																									
LDP01	1/05/2018	LDP01_01 May 18	LDP01	Surf Water	7.9		400					4																									
LDP01	8/05/2018	LDP01_08 May 18	LDP01	Surf Water	8		400					7																									
LDP01	15/05/2018	E51814249003	LDP01	Surf Water	7.39	7.37	393	130	10.5		221				25		13		26		4	12		67	102	<1	102	<1				3.77	3.55	3.01			
LDP01	17/05/2018	LDP01_17 May 18	LDP01	Surf Water	6.6		400				232	3	8	28.8		12.8		28.8		5.26		11.6		84		110											
LDP01	22/05/2018	LDP01_22 May 18	LDP01	Surf Water	8		400					4																									
LDP01	29/05/2018	LDP01_29 May 18	LDP01	Surf Water	8		400					2																									
LDP01	5/06/2018	LDP01_05 Jun 18	LDP01	Surf Water	8		370					4																									
LDP01	13/06/2018	LDP01_13 Jun 18	LDP01	Surf Water	7.8		340																														
LDP01	20/06/2018	LDP01_20 Jun 18	LDP01	Surf Water	7.9		350				248	5	12.2	27.3		11.6		25.1		5		11.3		76		92											
LDP01	26/06/2018	LDP01_26 Jun 18	LDP01	Surf Water	7.9		370					6																									
				Average	7.63	8.59	10.80	413.53	132.00	14.57	7.70	363.88	359.73	30.57	26.77	25.18	34.33	12.04	17.00	23.25	86.00	5.07	6.33	14.68	23.46	77.23	219.65	53.08		77.36			7.40	7.01	2.82		
				50th Percentile	7.73	8.1	11.4	375	130	13.7	7.8	310	245.00	15	15.55	25.7	25	11.6	13	25	26	5.35	4	11.3	6.9	73.5	59.15	66		85			3.77	3.55	2.82		
				90th Percentile	8	11.3	12.36	466.6	179.6	18.34	8	490	628.8	59	33.76	31.68	64.2	15.58	29	34.54	181.2	6.562	11.2	16.54	62.24	120	672.8	102.8		105.8			14.514	13.75	2.972		
				Minimum	6.6	4.1	8.4	147.1	74	10.5	6.4	110	165	2	7.2	6	4	7	5	13	12	3	2	5.07	4.32	31	31.3	5		6			1.23	1.18	2.63		
				Maximum	8.55	13.5	12.6	1595	192	19.5	8.5	1900	1200	318	12.5	32.5	74	19.5	33	36.3	220	6.77	13	77	94.4	140	806	110		109			17.2	16.3	3.01		
LN POND 2	11/12/2017	MPW019681	LN Pond 2	Surf Water					7.9	1100	874	21		55		26		180		22				46.5		482	92	<1	92	<1							
LN POND 2	25/01/2018	MPW020315	LN Pond 2	Surf Water					8.6	1900	1200	11												89.1		872	123										
LN POND 2	23/02/2018	MPW020755	LN Pond 2	Surf Water					7.9	1900	1230	20												70.8		746	134										
LN POND 2	13/03/2018	MPW021304	LN Pond 2	Surf Water					7.7	1400	944	120												48.8		528	106										
LN POND 2	4/05/2018	MPW021721	LN Pond 2	Surf Water					7.6	2100	1450	10												93.6		838	105										
WX22	26/07/2017	5104835	WX22	Surf Water	7.11	13			5.73		4.6			2	33.1								4.59		37.4		155										
WX22	23/08/2017	5103669	WX22	Surf Water	7.36	15			4.75		3.4			1.4	26.3								4.51		25		124										
WX22	27/09/2017	5162801	WX22	Surf Water	6.94	11			9.00		10.7			1.9	59.8								7.05		62.3		284										
WX22	25/10/2017	5214142	WX22	Surf Water	7.34	10			3.74		13.5			9.5	24.9								5.06		18		75.3										
WX22	22/11/2017	5235410	WX22	Surf Water	7.49	9.4			3.75		15.2			1.9	28.1								4.67		32.4		134										
WX22	13/12/2017	5300324	WX22	Surf Water	7.08	7.1			4.24		17			14.7	28.9								3.01		14.6		86.3										
WX22	24/01/2018	5364316	WX22	Surf Water	6.94	7.9			20.70		18.7			1.9	140								11.5		128		983										
WX22	21/02/2018	5410561	WX22	Surf Water	6.59	9.3			2360		13.5			1.9	152								12.8		164		1130										
WX22	21/03/2018	5457366	WX22	Surf Water	6.97	8.3			546		15.2			2.9	41.9								4.92		20.4		186										
WX22	26/04/2018	WX22_26 Apr 18	WX22	Surf Water	6.76		10.5		790		10.5			1.7	58.2								6.03		50.3		292										

	Cadmium	Cadmium (Filtered)	Phosphorus	Selenium	Selenium (Filtered)	Silver	Silver (Filtered)	Strontium	Vanadium	Vanadium (Filtered)	Zinc	Zinc (Filtered)				
EQI	µg/L	µg/L	mg/L	µg/L	µg/L	µg/L	µg/L	mg/L	µg/L	µg/L	µg/L	µg/L				
ANZECC (2000) or Local Guidelines - Surface Water	17	17	5	5	5	0.05	0.05	10	10	10	5	5				
Neubecks Creek at WX22 Pre-placement 90th Percentile	5	5	1	1	1						116	116				
Field ID	Sampled Date-Time	Sample Code	LocCode	Matrix Type												
CW POND 1	24/01/2018	MPW020312	CWP01	Surf.Water	-	-	-	-	-	-	-	-				
CW POND 1	23/02/2018	MPW020751	CWP01	Surf.Water	-	-	-	-	-	-	-	-				
CW POND 1	13/03/2018	MPW021302	CWP01	Surf.Water	-	-	-	-	-	-	-	-				
CW POND 1	3/05/2018	MPW021719	CWP01	Surf.Water	-	-	-	-	-	-	-	-				
CWP01	15/05/2018	ES1814249001	CWP01	Surf.Water	6	3	-	<10	<10	<1	<1	<10	<10	6	<5	
CW POND 2	11/12/2017	MPW019685	CWP02	Surf.Water	-	-	-	-	-	-	-	-				
CWPOND 2	11/12/2017	MPW019681	CWP02	Surf.Water	<10	-	-	<10	-	<1	-	-	20	-		
CW POND 2	25/01/2018	MPW020313	CWP02	Surf.Water	-	-	-	-	-	-	-	-				
CWP02	15/05/2018	ES1814249002	CWP02	Surf.Water	14	11	-	<10	<10	<1	<1	<10	<10	7	5	
LDP01	11/07/2017	S020067	LDP01	Surf.Water	-	-	-	-	-	-	-	-				
LDP01	18/07/2017	S022044	LDP01	Surf.Water	-	-	-	-	-	-	-	-				
LDP01	19/07/2017	S033346	LDP01	Surf.Water	4	-	<0.01	0.3	-	<1	-	0.102	<10	<10	17	13
LDP01	25/07/2017	S046784	LDP01	Surf.Water	-	-	-	-	-	-	-	-				
LDP01	1/08/2017	S052564	LDP01	Surf.Water	-	-	-	-	-	-	-	-				
LDP01	8/08/2017	S075338	LDP01	Surf.Water	-	-	-	-	-	-	-	-				
LDP01	15/08/2017	S089929	LDP01	Surf.Water	-	-	-	-	-	-	-	-				
LDP01	16/08/2017	S091123	LDP01	Surf.Water	6	-	<0.01	0.4	-	<1	-	0.085	<10	<10	32	8
LDP01	22/08/2017	S102498	LDP01	Surf.Water	-	-	-	-	-	-	-	-				
LDP01	29/08/2017	S113806	LDP01	Surf.Water	-	-	-	-	-	-	-	-				
LDP01	5/09/2017	S123864	LDP01	Surf.Water	-	-	-	-	-	-	-	-				
LDP01	12/09/2017	S134264	LDP01	Surf.Water	-	-	-	-	-	-	-	-				
LDP01	19/09/2017	S147432	LDP01	Surf.Water	-	-	-	-	-	-	-	-				
LDP01	22/09/2017	S148335	LDP01	Surf.Water	4	-	<0.01	0.4	-	<1	-	0.093	<10	<10	12	7
LDP01	26/09/2017	S161183	LDP01	Surf.Water	-	-	-	-	-	-	-	-				
LDP01	4/10/2017	S174391	LDP01	Surf.Water	-	-	-	-	-	-	-	-				
LDP01	10/10/2017	S186863	LDP01	Surf.Water	-	-	-	-	-	-	-	-				
LDP01	17/10/2017	S200138	LDP01	Surf.Water	-	-	-	-	-	-	-	-				
LDP01	19/10/2017	S201096	LDP01	Surf.Water	8	-	0.03	0.6	-	<1	-	0.123	<10	<10	31	6
LDP01	24/10/2017	S213102	LDP01	Surf.Water	-	-	-	-	-	-	-	-				
LDP01	31/10/2017	S229233	LDP01	Surf.Water	-	-	-	-	-	-	-	-				
LDP01	7/11/2017	S240956	LDP01	Surf.Water	-	-	-	-	-	-	-	-				
LDP01	14/11/2017	S252866	LDP01	Surf.Water	-	-	-	-	-	-	-	-				
LDP01	16/11/2017	S253682	LDP01	Surf.Water	4	-	0.01	0.4	-	<1	-	0.072	<10	<10	22	<5
LDP01	21/11/2017	S264981	LDP01	Surf.Water	-	-	-	-	-	-	-	-				
LDP01	28/11/2017	S276343	LDP01	Surf.Water	-	-	-	-	-	-	-	-				
LDP01	5/12/2017	S287233	LDP01	Surf.Water	-	-	-	-	-	-	-	-				
LDP01	12/12/2017	S299784	LDP01	Surf.Water	-	-	-	-	-	-	-	-				
LDP01	19/12/2017	S314031	LDP01	Surf.Water	-	-	-	-	-	-	-	-				
LDP01	20/12/2017	S314579	LDP01	Surf.Water	9	-	0.06	0.4	-	<1	-	0.065	<10	<10	50	12
LDP01	27/12/2017	S327470	LDP01	Surf.Water	-	-	-	-	-	-	-	-				
LDP01	3/01/2018	S334811	LDP01	Surf.Water	-	-	-	-	-	-	-	-				
LDP01	9/01/2018	S342542	LDP01	Surf.Water	-	-	-	-	-	-	-	-				
LDP01	15/01/2018	S352814	LDP01	Surf.Water	-	-	-	-	-	-	-	-				
LDP01	17/01/2018	S353210	LDP01	Surf.Water	2	-	0.02	0.3	-	<1	-	0.068	<10	<10	12	<5
LDP01	23/01/2018	S363933	LDP01	Surf.Water	-	-	-	-	-	-	-	-				
LDP01	30/01/2018	S375279	LDP01	Surf.Water	-	-	-	-	-	-	-	-				
LDP01	6/02/2018	S388622	LDP01	Surf.Water	-	-	-	-	-	-	-	-				

Orange highlighted cells indicate the value exceeds the adopted ANZECC (2000) and Local Guideline.

		Cadmium	Chromium (Filtered)	Phosphorus	Selenium	Selenium (Filtered)	Silver	Silver (Filtered)	Strontium	Vanadium	Vanadium (Filtered)	Zinc	Zinc (Filtered)			
		µg/L	µg/L	mg/L	µg/L	µg/L	µg/L	µg/L	mg/L	µg/L	µg/L	µg/L	µg/L			
EQL		1	1	10	10	1	1	1	10	10	10	5	5			
ANZECC (2000) or Local Guidelines - Surface Water		17	17	5	5	0.05	0.05					116	116			
Neubecks Creek at WX22 Pre-placement 90th Percentile		5	5	1	1							116	116			
Field ID	Sampled Date-Time	SampleCode	LocCode	Matrix Type	Cadmium	Chromium (Filtered)	Phosphorus	Selenium	Selenium (Filtered)	Silver	Silver (Filtered)	Strontium	Vanadium	Vanadium (Filtered)	Zinc	Zinc (Filtered)
LDP01	13/02/2018	5398567	LDP01	Surf Water	-	-	-	-	-	-	-	-	-	-	-	-
LDP01	14/02/2018	5398991	LDP01	Surf Water	10	-	0.02	0.3	-	<1	-	0.082	<10	<10	36	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	5444482	LDP01	Surf Water	4	-	0.02	0.3	-	<1	-	0.063	<10	<10	11	11
LDP01	20/03/2018	5455507	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	3	-	-	0.3	-	<1	-	0.09	<10	<10	11	<5
LDP01	24/04/2018	5525500	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	ES1814249003	LDP01	Surf Water	2	3	-	<10	<10	<1	<1	-	<10	<10	6	6
LDP01	17/05/2018	LDP01_17 May 18	LDP01	Surf Water	2	-	-	0.4	-	<1	-	0.09	<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	4	-	-	-	-	-	-	-	-	-	-	-
LDP01	20/06/2018	LDP01_20 Jun 18	LDP01	Surf Water	-	-	-	0.4	-	<1	-	0.08	<10	<10	18	<5
LDP01	26/06/2018	LDP01_26 Jun 18	LDP01	Surf Water	-	-	-	-	-	-	-	-	-	-	-	-
				Average	5.47	5.67	0.03	0.38	-	-	-	0.08	-	-	18.75	8.60
				50th Percentile	4	3	0.02	0.4	-	-	-	0.0835	-	-	14.5	7.5
				90th Percentile	9.6	9.4	0.045	0.4	-	-	-	0.1011	-	-	34	13
				Minimum	2	3	0.01	0.3	-	-	-	0.063	-	-	6	5
				Maximum	14	11	0.06	0.6	-	-	-	0.123	-	-	50	13
LN POND 2	11/12/2017	MPW019683	LN Pond 2	Surf Water	20	-	-	<10	-	<1	-	-	-	-	<10	-
LN POND 2	15/01/2018	MPW020115	LN Pond 2	Surf Water	-	-	-	-	-	-	-	-	-	-	-	-
LN POND 2	23/02/2018	MPW020755	LN Pond 2	Surf Water	-	-	-	-	-	-	-	-	-	-	-	-
LN POND 2	13/03/2018	MPW021304	LN Pond 2	Surf Water	-	-	-	-	-	-	-	-	-	-	-	-
LN POND 2	4/05/2018	MPW021721	LN Pond 2	Surf Water	-	-	-	-	-	-	-	-	-	-	-	-
WX22	26/07/2017	5048035	WX22	Surf Water	14	-	0.01	<0.2	-	<1	-	0.131	<10	<10	10	8
WX22	23/08/2017	5103669	WX22	Surf Water	7	-	<0.01	<0.2	-	<1	-	0.104	<10	<10	<5	<5
WX22	27/08/2017	5162801	WX22	Surf Water	20	-	0.01	<0.2	-	<1	-	0.22	<10	<10	10	9
WX22	25/10/2017	5214142	WX22	Surf Water	6	-	<0.01	<0.2	-	<1	-	0.098	<10	<10	9	7
WX22	27/11/2017	5265410	WX22	Surf Water	10	-	<0.01	<0.2	-	<1	-	0.141	<10	<10	<5	<5
WX22	13/12/2017	5300324	WX22	Surf Water	22	-	<0.01	<0.2	-	<1	-	0.14	<10	<10	18	10
WX22	24/01/2018	5364316	WX22	Surf Water	115	-	<0.01	<0.2	-	<1	-	0.594	<10	<10	80	60
WX22	21/02/2018	5410561	WX22	Surf Water	136	-	<0.01	<0.2	-	<1	-	0.594	<10	<10	93	87
WX22	21/03/2018	5457366	WX22	Surf Water	31	-	<0.01	<0.2	-	<1	-	0.148	<10	<10	14	10
WX22	26/04/2018	WX22_26 Apr 18	WX22	Surf Water	31	-	-	<0.2	-	<1	-	-	<10	<10	10	8
WX22	23/05/2018	WX22_23 May 18	WX22	Surf Water	28	-	-	<0.2	-	<1	-	-	<10	<10	7	7
WX22	27/06/2018	WX22_27 Jun 18	WX22	Surf Water	16	-	-	<0.2	-	<1	-	-	<10	<10	12	10
				Average	36.33	-	0.01	-	-	-	-	0.24	-	-	26.30	21.60
				50th Percentile	21	-	0.01	-	-	-	-	0.141	-	-	11	9.5
				90th Percentile	106.6	-	0.01	-	-	-	-	0.594	-	-	81.3	62.7
				Minimum	6	-	0.01	-	-	-	-	0.098	-	-	7	7
				Maximum	136	-	0.01	-	-	-	-	0.594	-	-	93	87
Statistical Summary																
Number of Results	39	13	28	39	13	39	13	31	37	37	39	37				
Number of Detects	38	13	18	22	10	10	10	31	10	10	36	30				
Minimum Concentration	2	3	<0.01	<0.2	<10	<1	<1	0.063	<10	<10	<5	<5				
Minimum Detect	2	3	0.01	0.3	ND	ND	ND	0.063	ND	ND	6	5				
Maximum Concentration	136	11	0.06	<10	<10	<1	<1	0.594	<10	<10	93	87				
Maximum Detect	136	11	0.06	0.6	ND	ND	ND	0.594	ND	ND	93	87				
Average Concentration	23	6.1	0.016	0.96	5	0.5	0.5	0.17	5	5	23	15				
Median Concentration	9	4.33333335	0.01	0.3	5	0.5	0.5	0.1011	5	5	12	8				
Standard Deviation	36	3.7	0.016	1.7	0	0	0	0.17	0	0	25	22				
Number of Guideline Exceedances	28	4	28	5	3	29	3	0	0	0	31	20				
Number of Guideline Exceedances (Detects Only)	27	4	18	0	0	0	0	0	0	0	30	20				

Orange highlighted cells indicate the value exceeds the adopted ANZECC (2000) and Local Guideline.

Annex G

Tabulated Groundwater Data

	Field Parameters			Major Anions and Cations							Other		Metals																			
	pH (Field)	Electrical Conductivity (Field)	Purge Volume	Calcium	Magnesium	Sodium	Potassium	Chloride	Sulfate (as SO4)	Total Alkalinity (as CaCO3)	Fluoride	Total Dissolved Solids (TDS)	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	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																																
ANZECC (2000) or Local Guidelines - Groundwater	6.5-8	2600						350	1000		1.5	2000		1	700	370	2	5		5	664	5	5704	0.04	1							
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

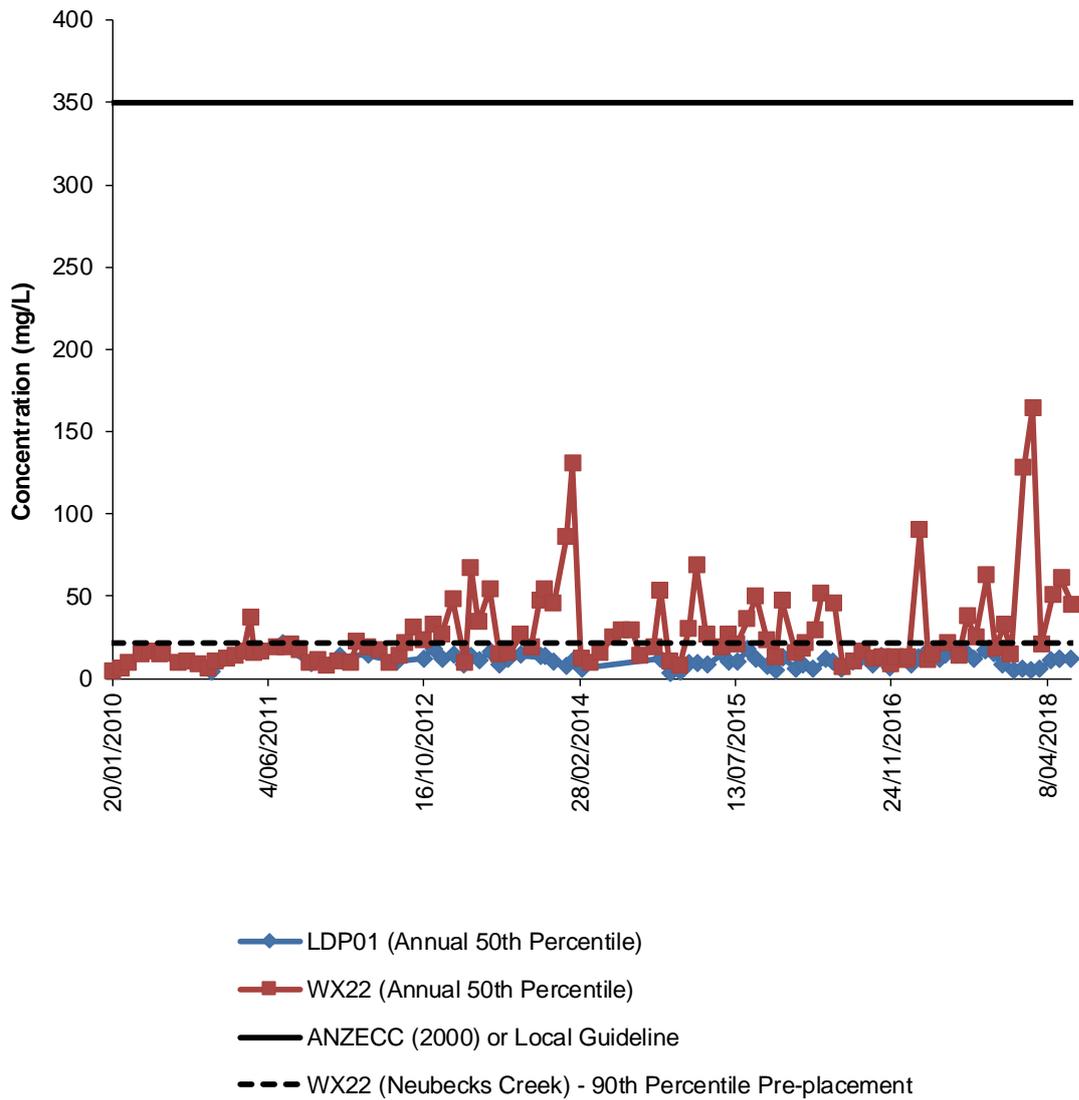
Field ID	Sampled Date	Sample Code	Location	Matrix Type	pH	EC	Purge	Ca	Mg	Na	K	Cl	SO4	Alk	F	TDS	Al	As	Bar	Bor	Cd	Cr	Cr(VI)	Cu	Fe	Pb	Mn	Hg	Mo	Ni	Se	Ag	V	V(Filtered)	Zn
MPGM4-D19	21/03/2018	5457508	D19	G.Water	5.95	5950	-	353	285	860	53.5	468	3060	151	0.087	5210	160	4	13	2160	<0.1	34	-	5	23,200	6	14,900	<0.04	2	979	<0.2	<1	<10	<10	429
MPGM4-D19	27/04/2018	D19_27 Apr 18	D19	G.Water	5.95	6330	-	336	275	906	65.8	515	3190	128	0.074	5240	1480	2	19	2440	0.1	18	-	3	27,600	7	12,100	<0.04	1	948	0.8	<1	<10	<10	380
MPGM4-D19	24/05/2018	D19_24 May 18	D19	G.Water	5.92	6320	-	334	277	1020	62.1	504	3020	133	0.153	5330	1690	11	50	2830	0.2	36	-	19	29,900	27	11,000	<0.04	4	927	0.6	<1	<10	<10	463
MPGM4-D19	27/06/2018	D19_27 Jun 18	D19	G.Water	5.92	6380	-	324	278	931	80	506	3260	141	0.08	5050	2060	21	74	3240	0.2	44	-	23	29,900	94	13,700	0.05	2	990	1.7	<1	<10	<10	543
			D19	Average	5.74	5560	-	282	234	782	58	439	2778	104	0.088	4561	917	9	32	2328	0.30	33	-	8.2	20628	24.7	9182	0.05	2.9	781	1.8	#DIV/0!	10	####	474
			D19	50th Percentile	5.845	6325	-	323.5	277.5	918	64	505	3110	128	0.084	5130	875	10	19	2560	0.20	26	-	5.0	28750	21.0	12850	0.05	3.0	963.5	0.8	#NUM!	10	####	456
				90th Percentile	5.947	7056	-	345	287.8	1004.2	80	596	3607	151	0.152	6082	2023	14	60.6	3204	0.60	48	-	19.0	34650	42.8	14080	0.05	4.0	1076	4.8	#NUM!	10	####	596
				Minimum	5.36	2350	0	112	78.3	307	31	137	1060	26	0.023	1700	30	2	11	950	0.10	3	0	2.0	42	1.0	302	0.05	1.0	174	0.5	0.0	10	0	360
			D19	Maximum	5.95	7120	0	353	289	1020	87	651	4050	157	0.153	6120	2180	21	74	3370	0.60	122	0	23.0	36900	94.0	14900	0.05	4.0	1100	5	0.0	10	0	618
D23	27/07/2017	5048059	D23	G.Water	5.85	3970	53	196	110	559	38	247	1850	122	0.139	3090	150	<1	20	440	0.4	7	-	<1	5940	1	2320	<0.04	<1	296	0.3	<1	<10	<10	310
D23	23/08/2017	5103679	D23	G.Water	5.87	4550	55	191	117	699	40.9	274	2040	132	<0.5	3600	330	<1	23	440	0.3	8	-	<1	4240	1	2330	<0.04	<1	356	0.4	<1	<10	<10	285
D23	28/09/2017	5162834	D23	G.Water	5.8	5150	52	236	134	770	54	322	2400	119	<0.1	4150	320	<1	24	510	0.5	28	-	2	5370	1	2800	<0.04	<1	398	0.5	<1	<10	<10	424
D23	25/10/2017	5214180	D23	G.Water	5.81	4260	51	188	110	595	42.5	268	1900	121	0.143	3460	290	1	18	540	0.3	12	-	<1	7060	2	2220	<0.04	2	339	0.6	<1	<10	<10	364
D23	22/11/2017	5265439	D23	G.Water	5.69	4130	50	197	116	660	48.2	251	1940	97	0.164	3240	210	1	16	560	0.3	<1	-	<1	14,600	2	2810	<0.04	<1	353	0.3	<1	<10	<10	433
D23	13/12/2017	5300359	D23	G.Water	5.93	3430	50	172	101	525	37.5	192	1580	154	0.207	2360	390	1	19	490	0.3	<1	-	1	10,900	2	2390	<0.04	<1	353	<0.2	<1	<10	<10	403
D23	24/01/2018	5364360	D23	G.Water	5.63	3660	49	214	113	515	52.5	196	1840	76	<0.2	2520	230	<1	14	390	0.2	<1	-	<1	15,200	2	2350	<0.04	<1	409	0.2	<1	<10	<10	593
D23	21/02/2018	5410598	D23	G.Water	5.72	3450	51	214	105	470	38.9	191	1670	92	<0.2	2690	540	<1	16	300	0.3	<1	-	2	20,100	1	2100	<0.04	<1	444	<0.2	<1	<10	<10	733
D23	21/03/2018	5457415	D23	G.Water	6.01	4440	81	278	153	728	46.1	274	2100	183	0.129	3360	1540	2	30	370	0.3	9	-	4	3590	4	2360	<0.04	<1	345	0.3	<1	<10	<10	320
MPGM4-D23	26/04/2018	D23_26 Apr 18	D23	G.Water	5.71	3950	50	233	122	560	44.3	245	1990	85	0.12	3200	1360	1	18	390	0.4	101	-	4	13,800	3	2340	<0.04	4	460	0.3	<1	<10	<10	593
MPGM4-D23	23/05/2018	D23_23 May 18	D23	G.Water	5.57	3820	47	216	117	589	42.8	228	1860	69	0.15	3080	710	2	16	420	0.2	4	-	1	19,900	4	2330	<0.04	<1	394	0.2	<1	<10	<10	616
MPGM4-D23	27/06/2018	D23_27 Jun 18	D23	G.Water	5.62	3720	48	222	120	524	50.7	216	1850	65	0.087	2730	780	2	15	450	0.3	17	-	2	23,500	3	2390	<0.04	<1	406	0.3	<1	<10	<10	649
			D23	Average	5.77	4044	53	213	118	600	45	242	1918	110	0.142	3123	571	1	19	442	0.3	23	-	2	12017	2	2395	-	3	379	0.3	-	-	-	477
			D23	50th Percentile	5.76	3960	51	214	116.5	574.5	43.55	246	1880	108	0.141	3145	360	1	18	440	0.3	10.5	-	2	12350	2	2345	-	3	375	0.3	-	-	-	429
				90th Percentile	5.924	4539	55	235.7	132.8	725.1	52.32	274	2094	152	0.177	3586	1302	2	23.9	537	0.4	49.9	-	4	20080	3.9	2759	-	3.8	440.5	0.51	-	-	-	646
				Minimum	5.57	3430	47	172	101	470	37.5	191	1580	65	0.087	2360	150	1	14	300	0.2	4	0	1	3590	1	2100	0	2	296	0.2	0	0	0	285
			D23	Maximum	6.01	5150	81	278	153	770	54	322	2400	183	0.207	4150	1540	2	30	560	0.5	101	0	4	23500	4	2810	0	4	460	0.6	0	0	0	733

Statistical Summary	pH	EC	Purge	Ca	Mg	Na	K	Cl	SO4	Alk	F	TDS	Al	As	Bar	Bor	Cd	Cr	Cr(VI)	Cu	Fe	Pb	Mn	Hg	Mo	Ni	Se	Ag	V	V(Filtered)	Zn			
Number of Results	210	210	86	210	210	210	210	210	210	210	210	210	210	####	210	####	####	####	47	210	210	####	210	####	####	210	####	####	####	####	#VALUE!	####	####	210
Number of Detects	210	210	86	210	210	210	210	210	210	200	168	210	199	####	210	####	####	####	46	127	210	####	210	####	####	210	####	####	####	#VALUE!	####	####	####	203
Minimum Concentration	3.21	204	0	9.34	5.75	6.78	1.93	3.4	70.8	0.5	0.015	181	<10	####	11	####	####	####	0	<1	34	####	36	####	####	1	####	####	#VALUE!	####	####	####	2.5	
Minimum Detect	3.21	204	1	9.34	5.75	6.78	1.93	3.4	70.8	0.5	0.015	181	10	####	11	####	####	####	ND	1	34	####	36	####	####	1	####	####	#VALUE!	####	####	####	2.5	
Maximum Concentration	6.35	49810	81	643	2220	17400	2020	4660	36100	208	<10	59200	46900	####	222	16200	####	####	<100	151	144000	####	21200	####	####	7180	1910	####	#VALUE!	####	####	####	4890	
Maximum Detect	6.35	49810	81	643	2220	17400	2020	4660	36100	208	5.41	59200	46900	####	222	16200	####	####	ND	15														

Annex H

Trend Graphs - Surface Water

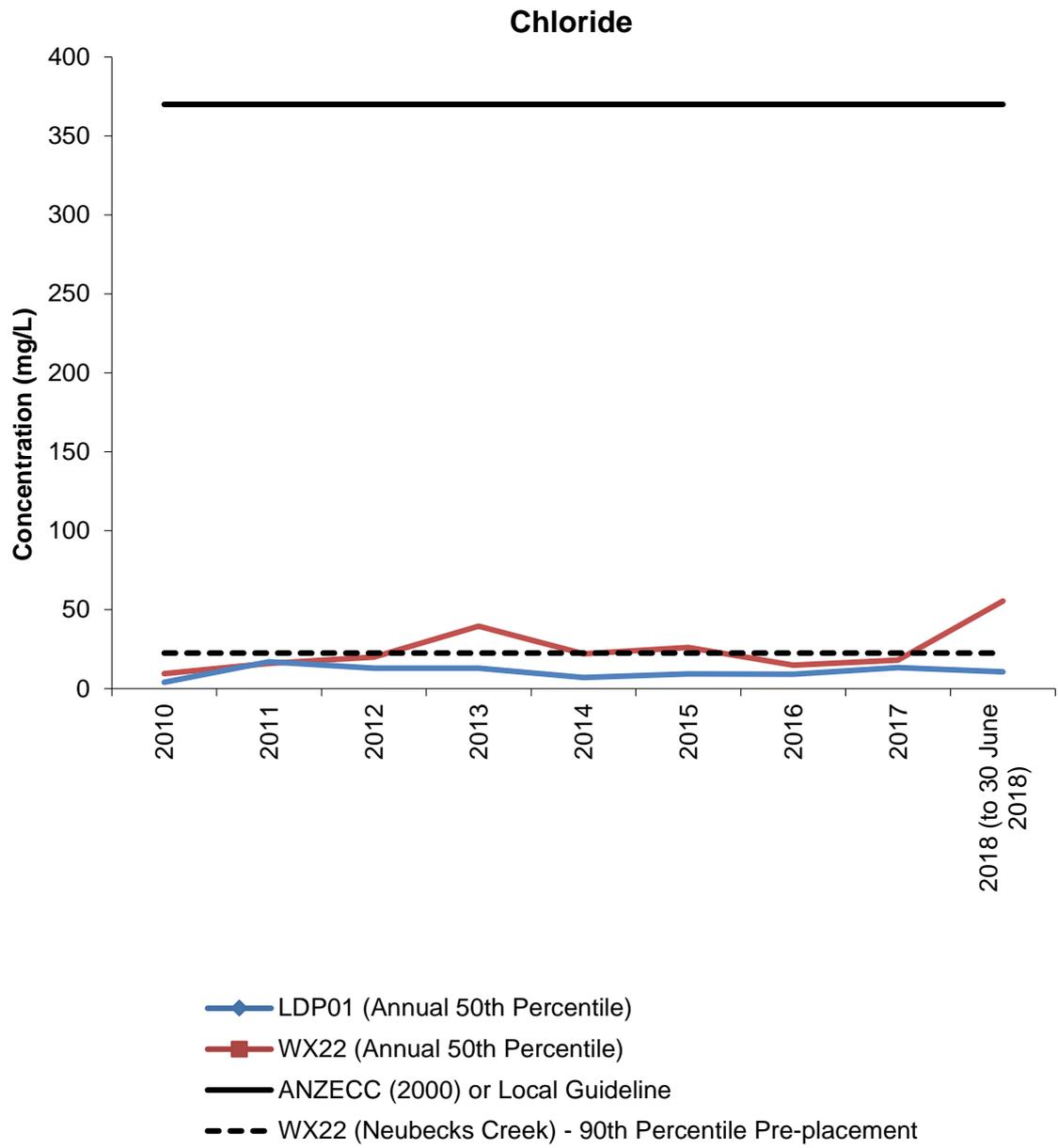
Chloride



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

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

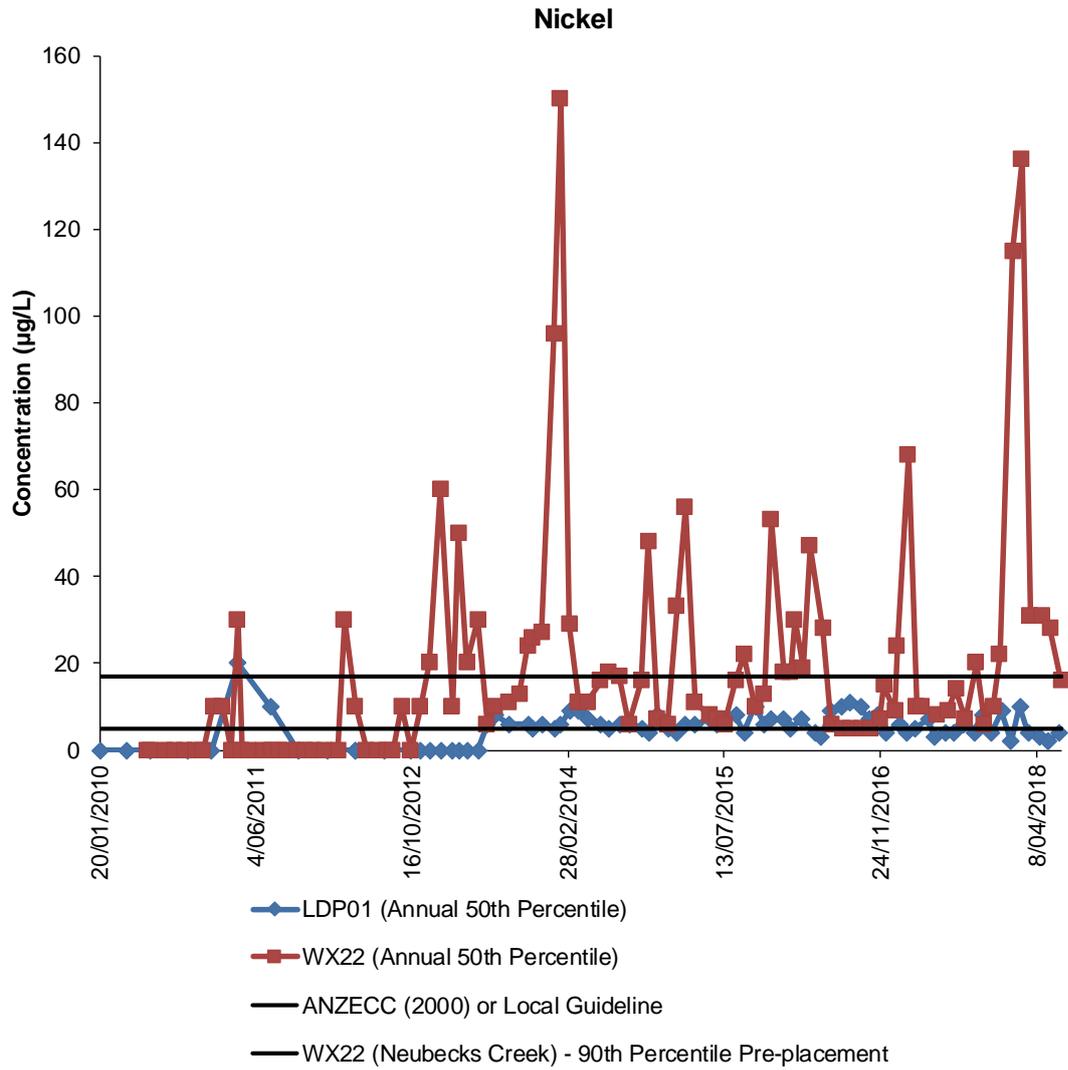




Graph 1b - Chloride Concentrations (Surface Water - 50th Percentile)

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



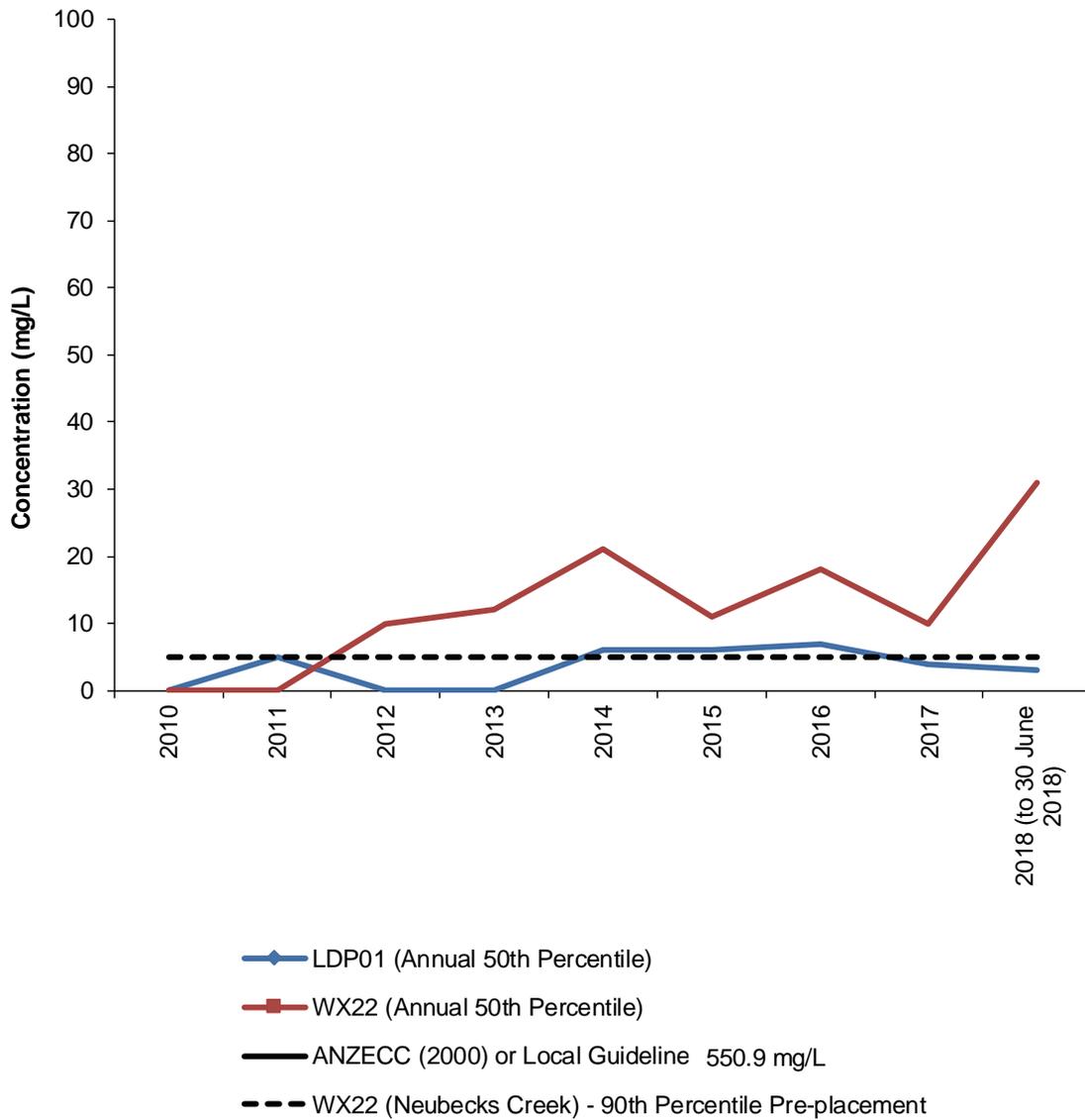


**Graph 2a - Nickel Concentrations
(Surface Water)**

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



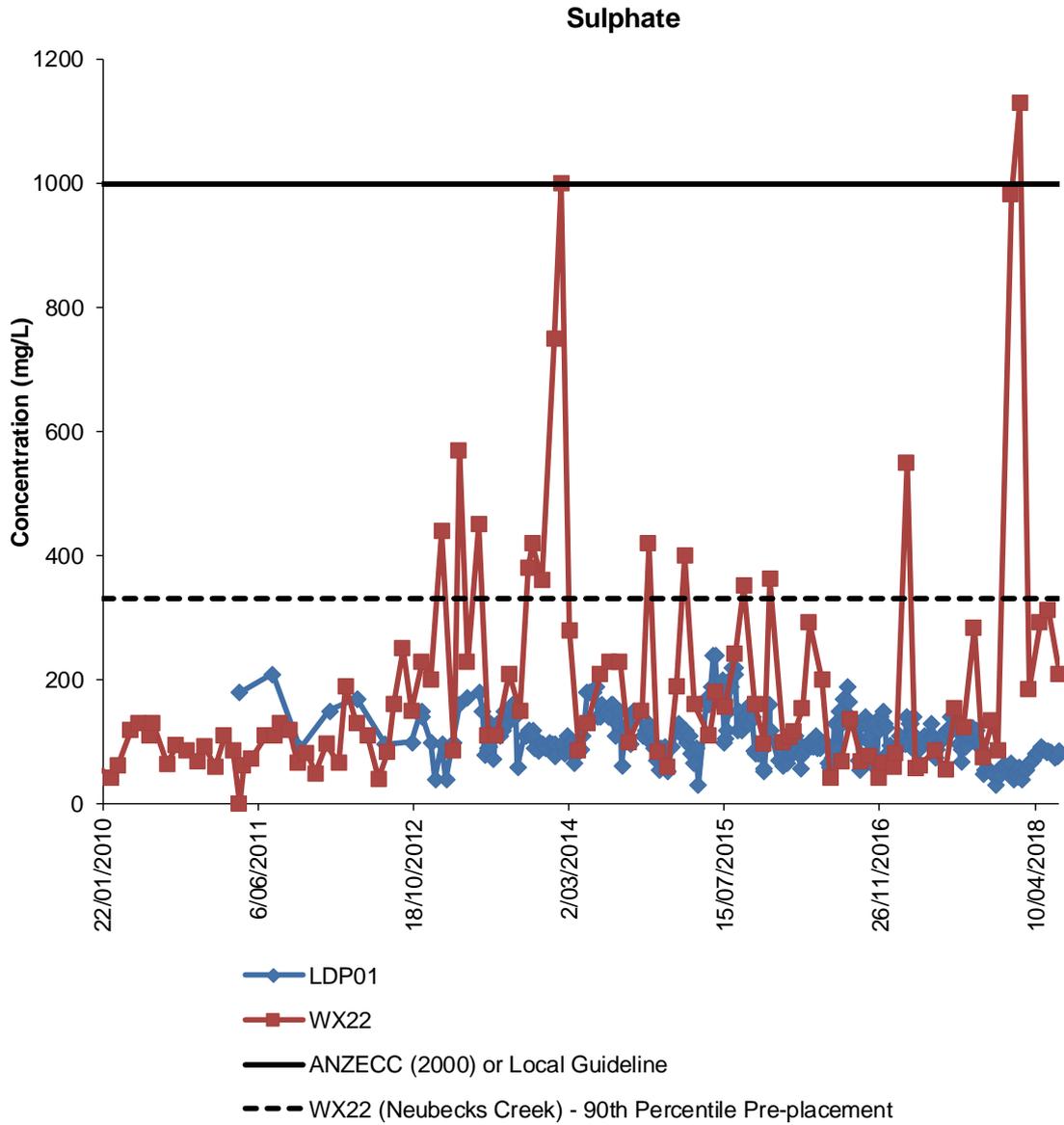
Nickel



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

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



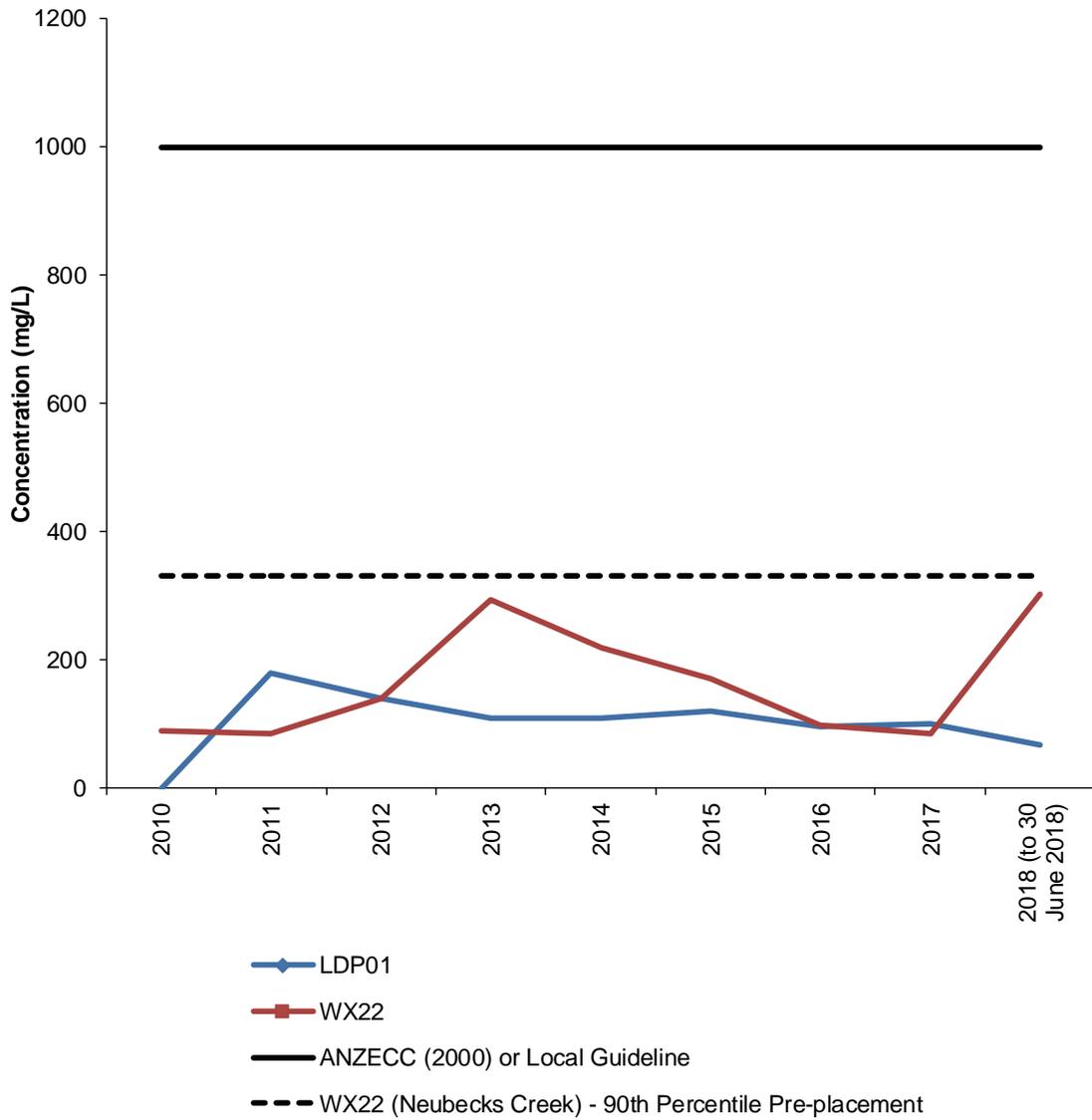


**Graph 3a - Sulphate Concentrations
(Surface Water)**

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



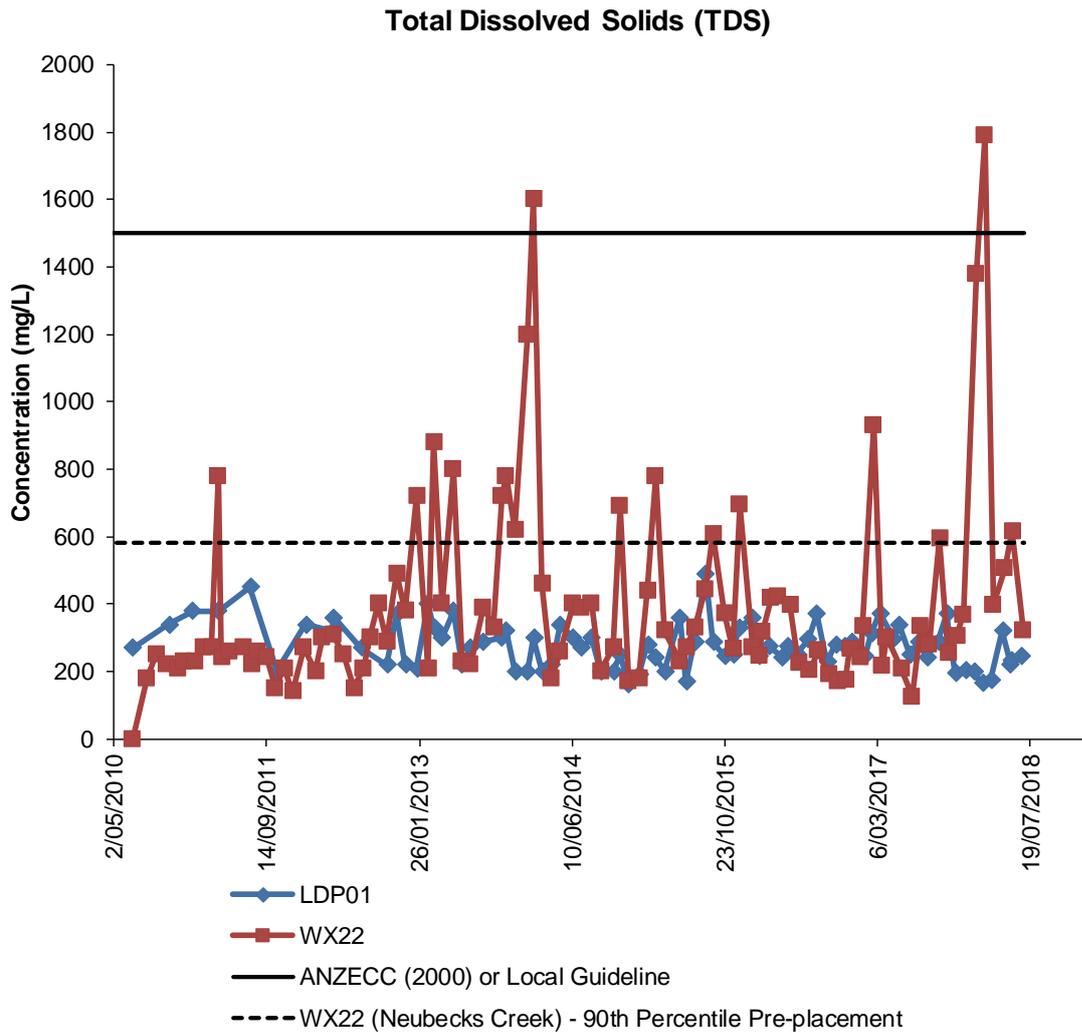
Sulphate



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

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

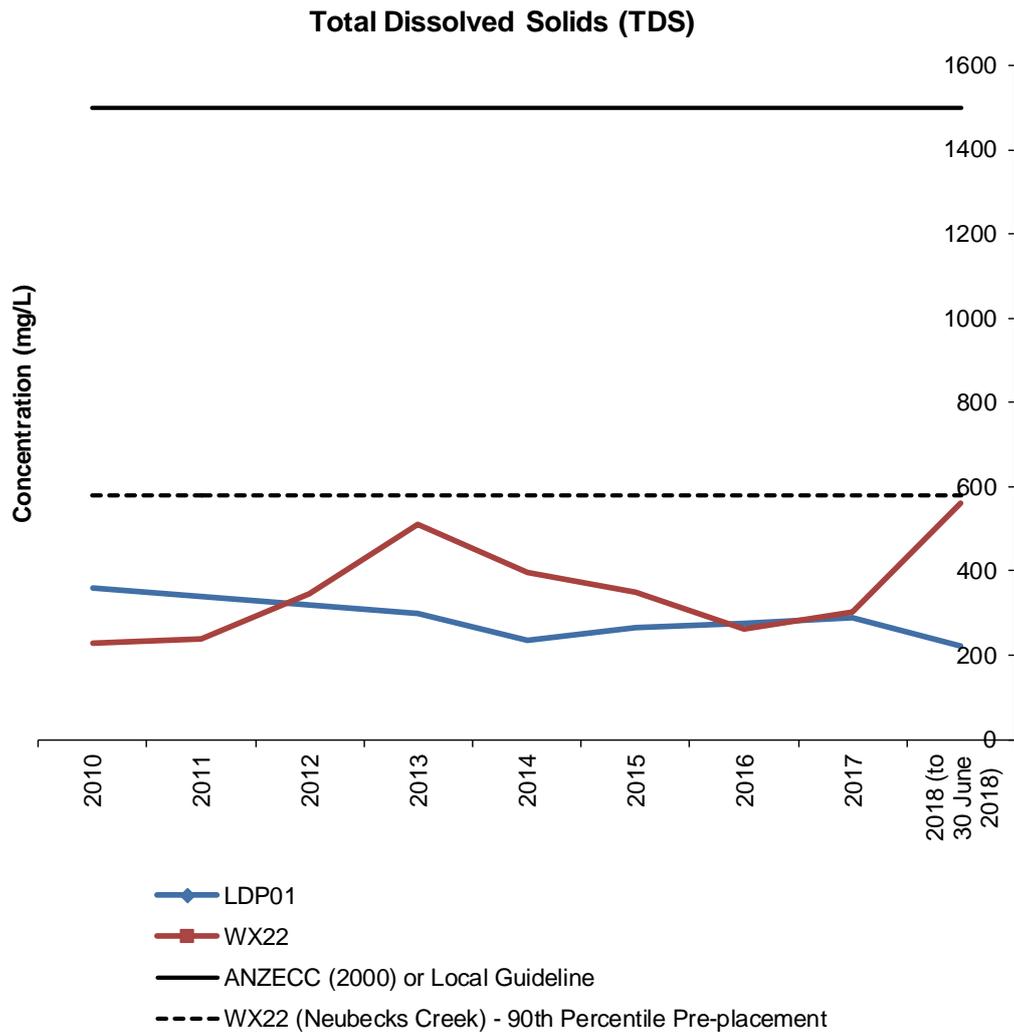




Graph 4a - Total Dissolved Solids (TDS) Concentrations (Surface Water)

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





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

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

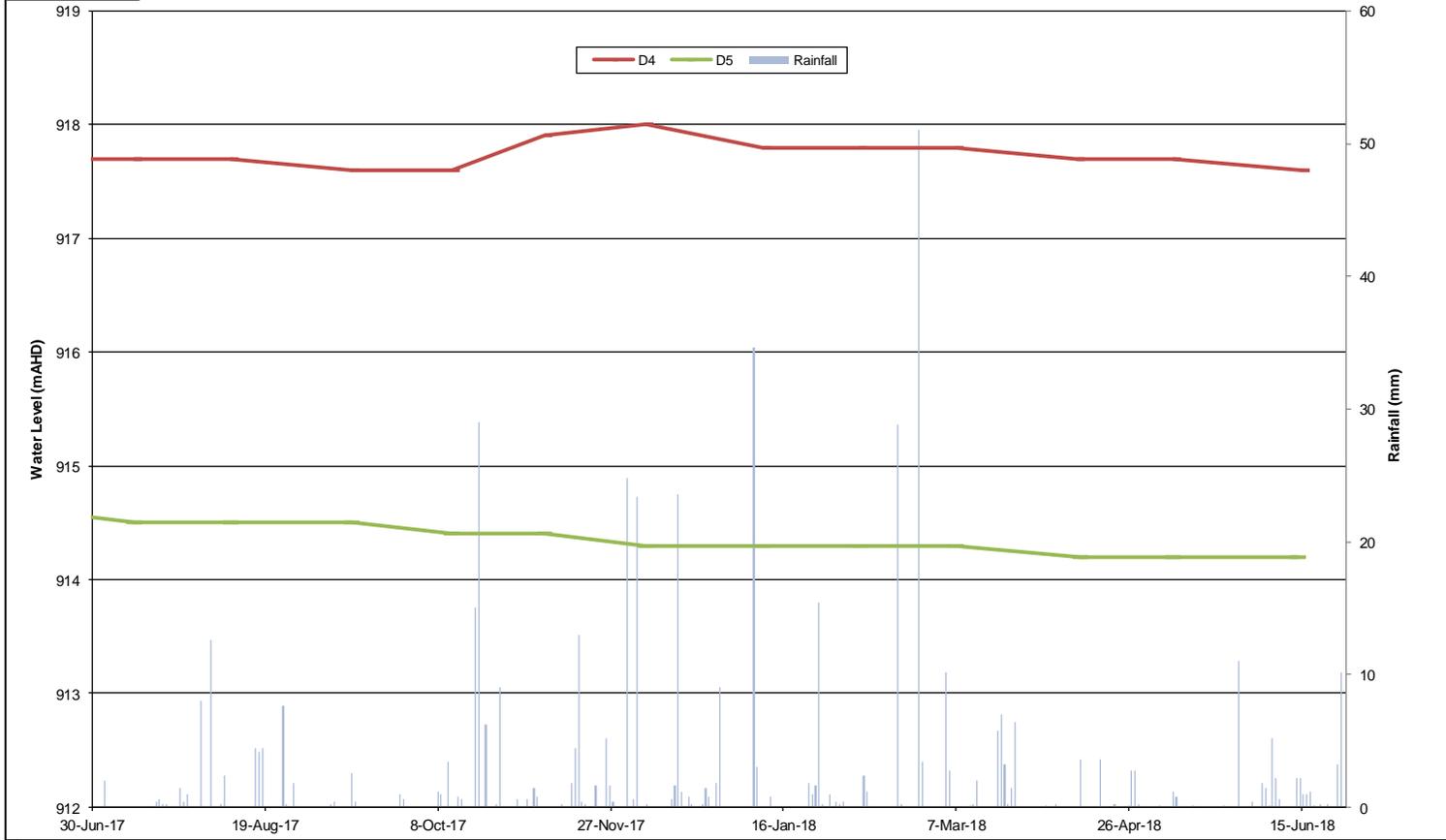


Annex I

Trend Graphs - Groundwater



Graph 1. Water Level Over Time - Background/Upgradient
Mt Piper
Annual Report July 2017 to June 2018 - 0470260

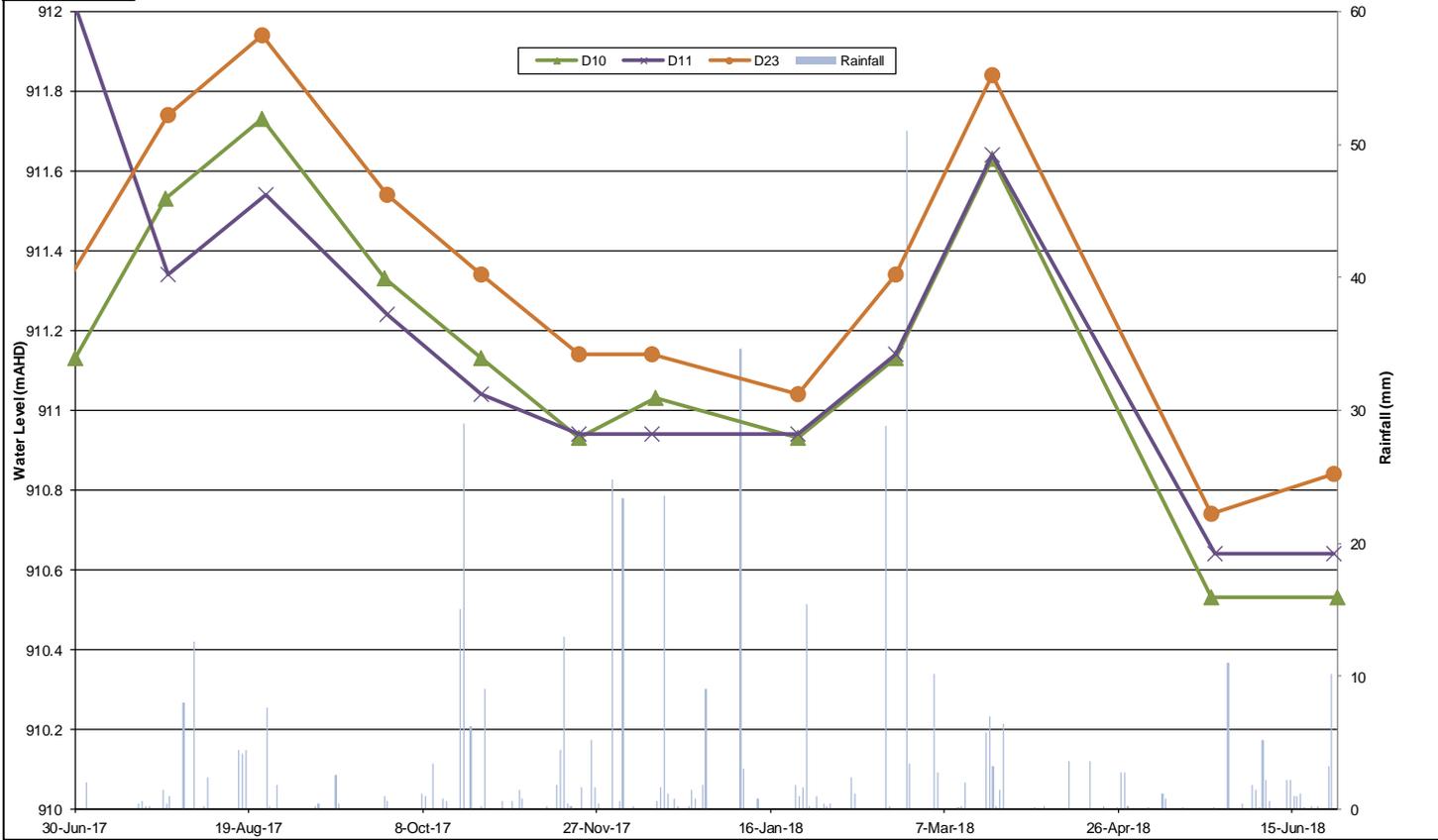


Comments

#1. Mass Kendall Trend with 0.95 Confidence



Graph 2. Water Level Over Time - Inside Ash Repository
Mt Piper
Annual Report July 2017 to June 2018 - 0470260

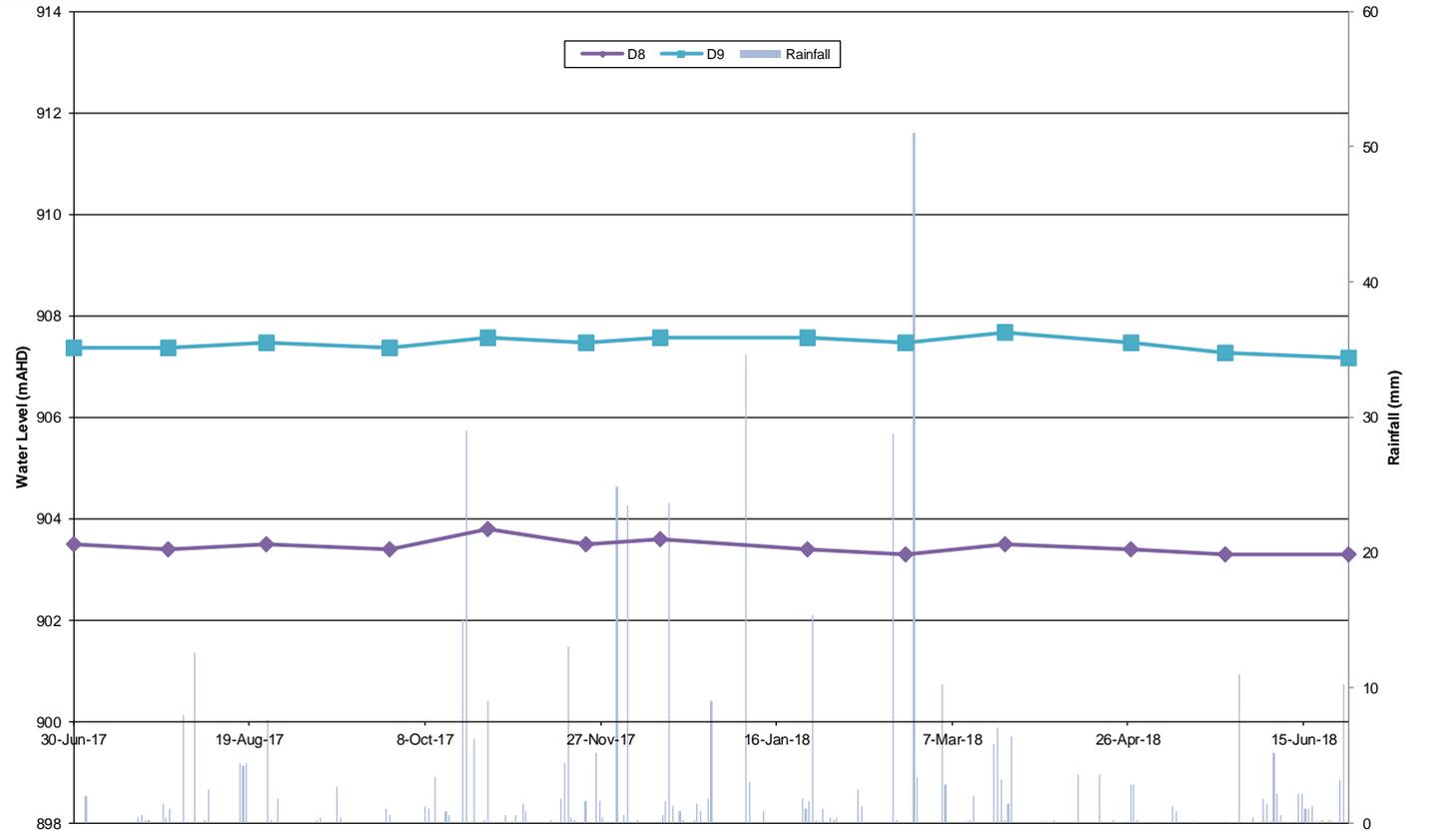


Comments

#1 - Mean Value of Time with 95% Confidence



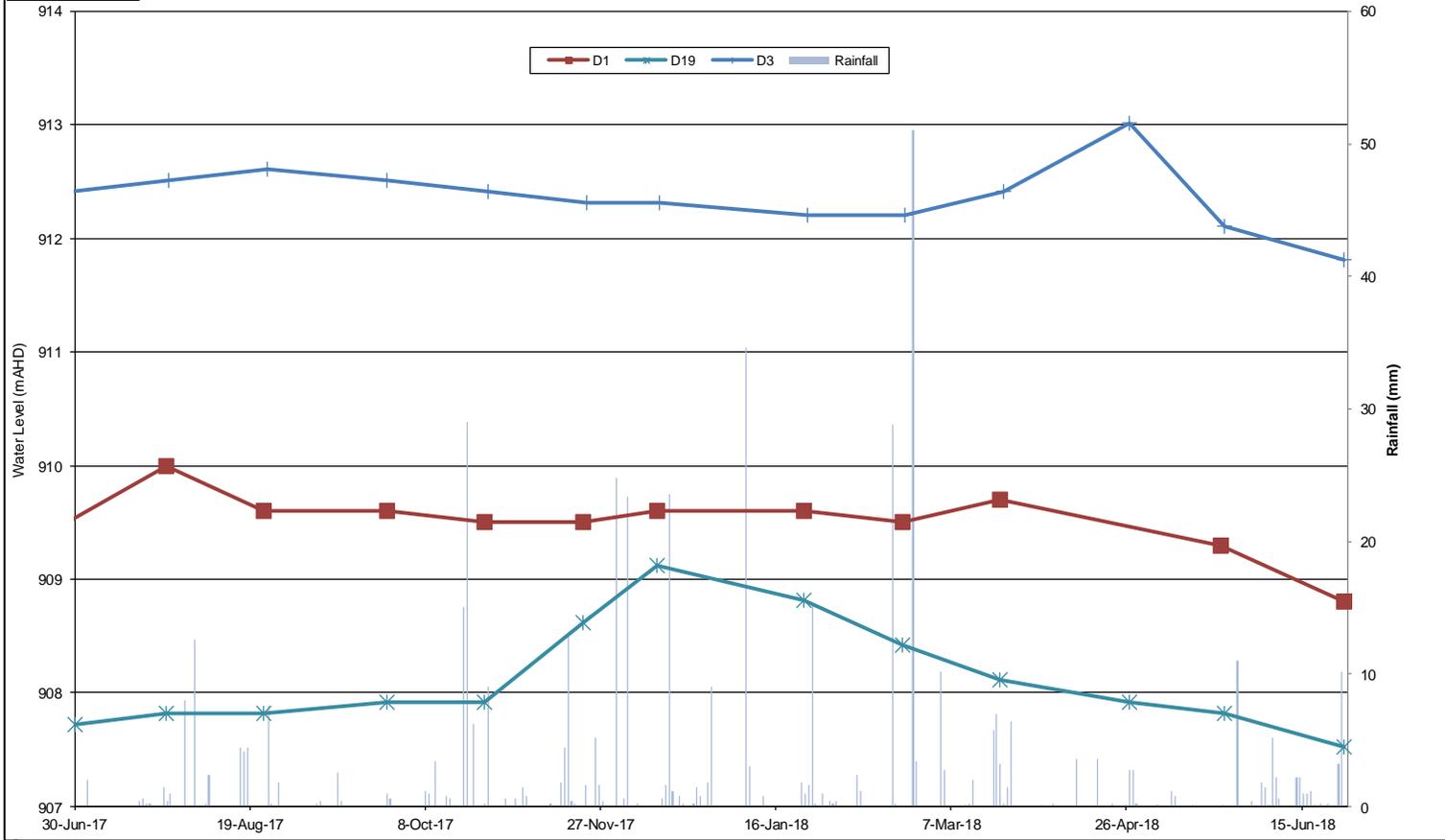
Graph 3. Water Level Over Time - Adjacent to Neubeck's Creek
Mt Piper
Annual Report July 2017 to June 2018 - 0470260



Comments

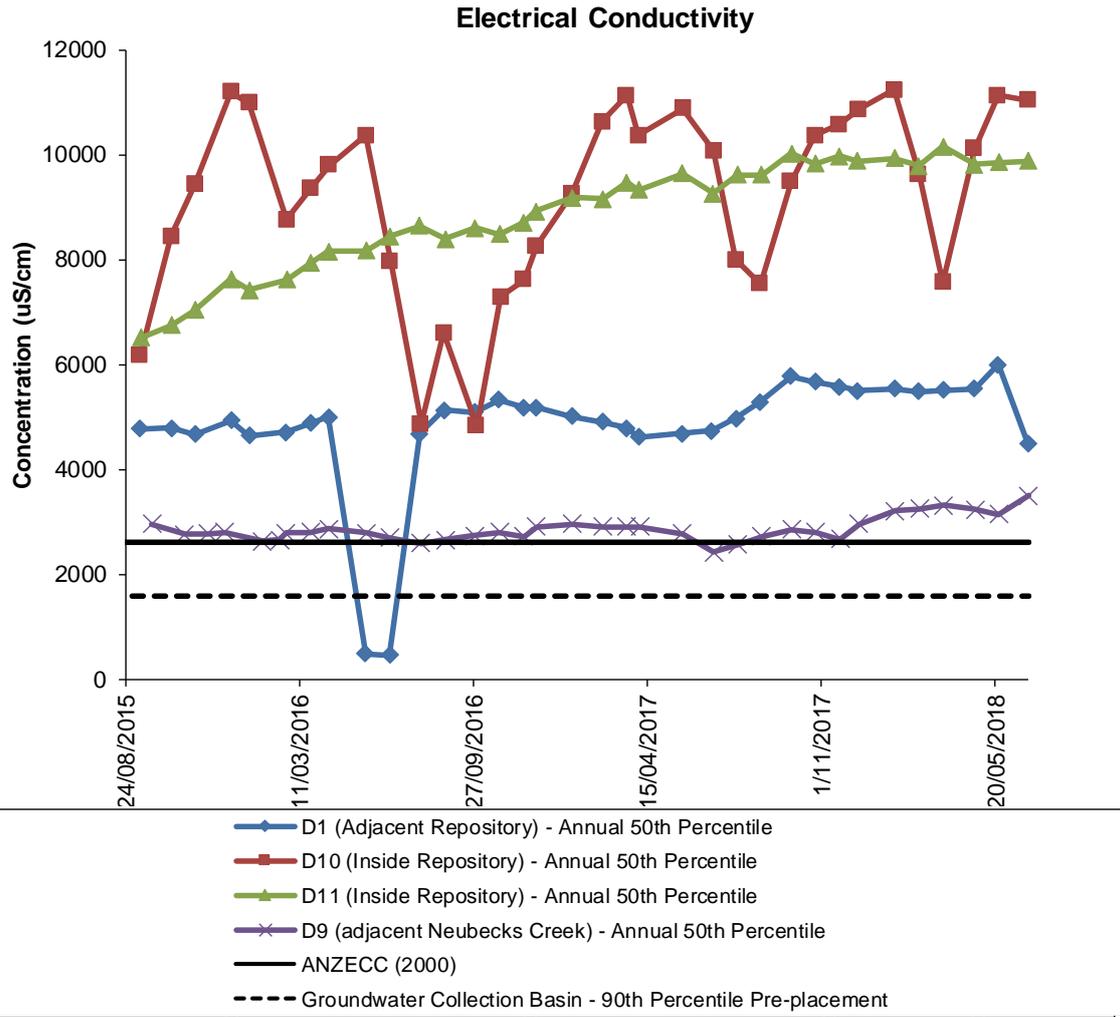


Graph 4. Water Level Over Time - Adjacent to Ash Repository
Mt Piper
Annual Report July 2017 to June 2018 - 0470260



Comments

#1 Mann-Kendal Trend with 0.95 Confidence

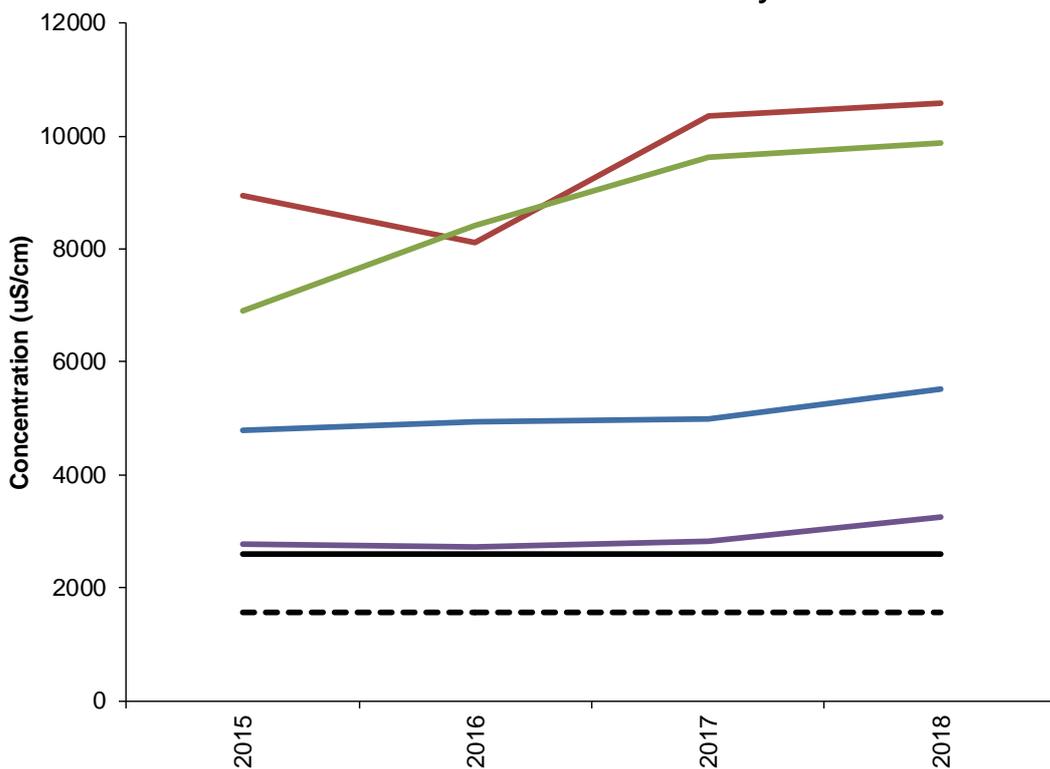


Graph 1a - Electrical Conductivity

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



Electrical Conductivity



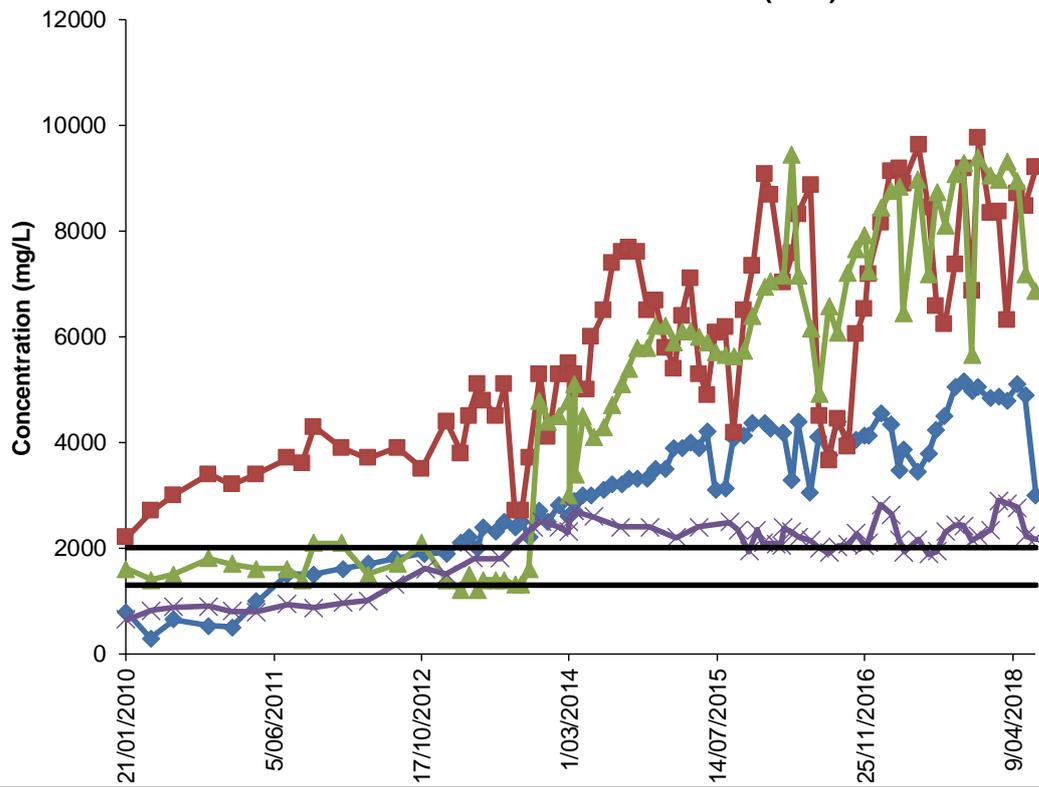
- ◆ D1 (Adjacent Repository) - Annual 50th Percentile
- D10 (Inside Repository) - Annual 50th Percentile
- ▲ D11 (Inside Repository) - Annual 50th Percentile
- × D9 (adjacent Neubecks Creek) - Annual 50th Percentile
- ANZECC (2000)
- - - Groundwater Collection Basin - 90th Percentile Pre-placement

Graph 1b - Electrical Conductivity - 50th percentile

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



Total Dissolved Solids (TDS)



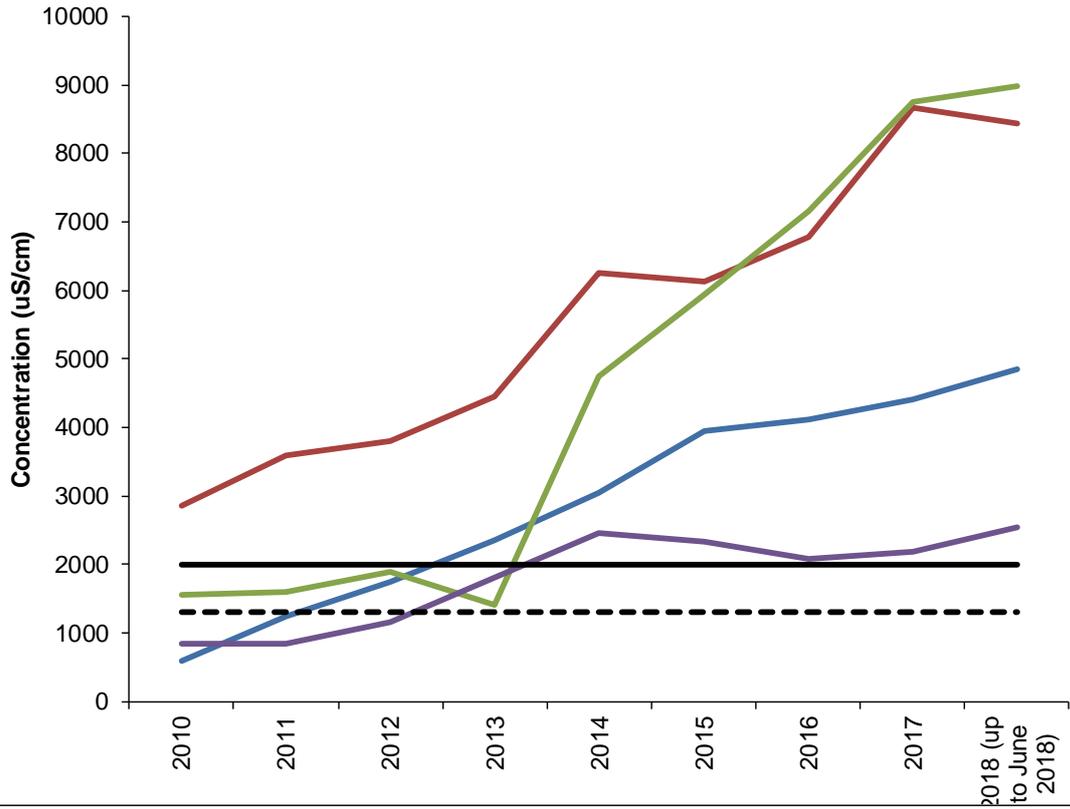
- ◆— D1 (Adjacent Repository) - Annual 50th Percentile
- D10 (Inside Repository) - Annual 50th Percentile
- ▲— D11 (Inside Repository) - Annual 50th Percentile
- ×— D9 (adjacent Neubecks Creek) - Annual 50th Percentile
- ANZECC (2000)
- Groundwater Collection Basin - 90th Percentile Pre-placement

**Graph 2a - TDS Concentrations
(Groundwater)**

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



TDS



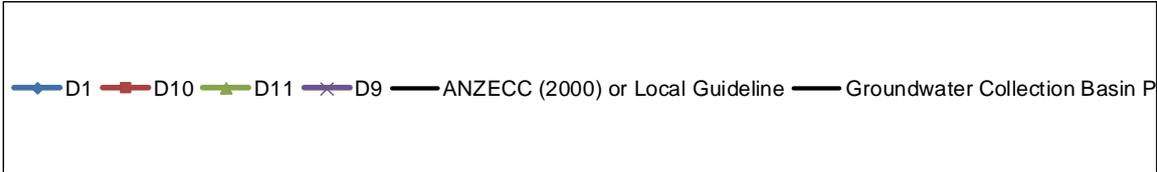
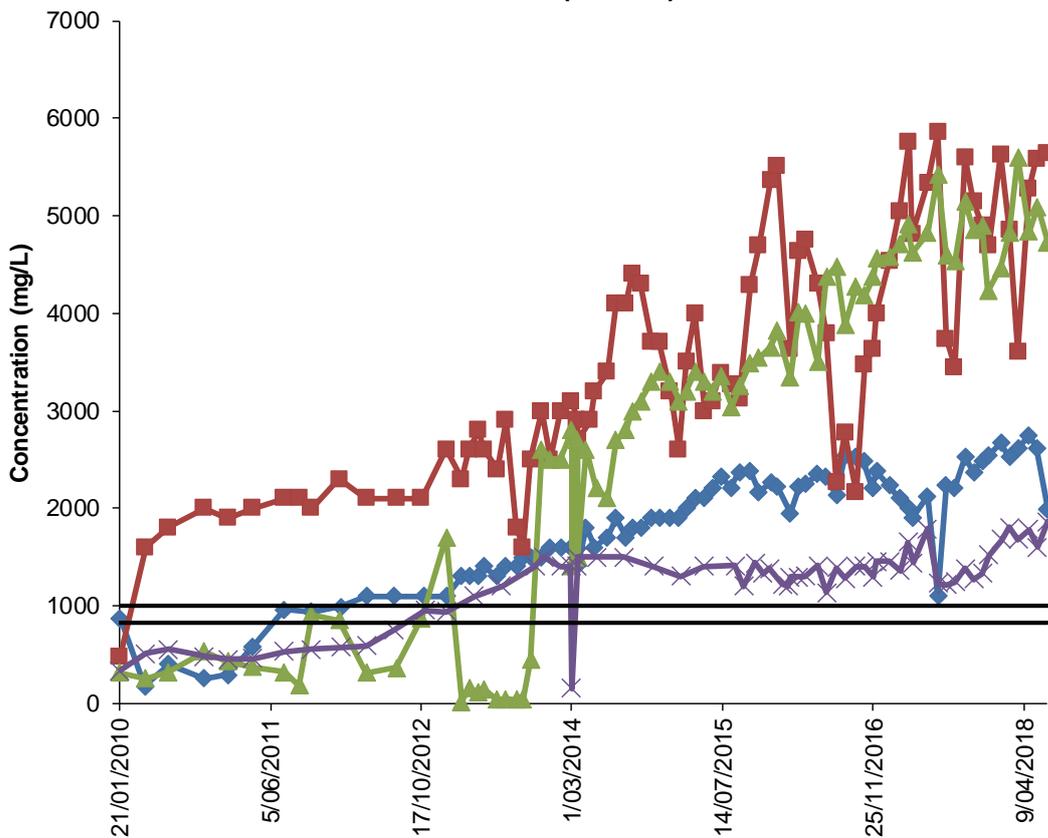
- ◆— D1 (Adjacent Repository) - Annual 50th Percentile
- D10 (Inside Repository) - Annual 50th Percentile
- ▲— D11 (Inside Repository) - Annual 50th Percentile
- ×— D9 (adjacent Neubecks Creek) - Annual 50th Percentile
- ANZECC (2000)
- - - Groundwater Collection Basin - 90th Percentile Pre-placement

Graph 2b - TDS - 50th percentile

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



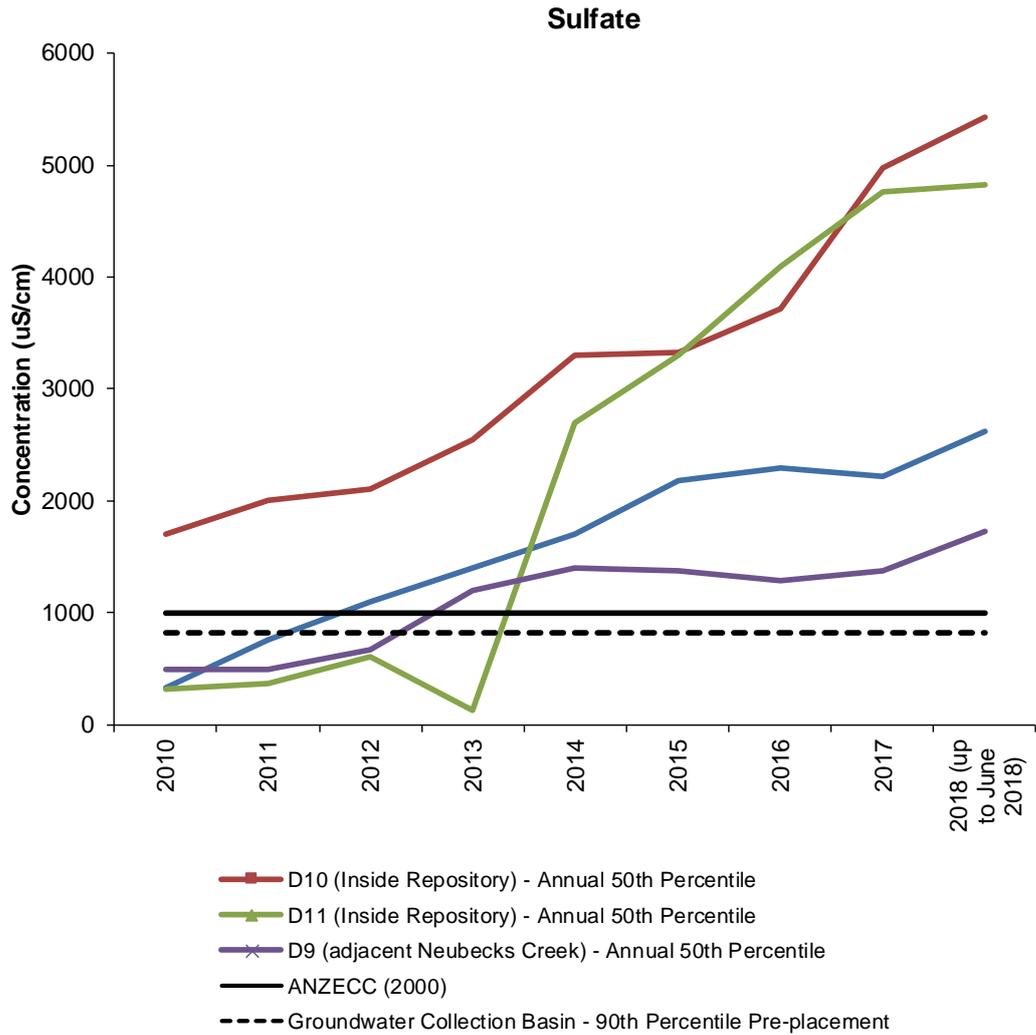
Sulfate (as SO4)



Graph 3a - Sulfate Concentrations (Groundwater)

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

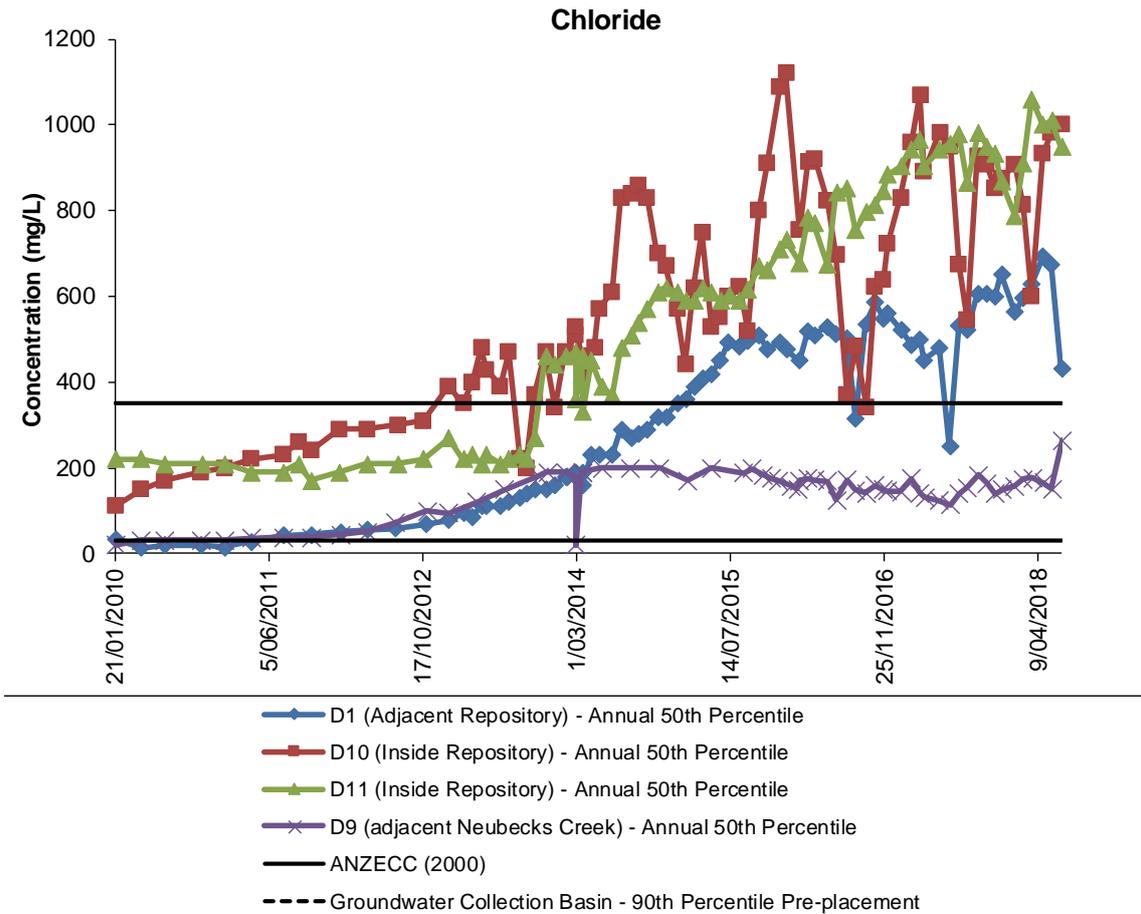




Graph 3b -Sulfate - 50th percentile

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



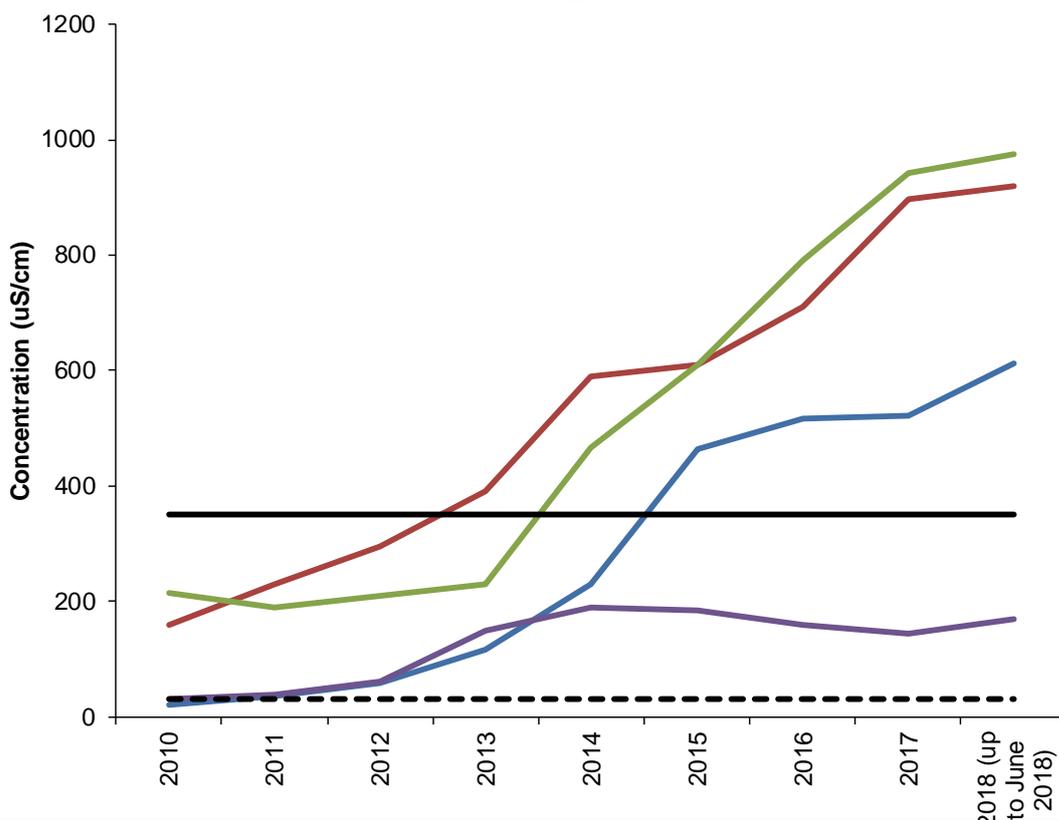


Graph 4a - Chloride Concentrations (Groundwater)

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



Chloride

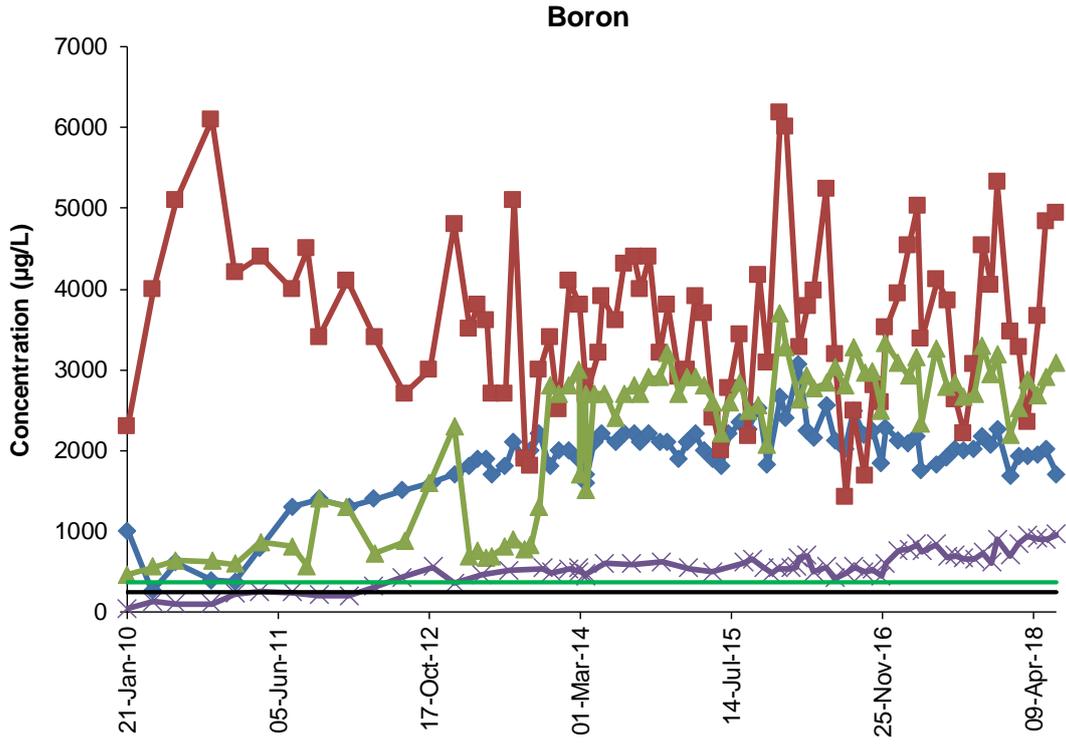


- ◆ D1 (Adjacent Repository) - Annual 50th Percentile
- D10 (Inside Repository) - Annual 50th Percentile
- ▲ D11 (Inside Repository) - Annual 50th Percentile
- × D9 (adjacent Neubecks Creek) - Annual 50th Percentile
- ANZECC (2000)
- Groundwater Collection Basin - 90th Percentile Pre-placement

Graph 4b - Chloride - 50th percentile

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



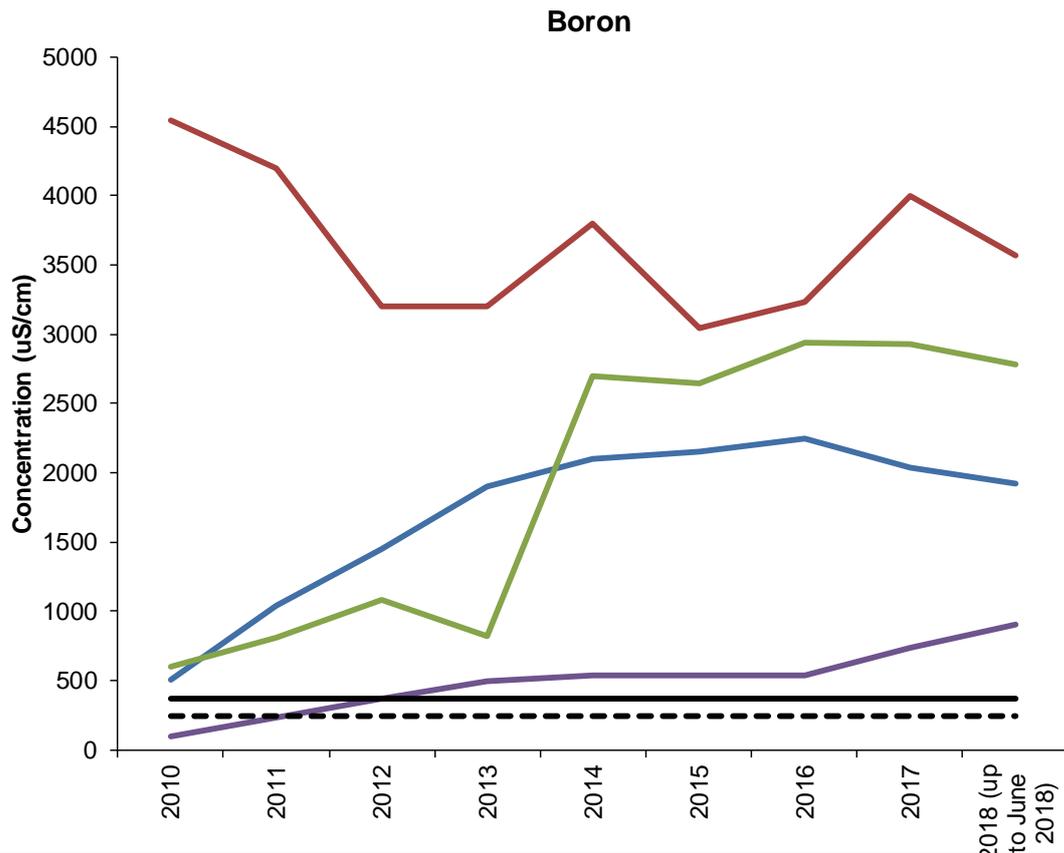


- ◆— D1 (Adjacent Repository) - Annual 50th Percentile
- D10 (Inside Repository) - Annual 50th Percentile
- ▲— D11 (Inside Repository) - Annual 50th Percentile
- ×— D9 (adjacent Neubecks Creek) - Annual 50th Percentile
- ANZECC (2000)
- - - Groundwater Collection Basin - 90th Percentile Pre-placement

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

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



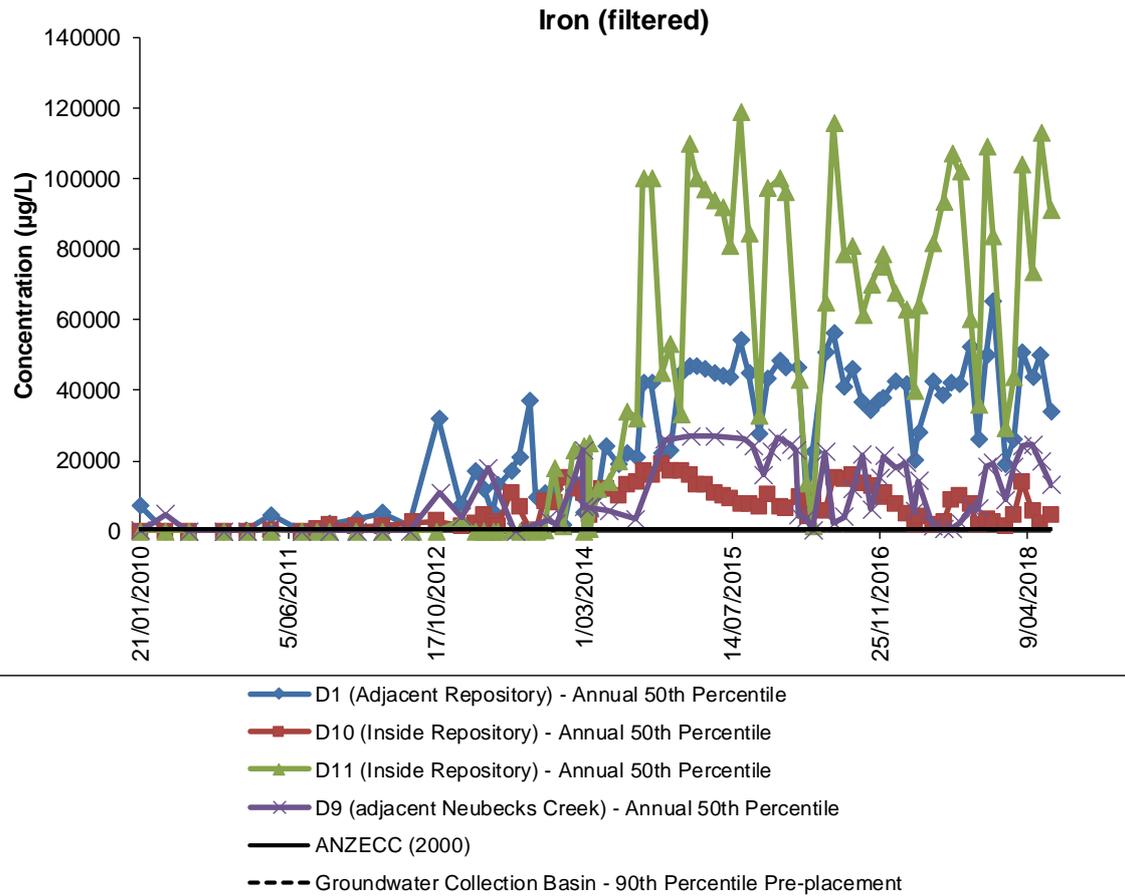


- ◆ D1 (Adjacent Repository) - Annual 50th Percentile
- D10 (Inside Repository) - Annual 50th Percentile
- ▲ D11 (Inside Repository) - Annual 50th Percentile
- × D9 (adjacent Neubecks Creek) - Annual 50th Percentile
- ANZECC (2000)
- - - Groundwater Collection Basin - 90th Percentile Pre-placement

Graph 5b - Boron - 50th percentile

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

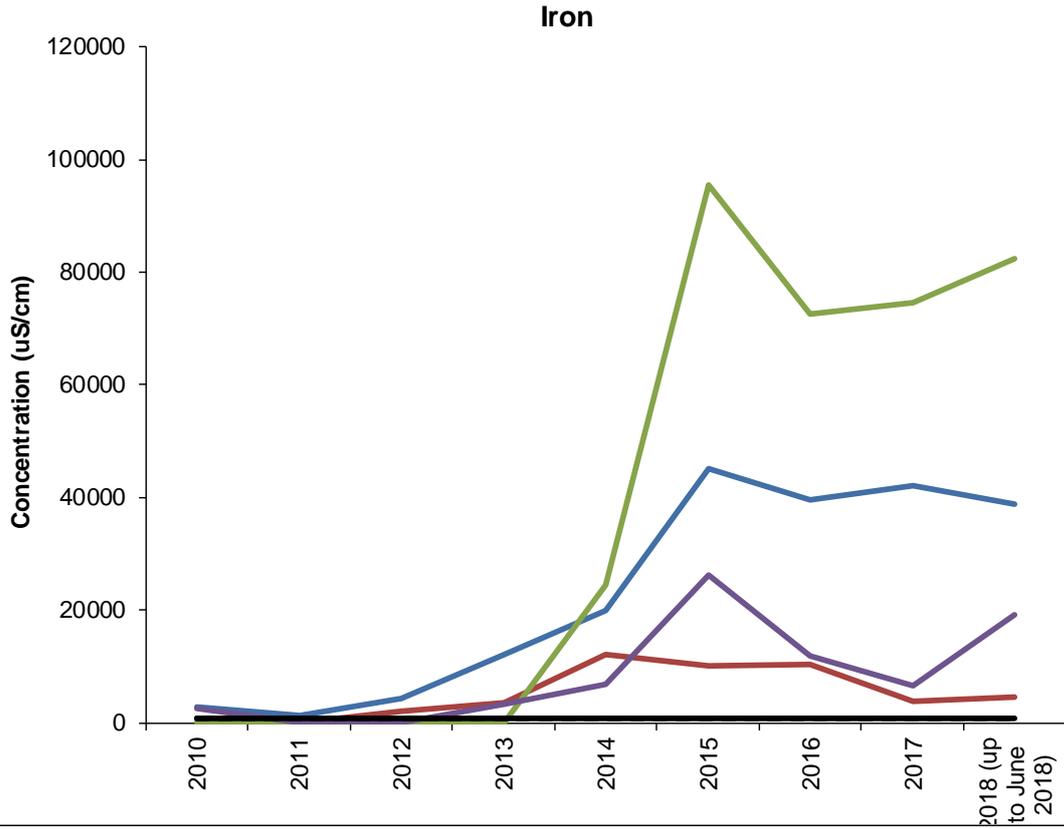




**Graph 6a - Iron Concentrations
(Groundwater)**

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



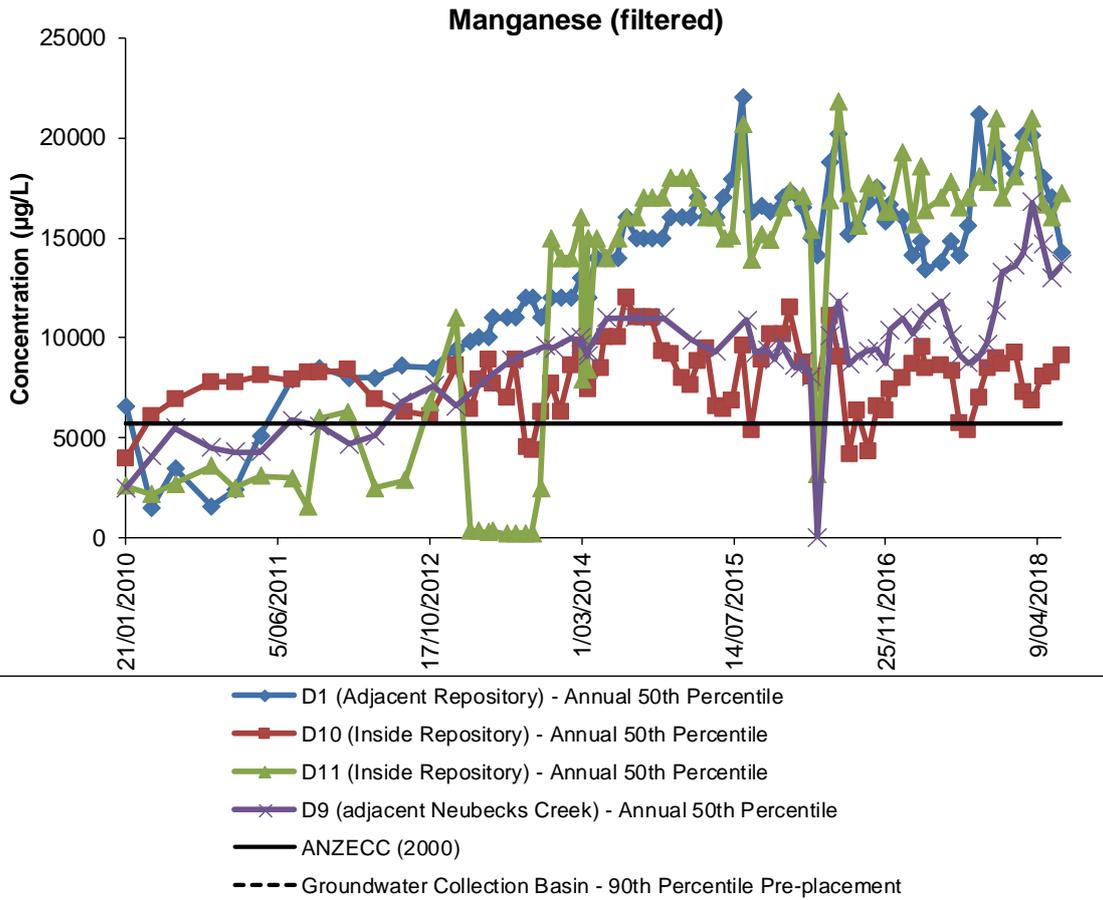


- ◆— D1 (Adjacent Repository) - Annual 50th Percentile
- D10 (Inside Repository) - Annual 50th Percentile
- ▲— D11 (Inside Repository) - Annual 50th Percentile
- ×— D9 (adjacent Neubecks Creek) - Annual 50th Percentile
- ANZECC (2000)
- Groundwater Collection Basin - 90th Percentile Pre-placement

Graph 6b - Iron - 50th percentile

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

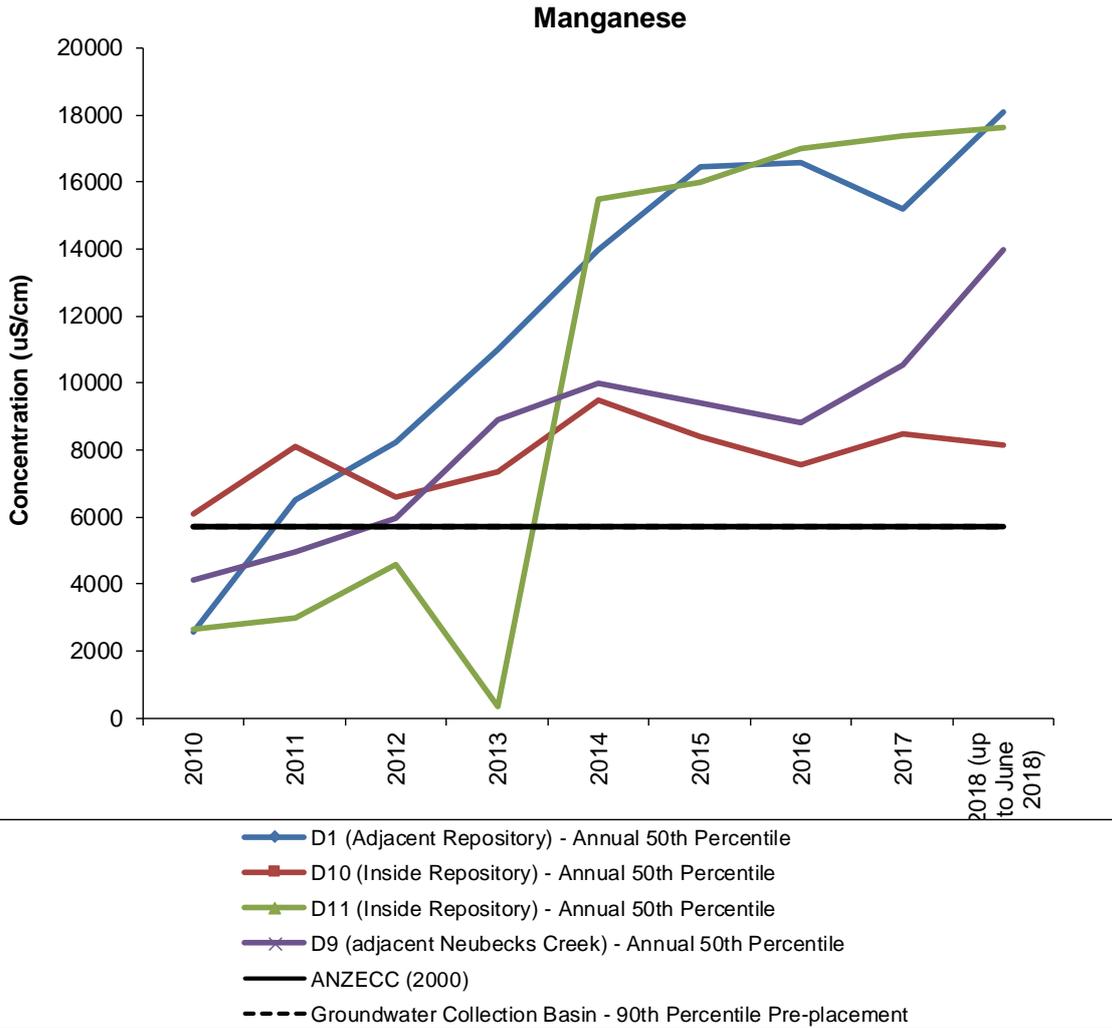




Graph 7a - Manganese Concentrations (Groundwater)

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





Graph 7b - Manganese - 50th percentile

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



Annex J

Community Contributions

SUMMARY OF COMMUNITY CONTRIBUTIONS

Table J1. Summary of Community Contributions Made by EnergyAustralia NSW – 2017/18

Recipient	Reason	Month/Year
Cancer Council	Match monies raised by Staff for Cancer Council Biggest Morning Tea	July 2017
Lithgow City Council	Creation of a Tech lab for adults and young children at Library	September 2017
Lithgow City Tennis Club	Assist with upgrade of the undercover seating area	September 2017
Catholic Care Social Services	Assist with costs of the Recover Wellbeing Group	September 2017
Lithgow Tidy Towns	Assist with the laneway art project in the Lithgow CBD	September 2017
Wallerawang/Lidsdale Progress Assoc.	Pyrotechnic display at New Year's Eve celebration at Lake Wallace	September 2017
Capertee Progress Association	To install more efficient heating to the Capertee Memorial Community Hall	September 2017
Lithgow Bears Rugby Club	Assist with costs of Kids Disco to raise funds for mental illness/suicide prevention in the local area	September 2017
L J Hooker	Donation towards Charity Auction	September 2017
La Salle Academy	2017 Award Presentation Ceremony	October 2017
Mitchell Conservatorium	Sponsorship of Scholarship for local musician	October 2017
Portland Central School	Annual Presentation Day 2017	November 2017
St Joseph's Primary School Portland	Annual Presentation Day 2017	November 2017
Mingaan	Assistance to NAIDOC Ceremony 2017	November 2017
Barton Park Arboretum	Costs associated with 10 Year Celebration of the Arboretum	November 2017
Lithgow Public School	Funding Books in Homes Program for students	November 2017
Greater Lithgow Arts Council	Assist with annual award ceremony	November 2017
Lithgow Swimming Club	Assist with Twilight Swimming Carnival	November 2017
Wallerawang Public School	Towards annual presentation Day	December 2017
Capertee Public School	Towards annual presentation Day	December 2017
Coerwull Public School	Towards annual presentation Day	December 2017

Recipient	Reason	Month/Year
Cullen Bullen Public School	Towards annual presentation Day	December 2017
Hampton Public School	Towards annual presentation Day	December 2017
Lithgow Public School	Towards annual presentation Day	December 2017
Meadow Flat Public School	Towards annual presentation Day	December 2017
St Patricks School Lithgow	Towards annual presentation Day	December 2017
Lithgow Community Nursery	Assist with purchase sunsafe shirts & ongoing costs of organisation	December 2017
Barton Park Arboretum	Assist with general upkeep and maintenance	December 2017
Zig Zag Public School Lithgow	Annual Presentation Day	December 2017
Lithgow High School	Towards annual presentation Day	December 2017
Lithgow Oberon Landcare Association	Assist with Landcare activities in the Lithgow/Oberon districts	December 2017
Lithgow City Council	Sponsorship of 2017 Halloween Festival	December 2017
Central Acclimatisation Society	Gone Fishing Day at Lake Wallace	December 2017
Lithgow Lions Club	Christmas Cakes	December 2017
Lithgow Show Society	Towards 2018 Lithgow Show	December 2017
Kelso Fire Brigade	Towards 2018 Fire & Rescue NSW Regional Championships	December 2017
St Patricks/St Vincent's Days for Girls	Hygiene kits for women in East Timor	December 2017
Josephite Foundation	Organisation providing loans to people on low incomes	December 2017
Hartley Advisory Committee	Back to Hartley weekend	December 2017
Legacy NSW (Lithgow)	Matching staff donations	December 2017
Lithgow Environment Group	Hoskins Church Solar Panels	January 2018
IronFest	Sponsorship of Annual Community Event	March 2018
Portland Art Show	Sponsorship via purchase of art work	March 2018
Lithgow PCYC	Matching donations	March 2018
Careflight	Matching donations	March 2018
Royal North Shore Hospital	Matching donations	March 2018
The Smith Family	Matching Donations	March 2018

COMPLAINTS

EnergyAustralia NSW maintains a 24-hour hotline for the public to report incidents, complaints or enquiries with contact details available on the EnergyAustralia website. EnergyAustralia NSW records the details of all complaints received in a Complaints Register. The Contract Administrator, Site Manager and the Environment Representative ensure that the community relations protocols are communicated to all project personnel involved in the complaints process and that appropriate training covering the protocols is established in site inductions.

The key elements of the on-site complaints management protocol include:

All persons wishing to register a complaint to operations personnel will be politely directed to the Support Services Leader, in line with EnergyAustralia NSW's existing complaints procedure.

The Support Services Leader will deal with the complaint and take down particulars of the complaint as per the criteria listed on the complaints register. Action will then be taken to resolve the issue whilst ensuring that all correspondence relating to the issue is documented. All attempts will be made to resolve the issue on the same day, however if this is not possible, the complainant will be updated regularly on the progress of the matter where practical.

Annex K

Laboratory Certificates Of
Analysis And Nalco
Procedures

Final - Report Number: 2105249
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 MPW017463
Date Sampled 12-Jul-2017 09:07
Date Received 14-Jul-2017
Date Completed 21-Jul-2017
Date Authorised 23-Jul-2017

Summary Report

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

Sampling point: Groundwater Bore MPGM5

Source: MP **Customer Sampling Point:** 030 **Sampling Code:** D11 **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	75 L
Recharge Bore Level	*Analysis in Field	7.4 m
pH	CA12125	5.95
Conductivity	CA12125	680 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		0.018 mg/L
Boron (B)	EG020A-T		<0.05 mg/L
Cadmium (Cd)	EG020A-T		<0.0001 mg/L
Calcium (Ca)	ED093T-UL		41.3 mg/L
Chromium (Cr)	EG020A-T		<0.001 mg/L
Copper (Cu)	EG020A-T		<0.001 mg/L
Iron (Fe)	EG020A-F	6.67 mg/L	
Lead (Pb)	EG020A-T		<0.001 mg/L
Magnesium (Mg)	ED093T-UL		46.1 mg/L
Manganese (Mn)	EG020A-F	1.33 mg/L	
Molybdenum (Mo)	EG020A-T		<0.001 mg/L
Nickel (Ni)	EG020A-T		0.070 mg/L
Potassium (K)	ED093T-UL		8.25 mg/L
Selenium (Se)	EG094B-T		<0.0002 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		18.0 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: 2105249
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 MPW017463
Date Sampled 12-Jul-2017 09:07
Date Received 14-Jul-2017
Date Completed 21-Jul-2017
Date Authorised 23-Jul-2017

Summary Report

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

Sampling point: Groundwater Bore MPM5

Source: MP **Customer Sampling Point:** 030 **Sampling Code:** D11 **Sample Frequency:** Month

Testing Laboratory: ALS Environmental

Zinc (Zn)	EG020A-T	0.041 mg/L
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Anions Test Method: ED009-X	Filtered
Fluoride (F)	0.068 mg/L
Chloride (Cl)	14.5 mg/L
Sulfate (SO4)	223 mg/L

Alkalinity Test Method: ED037-P	Total
Total Alkalinity (CaCO3)	104 mg/L

Physical Test Method: EA015H	Total
Total Dissolved Solids @ 180°C	469 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1717278. Report Date: 21-Jul-2017

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 Senior Chemist

Final - Report Number: 2105249

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

MPW017464

Date Sampled

13-Jul-2017 09:04

Date Received

14-Jul-2017

Date Completed

21-Jul-2017

Date Authorised

23-Jul-2017

Summary Report

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

Sampling point: Groundwater Bore MPGM5

Source: MP

Customer Sampling Point: 031

Sampling Code: D12

Sample Frequency: Month

Testing Laboratory: Mount Piper

Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	4.1 m
Bore Volume Pumped	*Analysis in Field	8 L
Recharge Bore Level	*Analysis in Field	4.5 m
pH	CA12125	6.27
Conductivity	CA12125	740 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		0.204 mg/L
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-T		<0.001 mg/L
Iron (Fe)	EG020A-F	52.1 mg/L	
Lead (Pb)	EG020A-T		<0.001 mg/L
Magnesium (Mg)	ED093T-UL		30.6 mg/L
Manganese (Mn)	EG020A-F	7.07 mg/L	
Molybdenum (Mo)	EG020A-T		0.002 mg/L
Nickel (Ni)	EG020A-T		0.024 mg/L
Potassium (K)	ED093T-UL		5.75 mg/L
Selenium (Se)	EG094B-T		<0.0002 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		40.8 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: 2105249
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 MPW017464
Date Sampled 13-Jul-2017 09:04
Date Received 14-Jul-2017
Date Completed 21-Jul-2017
Date Authorised 23-Jul-2017

Summary Report

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

Sampling point: Groundwater Bore MPGM5

Source: MP **Customer Sampling Point:** 031 **Sampling Code:** D12 **Sample Frequency:** Month

Testing Laboratory: ALS Environmental

Zinc (Zn)	EG020A-T	0.014 mg/L
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Anions Test Method: ED009-X

Fluoride (F)	Filtered	0.111 mg/L
Chloride (Cl)		59.0 mg/L
Sulfate (SO4)		25.2 mg/L

Alkalinity Test Method: ED037-P

Total Alkalinity (CaCO3)	Total
	188 mg/L

Physical Test Method: EA015H

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

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1717278. Report Date: 21-Jul-2017

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Authorised by Thanh Hoang Le
 Senior Chemist

Final - Report Number: 2105249

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

MPW017465

Date Sampled

12-Jul-2017 10:00

Date Received

14-Jul-2017

Date Completed

21-Jul-2017

Date Authorised

23-Jul-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: 012

Sampling Code: D7

Sample Frequency: Month

Testing Laboratory: Mount Piper

Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	1.2 m
Bore Volume Pumped	*Analysis in Field	42 L
Recharge Bore Level	*Analysis in Field	1.2 m
pH	CA12125	6.49
Conductivity	CA12125	529 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		0.003 mg/L
Barium (Ba)	EG020A-T		0.077 mg/L
Boron (B)	EG020A-T		<0.05 mg/L
Cadmium (Cd)	EG020A-T		<0.0001 mg/L
Calcium (Ca)	ED093T-UL		46.6 mg/L
Chromium (Cr)	EG020A-T		<0.001 mg/L
Copper (Cu)	EG020A-T		<0.001 mg/L
Iron (Fe)	EG020A-F	2.30 mg/L	
Lead (Pb)	EG020A-T		<0.001 mg/L
Magnesium (Mg)	ED093T-UL		24.8 mg/L
Manganese (Mn)	EG020A-F	0.808 mg/L	
Molybdenum (Mo)	EG020A-T		<0.001 mg/L
Nickel (Ni)	EG020A-T		<0.001 mg/L
Potassium (K)	ED093T-UL		10.4 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	
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: Allan Bowcher

Sample Number MPW017465
Date Sampled 12-Jul-2017 10:00
Date Received 14-Jul-2017
Date Completed 21-Jul-2017
Date Authorised 23-Jul-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:** 012 **Sampling Code:** D7 **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)	0.111 mg/L
Chloride (Cl)	20.4 mg/L
Sulfate (SO4)	23.8 mg/L

Alkalinity Test Method: ED037-P	Total
Total Alkalinity (CaCO3)	230 mg/L

Physical Test Method: EA015H	Total
Total Dissolved Solids @ 180°C	277 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1717278. Report Date: 21-Jul-2017

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 Senior Chemist

Final - Report Number: 2105249
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 MPW017466
Date Sampled 13-Jul-2017 09:25
Date Received 14-Jul-2017
Date Completed 21-Jul-2017
Date Authorised 23-Jul-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:** 007 **Sampling Code:** D2 **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	60 L
Recharge Bore Level	*Analysis in Field	2.8 m
pH	CA12125	4.69
Conductivity	CA12125	3190 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		1.18 mg/L
Arsenic (As)	EG020A-T		0.001 mg/L
Barium (Ba)	EG020A-T		0.033 mg/L
Boron (B)	EG020A-T		0.42 mg/L
Cadmium (Cd)	EG020A-T		0.0005 mg/L
Calcium (Ca)	ED093T-UL		207 mg/L
Chromium (Cr)	EG020A-T		<0.001 mg/L
Copper (Cu)	EG020A-T		<0.001 mg/L
Iron (Fe)	EG020A-F	9.96 mg/L	
Lead (Pb)	EG020A-T		0.002 mg/L
Magnesium (Mg)	ED093T-UL		179 mg/L
Manganese (Mn)	EG020A-F	7.33 mg/L	
Molybdenum (Mo)	EG020A-T		0.002 mg/L
Nickel (Ni)	EG020A-T		0.347 mg/L
Potassium (K)	ED093T-UL		22.8 mg/L
Selenium (Se)	EG094B-T		0.0004 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		319 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: 2105249
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 MPW017466
Date Sampled 13-Jul-2017 09:25
Date Received 14-Jul-2017
Date Completed 21-Jul-2017
Date Authorised 23-Jul-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:** 007 **Sampling Code:** D2 **Sample Frequency:** Month

Testing Laboratory: ALS Environmental

Zinc (Zn)	EG020A-T	0.733 mg/L
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Anions Test Method: ED009-X

Fluoride (F)	Filtered	0.117 mg/L
Chloride (Cl)		218 mg/L
Sulfate (SO4)		1550 mg/L

Alkalinity Test Method: ED037-P

Total Alkalinity (CaCO3)	Total
	<1 mg/L

Physical Test Method: EA015H

Total Dissolved Solids @ 180°C	Total
	2590 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1717278. Report Date: 21-Jul-2017

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 Senior Chemist

Final - Report Number: 2105249
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 MPW017467
Date Sampled 12-Jul-2017 11:40
Date Received 14-Jul-2017
Date Completed 21-Jul-2017
Date Authorised 23-Jul-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:** 009 **Sampling Code:** D4 **Sample Frequency:** Month

Testing Laboratory: Mount Piper
Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	1.7 m
Bore Volume Pumped	*Analysis in Field	119 L
Recharge Bore Level	*Analysis in Field	1.7 m
pH	CA12125	3.22
Conductivity	CA12125	1050 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		21.1 mg/L
Arsenic (As)	EG020A-T		0.054 mg/L
Barium (Ba)	EG020A-T		0.011 mg/L
Boron (B)	EG020A-T		<0.05 mg/L
Cadmium (Cd)	EG020A-T		0.0008 mg/L
Calcium (Ca)	ED093T-UL		13.8 mg/L
Chromium (Cr)	EG020A-T		0.003 mg/L
Copper (Cu)	EG020A-T		<0.001 mg/L
Iron (Fe)	EG020A-F	125 mg/L	
Lead (Pb)	EG020A-T		0.022 mg/L
Magnesium (Mg)	ED093T-UL		7.89 mg/L
Manganese (Mn)	EG020A-F	0.760 mg/L	
Molybdenum (Mo)	EG020A-T		<0.001 mg/L
Nickel (Ni)	EG020A-T		0.024 mg/L
Potassium (K)	ED093T-UL		8.40 mg/L
Selenium (Se)	EG094B-T		0.0003 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		19.1 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: 2105249
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 MPW017467
Date Sampled 12-Jul-2017 11:40
Date Received 14-Jul-2017
Date Completed 21-Jul-2017
Date Authorised 23-Jul-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:** 009 **Sampling Code:** D4 **Sample Frequency:** Month

Testing Laboratory: ALS Environmental

Zinc (Zn)	EG020A-T	0.251 mg/L
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Anions Test Method: ED009-X	Filtered
Fluoride (F)	0.210 mg/L
Chloride (Cl)	9.37 mg/L
Sulfate (SO4)	537 mg/L

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

Physical Test Method: EA015H	Total
Total Dissolved Solids @ 180°C	899 mg/L

EA015 TDS, result has been confirmed for sample 5 by re-analysis.

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1717278. Report Date: 21-Jul-2017

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 Senior Chemist

Final - Report Number: 2105249
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 MPW017468
Date Sampled 13-Jul-2017 09:51
Date Received 14-Jul-2017
Date Completed 21-Jul-2017
Date Authorised 23-Jul-2017

Summary Report

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

Sampling point: Groundwater Bore MPGM5

Source: MP **Customer Sampling Point:** 024 **Sampling Code:** D5 **Sample Frequency:** Month

Testing Laboratory: Mount Piper
Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	6.8 m
Bore Volume Pumped	*Analysis in Field	17 L
Recharge Bore Level	*Analysis in Field	6.8 m
pH	CA12125	6.09
Conductivity	CA12125	2100 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		0.065 mg/L
Boron (B)	EG020A-T		<0.05 mg/L
Cadmium (Cd)	EG020A-T		<0.0001 mg/L
Calcium (Ca)	ED093T-UL		129 mg/L
Chromium (Cr)	EG020A-T		<0.001 mg/L
Copper (Cu)	EG020A-T		<0.001 mg/L
Iron (Fe)	EG094B-F	1.33 mg/L	
Lead (Pb)	EG020A-T		<0.001 mg/L
Magnesium (Mg)	ED093T-UL		140 mg/L
Manganese (Mn)	EG020A-F	19.4 mg/L	
Molybdenum (Mo)	EG020A-T		<0.001 mg/L
Nickel (Ni)	EG020A-T		0.143 mg/L
Potassium (K)	ED093T-UL		14.0 mg/L
Selenium (Se)	EG094B-T		<0.0002 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		140 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: 2105249
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 MPW017468
Date Sampled 13-Jul-2017 09:51
Date Received 14-Jul-2017
Date Completed 21-Jul-2017
Date Authorised 23-Jul-2017

Summary Report

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

Sampling point: Groundwater Bore MPM5

Source: MP **Customer Sampling Point:** 024 **Sampling Code:** D5 **Sample Frequency:** Month

Testing Laboratory: ALS Environmental

Zinc (Zn)	EG020A-T	0.046 mg/L
-----------	----------	------------

Anions Test Method: ED009-X	Filtered	
Fluoride (F)		0.032 mg/L
Chloride (Cl)		170 mg/L
Sulfate (SO4)		604 mg/L

Alkalinity Test Method: ED037-P		Total
Total Alkalinity (CaCO3)		401 mg/L

Physical Test Method: EA015H		Total
Total Dissolved Solids @ 180°C		1300 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1717278. Report Date: 21-Jul-2017

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Accreditation Number 1099
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Authorised by Thanh Hoang Le
 Senior Chemist

Final - Report Number: 2105249

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

MPW017469

Date Sampled

13-Jul-2017 10:00

Date Received

14-Jul-2017

Date Completed

21-Jul-2017

Date Authorised

23-Jul-2017

Summary Report

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

Sampling point: Groundwater Bore MPGM5

Source: MP

Customer Sampling Point: 025

Sampling Code: D6

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	4.5 L
Recharge Bore Level	*Analysis in Field	9.1 m
pH	CA12125	5.79
Conductivity	CA12125	1320 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		0.003 mg/L
Barium (Ba)	EG020A-T		0.049 mg/L
Boron (B)	EG020A-T		<0.05 mg/L
Cadmium (Cd)	EG020A-T		<0.0001 mg/L
Calcium (Ca)	ED093T-UL		13.3 mg/L
Chromium (Cr)	EG020A-T		<0.001 mg/L
Copper (Cu)	EG020A-T		<0.001 mg/L
Iron (Fe)	EG020A-F	61.5 mg/L	
Lead (Pb)	EG020A-T		0.001 mg/L
Magnesium (Mg)	ED093T-UL		36.7 mg/L
Manganese (Mn)	EG020A-F	4.10 mg/L	
Molybdenum (Mo)	EG020A-T		<0.001 mg/L
Nickel (Ni)	EG020A-T		0.060 mg/L
Potassium (K)	ED093T-UL		3.58 mg/L
Selenium (Se)	EG094B-T		<0.0002 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		178 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: 2105249
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 MPW017469
Date Sampled 13-Jul-2017 10:00
Date Received 14-Jul-2017
Date Completed 21-Jul-2017
Date Authorised 23-Jul-2017

Summary Report

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

Sampling point: Groundwater Bore MPGM5

Source: MP **Customer Sampling Point:** 025 **Sampling Code:** D6 **Sample Frequency:** Month

Testing Laboratory: ALS Environmental

Zinc (Zn)	EG020A-T	0.032 mg/L
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Anions Test Method: ED009-X	Filtered
Fluoride (F)	0.016 mg/L
Chloride (Cl)	163 mg/L
Sulfate (SO4)	286 mg/L

Alkalinity Test Method: ED037-P	Total
Total Alkalinity (CaCO3)	144 mg/L

Physical Test Method: EA015H	Total
Total Dissolved Solids @ 180°C	714 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1717278. Report Date: 21-Jul-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



Final - Report Number: 2105249

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

MPW017470

Date Sampled

12-Jul-2017 00:33

Date Received

13-Jul-2017

Date Completed

13-Jul-2017

Date Authorised

14-Jul-2017

Summary Report

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

Sampling point: Groundwater Bore MPGM5

Source: MP

Customer Sampling Point: 027

Sampling Code: D8

Sample Frequency: Month

Testing Laboratory: Mount Piper

Water

Field Analysis Test Method: Analysis in Field
dry-not sampled

Total

Allan Bowcher

Authorised by Allan Bowcher
Chemist

Final - Report Number: 2105249

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

MPW017471

Date Sampled

13-Jul-2017 10:15

Date Received

14-Jul-2017

Date Completed

21-Jul-2017

Date Authorised

23-Jul-2017

Summary Report

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

Sampling point: Groundwater Bore MPGM5

Source: MP

Customer Sampling Point: 028

Sampling Code: D9

Sample Frequency: Month

Testing Laboratory: Mount Piper

Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	4.3 m
Bore Volume Pumped	*Analysis in Field	176 L
Recharge Bore Level	*Analysis in Field	11.0 m
pH	CA12125	5.91
Conductivity	CA12125	940 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		0.018 mg/L
Boron (B)	EG020A-T		<0.05 mg/L
Cadmium (Cd)	EG020A-T		<0.0001 mg/L
Calcium (Ca)	ED093T-UL		42.3 mg/L
Chromium (Cr)	EG020A-T		<0.001 mg/L
Copper (Cu)	EG020A-T		<0.001 mg/L
Iron (Fe)	EG094B-F	0.080 mg/L	
Lead (Pb)	EG020A-T		<0.001 mg/L
Magnesium (Mg)	ED093T-UL		51.8 mg/L
Manganese (Mn)	EG020A-F	0.053 mg/L	
Molybdenum (Mo)	EG020A-T		<0.001 mg/L
Nickel (Ni)	EG020A-T		0.024 mg/L
Potassium (K)	ED093T-UL		10.7 mg/L
Selenium (Se)	EG094B-T		0.0003 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		77.3 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: 2105249

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

MPW017471

Date Sampled

13-Jul-2017 10:15

Date Received

14-Jul-2017

Date Completed

21-Jul-2017

Date Authorised

23-Jul-2017

Summary Report

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

Sampling point: Groundwater Bore MPGM5

Source: MP

Customer Sampling Point: 028

Sampling Code: D9

Sample Frequency: Month

Testing Laboratory: ALS Environmental

Zinc (Zn)	EG020A-T	0.047 mg/L
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Anions Test Method: ED009-X

	Filtered
Fluoride (F)	0.054 mg/L
Chloride (Cl)	27.6 mg/L
Sulfate (SO4)	359 mg/L

Alkalinity Test Method: ED037-P

Total Alkalinity (CaCO3)	Total
	91 mg/L

Physical Test Method: EA015H

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

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1717278. Report Date: 21-Jul-2017

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Authorised by Thanh Hoang Le
 Senior Chemist

Final - Report Number: 2105249

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

MPW017472

Date Sampled

12-Jul-2017 13:00

Date Received

13-Jul-2017

Date Completed

13-Jul-2017

Date Authorised

14-Jul-2017

Summary Report

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

Sampling point: Groundwater Bore MPGM5

Source: MP

Customer Sampling Point: 026

Sampling Code: D7

Sample Frequency: Month

Testing Laboratory: Mount Piper

Water

Field Analysis Test Method: Analysis in Field

Total

Initial Bore Level

19.8 m

insufficient volume to sample

Allan Bowcher

Authorised by Allan Bowcher
Chemist

Final - Report Number: 2105249

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

MPW017473

Date Sampled

13-Jul-2017 10:25

Date Received

13-Jul-2017

Date Completed

13-Jul-2017

Date Authorised

14-Jul-2017

Summary Report

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

Sampling point: Groundwater Bore MPGM5

Source: MP

Customer Sampling Point: 023

Sampling Code: D4

Sample Frequency: Month

Testing Laboratory: Mount Piper

Water

Field Analysis Test Method: Analysis in Field

Total

Initial Bore Level

21.9 m

Bore Volume Pumped

1 L

Recharge Bore Level

22.0 m

volume not extractable

Allan Bowcher

Authorised by Allan Bowcher
Chemist

Final - Report Number: 2105249

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

MPW017474

Date Sampled

12-Jul-2017 13:40

Date Received

14-Jul-2017

Date Completed

21-Jul-2017

Date Authorised

23-Jul-2017

Summary Report

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

Sampling point: Groundwater Bore MPGM5

Source: MP

Customer Sampling Point: 022

Sampling Code: D3

Sample Frequency: Month

Testing Laboratory: Mount Piper

Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	11.6 m
Bore Volume Pumped	*Analysis in Field	119 L
Recharge Bore Level	*Analysis in Field	11.6 m
pH	CA12125	5.83
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		0.03 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		54.1 mg/L
Chromium (Cr)	EG020A-T		<0.001 mg/L
Copper (Cu)	EG020A-T		<0.001 mg/L
Iron (Fe)	EG020A-F	6.90 mg/L	
Lead (Pb)	EG020A-T		0.003 mg/L
Magnesium (Mg)	ED093T-UL		59.5 mg/L
Manganese (Mn)	EG020A-F	6.68 mg/L	
Molybdenum (Mo)	EG020A-T		<0.001 mg/L
Nickel (Ni)	EG020A-T		0.399 mg/L
Potassium (K)	ED093T-UL		11.7 mg/L
Selenium (Se)	EG094B-T		<0.0002 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		43.7 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: Allan Bowcher

Sample Number

MPW017474

Date Sampled

12-Jul-2017 13:40

Date Received

14-Jul-2017

Date Completed

21-Jul-2017

Date Authorised

23-Jul-2017

Summary Report

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

Sampling point: Groundwater Bore MPGM5

Source: MP

Customer Sampling Point: 022

Sampling Code: D3

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)	0.038 mg/L
Chloride (Cl)	38.9 mg/L
Sulfate (SO4)	322 mg/L

Alkalinity Test Method: ED037-P

Total Alkalinity (CaCO3)	Total 145 mg/L
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Physical Test Method: EA015H

Total Dissolved Solids @ 180°C	Total 506 mg/L
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Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1717278. Report Date: 21-Jul-2017

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Authorised by Thanh Hoang Le
 Senior Chemist

Final - Report Number: 2105249

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

MPW017475

Date Sampled

12-Jul-2017 14:10

Date Received

14-Jul-2017

Date Completed

21-Jul-2017

Date Authorised

23-Jul-2017

Summary Report

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

Sampling point: Groundwater Bore MPGM5

Source: MP

Customer Sampling Point: 020

Sampling Code: D1

Sample Frequency: Month

Testing Laboratory: Mount Piper

Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	11.4 m
Bore Volume Pumped	*Analysis in Field	123 L
Recharge Bore Level	*Analysis in Field	11.4 m
pH	CA12125	6.10
Conductivity	CA12125	590 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		0.044 mg/L
Boron (B)	EG020A-T		<0.05 mg/L
Cadmium (Cd)	EG020A-T		<0.0001 mg/L
Calcium (Ca)	ED093T-UL		44.9 mg/L
Chromium (Cr)	EG020A-T		<0.001 mg/L
Copper (Cu)	EG020A-T		<0.001 mg/L
Iron (Fe)	EG020A-F	13.7 mg/L	
Lead (Pb)	EG020A-T		<0.001 mg/L
Magnesium (Mg)	ED093T-UL		28.8 mg/L
Manganese (Mn)	EG020A-F	0.851 mg/L	
Molybdenum (Mo)	EG020A-T		<0.001 mg/L
Nickel (Ni)	EG020A-T		0.003 mg/L
Potassium (K)	ED093T-UL		10.1 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

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 Senior Chemist

Final - Report Number: 2105249
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 MPW017475
Date Sampled 12-Jul-2017 14:10
Date Received 14-Jul-2017
Date Completed 21-Jul-2017
Date Authorised 23-Jul-2017

Summary Report

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

Sampling point: Groundwater Bore MPGM5

Source: MP **Customer Sampling Point:** 020 **Sampling Code:** D1 **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)	20.3 mg/L
Sulfate (SO4)	95.1 mg/L

Alkalinity Test Method: ED037-P	Total
Total Alkalinity (CaCO3)	172 mg/L

Physical Test Method: EA015H	Total
Total Dissolved Solids @ 180°C	324 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1717278. Report Date: 21-Jul-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: 2105249
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 MPW017476
Date Sampled 13-Jul-2017 10:45
Date Received 14-Jul-2017
Date Completed 21-Jul-2017
Date Authorised 23-Jul-2017

Summary Report

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

Sampling point: Groundwater Bore MPGM5

Source: MP **Customer Sampling Point:** 021 **Sampling Code:** D2 **Sample Frequency:** Month

Testing Laboratory: Mount Piper
 Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	12.2 m
Bore Volume Pumped	*Analysis in Field	30 L
Recharge Bore Level	*Analysis in Field	12.2 m
pH	CA12125	5.69
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		0.83 mg/L
Arsenic (As)	EG020A-T		0.003 mg/L
Barium (Ba)	EG020A-T		0.024 mg/L
Boron (B)	EG020A-T		<0.05 mg/L
Cadmium (Cd)	EG020A-T		0.0002 mg/L
Calcium (Ca)	ED093T-UL		65.9 mg/L
Chromium (Cr)	EG020A-T		0.001 mg/L
Copper (Cu)	EG020A-T		0.002 mg/L
Iron (Fe)	EG020A-F	14.6 mg/L	
Lead (Pb)	EG020A-T		0.004 mg/L
Magnesium (Mg)	ED093T-UL		61.1 mg/L
Manganese (Mn)	EG020A-F	7.18 mg/L	
Molybdenum (Mo)	EG020A-T		<0.001 mg/L
Nickel (Ni)	EG020A-T		0.366 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		23.6 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: 2105249
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 MPW017476
Date Sampled 13-Jul-2017 10:45
Date Received 14-Jul-2017
Date Completed 21-Jul-2017
Date Authorised 23-Jul-2017

Summary Report

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

Sampling point: Groundwater Bore MPM5

Source: MP **Customer Sampling Point:** 021 **Sampling Code:** D2 **Sample Frequency:** Month

Testing Laboratory: ALS Environmental

Zinc (Zn)	EG020A-T	0.559 mg/L
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Anions Test Method: ED009-X	Filtered	
Fluoride (F)		0.047 mg/L
Chloride (Cl)		15.1 mg/L
Sulfate (SO4)		398 mg/L

Alkalinity Test Method: ED037-P	Total	
Total Alkalinity (CaCO3)		113 mg/L

Physical Test Method: EA015H	Total	
Total Dissolved Solids @ 180°C		646 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1717278. Report Date: 21-Jul-2017

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Authorised by Thanh Hoang Le
 Senior Chemist

Final - Report Number: 2105249

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

MPW017477

Date Sampled

12-Jul-2017 15:00

Date Received

14-Jul-2017

Date Completed

21-Jul-2017

Date Authorised

23-Jul-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: 010

Sampling Code: D5

Sample Frequency: Month

Testing Laboratory: Mount Piper

Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	10.8 m
Bore Volume Pumped	*Analysis in Field	253 L
Recharge Bore Level	*Analysis in Field	10.8 m
pH	CA12125	5.88
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		0.05 mg/L
Arsenic (As)	EG020A-T		0.001 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		102 mg/L
Chromium (Cr)	EG020A-T		<0.001 mg/L
Copper (Cu)	EG020A-T		<0.001 mg/L
Iron (Fe)	EG020A-F	53.1 mg/L	
Lead (Pb)	EG020A-T		<0.001 mg/L
Magnesium (Mg)	ED093T-UL		74.8 mg/L
Manganese (Mn)	EG020A-F	8.05 mg/L	
Molybdenum (Mo)	EG020A-T		<0.001 mg/L
Nickel (Ni)	EG020A-T		0.053 mg/L
Potassium (K)	ED093T-UL		10.6 mg/L
Selenium (Se)	EG094B-T		0.0002 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		26.1 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: 2105249

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

MPW017477

Date Sampled

12-Jul-2017 15:00

Date Received

14-Jul-2017

Date Completed

21-Jul-2017

Date Authorised

23-Jul-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: 010

Sampling Code: D5

Sample Frequency: Month

Testing Laboratory: ALS Environmental

Zinc (Zn)	EG020A-T	0.021 mg/L
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Anions Test Method: ED009-X

	Filtered
Fluoride (F)	0.121 mg/L
Chloride (Cl)	25.3 mg/L
Sulfate (SO4)	619 mg/L

Alkalinity Test Method: ED037-P

Total Alkalinity (CaCO3)	Total
	90 mg/L

Physical Test Method: EA015H

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

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1717278. Report Date: 21-Jul-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 be 'Thanh Hoang Le'.

Authorised by Thanh Hoang Le
Senior Chemist

Final - Report Number: 2105249

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

MPW017478

Date Sampled

12-Jul-2017 15:10

Date Received

13-Jul-2017

Date Completed

13-Jul-2017

Date Authorised

14-Jul-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: 011

Sampling Code: D6

Sample Frequency: Month

Testing Laboratory: Mount Piper

Water

Field Analysis Test Method: Analysis in Field
dry-not sampled

Total

Allan Bowcher

Authorised by Allan Bowcher
Chemist

Final - Report Number: 2112849
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 MPW017589
Date Sampled 19-Jul-2017 14:10
Date Received 21-Jul-2017
Date Completed 31-Jul-2017
Date Authorised 2-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	7.73
Conductivity	CA12125	484 µS/cm
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		0.17 mg/L
Arsenic (As)	EG020A-T		<0.001 mg/L
Barium (Ba)	EG020A-T		0.027 mg/L
Beryllium (Be)	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: 2112849
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 MPW017589
Date Sampled 19-Jul-2017 14:10
Date Received 21-Jul-2017
Date Completed 31-Jul-2017
Date Authorised 2-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	<0.05 mg/L
Cadmium (Cd)	EG020A-T	<0.0001 mg/L
Calcium (Ca)	ED093T-UL	32.4 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	0.013 mg/L
Iron (Fe)	EG094B-T	0.112 mg/L
Lead (Pb)	EG020A-T	<0.001 mg/L
Magnesium (Mg)	ED093T-UL	19.5 mg/L
Manganese (Mn)	EG020A-F	0.060 mg/L
Manganese (Mn)	EG020A-T	0.064 mg/L
Molybdenum (Mo)	EG020A-T	0.004 mg/L
Nickel (Ni)	EG020A-T	0.004 mg/L
Potassium (K)	ED093T-UL	6.59 mg/L
Selenium (Se)	EG094B-T	0.0003 mg/L
Silver (Ag)	EG020B-T	<0.001 mg/L
Sodium (Na)	ED093T-UL	26.7 mg/L
Strontium (Sr)	EG020B-T	0.102 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	0.017 mg/L

Anions	Test Method	Filtered
Fluoride (F)	ED009-X	0.111 mg/L
Chloride (Cl)	ED009-X	16.3 mg/L
Sulfate (SO4)	ED009-X	127 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



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Authorised by Thanh Hoang Le
 Senior Chemist

Final - Report Number: 2112849
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 MPW017589
Date Sampled 19-Jul-2017 14:10
Date Received 21-Jul-2017
Date Completed 31-Jul-2017
Date Authorised 2-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)		102 mg/L
Phenolphthalein Alkalinity (CaCO ₃)		<1 mg/L
Bicarbonate (CaCO ₃)		102 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	288 mg/L
Turbidity	EA045	7.2 NTU

Other	Test Method	Total
Nitrogen (N)	EK062G	0.3 mg/L
Ammonia (NH ₃ -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: ES1718189. Report Date: 28-Jul-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: 2118280
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 MPW017677
Date Sampled 27-Jul-2017 07:51
Date Received 1-Aug-2017
Date Completed 9-Aug-2017
Date Authorised 9-Aug-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	1 L
Recharge Bore Level	*Analysis in Field	2.2 m
pH	CA12125	5.92
Conductivity	CA12125	2560 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		0.027 mg/L
Boron (B)	EG020A-T		0.70 mg/L
Cadmium (Cd)	EG020A-T		0.0002 mg/L
Calcium (Ca)	ED093T-UL		165 mg/L
Chromium (Cr)	EG020A-T		<0.001 mg/L
Copper (Cu)	EG020A-T		<0.001 mg/L
Iron (Fe)	EG020A-F	0.63 mg/L	
Lead (Pb)	EG020A-T		<0.001 mg/L
Magnesium (Mg)	ED093T-UL		160 mg/L
Manganese (Mn)	EG020A-F	9.15 mg/L	
Molybdenum (Mo)	EG020A-T		<0.001 mg/L
Nickel (Ni)	EG020A-T		0.293 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		157 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: 2118280
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 MPW017677
Date Sampled 27-Jul-2017 07:51
Date Received 1-Aug-2017
Date Completed 9-Aug-2017
Date Authorised 9-Aug-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	0.090 mg/L
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Anions Test Method: ED009-X	Filtered	
Fluoride (F)		0.102 mg/L
Chloride (Cl)		140 mg/L
Sulfate (SO4)		1210 mg/L

Alkalinity Test Method: ED037-P		Total
Total Alkalinity (CaCO3)		79 mg/L

Physical Test Method: EA015H		Total
Total Dissolved Solids @ 180°C		1940 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1718664. Report Date: 3-Aug-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: 2118280
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 MPW017678
Date Sampled 26-Jul-2017 09:23
Date Received 1-Aug-2017
Date Completed 9-Aug-2017
Date Authorised 9-Aug-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	7.11
Conductivity	CA12125	573 µS/cm
Temperature	CA12125	4.6 °C
Dissolved Oxygen (O2)	*Analysis in Field	13.0 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		0.02 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: 2118280
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 MPW017678
Date Sampled 26-Jul-2017 09:23
Date Received 1-Aug-2017
Date Completed 9-Aug-2017
Date Authorised 9-Aug-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	0.022 mg/L
Boron (B)	EG020A-T	0.06 mg/L
Cadmium (Cd)	EG020A-T	<0.0001 mg/L
Calcium (Ca)	ED093T-UL	33.1 mg/L
Chromium (Cr)	EG020A-T	0.004 mg/L
Copper (Cu)	EG020A-F	<0.001 mg/L
Copper (Cu)	EG020A-T	<0.001 mg/L
Iron (Fe)	EG094B-F	0.126 mg/L
Iron (Fe)	EG094B-T	0.269 mg/L
Lead (Pb)	EG020A-T	<0.001 mg/L
Magnesium (Mg)	ED093T-UL	22.6 mg/L
Manganese (Mn)	EG020A-F	0.226 mg/L
Manganese (Mn)	EG020A-T	0.254 mg/L
Molybdenum (Mo)	EG020A-T	<0.001 mg/L
Nickel (Ni)	EG020A-T	0.014 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	30.0 mg/L
Strontium (Sr)	EG020B-T	0.131 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: 2118280
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 MPW017678
Date Sampled 26-Jul-2017 09:23
Date Received 1-Aug-2017
Date Completed 9-Aug-2017
Date Authorised 9-Aug-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	0.107 mg/L
Chloride (Cl)	ED009-X	37.4 mg/L
Sulfate (SO4)	ED009-X	155 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	335 mg/L
Turbidity	EA045	2.0 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: ES1718664. Report Date: 3-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

Final - Report Number: 2118280
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 MPW017679
Date Sampled 26-Jul-2017 10:15
Date Received 1-Aug-2017
Date Completed 9-Aug-2017
Date Authorised 9-Aug-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	2.4 m
Bore Volume Pumped	*Analysis in Field	129 L
Recharge Bore Level	*Analysis in Field	3.3 m
pH	CA12125	5.87
Conductivity	CA12125	4970 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		0.012 mg/L
Barium (Ba)	EG020A-T		0.042 mg/L
Boron (B)	EG020A-T		2.02 mg/L
Cadmium (Cd)	EG020A-T		0.0002 mg/L
Calcium (Ca)	ED093T-UL		359 mg/L
Chromium (Cr)	EG020A-T		0.002 mg/L
Copper (Cu)	EG020A-T		0.002 mg/L
Iron (Fe)	EG020A-F	42.1 mg/L	
Lead (Pb)	EG020A-T		0.001 mg/L
Magnesium (Mg)	ED093T-UL		261 mg/L
Manganese (Mn)	EG020A-F	14.1 mg/L	
Molybdenum (Mo)	EG020A-T		0.001 mg/L
Nickel (Ni)	EG020A-T		0.925 mg/L
Potassium (K)	ED093T-UL		33.3 mg/L
Selenium (Se)	EG094B-T		0.0002 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		426 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: 2118280
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 MPW017679
Date Sampled 26-Jul-2017 10:15
Date Received 1-Aug-2017
Date Completed 9-Aug-2017
Date Authorised 9-Aug-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	0.113 mg/L
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Anions Test Method: ED009-X	Filtered	
Fluoride (F)	0.087 mg/L	
Chloride (Cl)	533 mg/L	
Sulfate (SO4)	2230 mg/L	

Alkalinity Test Method: ED037-P		Total
Total Alkalinity (CaCO3)		155 mg/L

Physical Test Method: EA015H		Total
Total Dissolved Solids @ 180°C		4240 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1718664. Report Date: 3-Aug-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: 2118280
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 MPW017680
Date Sampled 27-Jul-2017 09:07
Date Received 1-Aug-2017
Date Completed 9-Aug-2017
Date Authorised 9-Aug-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	44 L
Recharge Bore Level	*Analysis in Field	2.5 m
pH	CA12125	5.59
Conductivity	CA12125	960 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		0.038 mg/L
Boron (B)	EG020A-T		0.13 mg/L
Cadmium (Cd)	EG020A-T		0.0001 mg/L
Calcium (Ca)	ED093T-UL		50.1 mg/L
Chromium (Cr)	EG020A-T		<0.001 mg/L
Copper (Cu)	EG020A-T		<0.001 mg/L
Iron (Fe)	EG094B-F	0.669 mg/L	
Lead (Pb)	EG020A-T		<0.001 mg/L
Magnesium (Mg)	ED093T-UL		41.8 mg/L
Manganese (Mn)	EG020A-F	1.80 mg/L	
Molybdenum (Mo)	EG020A-T		<0.001 mg/L
Nickel (Ni)	EG020A-T		0.100 mg/L
Potassium (K)	ED093T-UL		5.77 mg/L
Selenium (Se)	EG094B-T		<0.0002 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		59.7 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: 2118280
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 MPW017680
Date Sampled 27-Jul-2017 09:07
Date Received 1-Aug-2017
Date Completed 9-Aug-2017
Date Authorised 9-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:** 013 **Sampling Code:** D8 **Sample Frequency:** Month

Testing Laboratory: ALS Environmental

Zinc (Zn)	EG020A-T	0.109 mg/L
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Anions Test Method: ED009-X	Filtered	
Fluoride (F)		0.036 mg/L
Chloride (Cl)		54.9 mg/L
Sulfate (SO4)		388 mg/L

Alkalinity Test Method: ED037-P		Total
Total Alkalinity (CaCO3)		23 mg/L

Physical Test Method: EA015H		Total
Total Dissolved Solids @ 180°C		646 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1718664. Report Date: 3-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



Final - Report Number: 2118280

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

MPW017681

Date Sampled

26-Jul-2017 14:53

Date Received

28-Jul-2017

Date Completed

28-Jul-2017

Date Authorised

28-Jul-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

Testing Laboratory: Mount Piper

Water

Field Analysis Test Method: Analysis in Field
Dry

Total

Authorised by Nikki Tomlinson
Senior Chemist

Final - Report Number: 2118280
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 MPW017682
Date Sampled 27-Jul-2017 11:55
Date Received 1-Aug-2017
Date Completed 9-Aug-2017
Date Authorised 9-Aug-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

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	53 L
Recharge Bore Level	*Analysis in Field	24.1 m
pH	CA12125	5.85
Conductivity	CA12125	3970 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		<0.001 mg/L
Barium (Ba)	EG020A-T		0.020 mg/L
Boron (B)	EG020A-T		0.44 mg/L
Cadmium (Cd)	EG020A-T		0.0004 mg/L
Calcium (Ca)	ED093T-UL		196 mg/L
Chromium (Cr)	EG020A-T		0.007 mg/L
Copper (Cu)	EG020A-T		<0.001 mg/L
Iron (Fe)	EG020A-F	5.94 mg/L	
Lead (Pb)	EG020A-T		0.001 mg/L
Magnesium (Mg)	ED093T-UL		110 mg/L
Manganese (Mn)	EG020A-F	2.32 mg/L	
Molybdenum (Mo)	EG020A-T		<0.001 mg/L
Nickel (Ni)	EG020A-T		0.296 mg/L
Potassium (K)	ED093T-UL		38.0 mg/L
Selenium (Se)	EG094B-T		0.0003 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		559 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: 2118280
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 MPW017682
Date Sampled 27-Jul-2017 11:55
Date Received 1-Aug-2017
Date Completed 9-Aug-2017
Date Authorised 9-Aug-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

Testing Laboratory: ALS Environmental

Zinc (Zn) EG020A-T 0.310 mg/L

Anions Test Method: ED009-X

	Filtered
Fluoride (F)	0.139 mg/L
Chloride (Cl)	247 mg/L
Sulfate (SO4)	1850 mg/L

Alkalinity Test Method: ED037-P

	Total
Total Alkalinity (CaCO3)	122 mg/L

Physical Test Method: EA015H

	Total
Total Dissolved Solids @ 180°C	3090 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1718664. Report Date: 3-Aug-2017

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 Accredited for compliance with ISO/IEC 17025 - Testing.

Authorised by Thanh Hoang Le
 Senior Chemist

Final - Report Number: 2118280
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 MPW017683
Date Sampled 27-Jul-2017 12:10
Date Received 1-Aug-2017
Date Completed 9-Aug-2017
Date Authorised 9-Aug-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	39 L
Recharge Bore Level	*Analysis in Field	36.6 m
pH	CA12125	6.69
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		0.38 mg/L
Arsenic (As)	EG020A-T		0.003 mg/L
Barium (Ba)	EG020A-T		0.411 mg/L
Boron (B)	EG020A-T		0.08 mg/L
Cadmium (Cd)	EG020A-T		0.0001 mg/L
Calcium (Ca)	ED093T-UL		74.9 mg/L
Chromium (Cr)	EG020A-T		0.001 mg/L
Copper (Cu)	EG020A-T		<0.001 mg/L
Iron (Fe)	EG094B-F	0.003 mg/L	
Lead (Pb)	EG020A-T		<0.001 mg/L
Magnesium (Mg)	ED093T-UL		30.7 mg/L
Manganese (Mn)	EG020A-F	0.179 mg/L	
Molybdenum (Mo)	EG020A-T		0.002 mg/L
Nickel (Ni)	EG020A-T		0.008 mg/L
Potassium (K)	ED093T-UL		18.1 mg/L
Selenium (Se)	EG094B-T		0.0003 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		28.0 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: 2118280
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 MPW017683
Date Sampled 27-Jul-2017 12:10
Date Received 1-Aug-2017
Date Completed 9-Aug-2017
Date Authorised 9-Aug-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	0.039 mg/L
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Anions Test Method: ED009-X	Filtered
Fluoride (F)	0.537 mg/L
Chloride (Cl)	13.8 mg/L
Sulfate (SO4)	70.2 mg/L

Alkalinity Test Method: ED037-P	Total
Total Alkalinity (CaCO3)	330 mg/L

Physical Test Method: EA015H	Total
Total Dissolved Solids @ 180°C	424 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1718664. Report Date: 3-Aug-2017

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Authorised by Thanh Hoang Le
 Senior Chemist

Final - Report Number: 2118280

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

MPW017684

Date Sampled

26-Jul-2017 12:33

Date Received

28-Jul-2017

Date Completed

28-Jul-2017

Date Authorised

28-Jul-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

Testing Laboratory: Mount Piper

Water

Field Analysis Test Method: Analysis in Field

Total

Initial Bore Level

17.0 m

insufficient volume to sample

N Tomlinson

Authorised by Nikki Tomlinson
Senior Chemist

Final - Report Number: 2118280

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

MPW017685

Date Sampled

26-Jul-2017 12:37

Date Received

28-Jul-2017

Date Completed

28-Jul-2017

Date Authorised

28-Jul-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

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: 2118280
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 MPW017686
Date Sampled 27-Jul-2017 09:55
Date Received 1-Aug-2017
Date Completed 9-Aug-2017
Date Authorised 9-Aug-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

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	36.3 m
pH	CA12125	5.85
Conductivity	CA12125	37540 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		0.89 mg/L
Arsenic (As)	EG020A-T		<0.010 mg/L
Barium (Ba)	EG020A-T		0.043 mg/L
Boron (B)	EG020A-T		13.8 mg/L
Cadmium (Cd)	EG020A-T		0.0684 mg/L
Calcium (Ca)	ED093T-UL		497 mg/L
Chromium (Cr)	EG020A-T		<0.010 mg/L
Copper (Cu)	EG020A-T		0.070 mg/L
Iron (Fe)	EG020A-F	1.99 mg/L	
Lead (Pb)	EG020A-T		<0.010 mg/L
Magnesium (Mg)	ED093T-UL		1230 mg/L
Manganese (Mn)	EG020A-F	9.13 mg/L	
Molybdenum (Mo)	EG020A-T		4.06 mg/L
Nickel (Ni)	EG020A-T		0.913 mg/L
Potassium (K)	ED093T-UL		1910 mg/L
Selenium (Se)	EG094B-T		0.0477 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: 2118280
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 MPW017686
Date Sampled 27-Jul-2017 09:55
Date Received 1-Aug-2017
Date Completed 9-Aug-2017
Date Authorised 9-Aug-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

Testing Laboratory: ALS Environmental

Zinc (Zn)	EG020A-T	1.07 mg/L
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Anions Test Method: ED009-X	Filtered	
Fluoride (F)		0.935 mg/L
Chloride (Cl)		2500 mg/L
Sulfate (SO4)		22800 mg/L

Alkalinity Test Method: ED037-P		Total
Total Alkalinity (CaCO3)		56 mg/L

Physical Test Method: EA015H		Total
Total Dissolved Solids @ 180°C		39100 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1718664. Report Date: 3-Aug-2017

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Authorised by Thanh Hoang Le
 Senior Chemist

Final - Report Number: 2118280
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 MPW017687
Date Sampled 27-Jul-2017 10:10
Date Received 1-Aug-2017
Date Completed 9-Aug-2017
Date Authorised 9-Aug-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

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	5.44
Conductivity	CA12125	50370 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		12.5 mg/L
Arsenic (As)	EG020A-T		0.013 mg/L
Barium (Ba)	EG020A-T		0.106 mg/L
Boron (B)	EG020A-T		8.48 mg/L
Cadmium (Cd)	EG020A-T		0.0847 mg/L
Calcium (Ca)	ED093T-UL		501 mg/L
Chromium (Cr)	EG020A-T		0.013 mg/L
Copper (Cu)	EG020A-T		0.020 mg/L
Iron (Fe)	EG020A-F	1.90 mg/L	
Lead (Pb)	EG020A-T		0.023 mg/L
Magnesium (Mg)	ED093T-UL		2170 mg/L
Manganese (Mn)	EG020A-F	48.4 mg/L	
Molybdenum (Mo)	EG020A-T		0.085 mg/L
Nickel (Ni)	EG020A-T		2.28 mg/L
Potassium (K)	ED093T-UL		2140 mg/L
Selenium (Se)	EG094B-T		0.124 mg/L
Silver (Ag)	EG020B-T		<0.010 mg/L
Sodium (Na)	ED093T-UL		21000 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: 2118280
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 MPW017687
Date Sampled 27-Jul-2017 10:10
Date Received 1-Aug-2017
Date Completed 9-Aug-2017
Date Authorised 9-Aug-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

Testing Laboratory: ALS Environmental

Zinc (Zn) EG020A-T 4.01 mg/L

Anions Test Method: ED009-X

	Filtered
Fluoride (F)	2.89 mg/L
Chloride (Cl)	4200 mg/L
Sulfate (SO4)	33400 mg/L

Alkalinity Test Method: ED037-P

	Total
Total Alkalinity (CaCO3)	97 mg/L

Physical Test Method: EA015H

	Total
Total Dissolved Solids @ 180°C	56500 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1718664. Report Date: 3-Aug-2017

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 Senior Chemist

Final - Report Number: 2118280

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

MPW017688

Date Sampled

26-Jul-2017 12:18

Date Received

1-Aug-2017

Date Completed

9-Aug-2017

Date Authorised

9-Aug-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

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	5.77
Conductivity	CA12125	5070 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		1.65 mg/L
Arsenic (As)	EG020A-T		<0.001 mg/L
Barium (Ba)	EG020A-T		0.036 mg/L
Boron (B)	EG020A-T		7.43 mg/L
Cadmium (Cd)	EG020A-T		0.0151 mg/L
Calcium (Ca)	ED093T-UL		355 mg/L
Chromium (Cr)	EG020A-T		0.003 mg/L
Copper (Cu)	EG020A-T		<0.001 mg/L
Iron (Fe)	EG020A-F	1.07 mg/L	
Lead (Pb)	EG020A-T		<0.001 mg/L
Magnesium (Mg)	ED093T-UL		143 mg/L
Manganese (Mn)	EG020A-F	12.4 mg/L	
Molybdenum (Mo)	EG020A-T		0.017 mg/L
Nickel (Ni)	EG020A-T		0.652 mg/L
Potassium (K)	ED093T-UL		131 mg/L
Selenium (Se)	EG094B-T		0.0320 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		591 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: 2118280

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

MPW017688

Date Sampled

26-Jul-2017 12:18

Date Received

1-Aug-2017

Date Completed

9-Aug-2017

Date Authorised

9-Aug-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

Testing Laboratory: ALS Environmental

Zinc (Zn)	EG020A-T	1.05 mg/L
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Anions Test Method: ED009-X

	Filtered
Fluoride (F)	4.75 mg/L
Chloride (Cl)	226 mg/L
Sulfate (SO4)	2740 mg/L

Alkalinity Test Method: ED037-P

Total Alkalinity (CaCO3)	Total 87 mg/L
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Physical Test Method: EA015H

Total Dissolved Solids @ 180°C	Total 4350 mg/L
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Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1718664. Report Date: 3-Aug-2017

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Authorised by Thanh Hoang Le
 Senior Chemist

Final - Report Number: 2118280
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 MPW017689
Date Sampled 26-Jul-2017 15:15
Date Received 1-Aug-2017
Date Completed 9-Aug-2017
Date Authorised 9-Aug-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

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	3800 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		2.74 mg/L
Arsenic (As)	EG020A-T		0.006 mg/L
Barium (Ba)	EG020A-T		0.077 mg/L
Boron (B)	EG020A-T		1.20 mg/L
Cadmium (Cd)	EG020A-T		0.0023 mg/L
Calcium (Ca)	ED093T-UL		284 mg/L
Chromium (Cr)	EG020A-T		0.012 mg/L
Copper (Cu)	EG020A-T		0.012 mg/L
Iron (Fe)	EG020A-F	1.04 mg/L	
Lead (Pb)	EG020A-T		0.010 mg/L
Magnesium (Mg)	ED093T-UL		340 mg/L
Manganese (Mn)	EG020A-F	19.5 mg/L	
Molybdenum (Mo)	EG020A-T		0.003 mg/L
Nickel (Ni)	EG020A-T		0.479 mg/L
Potassium (K)	ED093T-UL		22.3 mg/L
Selenium (Se)	EG094B-T		0.0006 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		153 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: 2118280
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 MPW017689
Date Sampled 26-Jul-2017 15:15
Date Received 1-Aug-2017
Date Completed 9-Aug-2017
Date Authorised 9-Aug-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

Testing Laboratory: ALS Environmental

Zinc (Zn)	EG020A-T	0.281 mg/L
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Anions Test Method: ED009-X	Filtered	
Fluoride (F)	0.302 mg/L	
Chloride (Cl)	119 mg/L	
Sulfate (SO4)	2110 mg/L	

Alkalinity Test Method: ED037-P		Total
Total Alkalinity (CaCO3)		348 mg/L

Physical Test Method: EA015H		Total
Total Dissolved Solids @ 180°C		3530 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1718664. Report Date: 3-Aug-2017

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Authorised by Thanh Hoang Le
 Senior Chemist

Final - Report Number: 2118280
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 MPW017690
Date Sampled 26-Jul-2017 13:40
Date Received 1-Aug-2017
Date Completed 9-Aug-2017
Date Authorised 9-Aug-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	9.9 m
pH	CA12125	5.85
Conductivity	CA12125	7120 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		0.010 mg/L
Barium (Ba)	EG020A-T		0.057 mg/L
Boron (B)	EG020A-T		2.88 mg/L
Cadmium (Cd)	EG020A-T		0.0004 mg/L
Calcium (Ca)	ED093T-UL		346 mg/L
Chromium (Cr)	EG020A-T		0.048 mg/L
Copper (Cu)	EG020A-T		0.011 mg/L
Iron (Fe)	EG094B-F	33.3 mg/L	
Lead (Pb)	EG020A-T		0.029 mg/L
Magnesium (Mg)	ED093T-UL		288 mg/L
Manganese (Mn)	EG020A-F	13.8 mg/L	
Molybdenum (Mo)	EG020A-T		0.004 mg/L
Nickel (Ni)	EG020A-T		1.04 mg/L
Potassium (K)	ED093T-UL		66.1 mg/L
Selenium (Se)	EG094B-T		0.0006 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		952 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: 2118280
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 MPW017690
Date Sampled 26-Jul-2017 13:40
Date Received 1-Aug-2017
Date Completed 9-Aug-2017
Date Authorised 9-Aug-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	0.466 mg/L
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Anions Test Method: ED009-X		Filtered
Fluoride (F)		0.098 mg/L
Chloride (Cl)		600 mg/L
Sulfate (SO4)		3490 mg/L

Alkalinity Test Method: ED037-P		Total
Total Alkalinity (CaCO3)		121 mg/L

Physical Test Method: EA015H		Total
Total Dissolved Solids @ 180°C		6120 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: ES1718664. Report Date: 3-Aug-2017

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 Senior Chemist

Final - Report Number: 2118280
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 MPW017691
Date Sampled 27-Jul-2017 08:49
Date Received 1-Aug-2017
Date Completed 9-Aug-2017
Date Authorised 9-Aug-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	10.0 m
pH	CA12125	6.02
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		0.020 mg/L
Boron (B)	EG020A-T		0.05 mg/L
Cadmium (Cd)	EG020A-T		<0.0001 mg/L
Calcium (Ca)	ED093T-UL		73.4 mg/L
Chromium (Cr)	EG020A-T		<0.001 mg/L
Copper (Cu)	EG020A-T		<0.001 mg/L
Iron (Fe)	EG020A-F	13.2 mg/L	
Lead (Pb)	EG020A-T		<0.001 mg/L
Magnesium (Mg)	ED093T-UL		42.9 mg/L
Manganese (Mn)	EG020A-F	0.772 mg/L	
Molybdenum (Mo)	EG020A-T		<0.001 mg/L
Nickel (Ni)	EG020A-T		0.004 mg/L
Potassium (K)	ED093T-UL		8.52 mg/L
Selenium (Se)	EG094B-T		<0.0002 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		27.9 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: Allan Bowcher

Sample Number MPW017691
Date Sampled 27-Jul-2017 08:49
Date Received 1-Aug-2017
Date Completed 9-Aug-2017
Date Authorised 9-Aug-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
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Anions Test Method: ED009-X	Filtered
Fluoride (F)	0.060 mg/L
Chloride (Cl)	28.2 mg/L
Sulfate (SO4)	331 mg/L

Alkalinity Test Method: ED037-P	Total
Total Alkalinity (CaCO3)	115 mg/L

Physical Test Method: EA015H	Total
Total Dissolved Solids @ 180°C	584 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1718664. Report Date: 3-Aug-2017

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 Senior Chemist

Final - Report Number: 2118280
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 MPW017692
Date Sampled 27-Jul-2017 11:14
Date Received 1-Aug-2017
Date Completed 9-Aug-2017
Date Authorised 9-Aug-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	26.0 m
Bore Volume Pumped	*Analysis in Field	135 L
Recharge Bore Level	*Analysis in Field	26.0 m
pH	CA12125	6.12
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		0.018 mg/L
Boron (B)	EG020A-T		2.83 mg/L
Cadmium (Cd)	EG020A-T		<0.0001 mg/L
Calcium (Ca)	ED093T-UL		578 mg/L
Chromium (Cr)	EG020A-T		<0.001 mg/L
Copper (Cu)	EG020A-T		<0.001 mg/L
Iron (Fe)	EG020A-F	107 mg/L	
Lead (Pb)	EG020A-T		<0.001 mg/L
Magnesium (Mg)	ED093T-UL		388 mg/L
Manganese (Mn)	EG020A-F	16.5 mg/L	
Molybdenum (Mo)	EG020A-T		0.002 mg/L
Nickel (Ni)	EG020A-T		0.913 mg/L
Potassium (K)	ED093T-UL		89.6 mg/L
Selenium (Se)	EG094B-T		0.0002 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		1260 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 MPW017692
Date Sampled 27-Jul-2017 11:14
Date Received 1-Aug-2017
Date Completed 9-Aug-2017
Date Authorised 9-Aug-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:** 016 **Sampling Code:** D11 **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)	0.084 mg/L	
Chloride (Cl)	977 mg/L	
Sulfate (SO4)	4590 mg/L	

Alkalinity Test Method: ED037-P		Total
Total Alkalinity (CaCO3)		150 mg/L

Physical Test Method: EA015H		Total
Total Dissolved Solids @ 180°C		8730 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1718664. Report Date: 3-Aug-2017

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 Senior Chemist

Final - Report Number: 2118280

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

MPW017693

Date Sampled

26-Jul-2017 14:42

Date Received

1-Aug-2017

Date Completed

9-Aug-2017

Date Authorised

9-Aug-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	14.4 m
Bore Volume Pumped	*Analysis in Field	162 L
Recharge Bore Level	*Analysis in Field	14.5 m
pH	CA12125	5.54
Conductivity	CA12125	8000 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		0.015 mg/L
Boron (B)	EG020A-T		2.62 mg/L
Cadmium (Cd)	EG020A-T		0.0043 mg/L
Calcium (Ca)	ED093T-UL		233 mg/L
Chromium (Cr)	EG020A-T		<0.001 mg/L
Copper (Cu)	EG020A-T		<0.001 mg/L
Iron (Fe)	EG020A-F	8.95 mg/L	
Lead (Pb)	EG020A-T		0.003 mg/L
Magnesium (Mg)	ED093T-UL		256 mg/L
Manganese (Mn)	EG020A-F	5.71 mg/L	
Molybdenum (Mo)	EG020A-T		0.002 mg/L
Nickel (Ni)	EG020A-T		0.699 mg/L
Potassium (K)	ED093T-UL		142 mg/L
Selenium (Se)	EG094B-T		0.0021 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		1250 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 MPW017693
Date Sampled 26-Jul-2017 14:42
Date Received 1-Aug-2017
Date Completed 9-Aug-2017
Date Authorised 9-Aug-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	0.893 mg/L
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Anions Test Method: ED009-X	Filtered	
Fluoride (F)		0.435 mg/L
Chloride (Cl)		675 mg/L
Sulfate (SO4)		3740 mg/L

Alkalinity Test Method: ED037-P		Total
Total Alkalinity (CaCO3)		77 mg/L

Physical Test Method: EA015H		Total
Total Dissolved Solids @ 180°C		6590 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1718664. Report Date: 3-Aug-2017

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 Senior Chemist

Final - Report Number: 2118280

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

MPW017694

Date Sampled

27-Jul-2017 13:05

Date Received

1-Aug-2017

Date Completed

9-Aug-2017

Date Authorised

9-Aug-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	28.2 m
Bore Volume Pumped	*Analysis in Field	32 L
Recharge Bore Level	*Analysis in Field	28.0 m
pH	CA12125	6.02
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		<0.01 mg/L
Arsenic (As)	EG020A-T		0.003 mg/L
Barium (Ba)	EG020A-T		0.020 mg/L
Boron (B)	EG020A-T		0.16 mg/L
Cadmium (Cd)	EG020A-T		<0.0001 mg/L
Calcium (Ca)	ED093T-UL		214 mg/L
Chromium (Cr)	EG020A-T		0.002 mg/L
Copper (Cu)	EG020A-T		<0.001 mg/L
Iron (Fe)	EG020A-F	28.5 mg/L	
Lead (Pb)	EG020A-T		<0.001 mg/L
Magnesium (Mg)	ED093T-UL		132 mg/L
Manganese (Mn)	EG020A-F	3.31 mg/L	
Molybdenum (Mo)	EG020A-T		<0.001 mg/L
Nickel (Ni)	EG020A-T		0.114 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		367 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: 2118280
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 MPW017694
Date Sampled 27-Jul-2017 13:05
Date Received 1-Aug-2017
Date Completed 9-Aug-2017
Date Authorised 9-Aug-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

Zinc (Zn)	EG020A-T	0.115 mg/L
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Anions Test Method: ED009-X	Filtered
Fluoride (F)	0.078 mg/L
Chloride (Cl)	214 mg/L
Sulfate (SO4)	1640 mg/L

Alkalinity Test Method: ED037-P	Total
Total Alkalinity (CaCO3)	97 mg/L

Physical Test Method: EA015H	Total
Total Dissolved Solids @ 180°C	2770 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1718664. Report Date: 3-Aug-2017

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 Senior Chemist

Final - Report Number: 2118280
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 MPW017695
Date Sampled 27-Jul-2017 13:40
Date Received 1-Aug-2017
Date Completed 9-Aug-2017
Date Authorised 9-Aug-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	25.0 m
Bore Volume Pumped	*Analysis in Field	33 L
Recharge Bore Level	*Analysis in Field	25.0 m
pH	CA12125	5.86
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		0.33 mg/L
Arsenic (As)	EG020A-T		0.004 mg/L
Barium (Ba)	EG020A-T		0.016 mg/L
Boron (B)	EG020A-T		0.34 mg/L
Cadmium (Cd)	EG020A-T		0.0004 mg/L
Calcium (Ca)	ED093T-UL		196 mg/L
Chromium (Cr)	EG020A-T		0.012 mg/L
Copper (Cu)	EG020A-T		0.002 mg/L
Iron (Fe)	EG020A-F	4.90 mg/L	
Lead (Pb)	EG020A-T		0.003 mg/L
Magnesium (Mg)	ED093T-UL		108 mg/L
Manganese (Mn)	EG020A-F	2.36 mg/L	
Molybdenum (Mo)	EG020A-T		0.001 mg/L
Nickel (Ni)	EG020A-T		0.416 mg/L
Potassium (K)	ED093T-UL		32.4 mg/L
Selenium (Se)	EG094B-T		0.0006 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		691 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: 2118280
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 MPW017695
Date Sampled 27-Jul-2017 13:40
Date Received 1-Aug-2017
Date Completed 9-Aug-2017
Date Authorised 9-Aug-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	0.609 mg/L
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Anions Test Method: ED009-X	Filtered	
Fluoride (F)	0.051 mg/L	
Chloride (Cl)	291 mg/L	
Sulfate (SO4)	2060 mg/L	

Alkalinity Test Method: ED037-P		Total
Total Alkalinity (CaCO3)		104 mg/L

Physical Test Method: EA015H		Total
Total Dissolved Solids @ 180°C		3450 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1718664. Report Date: 3-Aug-2017

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Authorised by Thanh Hoang Le
 Senior Chemist

Final - Report Number: 2118280

ENERGY AUSTRALIA C/- MT PIPER POWER

BOULDER ROAD

PORTLAND NSW 2847 AUSTRALIA

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

Representative: Clive Stacey

Sample Number

MPW017696

Date Sampled

28-Jul-2017 07:08

Date Received

31-Jul-2017

Date Completed

31-Jul-2017

Date Authorised

31-Jul-2017

Summary Report

This sample was analysed as received, the results being as follows:

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
could not access. Instrument inserted in bore

Total

Allan Bowcher

Authorised by Allan Bowcher
Chemist

Final - Report Number: 2118280

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

MPW017697

Date Sampled

26-Jul-2017 12:37

Date Received

28-Jul-2017

Date Completed

28-Jul-2017

Date Authorised

28-Jul-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

25.1 m

insufficient volume to sample

•System out of service.

N Tomlinson

Authorised by Nikki Tomlinson
Senior Chemist

Final - Report Number: 2118280
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 MPW017698
Date Sampled 26-Jul-2017 11:15
Date Received 1-Aug-2017
Date Completed 9-Aug-2017
Date Authorised 9-Aug-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: CA12125	Total
pH		5.78
Conductivity		39560 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		1.04 mg/L
Arsenic (As)	EG020A-T		<0.010 mg/L
Barium (Ba)	EG020A-T		0.037 mg/L
Boron (B)	EG020A-T		15.5 mg/L
Cadmium (Cd)	EG020A-T		0.0756 mg/L
Calcium (Ca)	ED093T-UL		500 mg/L
Chromium (Cr)	EG020A-T		<0.010 mg/L
Copper (Cu)	EG020A-T		0.075 mg/L
Iron (Fe)	EG020A-F	2.00 mg/L	
Lead (Pb)	EG020A-T		<0.010 mg/L
Magnesium (Mg)	ED093T-UL		1340 mg/L
Manganese (Mn)	EG020A-F	9.82 mg/L	
Molybdenum (Mo)	EG020A-T		4.11 mg/L
Nickel (Ni)	EG020A-T		1.02 mg/L
Potassium (K)	ED093T-UL		2020 mg/L
Selenium (Se)	EG094B-T		0.0492 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	
Vanadium (V)	EG020A-T		<0.10 mg/L
Zinc (Zn)	EG020A-T		1.10 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

Final - Report Number: 2118280
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 MPW017698
Date Sampled 26-Jul-2017 11:15
Date Received 1-Aug-2017
Date Completed 9-Aug-2017
Date Authorised 9-Aug-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

Anions	Test Method: ED009-X	Filtered	
Fluoride (F)		0.643 mg/L	
Chloride (Cl)		2780 mg/L	
Sulfate (SO4)		25600 mg/L	
Alkalinity			Test Method: ED037-P
Total Alkalinity (CaCO3)			Total 51 mg/L
Physical			Test Method: EA015H
Total Dissolved Solids @ 180°C			Total 41400 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1718664. Report Date: 3-Aug-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: 2118280
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 MPW017699
Date Sampled 26-Jul-2017 11:50
Date Received 1-Aug-2017
Date Completed 9-Aug-2017
Date Authorised 9-Aug-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: CA12125	Total
pH		5.73
Conductivity		50410 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		11.4 mg/L
Arsenic (As)	EG020A-T		0.012 mg/L
Barium (Ba)	EG020A-T		0.098 mg/L
Boron (B)	EG020A-T		8.60 mg/L
Cadmium (Cd)	EG020A-T		0.0855 mg/L
Calcium (Ca)	ED093T-UL		501 mg/L
Chromium (Cr)	EG020A-T		0.011 mg/L
Copper (Cu)	EG020A-T		0.016 mg/L
Iron (Fe)	EG020A-F	0.42 mg/L	
Lead (Pb)	EG020A-T		0.020 mg/L
Magnesium (Mg)	ED093T-UL		2190 mg/L
Manganese (Mn)	EG020A-F	51.0 mg/L	
Molybdenum (Mo)	EG020A-T		0.076 mg/L
Nickel (Ni)	EG020A-T		2.29 mg/L
Potassium (K)	ED093T-UL		2120 mg/L
Selenium (Se)	EG094B-T		0.119 mg/L
Silver (Ag)	EG020B-T		<0.010 mg/L
Sodium (Na)	ED093T-UL		21200 mg/L
Vanadium (V)	EG020A-F	<0.10 mg/L	
Vanadium (V)	EG020A-T		<0.10 mg/L
Zinc (Zn)	EG020A-T		3.98 mg/L

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 Senior Chemist

Final - Report Number: 2118280

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

MPW017699

Date Sampled

26-Jul-2017 11:50

Date Received

1-Aug-2017

Date Completed

9-Aug-2017

Date Authorised

9-Aug-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

Anions Test Method: ED009-X

	Filtered
Fluoride (F)	2.75 mg/L
Chloride (Cl)	4160 mg/L
Sulfate (SO4)	33000 mg/L

Alkalinity Test Method: ED037-P

Total Alkalinity (CaCO3)	Total 178 mg/L
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Physical Test Method: EA015H

Total Dissolved Solids @ 180°C	Total 50500 mg/L
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Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1718664. Report Date: 3-Aug-2017

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Accreditation Number 1099
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Authorised by Thanh Hoang Le
 Senior Chemist

Final - Report Number: 2126951

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

MPW017890

Date Sampled

9-Aug-2017 08:36

Date Received

14-Aug-2017

Date Completed

21-Aug-2017

Date Authorised

21-Aug-2017

Summary Report

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

Sampling point: Groundwater Bore MPGM5

Source: MP

Customer Sampling Point: 030

Sampling Code: D11

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	75 L
Recharge Bore Level	*Analysis in Field	7.4 m
pH	CA12125	5.95
Conductivity	CA12125	680 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		0.018 mg/L
Boron (B)	EG020A-T		<0.05 mg/L
Cadmium (Cd)	EG020A-T		<0.0001 mg/L
Calcium (Ca)	ED093T-UL		35.9 mg/L
Chromium (Cr)	EG020A-T		<0.001 mg/L
Copper (Cu)	EG020A-T		<0.001 mg/L
Iron (Fe)	EG020A-F	7.00 mg/L	
Lead (Pb)	EG020A-T		<0.001 mg/L
Magnesium (Mg)	ED093T-UL		36.0 mg/L
Manganese (Mn)	EG020A-F	1.27 mg/L	
Molybdenum (Mo)	EG020A-T		<0.001 mg/L
Nickel (Ni)	EG020A-T		0.064 mg/L
Potassium (K)	ED093T-UL		7.08 mg/L
Selenium (Se)	EG094B-T		<0.0002 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		18.8 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: 2126951

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

MPW017890

Date Sampled

9-Aug-2017 08:36

Date Received

14-Aug-2017

Date Completed

21-Aug-2017

Date Authorised

21-Aug-2017

Summary Report

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

Sampling point: Groundwater Bore MPM5

Source: MP

Customer Sampling Point: 030

Sampling Code: D11

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)	0.065 mg/L
Chloride (Cl)	13.7 mg/L
Sulfate (SO4)	222 mg/L

Alkalinity Test Method: ED037-P

Total Alkalinity (CaCO3)	Total 107 mg/L
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Physical Test Method: EA015H

Total Dissolved Solids @ 180°C	Total 440 mg/L
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Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1719862. Report Date: 17-Aug-2017

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Accreditation Number 1099
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Authorised by Thanh Hoang Le
 Senior Chemist

Final - Report Number: 2126951
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 MPW017891
Date Sampled 10-Aug-2017 08:01
Date Received 14-Aug-2017
Date Completed 21-Aug-2017
Date Authorised 21-Aug-2017

Summary Report

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

Sampling point: Groundwater Bore MPGM5

Source: MP **Customer Sampling Point:** 031 **Sampling Code:** D12 **Sample Frequency:** Month

Testing Laboratory: Mount Piper
Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	4.2 m
Bore Volume Pumped	*Analysis in Field	10 L
Recharge Bore Level	*Analysis in Field	4.7 m
pH	CA12125	6.31
Conductivity	CA12125	710 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		0.190 mg/L
Boron (B)	EG020A-T		<0.05 mg/L
Cadmium (Cd)	EG020A-T		<0.0001 mg/L
Calcium (Ca)	ED093T-UL		18.7 mg/L
Chromium (Cr)	EG020A-T		<0.001 mg/L
Copper (Cu)	EG020A-T		<0.001 mg/L
Iron (Fe)	EG020A-F	42.7 mg/L	
Lead (Pb)	EG020A-T		<0.001 mg/L
Magnesium (Mg)	ED093T-UL		23.5 mg/L
Manganese (Mn)	EG020A-F	6.50 mg/L	
Molybdenum (Mo)	EG020A-T		<0.001 mg/L
Nickel (Ni)	EG020A-T		0.030 mg/L
Potassium (K)	ED093T-UL		4.47 mg/L
Selenium (Se)	EG094B-T		<0.0002 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		36.0 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: 2126951
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 MPW017891
Date Sampled 10-Aug-2017 08:01
Date Received 14-Aug-2017
Date Completed 21-Aug-2017
Date Authorised 21-Aug-2017

Summary Report

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

Sampling point: Groundwater Bore MPGM5

Source: MP **Customer Sampling Point:** 031 **Sampling Code:** D12 **Sample Frequency:** Month

Testing Laboratory: ALS Environmental

Zinc (Zn)	EG020A-T	0.011 mg/L
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Anions Test Method: ED009-X

Fluoride (F)	Filtered	0.081 mg/L
Chloride (Cl)		57.1 mg/L
Sulfate (SO4)		26.5 mg/L

Alkalinity Test Method: ED037-P

Total Alkalinity (CaCO3)	Total
	177 mg/L

Physical Test Method: EA015H

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

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1719862. Report Date: 17-Aug-2017

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Authorised by Thanh Hoang Le
 Senior Chemist

Final - Report Number: 2126951

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

MPW017892

Date Sampled

9-Aug-2017 09:25

Date Received

14-Aug-2017

Date Completed

21-Aug-2017

Date Authorised

21-Aug-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: 012

Sampling Code: D7

Sample Frequency: Month

Testing Laboratory: Mount Piper

Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	1.2 m
Bore Volume Pumped	*Analysis in Field	42 L
Recharge Bore Level	*Analysis in Field	1.2 m
pH	CA12125	6.49
Conductivity	CA12125	532 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		0.088 mg/L
Boron (B)	EG020A-T		<0.05 mg/L
Cadmium (Cd)	EG020A-T		<0.0001 mg/L
Calcium (Ca)	ED093T-UL		38.9 mg/L
Chromium (Cr)	EG020A-T		<0.001 mg/L
Copper (Cu)	EG020A-T		<0.001 mg/L
Iron (Fe)	EG020A-F	3.31 mg/L	
Lead (Pb)	EG020A-T		<0.001 mg/L
Magnesium (Mg)	ED093T-UL		18.8 mg/L
Manganese (Mn)	EG020A-F	0.891 mg/L	
Molybdenum (Mo)	EG020A-T		<0.001 mg/L
Nickel (Ni)	EG020A-T		<0.001 mg/L
Potassium (K)	ED093T-UL		8.19 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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 Senior Chemist

Final - Report Number: 2126951
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 MPW017892
Date Sampled 9-Aug-2017 09:25
Date Received 14-Aug-2017
Date Completed 21-Aug-2017
Date Authorised 21-Aug-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:** 012 **Sampling Code:** D7 **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)		0.100 mg/L
Chloride (Cl)		19.4 mg/L
Sulfate (SO4)		22.3 mg/L

Alkalinity Test Method: ED037-P	Total	
Total Alkalinity (CaCO3)		223 mg/L

Physical Test Method: EA015H	Total	
Total Dissolved Solids @ 180°C		316 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1719862. Report Date: 17-Aug-2017

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Authorised by Thanh Hoang Le
 Senior Chemist

Final - Report Number: 2126951

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

MPW017893

Date Sampled

10-Aug-2017 08:27

Date Received

14-Aug-2017

Date Completed

21-Aug-2017

Date Authorised

21-Aug-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: 007

Sampling Code: D2

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	61 L
Recharge Bore Level	*Analysis in Field	2.8 m
pH	CA12125	4.66
Conductivity	CA12125	2930 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		0.51 mg/L
Arsenic (As)	EG020A-T		<0.001 mg/L
Barium (Ba)	EG020A-T		0.024 mg/L
Boron (B)	EG020A-T		0.41 mg/L
Cadmium (Cd)	EG020A-T		<0.0001 mg/L
Calcium (Ca)	ED093T-UL		154 mg/L
Chromium (Cr)	EG020A-T		<0.001 mg/L
Copper (Cu)	EG020A-T		0.001 mg/L
Iron (Fe)	EG020A-F	11.5 mg/L	
Lead (Pb)	EG020A-T		0.002 mg/L
Magnesium (Mg)	ED093T-UL		123 mg/L
Manganese (Mn)	EG020A-F	6.08 mg/L	
Molybdenum (Mo)	EG020A-T		<0.001 mg/L
Nickel (Ni)	EG020A-T		0.280 mg/L
Potassium (K)	ED093T-UL		18.5 mg/L
Selenium (Se)	EG094B-T		<0.0002 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	
Vanadium (V)	EG020A-T		<0.01 mg/L

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 Senior Chemist

Final - Report Number: 2126951
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 MPW017893
Date Sampled 10-Aug-2017 08:27
Date Received 14-Aug-2017
Date Completed 21-Aug-2017
Date Authorised 21-Aug-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:** 007 **Sampling Code:** D2 **Sample Frequency:** Month

Testing Laboratory: ALS Environmental

Zinc (Zn)	EG020A-T	0.440 mg/L
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Anions Test Method: ED009-X		Filtered
Fluoride (F)		0.058 mg/L
Chloride (Cl)		194 mg/L
Sulfate (SO4)		1480 mg/L

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

Physical Test Method: EA015H		Total
Total Dissolved Solids @ 180°C		2440 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1719862. Report Date: 17-Aug-2017

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Authorised by Thanh Hoang Le
 Senior Chemist

Final - Report Number: 2126951
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 MPW017894
Date Sampled 9-Aug-2017 10:22
Date Received 14-Aug-2017
Date Completed 21-Aug-2017
Date Authorised 21-Aug-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:** 009 **Sampling Code:** D4 **Sample Frequency:** Month

Testing Laboratory: Mount Piper
Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	1.7 m
Bore Volume Pumped	*Analysis in Field	119 L
Recharge Bore Level	*Analysis in Field	1.7 m
pH	CA12125	3.27
Conductivity	CA12125	1050 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		21.6 mg/L
Arsenic (As)	EG020A-T		0.049 mg/L
Barium (Ba)	EG020A-T		0.012 mg/L
Boron (B)	EG020A-T		<0.05 mg/L
Cadmium (Cd)	EG020A-T		0.0008 mg/L
Calcium (Ca)	ED093T-UL		11.2 mg/L
Chromium (Cr)	EG020A-T		0.003 mg/L
Copper (Cu)	EG020A-T		0.007 mg/L
Iron (Fe)	EG020A-F	126 mg/L	
Lead (Pb)	EG020A-T		0.023 mg/L
Magnesium (Mg)	ED093T-UL		6.30 mg/L
Manganese (Mn)	EG020A-F	0.734 mg/L	
Molybdenum (Mo)	EG020A-T		<0.001 mg/L
Nickel (Ni)	EG020A-T		0.022 mg/L
Potassium (K)	ED093T-UL		6.65 mg/L
Selenium (Se)	EG094B-T		<0.0002 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		18.7 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: 2126951
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 MPW017894
Date Sampled 9-Aug-2017 10:22
Date Received 14-Aug-2017
Date Completed 21-Aug-2017
Date Authorised 21-Aug-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:** 009 **Sampling Code:** D4 **Sample Frequency:** Month

Testing Laboratory: ALS Environmental

Zinc (Zn)	EG020A-T	0.246 mg/L
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Anions Test Method: ED009-X	Filtered	
Fluoride (F)		0.168 mg/L
Chloride (Cl)		9.22 mg/L
Sulfate (SO4)		493 mg/L

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

Physical Test Method: EA015H	Total	
Total Dissolved Solids @ 180°C		888 mg/L

EA015 TDS, result has been confirmed for sample 6 by re-analysis.

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1719862. Report Date: 17-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: 2126951

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

MPW017895

Date Sampled

10-Aug-2017 08:45

Date Received

14-Aug-2017

Date Completed

21-Aug-2017

Date Authorised

21-Aug-2017

Summary Report

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

Sampling point: Groundwater Bore MPGM5

Source: MP

Customer Sampling Point: 024

Sampling Code: D5

Sample Frequency: Month

Testing Laboratory: Mount Piper

Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	6.9 m
Bore Volume Pumped	*Analysis in Field	16 L
Recharge Bore Level	*Analysis in Field	6.9 m
pH	CA12125	6.10
Conductivity	CA12125	2080 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		<0.001 mg/L
Barium (Ba)	EG020A-T		0.066 mg/L
Boron (B)	EG020A-T		<0.05 mg/L
Cadmium (Cd)	EG020A-T		<0.0001 mg/L
Calcium (Ca)	ED093T-UL		106 mg/L
Chromium (Cr)	EG020A-T		<0.001 mg/L
Copper (Cu)	EG020A-T		<0.001 mg/L
Iron (Fe)	EG094B-F	1.03 mg/L	
Lead (Pb)	EG020A-T		<0.001 mg/L
Magnesium (Mg)	ED093T-UL		109 mg/L
Manganese (Mn)	EG020A-F	19.3 mg/L	
Molybdenum (Mo)	EG020A-T		<0.001 mg/L
Nickel (Ni)	EG020A-T		0.127 mg/L
Potassium (K)	ED093T-UL		11.6 mg/L
Selenium (Se)	EG094B-T		<0.0002 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		108 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: 2126951
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 MPW017895
Date Sampled 10-Aug-2017 08:45
Date Received 14-Aug-2017
Date Completed 21-Aug-2017
Date Authorised 21-Aug-2017

Summary Report

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

Sampling point: Groundwater Bore MPGM5

Source: MP **Customer Sampling Point:** 024 **Sampling Code:** D5 **Sample Frequency:** Month

Testing Laboratory: ALS Environmental

Zinc (Zn)	EG020A-T	0.045 mg/L
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Anions Test Method: ED009-X	Filtered	
Fluoride (F)	0.072 mg/L	
Chloride (Cl)	162 mg/L	
Sulfate (SO4)	574 mg/L	

Alkalinity Test Method: ED037-P		Total
Total Alkalinity (CaCO3)		424 mg/L

Physical Test Method: EA015H		Total
Total Dissolved Solids @ 180°C		1430 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1719862. Report Date: 17-Aug-2017

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Accreditation Number 1099
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Authorised by Thanh Hoang Le
 Senior Chemist

Final - Report Number: 2126951

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

MPW017896

Date Sampled

10-Aug-2017 08:50

Date Received

14-Aug-2017

Date Completed

21-Aug-2017

Date Authorised

21-Aug-2017

Summary Report

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

Sampling point: Groundwater Bore MPGM5

Source: MP

Customer Sampling Point: 025

Sampling Code: D6

Sample Frequency: Month

Testing Laboratory: Mount Piper

Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	8.7 m
Bore Volume Pumped	*Analysis in Field	0.4 L
Recharge Bore Level	*Analysis in Field	9.1 m
pH	CA12125	5.78
Conductivity	CA12125	1340 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		0.006 mg/L
Barium (Ba)	EG020A-T		0.045 mg/L
Boron (B)	EG020A-T		<0.05 mg/L
Cadmium (Cd)	EG020A-T		<0.0001 mg/L
Calcium (Ca)	ED093T-UL		9.54 mg/L
Chromium (Cr)	EG020A-T		<0.001 mg/L
Copper (Cu)	EG020A-T		<0.001 mg/L
Iron (Fe)	EG020A-F	65.6 mg/L	
Lead (Pb)	EG020A-T		<0.001 mg/L
Magnesium (Mg)	ED093T-UL		27.2 mg/L
Manganese (Mn)	EG020A-F	3.36 mg/L	
Molybdenum (Mo)	EG020A-T		<0.001 mg/L
Nickel (Ni)	EG020A-T		0.056 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		140 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: 2126951

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

MPW017896

Date Sampled

10-Aug-2017 08:50

Date Received

14-Aug-2017

Date Completed

21-Aug-2017

Date Authorised

21-Aug-2017

Summary Report

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

Sampling point: Groundwater Bore MPM5

Source: MP

Customer Sampling Point: 025

Sampling Code: D6

Sample Frequency: Month

Testing Laboratory: ALS Environmental

Zinc (Zn)	EG020A-T	0.034 mg/L
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Anions Test Method: ED009-X

	Filtered
Fluoride (F)	0.017 mg/L
Chloride (Cl)	158 mg/L
Sulfate (SO4)	290 mg/L

Alkalinity Test Method: ED037-P

Total Alkalinity (CaCO3)	Total
	153 mg/L

Physical Test Method: EA015H

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

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1719862. Report Date: 17-Aug-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: 2126951

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

MPW017897

Date Sampled

9-Aug-2017 11:08

Date Received

10-Aug-2017

Date Completed

10-Aug-2017

Date Authorised

11-Aug-2017

Summary Report

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

Sampling point: Groundwater Bore MPGM5

Source: MP

Customer Sampling Point: 027

Sampling Code: D8

Sample Frequency: Month

Testing Laboratory: Mount Piper

Water

Field Analysis Test Method: Analysis in Field
Dry

Total

Authorised by Nikki Tomlinson
Senior Chemist

Final - Report Number: 2126951
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 MPW017898
Date Sampled 10-Aug-2017 09:03
Date Received 14-Aug-2017
Date Completed 21-Aug-2017
Date Authorised 21-Aug-2017

Summary Report

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

Sampling point: Groundwater Bore MPGM5

Source: MP **Customer Sampling Point:** 028 **Sampling Code:** D9 **Sample Frequency:** Month

Testing Laboratory: Mount Piper
Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	3.9 m
Bore Volume Pumped	*Analysis in Field	206 L
Recharge Bore Level	*Analysis in Field	7.1 m
pH	CA12125	6.23
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		0.06 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		32.3 mg/L
Chromium (Cr)	EG020A-T		<0.001 mg/L
Copper (Cu)	EG020A-T		<0.001 mg/L
Iron (Fe)	EG094B-F	0.053 mg/L	
Lead (Pb)	EG020A-T		<0.001 mg/L
Magnesium (Mg)	ED093T-UL		35.7 mg/L
Manganese (Mn)	EG020A-F	0.026 mg/L	
Molybdenum (Mo)	EG020A-T		<0.001 mg/L
Nickel (Ni)	EG020A-T		0.007 mg/L
Potassium (K)	ED093T-UL		7.61 mg/L
Selenium (Se)	EG094B-T		0.0004 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		58.8 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: 2126951
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 MPW017898
Date Sampled 10-Aug-2017 09:03
Date Received 14-Aug-2017
Date Completed 21-Aug-2017
Date Authorised 21-Aug-2017

Summary Report

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

Sampling point: Groundwater Bore MPM5

Source: MP **Customer Sampling Point:** 028 **Sampling Code:** D9 **Sample Frequency:** Month

Testing Laboratory: ALS Environmental

Zinc (Zn)	EG020A-T	0.019 mg/L
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Anions Test Method: ED009-X

Fluoride (F)	Filtered	0.062 mg/L
Chloride (Cl)		24.2 mg/L
Sulfate (SO4)		281 mg/L

Alkalinity Test Method: ED037-P

Total Alkalinity (CaCO3)	Total
	133 mg/L

Physical Test Method: EA015H

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

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1719862. Report Date: 17-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: 2126951

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

MPW017899

Date Sampled

9-Aug-2017 11:42

Date Received

10-Aug-2017

Date Completed

10-Aug-2017

Date Authorised

11-Aug-2017

Summary Report

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

Sampling point: Groundwater Bore MPGM5

Source: MP

Customer Sampling Point: 026

Sampling Code: D7

Sample Frequency: Month

Testing Laboratory: Mount Piper

Water

Field Analysis Test Method: Analysis in Field

Total

Initial Bore Level

19.8 m

insufficient volume to sample

N Tomlinson

Authorised by Nikki Tomlinson
Senior Chemist

Final - Report Number: 2126951

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

MPW017900

Date Sampled

10-Aug-2017 09:12

Date Received

10-Aug-2017

Date Completed

10-Aug-2017

Date Authorised

11-Aug-2017

Summary Report

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

Sampling point: Groundwater Bore MPGM5

Source: MP

Customer Sampling Point: 023

Sampling Code: D4

Sample Frequency: Month

Testing Laboratory: Mount Piper

Water

Field Analysis	Test Method: Analysis in Field	Total
Initial Bore Level		21.9 m
Bore Volume Pumped		1 L
Recharge Bore Level		22.0 m

volume not extractable

N Tomlinson

Authorised by Nikki Tomlinson
Senior Chemist

Final - Report Number: 2126951

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

MPW017901

Date Sampled

9-Aug-2017 12:20

Date Received

14-Aug-2017

Date Completed

21-Aug-2017

Date Authorised

21-Aug-2017

Summary Report

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

Sampling point: Groundwater Bore MPGM5

Source: MP

Customer Sampling Point: 022

Sampling Code: D3

Sample Frequency: Month

Testing Laboratory: Mount Piper

Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	11.7 m
Bore Volume Pumped	*Analysis in Field	117 L
Recharge Bore Level	*Analysis in Field	11.7 m
pH	CA12125	5.86
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		0.06 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		43.3 mg/L
Chromium (Cr)	EG020A-T		<0.001 mg/L
Copper (Cu)	EG020A-T		<0.001 mg/L
Iron (Fe)	EG020A-F	7.16 mg/L	
Lead (Pb)	EG020A-T		0.002 mg/L
Magnesium (Mg)	ED093T-UL		43.2 mg/L
Manganese (Mn)	EG020A-F	6.35 mg/L	
Molybdenum (Mo)	EG020A-T		<0.001 mg/L
Nickel (Ni)	EG020A-T		0.360 mg/L
Potassium (K)	ED093T-UL		8.56 mg/L
Selenium (Se)	EG094B-T		<0.0002 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

* 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: 2126951

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

MPW017901

Date Sampled

9-Aug-2017 12:20

Date Received

14-Aug-2017

Date Completed

21-Aug-2017

Date Authorised

21-Aug-2017

Summary Report

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

Sampling point: Groundwater Bore MPGM5

Source: MP

Customer Sampling Point: 022

Sampling Code: D3

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)	0.030 mg/L
Chloride (Cl)	37.8 mg/L
Sulfate (SO4)	304 mg/L

Alkalinity Test Method: ED037-P

Total Alkalinity (CaCO3)	Total
	151 mg/L

Physical Test Method: EA015H

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

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1719862. Report Date: 17-Aug-2017

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Authorised by Thanh Hoang Le
 Senior Chemist

Final - Report Number: 2126951

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

MPW017902

Date Sampled

9-Aug-2017 12:49

Date Received

14-Aug-2017

Date Completed

21-Aug-2017

Date Authorised

21-Aug-2017

Summary Report

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

Sampling point: Groundwater Bore MPGM5

Source: MP

Customer Sampling Point: 020

Sampling Code: D1

Sample Frequency: Month

Testing Laboratory: Mount Piper

Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	11.6 m
Bore Volume Pumped	*Analysis in Field	117 L
Recharge Bore Level	*Analysis in Field	11.6 m
pH	CA12125	6.12
Conductivity	CA12125	586 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		0.044 mg/L
Boron (B)	EG020A-T		<0.05 mg/L
Cadmium (Cd)	EG020A-T		<0.0001 mg/L
Calcium (Ca)	ED093T-UL		36.1 mg/L
Chromium (Cr)	EG020A-T		<0.001 mg/L
Copper (Cu)	EG020A-T		<0.001 mg/L
Iron (Fe)	EG020A-F	13.3 mg/L	
Lead (Pb)	EG020A-T		<0.001 mg/L
Magnesium (Mg)	ED093T-UL		20.8 mg/L
Manganese (Mn)	EG020A-F	0.816 mg/L	
Molybdenum (Mo)	EG020A-T		<0.001 mg/L
Nickel (Ni)	EG020A-T		0.007 mg/L
Potassium (K)	ED093T-UL		7.07 mg/L
Selenium (Se)	EG094B-T		<0.0002 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		17.3 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
 Accredited for compliance with ISO/IEC 17025 - Testing.

Authorised by Thanh Hoang Le
 Senior Chemist

Final - Report Number: 2126951
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 MPW017902
Date Sampled 9-Aug-2017 12:49
Date Received 14-Aug-2017
Date Completed 21-Aug-2017
Date Authorised 21-Aug-2017

Summary Report

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

Sampling point: Groundwater Bore MPM5

Source: MP **Customer Sampling Point:** 020 **Sampling Code:** D1 **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)		0.047 mg/L
Chloride (Cl)		19.3 mg/L
Sulfate (SO4)		87.9 mg/L

Alkalinity Test Method: ED037-P		Total
Total Alkalinity (CaCO3)		177 mg/L

Physical Test Method: EA015H		Total
Total Dissolved Solids @ 180°C		344 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1719862. Report Date: 17-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: 2126951

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

MPW017903

Date Sampled

9-Aug-2017 13:10

Date Received

14-Aug-2017

Date Completed

21-Aug-2017

Date Authorised

21-Aug-2017

Summary Report

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

Sampling point: Groundwater Bore MPGM5

Source: MP

Customer Sampling Point: 021

Sampling Code: D2

Sample Frequency: Month

Testing Laboratory: Mount Piper

Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	12.2 m
Bore Volume Pumped	*Analysis in Field	30 L
Recharge Bore Level	*Analysis in Field	12.2 m
pH	CA12125	5.75
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		3.61 mg/L
Arsenic (As)	EG020A-T		0.007 mg/L
Barium (Ba)	EG020A-T		0.055 mg/L
Boron (B)	EG020A-T		<0.05 mg/L
Cadmium (Cd)	EG020A-T		<0.0001 mg/L
Calcium (Ca)	ED093T-UL		50.4 mg/L
Chromium (Cr)	EG020A-T		0.006 mg/L
Copper (Cu)	EG020A-T		0.016 mg/L
Iron (Fe)	EG020A-F	14.9 mg/L	
Lead (Pb)	EG020A-T		0.008 mg/L
Magnesium (Mg)	ED093T-UL		44.0 mg/L
Manganese (Mn)	EG020A-F	6.95 mg/L	
Molybdenum (Mo)	EG020A-T		<0.001 mg/L
Nickel (Ni)	EG020A-T		0.322 mg/L
Potassium (K)	ED093T-UL		9.98 mg/L
Selenium (Se)	EG094B-T		0.0002 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		21.2 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



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

Authorised by Thanh Hoang Le
 Senior Chemist

Final - Report Number: 2126951
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 MPW017903
Date Sampled 9-Aug-2017 13:10
Date Received 14-Aug-2017
Date Completed 21-Aug-2017
Date Authorised 21-Aug-2017

Summary Report

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

Sampling point: Groundwater Bore MPM5

Source: MP **Customer Sampling Point:** 021 **Sampling Code:** D2 **Sample Frequency:** Month

Testing Laboratory: ALS Environmental

Zinc (Zn)	EG020A-T	0.526 mg/L
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Anions Test Method: ED009-X	Filtered	
Fluoride (F)		0.036 mg/L
Chloride (Cl)		14.8 mg/L
Sulfate (SO4)		360 mg/L

Alkalinity Test Method: ED037-P	Total	
Total Alkalinity (CaCO3)		117 mg/L

Physical Test Method: EA015H	Total	
Total Dissolved Solids @ 180°C		640 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1719862. Report Date: 17-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: 2126951

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

MPW017904

Date Sampled

9-Aug-2017 13:52

Date Received

14-Aug-2017

Date Completed

21-Aug-2017

Date Authorised

21-Aug-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: 010

Sampling Code: D5

Sample Frequency: Month

Testing Laboratory: Mount Piper

Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	10.8 m
Bore Volume Pumped	*Analysis in Field	253 L
Recharge Bore Level	*Analysis in Field	10.8 m
pH	CA12125	5.89
Conductivity	CA12125	1290 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		0.10 mg/L
Cadmium (Cd)	EG020A-T		<0.0001 mg/L
Calcium (Ca)	ED093T-UL		79.3 mg/L
Chromium (Cr)	EG020A-T		<0.001 mg/L
Copper (Cu)	EG020A-T		<0.001 mg/L
Iron (Fe)	EG020A-F	56.1 mg/L	
Lead (Pb)	EG020A-T		<0.001 mg/L
Magnesium (Mg)	ED093T-UL		55.8 mg/L
Manganese (Mn)	EG020A-F	7.77 mg/L	
Molybdenum (Mo)	EG020A-T		<0.001 mg/L
Nickel (Ni)	EG020A-T		0.053 mg/L
Potassium (K)	ED093T-UL		7.70 mg/L
Selenium (Se)	EG094B-T		<0.0002 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		23.9 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

Accredited for compliance with ISO/IEC 17025 - Testing.

Authorised by Thanh Hoang Le
Senior Chemist

Final - Report Number: 2126951
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 MPW017904
Date Sampled 9-Aug-2017 13:52
Date Received 14-Aug-2017
Date Completed 21-Aug-2017
Date Authorised 21-Aug-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:** 010 **Sampling Code:** D5 **Sample Frequency:** Month

Testing Laboratory: ALS Environmental

Zinc (Zn)	EG020A-T	0.024 mg/L
-----------	----------	------------

Anions Test Method: ED009-X	Filtered	
Fluoride (F)	0.084 mg/L	
Chloride (Cl)	24.3 mg/L	
Sulfate (SO4)	605 mg/L	

Alkalinity Test Method: ED037-P		Total
Total Alkalinity (CaCO3)		102 mg/L

Physical Test Method: EA015H		Total
Total Dissolved Solids @ 180°C		784 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1719862. Report Date: 17-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



Final - Report Number: 2126951

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

MPW017905

Date Sampled

9-Aug-2017 14:05

Date Received

10-Aug-2017

Date Completed

10-Aug-2017

Date Authorised

11-Aug-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: 011

Sampling Code: D6

Sample Frequency: Month

Testing Laboratory: Mount Piper

Water

Field Analysis Test Method: Analysis in Field
Dry

Total

Authorised by Nikki Tomlinson
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

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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

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

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 µS/cm
Temperature	CA12125	3.4 °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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* 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

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

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

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

	Filtered
Fluoride (F)	<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
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Physical Test Method: EA015H

Total Dissolved Solids @ 180°C	Total 4490 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
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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 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	

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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	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

Fluoride (F)	Filtered	
Chloride (Cl)	<0.050 mg/L	
Sulfate (SO4)	9.26 mg/L	
	124 mg/L	

Alkalinity Test Method: ED037-P

Total Alkalinity (CaCO3)	Total	
	10 mg/L	

Physical Test Method: EA015H

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

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

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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
Dry

Test Method: Analysis in Field

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

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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



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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

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	

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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 MPM4

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

	Filtered	
Fluoride (F)	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

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

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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

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

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



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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
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Physical Test Method: EA015H

Total Dissolved Solids @ 180°C	Total 39900 mg/L
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Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1721202. Report Date: 31-Aug-2017

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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

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

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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



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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 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
--------------------------	-------------------------

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
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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 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
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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

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
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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

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

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 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
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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

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

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 Alkalinity (CaCO3)	Total 145 mg/L
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Physical Test Method: EA015H

Total Dissolved Solids @ 180°C	Total 579 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

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

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	

* 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

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

	Filtered
Fluoride (F)	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
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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
 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

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

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	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 MPM4

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

Fluoride (F)	Filtered	
	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	

Physical Test Method: EA015H

Total Dissolved Solids @ 180°C	Total	
	6240 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

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

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	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 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 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

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

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

Final - Report Number: 2153413
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 MPW018385
Date Sampled 13-Sep-2017 08:35
Date Received 15-Sep-2017
Date Completed 21-Sep-2017
Date Authorised 26-Sep-2017

Summary Report

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

Sampling point: Groundwater Bore MPGM5

Source: MP **Customer Sampling Point:** 030 **Sampling Code:** D11 **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	74 L
Recharge Bore Level	*Analysis in Field	7.5 m
pH	CA12125	5.98
Conductivity	CA12125	700 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		0.019 mg/L
Boron (B)	EG020A-T		<0.05 mg/L
Cadmium (Cd)	EG020A-T		<0.0001 mg/L
Calcium (Ca)	ED093T-UL		41.1 mg/L
Chromium (Cr)	EG020A-T		<0.001 mg/L
Copper (Cu)	EG020A-T		<0.001 mg/L
Iron (Fe)	EG020A-F	8.10 mg/L	
Lead (Pb)	EG020A-T		<0.001 mg/L
Magnesium (Mg)	ED093T-UL		43.9 mg/L
Manganese (Mn)	EG020A-F	1.54 mg/L	
Molybdenum (Mo)	EG020A-T		<0.001 mg/L
Nickel (Ni)	EG020A-T		0.074 mg/L
Potassium (K)	ED093T-UL		7.56 mg/L
Selenium (Se)	EG094B-T		<0.0002 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		19.8 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: 2153413
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 MPW018385
Date Sampled 13-Sep-2017 08:35
Date Received 15-Sep-2017
Date Completed 21-Sep-2017
Date Authorised 26-Sep-2017

Summary Report

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

Sampling point: Groundwater Bore MPM5

Source: MP **Customer Sampling Point:** 030 **Sampling Code:** D11 **Sample Frequency:** Month

Testing Laboratory: ALS Environmental

Zinc (Zn)	EG020A-T	0.055 mg/L
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Anions Test Method: ED009-X	Filtered
Fluoride (F)	0.074 mg/L
Chloride (Cl)	14.1 mg/L
Sulfate (SO4)	233 mg/L

Alkalinity Test Method: ED037-P	Total
Total Alkalinity (CaCO3)	112 mg/L

Physical Test Method: EA015H	Total
Total Dissolved Solids @ 180°C	455 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1723019. Report Date: 21-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

Final - Report Number: 2153413
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 MPW018386
Date Sampled 14-Sep-2017 08:05
Date Received 15-Sep-2017
Date Completed 21-Sep-2017
Date Authorised 26-Sep-2017

Summary Report

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

Sampling point: Groundwater Bore MPGM5

Source: MP **Customer Sampling Point:** 031 **Sampling Code:** D12 **Sample Frequency:** Month

Testing Laboratory: Mount Piper
Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	4.3 m
Bore Volume Pumped	*Analysis in Field	7 L
Recharge Bore Level	*Analysis in Field	4.8 m
pH	CA12125	6.11
Conductivity	CA12125	710 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		0.184 mg/L
Boron (B)	EG020A-T		<0.05 mg/L
Cadmium (Cd)	EG020A-T		<0.0001 mg/L
Calcium (Ca)	ED093T-UL		21.8 mg/L
Chromium (Cr)	EG020A-T		<0.001 mg/L
Copper (Cu)	EG020A-T		<0.001 mg/L
Iron (Fe)	EG020A-F	44.7 mg/L	
Lead (Pb)	EG020A-T		<0.001 mg/L
Magnesium (Mg)	ED093T-UL		29.1 mg/L
Manganese (Mn)	EG020A-F	7.30 mg/L	
Molybdenum (Mo)	EG020A-T		<0.001 mg/L
Nickel (Ni)	EG020A-T		0.034 mg/L
Potassium (K)	ED093T-UL		4.81 mg/L
Selenium (Se)	EG094B-T		0.0002 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		39.7 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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 Accredited for compliance with ISO/IEC 17025 - Testing.

Authorised by Thanh Hoang Le
 Senior Chemist

Final - Report Number: 2153413
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 MPW018386
Date Sampled 14-Sep-2017 08:05
Date Received 15-Sep-2017
Date Completed 21-Sep-2017
Date Authorised 26-Sep-2017

Summary Report

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

Sampling point: Groundwater Bore MPGM5

Source: MP **Customer Sampling Point:** 031 **Sampling Code:** D12 **Sample Frequency:** Month

Testing Laboratory: ALS Environmental

Zinc (Zn)	EG020A-T	0.012 mg/L
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Anions Test Method: ED009-X	Filtered	
Fluoride (F)	0.097 mg/L	
Chloride (Cl)	57.3 mg/L	
Sulfate (SO4)	31.5 mg/L	

Alkalinity Test Method: ED037-P	Total	
Total Alkalinity (CaCO3)	234 mg/L	

Physical Test Method: EA015H	Total	
Total Dissolved Solids @ 180°C	316 mg/L	

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1723019. Report Date: 21-Sep-2017

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 Senior Chemist

Final - Report Number: 2153413
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 MPW018387
Date Sampled 13-Sep-2017 09:19
Date Received 15-Sep-2017
Date Completed 21-Sep-2017
Date Authorised 26-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:** 012 **Sampling Code:** D7 **Sample Frequency:** Month

Testing Laboratory: Mount Piper
Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	1.1 m
Bore Volume Pumped	*Analysis in Field	44 L
Recharge Bore Level	*Analysis in Field	1.1 m
pH	CA12125	6.46
Conductivity	CA12125	533 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		0.091 mg/L
Boron (B)	EG020A-T		<0.05 mg/L
Cadmium (Cd)	EG020A-T		<0.0001 mg/L
Calcium (Ca)	ED093T-UL		43.9 mg/L
Chromium (Cr)	EG020A-T		<0.001 mg/L
Copper (Cu)	EG020A-T		<0.001 mg/L
Iron (Fe)	EG020A-F	2.79 mg/L	
Lead (Pb)	EG020A-T		<0.001 mg/L
Magnesium (Mg)	ED093T-UL		22.8 mg/L
Manganese (Mn)	EG020A-F	0.912 mg/L	
Molybdenum (Mo)	EG020A-T		<0.001 mg/L
Nickel (Ni)	EG020A-T		<0.001 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		21.4 mg/L
Vanadium (V)	EG020A-F	<0.01 mg/L	
Vanadium (V)	EG020A-T		<0.01 mg/L

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 Senior Chemist

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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 MPW018387
Date Sampled 13-Sep-2017 09:19
Date Received 15-Sep-2017
Date Completed 21-Sep-2017
Date Authorised 26-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:** 012 **Sampling Code:** D7 **Sample Frequency:** Month

Testing Laboratory: ALS Environmental

Zinc (Zn) EG020A-T <0.005 mg/L

Anions Test Method: ED009-X

	Filtered
Fluoride (F)	0.100 mg/L
Chloride (Cl)	19.3 mg/L
Sulfate (SO4)	20.9 mg/L

Alkalinity Test Method: ED037-P

	Total
Total Alkalinity (CaCO3)	223 mg/L

Physical Test Method: EA015H

	Total
Total Dissolved Solids @ 180°C	282 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1723019. Report Date: 21-Sep-2017

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 Senior Chemist

Final - Report Number: 2153413
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 MPW018388
Date Sampled 14-Sep-2017 08:25
Date Received 15-Sep-2017
Date Completed 21-Sep-2017
Date Authorised 26-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:** 007 **Sampling Code:** D2 **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	60 L
Recharge Bore Level	*Analysis in Field	2.8 m
pH	CA12125	5.01
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		0.57 mg/L
Arsenic (As)	EG020A-T		<0.001 mg/L
Barium (Ba)	EG020A-T		0.029 mg/L
Boron (B)	EG020A-T		0.54 mg/L
Cadmium (Cd)	EG020A-T		0.0002 mg/L
Calcium (Ca)	ED093T-UL		228 mg/L
Chromium (Cr)	EG020A-T		<0.001 mg/L
Copper (Cu)	EG020A-T		<0.001 mg/L
Iron (Fe)	EG020A-F	9.18 mg/L	
Lead (Pb)	EG020A-T		<0.001 mg/L
Magnesium (Mg)	ED093T-UL		190 mg/L
Manganese (Mn)	EG020A-F	9.21 mg/L	
Molybdenum (Mo)	EG020A-T		<0.001 mg/L
Nickel (Ni)	EG020A-T		0.385 mg/L
Potassium (K)	ED093T-UL		22.0 mg/L
Selenium (Se)	EG094B-T		0.0003 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		344 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: Nikki Tomlinson

Sample Number MPW018388
Date Sampled 14-Sep-2017 08:25
Date Received 15-Sep-2017
Date Completed 21-Sep-2017
Date Authorised 26-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:** 007 **Sampling Code:** D2 **Sample Frequency:** Month

Testing Laboratory: ALS Environmental

Zinc (Zn)	EG020A-T	0.587 mg/L
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Anions Test Method: ED009-X	Filtered	
Fluoride (F)	0.113 mg/L	
Chloride (Cl)	242 mg/L	
Sulfate (SO4)	1840 mg/L	

Alkalinity Test Method: ED037-P		Total
Total Alkalinity (CaCO3)		8 mg/L

Physical Test Method: EA015H		Total
Total Dissolved Solids @ 180°C		3100 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1723019. Report Date: 21-Sep-2017

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 Senior Chemist

Final - Report Number: 2153413
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 MPW018389
Date Sampled 13-Sep-2017 10:13
Date Received 15-Sep-2017
Date Completed 21-Sep-2017
Date Authorised 26-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:** 009 **Sampling Code:** D4 **Sample Frequency:** Month

Testing Laboratory: Mount Piper
Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	1.8 m
Bore Volume Pumped	*Analysis in Field	117 L
Recharge Bore Level	*Analysis in Field	1.8 m
pH	CA12125	3.21
Conductivity	CA12125	1060 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		24.4 mg/L
Arsenic (As)	EG020A-T		0.061 mg/L
Barium (Ba)	EG020A-T		0.013 mg/L
Boron (B)	EG020A-T		<0.05 mg/L
Cadmium (Cd)	EG020A-T		0.0010 mg/L
Calcium (Ca)	ED093T-UL		12.7 mg/L
Chromium (Cr)	EG020A-T		0.003 mg/L
Copper (Cu)	EG020A-T		0.001 mg/L
Iron (Fe)	EG020A-F	144 mg/L	
Lead (Pb)	EG020A-T		0.026 mg/L
Magnesium (Mg)	ED093T-UL		7.70 mg/L
Manganese (Mn)	EG020A-F	0.868 mg/L	
Molybdenum (Mo)	EG020A-T		<0.001 mg/L
Nickel (Ni)	EG020A-T		0.024 mg/L
Potassium (K)	ED093T-UL		7.14 mg/L
Selenium (Se)	EG094B-T		0.0003 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		0.02 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 MPW018389
Date Sampled 13-Sep-2017 10:13
Date Received 15-Sep-2017
Date Completed 21-Sep-2017
Date Authorised 26-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:** 009 **Sampling Code:** D4 **Sample Frequency:** Month

Testing Laboratory: ALS Environmental

Zinc (Zn)	EG020A-T	0.250 mg/L
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Anions Test Method: ED009-X		Filtered
Fluoride (F)		0.135 mg/L
Chloride (Cl)		9.35 mg/L
Sulfate (SO4)		474 mg/L

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

Physical Test Method: EA015H		Total
Total Dissolved Solids @ 180°C		952 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1723019. Report Date: 21-Sep-2017

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 Senior Chemist

Final - Report Number: 2153413
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 MPW018390
Date Sampled 14-Sep-2017 08:42
Date Received 15-Sep-2017
Date Completed 21-Sep-2017
Date Authorised 26-Sep-2017

Summary Report

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

Sampling point: Groundwater Bore MPGM5

Source: MP **Customer Sampling Point:** 024 **Sampling Code:** D5 **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	20 L
Recharge Bore Level	*Analysis in Field	7.0 m
pH	CA12125	6.02
Conductivity	CA12125	2110 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		0.072 mg/L
Boron (B)	EG020A-T		<0.05 mg/L
Cadmium (Cd)	EG020A-T		<0.0001 mg/L
Calcium (Ca)	ED093T-UL		120 mg/L
Chromium (Cr)	EG020A-T		<0.001 mg/L
Copper (Cu)	EG020A-T		<0.001 mg/L
Iron (Fe)	EG094B-F	1.32 mg/L	
Lead (Pb)	EG020A-T		<0.001 mg/L
Magnesium (Mg)	ED093T-UL		132 mg/L
Manganese (Mn)	EG020A-F	23.3 mg/L	
Molybdenum (Mo)	EG020A-T		<0.001 mg/L
Nickel (Ni)	EG020A-T		0.137 mg/L
Potassium (K)	ED093T-UL		11.9 mg/L
Selenium (Se)	EG094B-T		<0.0002 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		122 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: 2153413
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 MPW018390
Date Sampled 14-Sep-2017 08:42
Date Received 15-Sep-2017
Date Completed 21-Sep-2017
Date Authorised 26-Sep-2017

Summary Report

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

Sampling point: Groundwater Bore MPGM5

Source: MP **Customer Sampling Point:** 024 **Sampling Code:** D5 **Sample Frequency:** Month

Testing Laboratory: ALS Environmental

Zinc (Zn)	EG020A-T	0.048 mg/L
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Anions Test Method: ED009-X	Filtered	
Fluoride (F)		0.055 mg/L
Chloride (Cl)		161 mg/L
Sulfate (SO4)		612 mg/L

Alkalinity Test Method: ED037-P		Total
Total Alkalinity (CaCO3)		470 mg/L

Physical Test Method: EA015H		Total
Total Dissolved Solids @ 180°C		1460 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1723019. Report Date: 21-Sep-2017

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 Senior Chemist

Final - Report Number: 2153413
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 MPW018391
Date Sampled 14-Sep-2017 08:49
Date Received 15-Sep-2017
Date Completed 21-Sep-2017
Date Authorised 26-Sep-2017

Summary Report

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

Sampling point: Groundwater Bore MPGM5

Source: MP **Customer Sampling Point:** 025 **Sampling Code:** D6 **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	2.5 L
Recharge Bore Level	*Analysis in Field	9.2 m
pH	CA12125	5.75
Conductivity	CA12125	1360 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		0.009 mg/L
Barium (Ba)	EG020A-T		0.054 mg/L
Boron (B)	EG020A-T		<0.05 mg/L
Cadmium (Cd)	EG020A-T		<0.0001 mg/L
Calcium (Ca)	ED093T-UL		10.6 mg/L
Chromium (Cr)	EG020A-T		<0.001 mg/L
Copper (Cu)	EG020A-T		<0.001 mg/L
Iron (Fe)	EG020A-F	86.6 mg/L	
Lead (Pb)	EG020A-T		<0.001 mg/L
Magnesium (Mg)	ED093T-UL		32.7 mg/L
Manganese (Mn)	EG020A-F	4.03 mg/L	
Molybdenum (Mo)	EG020A-T		<0.001 mg/L
Nickel (Ni)	EG020A-T		0.060 mg/L
Potassium (K)	ED093T-UL		2.46 mg/L
Selenium (Se)	EG094B-T		0.0002 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		161 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: 2153413

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

MPW018391

Date Sampled

14-Sep-2017 08:49

Date Received

15-Sep-2017

Date Completed

21-Sep-2017

Date Authorised

26-Sep-2017

Summary Report

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

Sampling point: Groundwater Bore MPGM5

Source: MP

Customer Sampling Point: 025

Sampling Code: D6

Sample Frequency: Month

Testing Laboratory: ALS Environmental

Zinc (Zn) EG020A-T 0.025 mg/L

Anions Test Method: ED009-X

Filtered

Fluoride (F) 0.184 mg/L

Chloride (Cl) 158 mg/L

Sulfate (SO4) 301 mg/L

Alkalinity Test Method: ED037-P

Total

Total Alkalinity (CaCO3) 198 mg/L

Physical Test Method: EA015H

Total

Total Dissolved Solids @ 180°C 797 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1723019. Report Date: 21-Sep-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: 2153413

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

MPW018392

Date Sampled

13-Sep-2017 10:48

Date Received

14-Sep-2017

Date Completed

14-Sep-2017

Date Authorised

14-Sep-2017

Summary Report

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

Sampling point: Groundwater Bore MPGM5

Source: MP

Customer Sampling Point: 027

Sampling Code: D8

Sample Frequency: Month

Testing Laboratory: Mount Piper

Water

Field Analysis Test Method: Analysis in Field
Dry

Total

Authorised by Nikki Tomlinson
Senior Chemist

Final - Report Number: 2153413
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 MPW018393
Date Sampled 14-Sep-2017 09:00
Date Received 15-Sep-2017
Date Completed 21-Sep-2017
Date Authorised 26-Sep-2017

Summary Report

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

Sampling point: Groundwater Bore MPGM5

Source: MP **Customer Sampling Point:** 028 **Sampling Code:** D9 **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	52 L
Recharge Bore Level	*Analysis in Field	12.3 m
pH	CA12125	5.90
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		0.05 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		43.4 mg/L
Chromium (Cr)	EG020A-T		<0.001 mg/L
Copper (Cu)	EG020A-T		<0.001 mg/L
Iron (Fe)	EG094B-F	0.600 mg/L	
Lead (Pb)	EG020A-T		<0.001 mg/L
Magnesium (Mg)	ED093T-UL		52.2 mg/L
Manganese (Mn)	EG020A-F	0.128 mg/L	
Molybdenum (Mo)	EG020A-T		<0.001 mg/L
Nickel (Ni)	EG020A-T		0.009 mg/L
Potassium (K)	ED093T-UL		8.54 mg/L
Selenium (Se)	EG094B-T		0.0005 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		66.1 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: 2153413
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 MPW018393
Date Sampled 14-Sep-2017 09:00
Date Received 15-Sep-2017
Date Completed 21-Sep-2017
Date Authorised 26-Sep-2017

Summary Report

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

Sampling point: Groundwater Bore MPGM5

Source: MP **Customer Sampling Point:** 028 **Sampling Code:** D9 **Sample Frequency:** Month

Testing Laboratory: ALS Environmental

Zinc (Zn)	EG020A-T	0.028 mg/L
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Anions Test Method: ED009-X	Filtered	
Fluoride (F)		0.083 mg/L
Chloride (Cl)		30.3 mg/L
Sulfate (SO4)		337 mg/L

Alkalinity Test Method: ED037-P	Total	
Total Alkalinity (CaCO3)		135 mg/L

Physical Test Method: EA015H	Total	
Total Dissolved Solids @ 180°C		616 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1723019. Report Date: 21-Sep-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: 2153413

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

MPW018394

Date Sampled

13-Sep-2017 11:10

Date Received

14-Sep-2017

Date Completed

14-Sep-2017

Date Authorised

14-Sep-2017

Summary Report

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

Sampling point: Groundwater Bore MPGM5

Source: MP

Customer Sampling Point: 026

Sampling Code: D7

Sample Frequency: Month

Testing Laboratory: Mount Piper

Water

Field Analysis Test Method: Analysis in Field

Total

Initial Bore Level

19.9 m

Insufficient Volume to Sample

N Tomlinson

Authorised by Nikki Tomlinson
Senior Chemist

Final - Report Number: 2153413

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

MPW018395

Date Sampled

14-Sep-2017 09:03

Date Received

14-Sep-2017

Date Completed

14-Sep-2017

Date Authorised

14-Sep-2017

Summary Report

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

Sampling point: Groundwater Bore MPGM5

Source: MP

Customer Sampling Point: 023

Sampling Code: D4

Sample Frequency: Month

Testing Laboratory: Mount Piper

Water

Field Analysis Test Method: Analysis in Field

Total

Initial Bore Level

21.9 m

Bore Volume Pumped

0.1 L

Recharge Bore Level

22.0 m

Volume Not Extractable

N Tomlinson

Authorised by Nikki Tomlinson
Senior Chemist

Final - Report Number: 2153413
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 MPW018396
Date Sampled 13-Sep-2017 11:41
Date Received 15-Sep-2017
Date Completed 21-Sep-2017
Date Authorised 26-Sep-2017

Summary Report

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

Sampling point: Groundwater Bore MPGM5

Source: MP **Customer Sampling Point:** 022 **Sampling Code:** D3 **Sample Frequency:** Month

Testing Laboratory: Mount Piper
Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	11.7 m
Bore Volume Pumped	*Analysis in Field	117 L
Recharge Bore Level	*Analysis in Field	11.7 m
pH	CA12125	5.79
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		0.04 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		48.5 mg/L
Chromium (Cr)	EG020A-T		<0.001 mg/L
Copper (Cu)	EG020A-T		<0.001 mg/L
Iron (Fe)	EG020A-F	7.41 mg/L	
Lead (Pb)	EG020A-T		0.003 mg/L
Magnesium (Mg)	ED093T-UL		53.1 mg/L
Manganese (Mn)	EG020A-F	6.87 mg/L	
Molybdenum (Mo)	EG020A-T		<0.001 mg/L
Nickel (Ni)	EG020A-T		0.372 mg/L
Potassium (K)	ED093T-UL		9.80 mg/L
Selenium (Se)	EG094B-T		<0.0002 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		43.8 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: 2153413
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 MPW018396
Date Sampled 13-Sep-2017 11:41
Date Received 15-Sep-2017
Date Completed 21-Sep-2017
Date Authorised 26-Sep-2017

Summary Report

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

Sampling point: Groundwater Bore MPGM5

Source: MP **Customer Sampling Point:** 022 **Sampling Code:** D3 **Sample Frequency:** Month

Testing Laboratory: ALS Environmental

Zinc (Zn)	EG020A-T	0.114 mg/L
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Anions Test Method: ED009-X	Filtered	
Fluoride (F)	0.042 mg/L	
Chloride (Cl)	32.7 mg/L	
Sulfate (SO4)	283 mg/L	

Alkalinity Test Method: ED037-P		Total
Total Alkalinity (CaCO3)		167 mg/L

Physical Test Method: EA015H		Total
Total Dissolved Solids @ 180°C		568 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: ES1723019. Report Date: 21-Sep-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: 2153413
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 MPW018397
Date Sampled 13-Sep-2017 13:52
Date Received 15-Sep-2017
Date Completed 21-Sep-2017
Date Authorised 26-Sep-2017

Summary Report

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

Sampling point: Groundwater Bore MPGM5

Source: MP **Customer Sampling Point:** 020 **Sampling Code:** D1 **Sample Frequency:** Month

Testing Laboratory: Mount Piper
Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	11.7 m
Bore Volume Pumped	*Analysis in Field	115 L
Recharge Bore Level	*Analysis in Field	11.7 m
pH	CA12125	6.07
Conductivity	CA12125	590 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		0.049 mg/L
Boron (B)	EG020A-T		<0.05 mg/L
Cadmium (Cd)	EG020A-T		<0.0001 mg/L
Calcium (Ca)	ED093T-UL		42.9 mg/L
Chromium (Cr)	EG020A-T		<0.001 mg/L
Copper (Cu)	EG020A-T		<0.001 mg/L
Iron (Fe)	EG020A-F	15.4 mg/L	
Lead (Pb)	EG020A-T		<0.001 mg/L
Magnesium (Mg)	ED093T-UL		26.3 mg/L
Manganese (Mn)	EG020A-F	0.967 mg/L	
Molybdenum (Mo)	EG020A-T		<0.001 mg/L
Nickel (Ni)	EG020A-T		0.005 mg/L
Potassium (K)	ED093T-UL		8.57 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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 Senior Chemist

Final - Report Number: 2153413
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 MPW018397
Date Sampled 13-Sep-2017 13:52
Date Received 15-Sep-2017
Date Completed 21-Sep-2017
Date Authorised 26-Sep-2017

Summary Report

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

Sampling point: Groundwater Bore MPGM5

Source: MP **Customer Sampling Point:** 020 **Sampling Code:** D1 **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)		0.047 mg/L
Chloride (Cl)		19.4 mg/L
Sulfate (SO4)		91.2 mg/L

Alkalinity Test Method: ED037-P	Total	
Total Alkalinity (CaCO3)		188 mg/L

Physical Test Method: EA015H	Total	
Total Dissolved Solids @ 180°C		339 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1723019. Report Date: 21-Sep-2017

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 Senior Chemist

Final - Report Number: 2153413
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 MPW018398
Date Sampled 13-Sep-2017 12:00
Date Received 15-Sep-2017
Date Completed 21-Sep-2017
Date Authorised 26-Sep-2017

Summary Report

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

Sampling point: Groundwater Bore MPGM5

Source: MP **Customer Sampling Point:** 021 **Sampling Code:** D2 **Sample Frequency:** Month

Testing Laboratory: Mount Piper
Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	12.3 m
Bore Volume Pumped	*Analysis in Field	28 L
Recharge Bore Level	*Analysis in Field	12.3 m
pH	CA12125	5.72
Conductivity	CA12125	940 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		2.07 mg/L
Arsenic (As)	EG020A-T		0.007 mg/L
Barium (Ba)	EG020A-T		0.052 mg/L
Boron (B)	EG020A-T		<0.05 mg/L
Cadmium (Cd)	EG020A-T		0.0002 mg/L
Calcium (Ca)	ED093T-UL		60.3 mg/L
Chromium (Cr)	EG020A-T		0.004 mg/L
Copper (Cu)	EG020A-T		0.020 mg/L
Iron (Fe)	EG020A-F	17.6 mg/L	
Lead (Pb)	EG020A-T		0.009 mg/L
Magnesium (Mg)	ED093T-UL		55.8 mg/L
Manganese (Mn)	EG020A-F	8.02 mg/L	
Molybdenum (Mo)	EG020A-T		<0.001 mg/L
Nickel (Ni)	EG020A-T		0.363 mg/L
Potassium (K)	ED093T-UL		10.7 mg/L
Selenium (Se)	EG094B-T		0.0005 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		24.0 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: 2153413
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 MPW018398
Date Sampled 13-Sep-2017 12:00
Date Received 15-Sep-2017
Date Completed 21-Sep-2017
Date Authorised 26-Sep-2017

Summary Report

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

Sampling point: Groundwater Bore MPGM5

Source: MP **Customer Sampling Point:** 021 **Sampling Code:** D2 **Sample Frequency:** Month

Testing Laboratory: ALS Environmental

Zinc (Zn)	EG020A-T	0.547 mg/L
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Anions Test Method: ED009-X	Filtered	
Fluoride (F)		0.051 mg/L
Chloride (Cl)		15.1 mg/L
Sulfate (SO4)		349 mg/L

Alkalinity Test Method: ED037-P	Total	
Total Alkalinity (CaCO3)		133 mg/L

Physical Test Method: EA015H	Total	
Total Dissolved Solids @ 180°C		612 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1723019. Report Date: 21-Sep-2017

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Authorised by Thanh Hoang Le
 Senior Chemist

Final - Report Number: 2153413
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 MPW018399
Date Sampled 13-Sep-2017 13:22
Date Received 15-Sep-2017
Date Completed 21-Sep-2017
Date Authorised 26-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:** 010 **Sampling Code:** D5 **Sample Frequency:** Month

Testing Laboratory: Mount Piper
Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	10.8 m
Bore Volume Pumped	*Analysis in Field	253 L
Recharge Bore Level	*Analysis in Field	10.8 m
pH	CA12125	5.87
Conductivity	CA12125	1290 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		0.018 mg/L
Boron (B)	EG020A-T		0.11 mg/L
Cadmium (Cd)	EG020A-T		<0.0001 mg/L
Calcium (Ca)	ED093T-UL		92.2 mg/L
Chromium (Cr)	EG020A-T		0.002 mg/L
Copper (Cu)	EG020A-T		<0.001 mg/L
Iron (Fe)	EG020A-F	65.1 mg/L	
Lead (Pb)	EG020A-T		<0.001 mg/L
Magnesium (Mg)	ED093T-UL		68.6 mg/L
Manganese (Mn)	EG020A-F	9.02 mg/L	
Molybdenum (Mo)	EG020A-T		<0.001 mg/L
Nickel (Ni)	EG020A-T		0.057 mg/L
Potassium (K)	ED093T-UL		8.77 mg/L
Selenium (Se)	EG094B-T		0.0004 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		27.0 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: 2153413
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 MPW018399
Date Sampled 13-Sep-2017 13:22
Date Received 15-Sep-2017
Date Completed 21-Sep-2017
Date Authorised 26-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:** 010 **Sampling Code:** D5 **Sample Frequency:** Month

Testing Laboratory: ALS Environmental

Zinc (Zn)	EG020A-T	0.034 mg/L
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Anions Test Method: ED009-X	Filtered	
Fluoride (F)		0.086 mg/L
Chloride (Cl)		24.4 mg/L
Sulfate (SO4)		585 mg/L

Alkalinity Test Method: ED037-P		Total
Total Alkalinity (CaCO3)		103 mg/L

Physical Test Method: EA015H		Total
Total Dissolved Solids @ 180°C		1020 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1723019. Report Date: 21-Sep-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: 2153413

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

MPW018400

Date Sampled

13-Sep-2017 12:05

Date Received

14-Sep-2017

Date Completed

14-Sep-2017

Date Authorised

14-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: 011

Sampling Code: D6

Sample Frequency: Month

Testing Laboratory: Mount Piper

Water

Field Analysis
Dry

Test Method: Analysis in Field

Total

Authorised by Nikki Tomlinson
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
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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 (CaCO ₃)		109 mg/L
Phenolphthalein Alkalinity (CaCO ₃)		<1 mg/L
Bicarbonate (CaCO ₃)		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 (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: ES1723970. Report Date: 3-Oct-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: 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

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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 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 MPMG4

Source: MP **Customer Sampling Point:** 014 **Sampling Code:** D9 **Sample Frequency:** Month

Testing Laboratory: ALS Environmental

Zinc (Zn)	EG020A-T	0.102 mg/L
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Anions Test Method: ED009-X	Filtered	
Fluoride (F)	0.051 mg/L	
Chloride (Cl)	184 mg/L	
Sulfate (SO4)	1380 mg/L	

Alkalinity Test Method: ED037-P		Total
Total Alkalinity (CaCO3)		78 mg/L

Physical Test Method: EA015H		Total
Total Dissolved Solids @ 180°C		2430 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 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

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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

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

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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 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

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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 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

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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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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: 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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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

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
Dry

Test Method: Analysis in Field

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 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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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 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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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 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

* 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 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
-----------	----------	------------

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

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

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

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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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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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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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	

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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 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

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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: 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

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

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

* 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 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: 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

* 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 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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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

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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: 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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 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: 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

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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 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
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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

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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 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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 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: 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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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

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

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
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 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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 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 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

* 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 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

* 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: 2178508

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

MPW018778

Date Sampled

12-Oct-2017 08:50

Date Received

17-Oct-2017

Date Completed

23-Oct-2017

Date Authorised

25-Oct-2017

Summary Report

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

Sampling point: Groundwater Bore MPGM5

Source: MP

Customer Sampling Point: 030

Sampling Code: D11

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	74 L
Recharge Bore Level	*Analysis in Field	7.5 m
pH	CA12125	6.02
Conductivity	CA12125	700 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		0.019 mg/L
Boron (B)	EG020A-T		<0.05 mg/L
Cadmium (Cd)	EG020A-T		<0.0001 mg/L
Calcium (Ca)	ED093T-UL		42.2 mg/L
Chromium (Cr)	EG020A-T		<0.001 mg/L
Copper (Cu)	EG020A-T		<0.001 mg/L
Iron (Fe)	EG020A-F	8.29 mg/L	
Lead (Pb)	EG020A-T		<0.001 mg/L
Magnesium (Mg)	ED093T-UL		44.0 mg/L
Manganese (Mn)	EG020A-F	1.55 mg/L	
Molybdenum (Mo)	EG020A-T		<0.001 mg/L
Nickel (Ni)	EG020A-T		0.073 mg/L
Potassium (K)	ED093T-UL		7.50 mg/L
Selenium (Se)	EG094B-T		<0.0002 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		21.0 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: 2178508

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

MPW018778

Date Sampled

12-Oct-2017 08:50

Date Received

17-Oct-2017

Date Completed

23-Oct-2017

Date Authorised

25-Oct-2017

Summary Report

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

Sampling point: Groundwater Bore MPGM5

Source: MP

Customer Sampling Point: 030

Sampling Code: D11

Sample Frequency: Month

Testing Laboratory: ALS Environmental

Zinc (Zn)	EG020A-T	0.056 mg/L
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Anions Test Method: ED009-X

Fluoride (F)	Filtered	0.062 mg/L
Chloride (Cl)		14.1 mg/L
Sulfate (SO4)		246 mg/L

Alkalinity Test Method: ED037-P

Total Alkalinity (CaCO3)	Total
	115 mg/L

Physical Test Method: EA015H

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

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1725729. Report Date: 20-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: 2178508
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 MPW018779
Date Sampled 13-Oct-2017 08:11
Date Received 17-Oct-2017
Date Completed 23-Oct-2017
Date Authorised 25-Oct-2017

Summary Report

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

Sampling point: Groundwater Bore MPGM5

Source: MP **Customer Sampling Point:** 031 **Sampling Code:** D12 **Sample Frequency:** Month

Testing Laboratory: Mount Piper
Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	4.4 m
Bore Volume Pumped	*Analysis in Field	8 L
Recharge Bore Level	*Analysis in Field	5.2 m
pH	CA12125	6.18
Conductivity	CA12125	660 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		0.002 mg/L
Barium (Ba)	EG020A-T		0.155 mg/L
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-T		<0.001 mg/L
Iron (Fe)	EG020A-F	8.74 mg/L	
Lead (Pb)	EG020A-T		<0.001 mg/L
Magnesium (Mg)	ED093T-UL		29.3 mg/L
Manganese (Mn)	EG020A-F	6.65 mg/L	
Molybdenum (Mo)	EG020A-T		<0.001 mg/L
Nickel (Ni)	EG020A-T		0.042 mg/L
Potassium (K)	ED093T-UL		4.31 mg/L
Selenium (Se)	EG094B-T		<0.0002 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		42.8 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: 2178508

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

MPW018779

Date Sampled

13-Oct-2017 08:11

Date Received

17-Oct-2017

Date Completed

23-Oct-2017

Date Authorised

25-Oct-2017

Summary Report

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

Sampling point: Groundwater Bore MPGM5

Source: MP

Customer Sampling Point: 031

Sampling Code: D12

Sample Frequency: Month

Testing Laboratory: ALS Environmental

Zinc (Zn)	EG020A-T	0.020 mg/L
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Anions Test Method: ED009-X

	Filtered
Fluoride (F)	0.090 mg/L
Chloride (Cl)	57.1 mg/L
Sulfate (SO4)	46.5 mg/L

Alkalinity Test Method: ED037-P

Total Alkalinity (CaCO3)	Total 167 mg/L
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Physical Test Method: EA015H

Total Dissolved Solids @ 180°C	Total 291 mg/L
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Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1725729. Report Date: 20-Oct-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: 2178508

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

MPW018780

Date Sampled

12-Oct-2017 09:30

Date Received

17-Oct-2017

Date Completed

23-Oct-2017

Date Authorised

25-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: 012

Sampling Code: D7

Sample Frequency: Month

Testing Laboratory: Mount Piper

Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	1.2 m
Bore Volume Pumped	*Analysis in Field	42 L
Recharge Bore Level	*Analysis in Field	1.2 m
pH	CA12125	6.47
Conductivity	CA12125	555 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		0.098 mg/L
Boron (B)	EG020A-T		<0.05 mg/L
Cadmium (Cd)	EG020A-T		<0.0001 mg/L
Calcium (Ca)	ED093T-UL		46.7 mg/L
Chromium (Cr)	EG020A-T		<0.001 mg/L
Copper (Cu)	EG020A-T		<0.001 mg/L
Iron (Fe)	EG020A-F	0.43 mg/L	
Lead (Pb)	EG020A-T		<0.001 mg/L
Magnesium (Mg)	ED093T-UL		23.8 mg/L
Manganese (Mn)	EG020A-F	0.948 mg/L	
Molybdenum (Mo)	EG020A-T		<0.001 mg/L
Nickel (Ni)	EG020A-T		<0.001 mg/L
Potassium (K)	ED093T-UL		9.23 mg/L
Selenium (Se)	EG094B-T		<0.0002 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		23.5 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: 2178508

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

MPW018780

Date Sampled

12-Oct-2017 09:30

Date Received

17-Oct-2017

Date Completed

23-Oct-2017

Date Authorised

25-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: 012

Sampling Code: D7

Sample Frequency: Month

Testing Laboratory: ALS Environmental

Zinc (Zn)	EG020A-T	<0.005 mg/L
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Anions Test Method: ED009-X

Fluoride (F)	Filtered	0.121 mg/L
Chloride (Cl)		19.5 mg/L
Sulfate (SO4)		22.8 mg/L

Alkalinity Test Method: ED037-P

Total Alkalinity (CaCO3)	Total
	228 mg/L

Physical Test Method: EA015H

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

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1725729. Report Date: 20-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: 2178508

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

MPW018781

Date Sampled

13-Oct-2017 08:30

Date Received

17-Oct-2017

Date Completed

23-Oct-2017

Date Authorised

25-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: 007

Sampling Code: D2

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	59 L
Recharge Bore Level	*Analysis in Field	2.7 m
pH	CA12125	5.22
Conductivity	CA12125	3560 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		0.82 mg/L
Arsenic (As)	EG020A-T		<0.001 mg/L
Barium (Ba)	EG020A-T		0.030 mg/L
Boron (B)	EG020A-T		0.52 mg/L
Cadmium (Cd)	EG020A-T		0.0002 mg/L
Calcium (Ca)	ED093T-UL		235 mg/L
Chromium (Cr)	EG020A-T		<0.001 mg/L
Copper (Cu)	EG020A-T		<0.001 mg/L
Iron (Fe)	EG020A-F	9.32 mg/L	
Lead (Pb)	EG020A-T		<0.001 mg/L
Magnesium (Mg)	ED093T-UL		197 mg/L
Manganese (Mn)	EG020A-F	8.82 mg/L	
Molybdenum (Mo)	EG020A-T		<0.001 mg/L
Nickel (Ni)	EG020A-T		0.402 mg/L
Potassium (K)	ED093T-UL		23.2 mg/L
Selenium (Se)	EG094B-T		0.0003 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		318 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: 2178508
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 MPW018781
Date Sampled 13-Oct-2017 08:30
Date Received 17-Oct-2017
Date Completed 23-Oct-2017
Date Authorised 25-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:** 007 **Sampling Code:** D2 **Sample Frequency:** Month

Testing Laboratory: ALS Environmental

Zinc (Zn)	EG020A-T	0.669 mg/L
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Anions Test Method: ED009-X	Filtered	
Fluoride (F)	0.078 mg/L	
Chloride (Cl)	244 mg/L	
Sulfate (SO4)	1810 mg/L	

Alkalinity Test Method: ED037-P		Total
Total Alkalinity (CaCO3)		1 mg/L

Physical Test Method: EA015H		Total
Total Dissolved Solids @ 180°C		2330 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1725729. Report Date: 20-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: 2178508

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

MPW018782

Date Sampled

12-Oct-2017 10:25

Date Received

17-Oct-2017

Date Completed

23-Oct-2017

Date Authorised

25-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: 009

Sampling Code: D4

Sample Frequency: Month

Testing Laboratory: Mount Piper

Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	1.8 m
Bore Volume Pumped	*Analysis in Field	117 L
Recharge Bore Level	*Analysis in Field	1.8 m
pH	CA12125	3.31
Conductivity	CA12125	1040 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		22.0 mg/L
Arsenic (As)	EG020A-T		0.056 mg/L
Barium (Ba)	EG020A-T		0.012 mg/L
Boron (B)	EG020A-T		<0.05 mg/L
Cadmium (Cd)	EG020A-T		0.0008 mg/L
Calcium (Ca)	ED093T-UL		13.1 mg/L
Chromium (Cr)	EG020A-T		0.003 mg/L
Copper (Cu)	EG020A-T		0.002 mg/L
Iron (Fe)	EG020A-F	133 mg/L	
Lead (Pb)	EG020A-T		0.023 mg/L
Magnesium (Mg)	ED093T-UL		7.72 mg/L
Manganese (Mn)	EG020A-F	0.834 mg/L	
Molybdenum (Mo)	EG020A-T		<0.001 mg/L
Nickel (Ni)	EG020A-T		0.025 mg/L
Potassium (K)	ED093T-UL		6.92 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: 2178508

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

MPW018782

Date Sampled

12-Oct-2017 10:25

Date Received

17-Oct-2017

Date Completed

23-Oct-2017

Date Authorised

25-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: 009

Sampling Code: D4

Sample Frequency: Month

Testing Laboratory: ALS Environmental

Zinc (Zn)	EG020A-T	0.243 mg/L
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Anions Test Method: ED009-X

	Filtered
Fluoride (F)	0.175 mg/L
Chloride (Cl)	9.92 mg/L
Sulfate (SO4)	470 mg/L

Alkalinity Test Method: ED037-P

Total Alkalinity (CaCO3)	Total
	<1 mg/L

Physical Test Method: EA015H

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

EA015 TDS, result has been confirmed for sample 6 by re-analysis.

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1725729. Report Date: 20-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: 2178508

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

MPW018783

Date Sampled

13-Oct-2017 08:45

Date Received

17-Oct-2017

Date Completed

23-Oct-2017

Date Authorised

25-Oct-2017

Summary Report

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

Sampling point: Groundwater Bore MPGM5

Source: MP

Customer Sampling Point: 024

Sampling Code: D5

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	15 L
Recharge Bore Level	*Analysis in Field	7.0 m
pH	CA12125	6.11
Conductivity	CA12125	2110 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		0.070 mg/L
Boron (B)	EG020A-T		<0.05 mg/L
Cadmium (Cd)	EG020A-T		<0.0001 mg/L
Calcium (Ca)	ED093T-UL		126 mg/L
Chromium (Cr)	EG020A-T		<0.001 mg/L
Copper (Cu)	EG020A-T		<0.001 mg/L
Iron (Fe)	EG094B-F	0.896 mg/L	
Lead (Pb)	EG020A-T		<0.001 mg/L
Magnesium (Mg)	ED093T-UL		136 mg/L
Manganese (Mn)	EG020A-F	20.7 mg/L	
Molybdenum (Mo)	EG020A-T		<0.001 mg/L
Nickel (Ni)	EG020A-T		0.137 mg/L
Potassium (K)	ED093T-UL		12.1 mg/L
Selenium (Se)	EG094B-T		<0.0002 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		120 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: 2178508
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 MPW018783
Date Sampled 13-Oct-2017 08:45
Date Received 17-Oct-2017
Date Completed 23-Oct-2017
Date Authorised 25-Oct-2017

Summary Report

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

Sampling point: Groundwater Bore MPGM5

Source: MP **Customer Sampling Point:** 024 **Sampling Code:** D5 **Sample Frequency:** Month

Testing Laboratory: ALS Environmental

Zinc (Zn)	EG020A-T	0.053 mg/L
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Anions Test Method: ED009-X		Filtered
Fluoride (F)		0.064 mg/L
Chloride (Cl)		162 mg/L
Sulfate (SO4)		634 mg/L

Alkalinity Test Method: ED037-P		Total
Total Alkalinity (CaCO3)		456 mg/L

Physical Test Method: EA015H		Total
Total Dissolved Solids @ 180°C		1430 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1725729. Report Date: 20-Oct-2017

* NATA accreditation does not cover the performance of this service



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 Accredited for compliance with ISO/IEC 17025 - Testing.

Authorised by Thanh Hoang Le
 Senior Chemist

Final - Report Number: 2178508

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

MPW018784

Date Sampled

13-Oct-2017 08:55

Date Received

17-Oct-2017

Date Completed

23-Oct-2017

Date Authorised

25-Oct-2017

Summary Report

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

Sampling point: Groundwater Bore MPGM5

Source: MP

Customer Sampling Point: 025

Sampling Code: D6

Sample Frequency: Month

Testing Laboratory: Mount Piper

Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	8.9 m
Bore Volume Pumped	*Analysis in Field	4 L
Recharge Bore Level	*Analysis in Field	9.2 m
pH	CA12125	5.83
Conductivity	CA12125	1320 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		0.005 mg/L
Barium (Ba)	EG020A-T		0.051 mg/L
Boron (B)	EG020A-T		<0.05 mg/L
Cadmium (Cd)	EG020A-T		<0.0001 mg/L
Calcium (Ca)	ED093T-UL		12.1 mg/L
Chromium (Cr)	EG020A-T		<0.001 mg/L
Copper (Cu)	EG020A-T		<0.001 mg/L
Iron (Fe)	EG020A-F	63.2 mg/L	
Lead (Pb)	EG020A-T		0.004 mg/L
Magnesium (Mg)	ED093T-UL		33.6 mg/L
Manganese (Mn)	EG020A-F	4.09 mg/L	
Molybdenum (Mo)	EG020A-T		<0.001 mg/L
Nickel (Ni)	EG020A-T		0.052 mg/L
Potassium (K)	ED093T-UL		2.99 mg/L
Selenium (Se)	EG094B-T		<0.0002 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		148 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: 2178508
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 MPW018784
Date Sampled 13-Oct-2017 08:55
Date Received 17-Oct-2017
Date Completed 23-Oct-2017
Date Authorised 25-Oct-2017

Summary Report

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

Sampling point: Groundwater Bore MPM5

Source: MP **Customer Sampling Point:** 025 **Sampling Code:** D6 **Sample Frequency:** Month

Testing Laboratory: ALS Environmental

Zinc (Zn)	EG020A-T	0.030 mg/L
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Anions Test Method: ED009-X		Filtered
Fluoride (F)		0.025 mg/L
Chloride (Cl)		156 mg/L
Sulfate (SO4)		291 mg/L

Alkalinity Test Method: ED037-P		Total
Total Alkalinity (CaCO3)		158 mg/L

Physical Test Method: EA015H		Total
Total Dissolved Solids @ 180°C		810 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1725729. Report Date: 20-Oct-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: 2178508

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

MPW018785

Date Sampled

12-Oct-2017 11:05

Date Received

13-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: Groundwater Bore MPGM5

Source: MP

Customer Sampling Point: 027

Sampling Code: D8

Sample Frequency: 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: 2178508

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

MPW018786

Date Sampled

13-Oct-2017 09:10

Date Received

17-Oct-2017

Date Completed

23-Oct-2017

Date Authorised

25-Oct-2017

Summary Report

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

Sampling point: Groundwater Bore MPGM5

Source: MP

Customer Sampling Point: 028

Sampling Code: D9

Sample Frequency: Month

Testing Laboratory: Mount Piper

Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	10.8 m
Bore Volume Pumped	*Analysis in Field	20 L
Recharge Bore Level	*Analysis in Field	12.2 m
pH	CA12125	6.00
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		0.12 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		43.5 mg/L
Chromium (Cr)	EG020A-T		<0.001 mg/L
Copper (Cu)	EG020A-T		<0.001 mg/L
Iron (Fe)	EG094B-F	0.042 mg/L	
Lead (Pb)	EG020A-T		<0.001 mg/L
Magnesium (Mg)	ED093T-UL		51.8 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		8.77 mg/L
Selenium (Se)	EG094B-T		0.0002 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		67.4 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: 2178508
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 MPW018786
Date Sampled 13-Oct-2017 09:10
Date Received 17-Oct-2017
Date Completed 23-Oct-2017
Date Authorised 25-Oct-2017

Summary Report

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

Sampling point: Groundwater Bore MPM5

Source: MP **Customer Sampling Point:** 028 **Sampling Code:** D9 **Sample Frequency:** Month

Testing Laboratory: ALS Environmental

Zinc (Zn)	EG020A-T	0.032 mg/L
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Anions Test Method: ED009-X	Filtered	
Fluoride (F)	0.054 mg/L	
Chloride (Cl)	26.1 mg/L	
Sulfate (SO4)	350 mg/L	

Alkalinity Test Method: ED037-P	Total	
Total Alkalinity (CaCO3)	134 mg/L	

Physical Test Method: EA015H	Total	
Total Dissolved Solids @ 180°C	552 mg/L	

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1725729. Report Date: 20-Oct-2017

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 Senior Chemist

Final - Report Number: 2178508

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

MPW018787

Date Sampled

12-Oct-2017 11:20

Date Received

13-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: Groundwater Bore MPGM5

Source: MP

Customer Sampling Point: 026

Sampling Code: D7

Sample Frequency: Month

Testing Laboratory: Mount Piper

Water

Field Analysis Test Method: Analysis in Field

Total

Initial Bore Level

19.9 m

insufficient volume to sample

Allan Bowcher

Authorised by Allan Bowcher
Chemist

Final - Report Number: 2178508

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

MPW018788

Date Sampled

13-Oct-2017 09:20

Date Received

13-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: Groundwater Bore MPGM5

Source: MP

Customer Sampling Point: 023

Sampling Code: D4

Sample Frequency: Month

Testing Laboratory: Mount Piper

Water

Field Analysis Test Method: Analysis in Field

Total

Initial Bore Level

21.9 m

Bore Volume Pumped

0 L

Recharge Bore Level

21.9 m

volume not extractable

Allan Bowcher

Authorised by Allan Bowcher
Chemist

Final - Report Number: 2178508

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

MPW018789

Date Sampled

12-Oct-2017 11:53

Date Received

17-Oct-2017

Date Completed

23-Oct-2017

Date Authorised

25-Oct-2017

Summary Report

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

Sampling point: Groundwater Bore MPGM5

Source: MP

Customer Sampling Point: 022

Sampling Code: D3

Sample Frequency: Month

Testing Laboratory: Mount Piper

Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	11.8 m
Bore Volume Pumped	*Analysis in Field	115 L
Recharge Bore Level	*Analysis in Field	11.8 m
pH	CA12125	5.88
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		0.16 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		47.9 mg/L
Chromium (Cr)	EG020A-T		<0.001 mg/L
Copper (Cu)	EG020A-T		<0.001 mg/L
Iron (Fe)	EG020A-F	6.53 mg/L	
Lead (Pb)	EG020A-T		0.002 mg/L
Magnesium (Mg)	ED093T-UL		51.6 mg/L
Manganese (Mn)	EG020A-F	6.65 mg/L	
Molybdenum (Mo)	EG020A-T		<0.001 mg/L
Nickel (Ni)	EG020A-T		0.363 mg/L
Potassium (K)	ED093T-UL		9.24 mg/L
Selenium (Se)	EG094B-T		<0.0002 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		43.5 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: 2178508
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 MPW018789
Date Sampled 12-Oct-2017 11:53
Date Received 17-Oct-2017
Date Completed 23-Oct-2017
Date Authorised 25-Oct-2017

Summary Report

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

Sampling point: Groundwater Bore MPM5

Source: MP **Customer Sampling Point:** 022 **Sampling Code:** D3 **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)		0.037 mg/L
Chloride (Cl)		32.2 mg/L
Sulfate (SO4)		284 mg/L

Alkalinity Test Method: ED037-P	Total	
Total Alkalinity (CaCO3)		162 mg/L

Physical Test Method: EA015H	Total	
Total Dissolved Solids @ 180°C		537 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1725729. Report Date: 20-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: 2178508

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

MPW018790

Date Sampled

12-Oct-2017 00:23

Date Received

17-Oct-2017

Date Completed

23-Oct-2017

Date Authorised

25-Oct-2017

Summary Report

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

Sampling point: Groundwater Bore MPGM5

Source: MP

Customer Sampling Point: 020

Sampling Code: D1

Sample Frequency: Month

Testing Laboratory: Mount Piper

Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	11.8 m
Bore Volume Pumped	*Analysis in Field	112 L
Recharge Bore Level	*Analysis in Field	11.8 m
pH	CA12125	6.11
Conductivity	CA12125	580 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		0.048 mg/L
Boron (B)	EG020A-T		<0.05 mg/L
Cadmium (Cd)	EG020A-T		<0.0001 mg/L
Calcium (Ca)	ED093T-UL		43.5 mg/L
Chromium (Cr)	EG020A-T		<0.001 mg/L
Copper (Cu)	EG020A-T		<0.001 mg/L
Iron (Fe)	EG020A-F	7.74 mg/L	
Lead (Pb)	EG020A-T		<0.001 mg/L
Magnesium (Mg)	ED093T-UL		26.4 mg/L
Manganese (Mn)	EG020A-F	0.965 mg/L	
Molybdenum (Mo)	EG020A-T		<0.001 mg/L
Nickel (Ni)	EG020A-T		0.006 mg/L
Potassium (K)	ED093T-UL		8.35 mg/L
Selenium (Se)	EG094B-T		<0.0002 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		21.0 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: 2178508
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 MPW018790
Date Sampled 12-Oct-2017 00:23
Date Received 17-Oct-2017
Date Completed 23-Oct-2017
Date Authorised 25-Oct-2017

Summary Report

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

Sampling point: Groundwater Bore MPGM5

Source: MP **Customer Sampling Point:** 020 **Sampling Code:** D1 **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)		0.052 mg/L
Chloride (Cl)		19.2 mg/L
Sulfate (SO4)		95.2 mg/L

Alkalinity Test Method: ED037-P	Total	
Total Alkalinity (CaCO3)		174 mg/L

Physical Test Method: EA015H	Total	
Total Dissolved Solids @ 180°C		316 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1725729. Report Date: 20-Oct-2017

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Authorised by Thanh Hoang Le
 Senior Chemist

Final - Report Number: 2178508

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

MPW018791

Date Sampled

12-Oct-2017 00:43

Date Received

17-Oct-2017

Date Completed

23-Oct-2017

Date Authorised

25-Oct-2017

Summary Report

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

Sampling point: Groundwater Bore MPGM5

Source: MP

Customer Sampling Point: 021

Sampling Code: D2

Sample Frequency: Month

Testing Laboratory: Mount Piper

Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	12.3 m
Bore Volume Pumped	*Analysis in Field	18 L
Recharge Bore Level	*Analysis in Field	12.3 m
pH	CA12125	5.76
Conductivity	CA12125	940 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		4.08 mg/L
Arsenic (As)	EG020A-T		0.010 mg/L
Barium (Ba)	EG020A-T		0.074 mg/L
Boron (B)	EG020A-T		<0.05 mg/L
Cadmium (Cd)	EG020A-T		0.0002 mg/L
Calcium (Ca)	ED093T-UL		64.4 mg/L
Chromium (Cr)	EG020A-T		0.008 mg/L
Copper (Cu)	EG020A-T		0.024 mg/L
Iron (Fe)	EG020A-F	13.0 mg/L	
Lead (Pb)	EG020A-T		0.012 mg/L
Magnesium (Mg)	ED093T-UL		58.5 mg/L
Manganese (Mn)	EG020A-F	8.16 mg/L	
Molybdenum (Mo)	EG020A-T		<0.001 mg/L
Nickel (Ni)	EG020A-T		0.379 mg/L
Potassium (K)	ED093T-UL		11.9 mg/L
Selenium (Se)	EG094B-T		0.0003 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		26.5 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: 2178508
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 MPW018791
Date Sampled 12-Oct-2017 00:43
Date Received 17-Oct-2017
Date Completed 23-Oct-2017
Date Authorised 25-Oct-2017

Summary Report

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

Sampling point: Groundwater Bore MPM5

Source: MP **Customer Sampling Point:** 021 **Sampling Code:** D2 **Sample Frequency:** Month

Testing Laboratory: ALS Environmental

Zinc (Zn)	EG020A-T	0.647 mg/L
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Anions Test Method: ED009-X	Filtered	
Fluoride (F)		0.042 mg/L
Chloride (Cl)		15.2 mg/L
Sulfate (SO4)		383 mg/L

Alkalinity Test Method: ED037-P	Total	
Total Alkalinity (CaCO3)		116 mg/L

Physical Test Method: EA015H	Total	
Total Dissolved Solids @ 180°C		596 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1725729. Report Date: 20-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: 2178508

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

MPW018792

Date Sampled

12-Oct-2017 13:25

Date Received

17-Oct-2017

Date Completed

23-Oct-2017

Date Authorised

25-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: 010

Sampling Code: D5

Sample Frequency: Month

Testing Laboratory: Mount Piper

Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	10.9 m
Bore Volume Pumped	*Analysis in Field	250 L
Recharge Bore Level	*Analysis in Field	10.9 m
pH	CA12125	5.93
Conductivity	CA12125	1290 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		0.017 mg/L
Boron (B)	EG020A-T		0.12 mg/L
Cadmium (Cd)	EG020A-T		<0.0001 mg/L
Calcium (Ca)	ED093T-UL		97.7 mg/L
Chromium (Cr)	EG020A-T		<0.001 mg/L
Copper (Cu)	EG020A-T		0.001 mg/L
Iron (Fe)	EG020A-F	40.5 mg/L	
Lead (Pb)	EG020A-T		<0.001 mg/L
Magnesium (Mg)	ED093T-UL		70.7 mg/L
Manganese (Mn)	EG020A-F	9.14 mg/L	
Molybdenum (Mo)	EG020A-T		<0.001 mg/L
Nickel (Ni)	EG020A-T		0.056 mg/L
Potassium (K)	ED093T-UL		8.91 mg/L
Selenium (Se)	EG094B-T		<0.0002 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		29.0 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: 2178508
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 MPW018792
Date Sampled 12-Oct-2017 13:25
Date Received 17-Oct-2017
Date Completed 23-Oct-2017
Date Authorised 25-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:** 010 **Sampling Code:** D5 **Sample Frequency:** Month

Testing Laboratory: ALS Environmental

Zinc (Zn)	EG020A-T	0.024 mg/L
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Anions Test Method: ED009-X	Filtered	
Fluoride (F)		0.098 mg/L
Chloride (Cl)		24.6 mg/L
Sulfate (SO4)		625 mg/L

Alkalinity Test Method: ED037-P	Total	
Total Alkalinity (CaCO3)		90 mg/L

Physical Test Method: EA015H	Total	
Total Dissolved Solids @ 180°C		921 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1725729. Report Date: 20-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

Customer Analytical Services

Mount Piper Power Station 350 Boulder Road Portland 2847 NSW

Email: customeranalyticalservices@nalco.com



Final - Report Number: 2178508

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

MPW018793

Date Sampled

12-Oct-2017 13:40

Date Received

13-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: Groundwater Bore MPGM4

Source: MP

Customer Sampling Point: 011

Sampling Code: D6

Sample Frequency: 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: 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
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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: 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

* 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: 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

* 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

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 μ S/cm
Temperature	CA12125	13.5 $^{\circ}$ 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

* 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

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

* 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 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

* 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: 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

* 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

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

* 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 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
Total Alkalinity (CaCO3)	8 mg/L

Physical Test Method: EA015H	Total
Total Dissolved Solids @ 180°C	181 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

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

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 **Test Method:** Analysis in Field
Dry

Total

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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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

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
 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

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
 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 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

* 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

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

Initial Bore Level

Total

17.0 m

insufficient volume to sample

Nominson

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	

* 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: 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 Alkalinity (CaCO3)	Total
	77 mg/L

Physical Test Method: EA015H

Total Dissolved Solids @ 180°C	Total
	55600 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 be 'Thanh Hoang Le'.

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	

* 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 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

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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 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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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: 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

Total Alkalinity (CaCO3)	99 mg/L
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Physical Test Method: EA015H

Total

Total Dissolved Solids @ 180°C	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

* 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 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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 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		Filtered
Fluoride (F)		0.151 mg/L
Chloride (Cl)		506 mg/L
Sulfate (SO4)		3160 mg/L
Alkalinity Test Method: ED037-P		Total
Total Alkalinity (CaCO3)		157 mg/L
Physical Test Method: EA015H		Total
Total Dissolved Solids @ 180°C		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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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
Total Alkalinity (CaCO3)		132 mg/L

Physical Test Method: EA015H		Total
Total Dissolved Solids @ 180°C		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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 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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 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

	Filtered
Fluoride (F)	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
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Physical Test Method: EA015H

Total Dissolved Solids @ 180°C	Total 9290 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

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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 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

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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: ALS Environmental

Zinc (Zn)	EG020A-T	0.095 mg/L
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Anions Test Method: ED009-X

Fluoride (F)	Filtered	0.089 mg/L
Chloride (Cl)		218 mg/L
Sulfate (SO4)		1580 mg/L

Alkalinity Test Method: ED037-P

Total Alkalinity (CaCO3)	Total
	112 mg/L

Physical Test Method: EA015H

Total Dissolved Solids @ 180°C	Total
	2740 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

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		
Fluoride (F)		Filtered 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

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
-----------	----------	------------

Anions Test Method: ED009-X

Fluoride (F)	Filtered	0.266 mg/L
Chloride (Cl)		22.3 mg/L
Sulfate (SO4)		289 mg/L

Alkalinity Test Method: ED037-P

Total Alkalinity (CaCO3)	Total
	322 mg/L

Physical Test Method: EA015H

Total Dissolved Solids @ 180°C	Total
	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

Fluoride (F)

Filtered

0.948 mg/L

Chloride (Cl)

3630 mg/L

Sulfate (SO4)

28300 mg/L

Alkalinity Test Method: ED037-P

Total Alkalinity (CaCO3)

Total

54 mg/L

Physical Test Method: EA015H

Total Dissolved Solids @ 180°C

Total

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.

A handwritten signature in black ink, appearing to be 'Thanh Hoang Le'.

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
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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

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

Fluoride (F)

Filtered

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 be 'Thanh Hoang Le'.

Authorised by Thanh Hoang Le
Senior Chemist

Final - Report Number: 2198312
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 MPW019187
Date Sampled 8-Nov-2017 08:27
Date Received 9-Nov-2017
Date Completed 21-Nov-2017
Date Authorised 21-Nov-2017

Summary Report

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

Sampling point: Groundwater Bore MPGM5

Source: MP **Customer Sampling Point:** 030 **Sampling Code:** D11 **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	72 L
Recharge Bore Level	*Analysis in Field	7.6 m
pH	CA12125	5.93
Conductivity	CA12125	700 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		0.020 mg/L
Boron (B)	EG020A-T		<0.05 mg/L
Cadmium (Cd)	EG020A-T		<0.0001 mg/L
Calcium (Ca)	ED093T-UL		40.2 mg/L
Chromium (Cr)	EG020A-T		<0.001 mg/L
Copper (Cu)	EG020A-T		<0.001 mg/L
Iron (Fe)	EG020A-F	7.42 mg/L	
Lead (Pb)	EG020A-T		<0.001 mg/L
Magnesium (Mg)	ED093T-UL		43.0 mg/L
Manganese (Mn)	EG020A-F	1.53 mg/L	
Molybdenum (Mo)	EG020A-T		<0.001 mg/L
Nickel (Ni)	EG020A-T		0.075 mg/L
Potassium (K)	ED093T-UL		6.09 mg/L
Selenium (Se)	EG094B-T		<0.0002 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		17.7 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: 2198312
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 MPW019187
Date Sampled 8-Nov-2017 08:27
Date Received 9-Nov-2017
Date Completed 21-Nov-2017
Date Authorised 21-Nov-2017

Summary Report

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

Sampling point: Groundwater Bore MPM5

Source: MP **Customer Sampling Point:** 030 **Sampling Code:** D11 **Sample Frequency:** Month

Testing Laboratory: ALS Environmental

Zinc (Zn) EG020A-T 0.061 mg/L

Anions Test Method: ED009-X

	Filtered
Fluoride (F)	0.068 mg/L
Chloride (Cl)	14.4 mg/L
Sulfate (SO4)	244 mg/L

Alkalinity Test Method: ED037-P

	Total
Total Alkalinity (CaCO3)	126 mg/L

Physical Test Method: EA015H

	Total
Total Dissolved Solids @ 180°C	524 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1728226. Report Date: 16-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: 2198312
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 MPW019188
Date Sampled 9-Nov-2017 08:00
Date Received 9-Nov-2017
Date Completed 21-Nov-2017
Date Authorised 21-Nov-2017

Summary Report

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

Sampling point: Groundwater Bore MPGM5

Source: MP **Customer Sampling Point:** 031 **Sampling Code:** D12 **Sample Frequency:** Month

Testing Laboratory: Mount Piper

Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	4.5 m
Bore Volume Pumped	*Analysis in Field	5.5 L
Recharge Bore Level	*Analysis in Field	5.2 m
pH	CA12125	6.19
Conductivity	CA12125	670 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		0.137 mg/L
Boron (B)	EG020A-T		<0.05 mg/L
Cadmium (Cd)	EG020A-T		<0.0001 mg/L
Calcium (Ca)	ED093T-UL		23.3 mg/L
Chromium (Cr)	EG020A-T		<0.001 mg/L
Copper (Cu)	EG020A-T		0.003 mg/L
Iron (Fe)	EG020A-F	20.9 mg/L	
Lead (Pb)	EG020A-T		<0.001 mg/L
Magnesium (Mg)	ED093T-UL		27.6 mg/L
Manganese (Mn)	EG020A-F	6.94 mg/L	
Molybdenum (Mo)	EG020A-T		<0.001 mg/L
Nickel (Ni)	EG020A-T		0.059 mg/L
Potassium (K)	ED093T-UL		2.80 mg/L
Selenium (Se)	EG094B-T		<0.0002 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		37.0 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: 2198312
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 MPW019188
Date Sampled 9-Nov-2017 08:00
Date Received 9-Nov-2017
Date Completed 21-Nov-2017
Date Authorised 21-Nov-2017

Summary Report

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

Sampling point: Groundwater Bore MPGM5

Source: MP **Customer Sampling Point:** 031 **Sampling Code:** D12 **Sample Frequency:** Month

Testing Laboratory: ALS Environmental

Zinc (Zn)	EG020A-T	0.022 mg/L
Anions	Test Method	Filtered
Fluoride (F)	ED009-X	<0.050 mg/L
Chloride (Cl)	ED009-X	57.2 mg/L
Sulfate (SO4)	ED009-X	61.8 mg/L

ED009x: samples ES1728226-4 and 9 required dilution due to matrix interferences. LOR values have been adjusted accordingly.

Alkalinity Test Method: ED037-P	Total
Total Alkalinity (CaCO3)	177 mg/L

Physical Test Method: EA015H	Total
Total Dissolved Solids @ 180°C	346 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1728226. Report Date: 16-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: 2198312
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 MPW019189
Date Sampled 8-Nov-2017 09:05
Date Received 9-Nov-2017
Date Completed 21-Nov-2017
Date Authorised 21-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:** 012 **Sampling Code:** D7 **Sample Frequency:** Month

Testing Laboratory: Mount Piper
Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	1.3 m
Bore Volume Pumped	*Analysis in Field	40 L
Recharge Bore Level	*Analysis in Field	1.3 m
pH	CA12125	6.44
Conductivity	CA12125	568 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		0.099 mg/L
Boron (B)	EG020A-T		<0.05 mg/L
Cadmium (Cd)	EG020A-T		<0.0001 mg/L
Calcium (Ca)	ED093T-UL		44.0 mg/L
Chromium (Cr)	EG020A-T		<0.001 mg/L
Copper (Cu)	EG020A-T		<0.001 mg/L
Iron (Fe)	EG020A-F	5.88 mg/L	
Lead (Pb)	EG020A-T		<0.001 mg/L
Magnesium (Mg)	ED093T-UL		22.7 mg/L
Manganese (Mn)	EG020A-F	0.948 mg/L	
Molybdenum (Mo)	EG020A-T		<0.001 mg/L
Nickel (Ni)	EG020A-T		<0.001 mg/L
Potassium (K)	ED093T-UL		7.33 mg/L
Selenium (Se)	EG094B-T		<0.0002 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		19.4 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: 2198312
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 MPW019189
Date Sampled 8-Nov-2017 09:05
Date Received 9-Nov-2017
Date Completed 21-Nov-2017
Date Authorised 21-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:** 012 **Sampling Code:** D7 **Sample Frequency:** Month

Testing Laboratory: ALS Environmental

Zinc (Zn) EG020A-T <0.005 mg/L

Anions Test Method: ED009-X

	Filtered
Fluoride (F)	0.092 mg/L
Chloride (Cl)	21.0 mg/L
Sulfate (SO4)	23.1 mg/L

Alkalinity Test Method: ED037-P

	Total
Total Alkalinity (CaCO3)	255 mg/L

Physical Test Method: EA015H

	Total
Total Dissolved Solids @ 180°C	403 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1728226. Report Date: 16-Nov-2017

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Authorised by Thanh Hoang Le
 Senior Chemist

Final - Report Number: 2198312
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 MPW019190
Date Sampled 9-Nov-2017 08:20
Date Received 9-Nov-2017
Date Completed 21-Nov-2017
Date Authorised 21-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:** 007 **Sampling Code:** D2 **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	60 L
Recharge Bore Level	*Analysis in Field	2.7 m
pH	CA12125	5.34
Conductivity	CA12125	2130 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		0.020 mg/L
Boron (B)	EG020A-T		0.33 mg/L
Cadmium (Cd)	EG020A-T		0.0001 mg/L
Calcium (Ca)	ED093T-UL		113 mg/L
Chromium (Cr)	EG020A-T		<0.001 mg/L
Copper (Cu)	EG020A-T		0.003 mg/L
Iron (Fe)	EG020A-F	8.46 mg/L	
Lead (Pb)	EG020A-T		0.001 mg/L
Magnesium (Mg)	ED093T-UL		92.7 mg/L
Manganese (Mn)	EG020A-F	4.58 mg/L	
Molybdenum (Mo)	EG020A-T		<0.001 mg/L
Nickel (Ni)	EG020A-T		0.190 mg/L
Potassium (K)	ED093T-UL		11.7 mg/L
Selenium (Se)	EG094B-T		<0.0002 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		183 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: 2198312
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 MPW019190
Date Sampled 9-Nov-2017 08:20
Date Received 9-Nov-2017
Date Completed 21-Nov-2017
Date Authorised 21-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:** 007 **Sampling Code:** D2 **Sample Frequency:** Month

Testing Laboratory: ALS Environmental

Zinc (Zn)	EG020A-T	0.246 mg/L
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Anions Test Method: ED009-X		Filtered
Fluoride (F)		0.054 mg/L
Chloride (Cl)		136 mg/L
Sulfate (SO4)		981 mg/L

Alkalinity Test Method: ED037-P		Total
Total Alkalinity (CaCO3)		4 mg/L

Physical Test Method: EA015H		Total
Total Dissolved Solids @ 180°C		1700 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1728226. Report Date: 16-Nov-2017

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 Senior Chemist

Final - Report Number: 2198312
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 MPW019191
Date Sampled 8-Nov-2017 10:00
Date Received 9-Nov-2017
Date Completed 21-Nov-2017
Date Authorised 21-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:** 009 **Sampling Code:** D4 **Sample Frequency:** Month

Testing Laboratory: Mount Piper
Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	1.5 m
Bore Volume Pumped	*Analysis in Field	124 L
Recharge Bore Level	*Analysis in Field	1.6 m
pH	CA12125	3.32
Conductivity	CA12125	1020 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		20.8 mg/L
Arsenic (As)	EG020A-T		0.048 mg/L
Barium (Ba)	EG020A-T		0.022 mg/L
Boron (B)	EG020A-T		<0.05 mg/L
Cadmium (Cd)	EG020A-T		0.0007 mg/L
Calcium (Ca)	ED093T-UL		9.34 mg/L
Chromium (Cr)	EG020A-T		0.003 mg/L
Copper (Cu)	EG020A-T		0.003 mg/L
Iron (Fe)	EG020A-F	133 mg/L	
Lead (Pb)	EG020A-T		0.017 mg/L
Magnesium (Mg)	ED093T-UL		5.75 mg/L
Manganese (Mn)	EG020A-F	0.843 mg/L	
Molybdenum (Mo)	EG020A-T		<0.001 mg/L
Nickel (Ni)	EG020A-T		0.021 mg/L
Potassium (K)	ED093T-UL		4.14 mg/L
Selenium (Se)	EG094B-T		0.0003 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		13.4 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: 2198312
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 MPW019191
Date Sampled 8-Nov-2017 10:00
Date Received 9-Nov-2017
Date Completed 21-Nov-2017
Date Authorised 21-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:** 009 **Sampling Code:** D4 **Sample Frequency:** Month

Testing Laboratory: ALS Environmental

Zinc (Zn) EG020A-T 0.220 mg/L

Anions Test Method: ED009-X

	Filtered
Fluoride (F)	0.182 mg/L
Chloride (Cl)	10.6 mg/L
Sulfate (SO4)	514 mg/L

Alkalinity Test Method: ED037-P

	Total
Total Alkalinity (CaCO3)	<1 mg/L

Physical Test Method: EA015H

	Total
Total Dissolved Solids @ 180°C	912 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1728226. Report Date: 16-Nov-2017

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 Senior Chemist

Final - Report Number: 2198312
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 MPW019192
Date Sampled 9-Nov-2017 08:35
Date Received 9-Nov-2017
Date Completed 17-Nov-2017
Date Authorised 21-Nov-2017

Summary Report

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

Sampling point: Groundwater Bore MPGM5

Source: MP **Customer Sampling Point:** 024 **Sampling Code:** D5 **Sample Frequency:** Month

Testing Laboratory: Mount Piper

Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	7.1 m
Bore Volume Pumped	*Analysis in Field	15 L
Recharge Bore Level	*Analysis in Field	7.1 m
pH	CA12125	6.08
Conductivity	CA12125	2040 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		0.063 mg/L
Boron (B)	EG020A-T		0.05 mg/L
Cadmium (Cd)	EG020A-T		<0.0001 mg/L
Calcium (Ca)	ED093T-UL		111 mg/L
Chromium (Cr)	EG020A-T		<0.001 mg/L
Copper (Cu)	EG020A-T		<0.001 mg/L
Iron (Fe)	EG094B-F	0.828 mg/L	
Lead (Pb)	EG020A-T		<0.001 mg/L
Magnesium (Mg)	ED093T-UL		121 mg/L
Manganese (Mn)	EG020A-F	21.8 mg/L	
Molybdenum (Mo)	EG020A-T		<0.001 mg/L
Nickel (Ni)	EG020A-T		0.121 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		110 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 MPW019192
Date Sampled 9-Nov-2017 08:35
Date Received 9-Nov-2017
Date Completed 17-Nov-2017
Date Authorised 21-Nov-2017

Summary Report

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

Sampling point: Groundwater Bore MPGM5

Source: MP **Customer Sampling Point:** 024 **Sampling Code:** D5 **Sample Frequency:** Month

Testing Laboratory: ALS Environmental

Zinc (Zn)	EG020A-T	0.052 mg/L
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Anions	Test Method: ED009-X	Filtered
Fluoride (F)		0.088 mg/L
Chloride (Cl)		160 mg/L
Sulfate (SO4)		544 mg/L

Alkalinity	Test Method: ED037-P	Total
Total Alkalinity (CaCO3)		471 mg/L

Physical	Test Method: EA015H	Total
Total Dissolved Solids @ 180°C		1380 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: ES1728226. Report Date: 16-Nov-2017

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 Senior Chemist

Final - Report Number: 2198312
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 MPW019193
Date Sampled 9-Nov-2017 08:45
Date Received 9-Nov-2017
Date Completed 21-Nov-2017
Date Authorised 21-Nov-2017

Summary Report

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

Sampling point: Groundwater Bore MPGM5

Source: MP **Customer Sampling Point:** 025 **Sampling Code:** D6 **Sample Frequency:** Month

Testing Laboratory: Mount Piper

Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	8.9 m
Bore Volume Pumped	*Analysis in Field	9 L
Recharge Bore Level	*Analysis in Field	9.2 m
pH	CA12125	5.81
Conductivity	CA12125	1320 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		0.002 mg/L
Barium (Ba)	EG020A-T		0.050 mg/L
Boron (B)	EG020A-T		<0.05 mg/L
Cadmium (Cd)	EG020A-T		<0.0001 mg/L
Calcium (Ca)	ED093T-UL		11.6 mg/L
Chromium (Cr)	EG020A-T		<0.001 mg/L
Copper (Cu)	EG020A-T		<0.001 mg/L
Iron (Fe)	EG020A-F	23.5 mg/L	
Lead (Pb)	EG020A-T		0.001 mg/L
Magnesium (Mg)	ED093T-UL		32.7 mg/L
Manganese (Mn)	EG020A-F	4.13 mg/L	
Molybdenum (Mo)	EG020A-T		<0.001 mg/L
Nickel (Ni)	EG020A-T		0.052 mg/L
Potassium (K)	ED093T-UL		2.45 mg/L
Selenium (Se)	EG094B-T		<0.0002 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		152 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: 2198312
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 MPW019193
Date Sampled 9-Nov-2017 08:45
Date Received 9-Nov-2017
Date Completed 21-Nov-2017
Date Authorised 21-Nov-2017

Summary Report

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

Sampling point: Groundwater Bore MPGM5

Source: MP **Customer Sampling Point:** 025 **Sampling Code:** D6 **Sample Frequency:** Month

Testing Laboratory: ALS Environmental

Zinc (Zn)	EG020A-T	0.029 mg/L
Anions	Test Method	Filtered
Fluoride (F)	ED009-X	<0.050 mg/L
Chloride (Cl)	ED009-X	159 mg/L
Sulfate (SO4)	ED009-X	282 mg/L

ED009x: samples ES1728226-4 and 9 required dilution due to matrix interferences. LOR values have been adjusted accordingly.

Alkalinity Test Method: ED037-P	Total
Total Alkalinity (CaCO3)	170 mg/L

Physical Test Method: EA015H	Total
Total Dissolved Solids @ 180°C	860 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1728226. Report Date: 16-Nov-2017

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 Senior Chemist

Final - Report Number: 2198312
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 MPW019194
Date Sampled 8-Nov-2017 10:40
Date Received 9-Nov-2017
Date Completed 9-Nov-2017
Date Authorised 9-Nov-2017

Summary Report

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

Sampling point: Groundwater Bore MPGM5

Source: MP

Customer Sampling Point: 027

Sampling Code: D8

Sample Frequency: 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: 2198312
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 MPW019195
Date Sampled 9-Nov-2017 09:00
Date Received 9-Nov-2017
Date Completed 17-Nov-2017
Date Authorised 21-Nov-2017

Summary Report

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

Sampling point: Groundwater Bore MPGM5

Source: MP **Customer Sampling Point:** 028 **Sampling Code:** D9 **Sample Frequency:** Month

Testing Laboratory: Mount Piper

Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	10.0 m
Bore Volume Pumped	*Analysis in Field	35 L
Recharge Bore Level	*Analysis in Field	12.1 m
pH	CA12125	5.96
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		0.05 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		42.3 mg/L
Chromium (Cr)	EG020A-T		<0.001 mg/L
Copper (Cu)	EG020A-T		<0.001 mg/L
Iron (Fe)	EG094B-F	0.037 mg/L	
Lead (Pb)	EG020A-T		<0.001 mg/L
Magnesium (Mg)	ED093T-UL		50.4 mg/L
Manganese (Mn)	EG020A-F	0.025 mg/L	
Molybdenum (Mo)	EG020A-T		<0.001 mg/L
Nickel (Ni)	EG020A-T		0.009 mg/L
Potassium (K)	ED093T-UL		7.38 mg/L
Selenium (Se)	EG094B-T		0.0003 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		60.2 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: 2198312
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 MPW019195
Date Sampled 9-Nov-2017 09:00
Date Received 9-Nov-2017
Date Completed 17-Nov-2017
Date Authorised 21-Nov-2017

Summary Report

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

Sampling point: Groundwater Bore MPGM5

Source: MP **Customer Sampling Point:** 028 **Sampling Code:** D9 **Sample Frequency:** Month

Testing Laboratory: ALS Environmental

Zinc (Zn)	EG020A-T	0.034 mg/L
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Anions Test Method: ED009-X

Fluoride (F)	Filtered	0.092 mg/L
Chloride (Cl)		24.8 mg/L
Sulfate (SO4)		312 mg/L

Alkalinity Test Method: ED037-P

Total Alkalinity (CaCO3)	Total
	154 mg/L

Physical Test Method: EA015H

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

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1728226. Report Date: 16-Nov-2017

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 Senior Chemist

Final - Report Number: 2198312
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 MPW019196
Date Sampled 8-Nov-2017 11:00
Date Received 9-Nov-2017
Date Completed 9-Nov-2017
Date Authorised 9-Nov-2017

Summary Report

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

Sampling point: Groundwater Bore MPGM5

Source: MP

Customer Sampling Point: 026

Sampling Code: D7

Sample Frequency: Month

Testing Laboratory: Mount Piper
Water

Field Analysis Test Method: Analysis in Field
Initial Bore Level

Total
19.8 m

insufficient volume to sample

Allan Bowcher

Authorised by Allan Bowcher
Chemist

Final - Report Number: 2198312
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 MPW019197
Date Sampled 9-Nov-2017 09:10
Date Received 9-Nov-2017
Date Completed 9-Nov-2017
Date Authorised 9-Nov-2017

Summary Report

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

Sampling point: Groundwater Bore MPGM5

Source: MP

Customer Sampling Point: 023

Sampling Code: D4

Sample Frequency: Month

Testing Laboratory: Mount Piper
Water

Field Analysis	Test Method: Analysis in Field	Total
Initial Bore Level		21.7 m
Bore Volume Pumped		1.5 L
Recharge Bore Level		21.9 m

volume not extractable

Allan Bowcher

Authorised by Allan Bowcher
Chemist

Final - Report Number: 2198312
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 MPW019198
Date Sampled 8-Nov-2017 11:30
Date Received 9-Nov-2017
Date Completed 21-Nov-2017
Date Authorised 21-Nov-2017

Summary Report

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

Sampling point: Groundwater Bore MPGM5

Source: MP **Customer Sampling Point:** 022 **Sampling Code:** D3 **Sample Frequency:** Month

Testing Laboratory: Mount Piper
Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	11.7 m
Bore Volume Pumped	*Analysis in Field	117 L
Recharge Bore Level	*Analysis in Field	11.7 m
pH	CA12125	5.89
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		0.02 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		47.4 mg/L
Chromium (Cr)	EG020A-T		<0.001 mg/L
Copper (Cu)	EG020A-T		<0.001 mg/L
Iron (Fe)	EG020A-F	6.98 mg/L	
Lead (Pb)	EG020A-T		0.002 mg/L
Magnesium (Mg)	ED093T-UL		51.5 mg/L
Manganese (Mn)	EG020A-F	6.46 mg/L	
Molybdenum (Mo)	EG020A-T		<0.001 mg/L
Nickel (Ni)	EG020A-T		0.352 mg/L
Potassium (K)	ED093T-UL		7.93 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

* 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: 2198312
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 MPW019198
Date Sampled 8-Nov-2017 11:30
Date Received 9-Nov-2017
Date Completed 21-Nov-2017
Date Authorised 21-Nov-2017

Summary Report

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

Sampling point: Groundwater Bore MPGM5

Source: MP **Customer Sampling Point:** 022 **Sampling Code:** D3 **Sample Frequency:** Month

Testing Laboratory: ALS Environmental

Zinc (Zn)	EG020A-T	0.107 mg/L
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Anions Test Method: ED009-X

	Filtered
Fluoride (F)	0.051 mg/L
Chloride (Cl)	31.9 mg/L
Sulfate (SO4)	285 mg/L

Alkalinity Test Method: ED037-P

Total Alkalinity (CaCO3)	Total 174 mg/L
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Physical Test Method: EA015H

Total Dissolved Solids @ 180°C	Total 647 mg/L
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Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1728226. Report Date: 16-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: 2198312
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 MPW019199
Date Sampled 8-Nov-2017 12:00
Date Received 9-Nov-2017
Date Completed 21-Nov-2017
Date Authorised 21-Nov-2017

Summary Report

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

Sampling point: Groundwater Bore MPGM5

Source: MP **Customer Sampling Point:** 020 **Sampling Code:** D1 **Sample Frequency:** Month

Testing Laboratory: Mount Piper
Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	11.8 m
Bore Volume Pumped	*Analysis in Field	112 L
Recharge Bore Level	*Analysis in Field	11.8 m
pH	CA12125	6.13
Conductivity	CA12125	583 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		0.046 mg/L
Boron (B)	EG020A-T		<0.05 mg/L
Cadmium (Cd)	EG020A-T		<0.0001 mg/L
Calcium (Ca)	ED093T-UL		42.1 mg/L
Chromium (Cr)	EG020A-T		<0.001 mg/L
Copper (Cu)	EG020A-T		<0.001 mg/L
Iron (Fe)	EG020A-F	13.3 mg/L	
Lead (Pb)	EG020A-T		<0.001 mg/L
Magnesium (Mg)	ED093T-UL		26.2 mg/L
Manganese (Mn)	EG020A-F	0.879 mg/L	
Molybdenum (Mo)	EG020A-T		<0.001 mg/L
Nickel (Ni)	EG020A-T		0.004 mg/L
Potassium (K)	ED093T-UL		7.02 mg/L
Selenium (Se)	EG094B-T		<0.0002 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		18.5 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: 2198312
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 MPW019199
Date Sampled 8-Nov-2017 12:00
Date Received 9-Nov-2017
Date Completed 21-Nov-2017
Date Authorised 21-Nov-2017

Summary Report

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

Sampling point: Groundwater Bore MPGM5

Source: MP **Customer Sampling Point:** 020 **Sampling Code:** D1 **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)	0.074 mg/L
Chloride (Cl)	19.8 mg/L
Sulfate (SO4)	94.7 mg/L

Alkalinity Test Method: ED037-P	Total
Total Alkalinity (CaCO3)	199 mg/L

Physical Test Method: EA015H	Total
Total Dissolved Solids @ 180°C	350 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1728226. Report Date: 16-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: 2198312
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 MPW019200
Date Sampled 8-Nov-2017 12:20
Date Received 9-Nov-2017
Date Completed 21-Nov-2017
Date Authorised 21-Nov-2017

Summary Report

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

Sampling point: Groundwater Bore MPGM5

Source: MP **Customer Sampling Point:** 021 **Sampling Code:** D2 **Sample Frequency:** Month

Testing Laboratory: Mount Piper
Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	12.3 m
Bore Volume Pumped	*Analysis in Field	28 L
Recharge Bore Level	*Analysis in Field	12.3 m
pH	CA12125	5.77
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		1.13 mg/L
Arsenic (As)	EG020A-T		0.004 mg/L
Barium (Ba)	EG020A-T		0.034 mg/L
Boron (B)	EG020A-T		<0.05 mg/L
Cadmium (Cd)	EG020A-T		0.0002 mg/L
Calcium (Ca)	ED093T-UL		56.0 mg/L
Chromium (Cr)	EG020A-T		0.002 mg/L
Copper (Cu)	EG020A-T		0.003 mg/L
Iron (Fe)	EG020A-F	14.7 mg/L	
Lead (Pb)	EG020A-T		0.004 mg/L
Magnesium (Mg)	ED093T-UL		53.2 mg/L
Manganese (Mn)	EG020A-F	7.46 mg/L	
Molybdenum (Mo)	EG020A-T		<0.001 mg/L
Nickel (Ni)	EG020A-T		0.286 mg/L
Potassium (K)	ED093T-UL		10.7 mg/L
Selenium (Se)	EG094B-T		0.0005 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		25.4 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: 2198312
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 MPW019200
Date Sampled 8-Nov-2017 12:20
Date Received 9-Nov-2017
Date Completed 21-Nov-2017
Date Authorised 21-Nov-2017

Summary Report

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

Sampling point: Groundwater Bore MPM5

Source: MP **Customer Sampling Point:** 021 **Sampling Code:** D2 **Sample Frequency:** Month

Testing Laboratory: ALS Environmental

Zinc (Zn) EG020A-T 0.411 mg/L

Anions Test Method: ED009-X

	Filtered
Fluoride (F)	0.044 mg/L
Chloride (Cl)	16.4 mg/L
Sulfate (SO4)	334 mg/L

Alkalinity Test Method: ED037-P

	Total
Total Alkalinity (CaCO3)	146 mg/L

Physical Test Method: EA015H

	Total
Total Dissolved Solids @ 180°C	630 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1728226. Report Date: 16-Nov-2017

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

Authorised by Thanh Hoang Le
 Senior Chemist

Final - Report Number: 2198312
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 MPW019201
Date Sampled 8-Nov-2017 13:00
Date Received 9-Nov-2017
Date Completed 21-Nov-2017
Date Authorised 21-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:** 010 **Sampling Code:** D5 **Sample Frequency:** Month

Testing Laboratory: Mount Piper
Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	10.9 m
Bore Volume Pumped	*Analysis in Field	250 L
Recharge Bore Level	*Analysis in Field	10.9 m
pH	CA12125	5.89
Conductivity	CA12125	1290 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		0.017 mg/L
Boron (B)	EG020A-T		0.11 mg/L
Cadmium (Cd)	EG020A-T		<0.0001 mg/L
Calcium (Ca)	ED093T-UL		191 mg/L
Chromium (Cr)	EG020A-T		<0.001 mg/L
Copper (Cu)	EG020A-T		<0.001 mg/L
Iron (Fe)	EG020A-F	56.7 mg/L	
Lead (Pb)	EG020A-T		<0.001 mg/L
Magnesium (Mg)	ED093T-UL		144 mg/L
Manganese (Mn)	EG020A-F	8.44 mg/L	
Molybdenum (Mo)	EG020A-T		<0.001 mg/L
Nickel (Ni)	EG020A-T		0.047 mg/L
Potassium (K)	ED093T-UL		14.3 mg/L
Selenium (Se)	EG094B-T		0.0003 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		51.3 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
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Authorised by Thanh Hoang Le
 Senior Chemist

Final - Report Number: 2198312
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 MPW019201
Date Sampled 8-Nov-2017 13:00
Date Received 9-Nov-2017
Date Completed 21-Nov-2017
Date Authorised 21-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:** 010 **Sampling Code:** D5 **Sample Frequency:** Month

Testing Laboratory: ALS Environmental

Zinc (Zn)	EG020A-T	0.024 mg/L
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Anions Test Method: ED009-X		Filtered
Fluoride (F)		0.175 mg/L
Chloride (Cl)		24.7 mg/L
Sulfate (SO4)		617 mg/L

Alkalinity Test Method: ED037-P		Total
Total Alkalinity (CaCO3)		92 mg/L

Physical Test Method: EA015H		Total
Total Dissolved Solids @ 180°C		1000 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1728226. Report Date: 16-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: 2198312
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 MPW019202
Date Sampled 8-Nov-2017 13:15
Date Received 9-Nov-2017
Date Completed 9-Nov-2017
Date Authorised 9-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: 011

Sampling Code: D6

Sample Frequency: 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: 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
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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: 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
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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

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
 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 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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 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 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

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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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 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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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 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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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 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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 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 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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 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 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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 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 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 Alkalinity (CaCO3)	Total 383 mg/L
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Physical Test Method: EA015H

Total Dissolved Solids @ 180°C	Total 515 mg/L
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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

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 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	

* 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 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

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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 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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 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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 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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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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 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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 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

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 Alkalinity (CaCO3)	Total 46 mg/L
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Physical Test Method: EA015H

Total Dissolved Solids @ 180°C	Total 3930 mg/L
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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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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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 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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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 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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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: 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



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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: ALS Environmental

Zinc (Zn)	EG020A-T	1.03 mg/L
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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

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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 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

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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 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 Alkalinity (CaCO3)	Total 108 mg/L
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Physical Test Method: EA015H

Total Dissolved Solids @ 180°C	Total 2810 mg/L
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Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1729612. Report Date: 30-Nov-2017

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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 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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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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 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

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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 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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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

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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 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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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

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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 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

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Authorised by Thanh Hoang Le
 Senior Chemist

Final - Report Number: 2220326
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 MPW019573
Date Sampled 7-Dec-2017 09:30
Date Received 12-Dec-2017
Date Completed 19-Dec-2017
Date Authorised 20-Dec-2017

Summary Report

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

Sampling point: Groundwater Bore MPGM5

Source: MP **Customer Sampling Point:** 030 **Sampling Code:** D11 **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	72 L
Recharge Bore Level	*Analysis in Field	7.6 m
pH	CA12125	6.05
Conductivity	CA12125	700 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		0.019 mg/L
Boron (B)	EG020A-T		0.40 mg/L
Cadmium (Cd)	EG020A-T		<0.0001 mg/L
Calcium (Ca)	ED093T-UL		44.7 mg/L
Chromium (Cr)	EG020A-T		<0.001 mg/L
Copper (Cu)	EG020A-T		<0.001 mg/L
Iron (Fe)	EG020A-F	0.17 mg/L	
Lead (Pb)	EG020A-T		<0.001 mg/L
Magnesium (Mg)	ED093T-UL		49.7 mg/L
Manganese (Mn)	EG020A-F	1.60 mg/L	
Molybdenum (Mo)	EG020A-T		<0.001 mg/L
Nickel (Ni)	EG020A-T		0.075 mg/L
Potassium (K)	ED093T-UL		6.45 mg/L
Selenium (Se)	EG094B-T		<0.0002 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		20.4 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: 2220326
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 MPW019573
Date Sampled 7-Dec-2017 09:30
Date Received 12-Dec-2017
Date Completed 19-Dec-2017
Date Authorised 20-Dec-2017

Summary Report

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

Sampling point: Groundwater Bore MPGM5

Source: MP **Customer Sampling Point:** 030 **Sampling Code:** D11 **Sample Frequency:** Month

Testing Laboratory: ALS Environmental

Zinc (Zn)	EG020A-T	0.060 mg/L
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Anions Test Method: ED009-X

Fluoride (F)	Filtered	0.058 mg/L
Chloride (Cl)		14.4 mg/L
Sulfate (SO4)		239 mg/L

Alkalinity Test Method: ED037-P

Total Alkalinity (CaCO3)	Total
	132 mg/L

Physical Test Method: EA015H

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

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1731285. Report Date: 15-Dec-2017

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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 MPW019574
Date Sampled 8-Dec-2017 07:50
Date Received 12-Dec-2017
Date Completed 19-Dec-2017
Date Authorised 20-Dec-2017

Summary Report

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

Sampling point: Groundwater Bore MPGM5

Source: MP **Customer Sampling Point:** 031 **Sampling Code:** D12 **Sample Frequency:** Month

Testing Laboratory: Mount Piper

Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	4.4 m
Bore Volume Pumped	*Analysis in Field	9 L
Recharge Bore Level	*Analysis in Field	5.3 m
pH	CA12125	6.20
Conductivity	CA12125	622 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		0.131 mg/L
Boron (B)	EG020A-T		<0.05 mg/L
Cadmium (Cd)	EG020A-T		<0.0001 mg/L
Calcium (Ca)	ED093T-UL		24.5 mg/L
Chromium (Cr)	EG020A-T		<0.001 mg/L
Copper (Cu)	EG020A-T		<0.001 mg/L
Iron (Fe)	EG020A-F	0.18 mg/L	
Lead (Pb)	EG020A-T		0.001 mg/L
Magnesium (Mg)	ED093T-UL		28.8 mg/L
Manganese (Mn)	EG020A-F	6.65 mg/L	
Molybdenum (Mo)	EG020A-T		<0.001 mg/L
Nickel (Ni)	EG020A-T		0.073 mg/L
Potassium (K)	ED093T-UL		2.87 mg/L
Selenium (Se)	EG094B-T		<0.0002 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		38.6 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 MPW019574
Date Sampled 8-Dec-2017 07:50
Date Received 12-Dec-2017
Date Completed 19-Dec-2017
Date Authorised 20-Dec-2017

Summary Report

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

Sampling point: Groundwater Bore MPGM5

Source: MP **Customer Sampling Point:** 031 **Sampling Code:** D12 **Sample Frequency:** Month

Testing Laboratory: ALS Environmental

Zinc (Zn) EG020A-T 0.029 mg/L

Anions Test Method: ED009-X

	Filtered
Fluoride (F)	0.115 mg/L
Chloride (Cl)	50.2 mg/L
Sulfate (SO4)	69.6 mg/L

Alkalinity Test Method: ED037-P

	Total
Total Alkalinity (CaCO3)	143 mg/L

Physical Test Method: EA015H

	Total
Total Dissolved Solids @ 180°C	322 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1731285. Report Date: 15-Dec-2017

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Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Nikki Tomlinson

Sample Number MPW019575
Date Sampled 7-Dec-2017 10:02
Date Received 12-Dec-2017
Date Completed 19-Dec-2017
Date Authorised 20-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:** 012 **Sampling Code:** D7 **Sample Frequency:** Month

Testing Laboratory: Mount Piper

Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	1.3 m
Bore Volume Pumped	*Analysis in Field	40 L
Recharge Bore Level	*Analysis in Field	1.3 m
pH	CA12125	6.56
Conductivity	CA12125	566 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		0.112 mg/L
Boron (B)	EG020A-T		<0.05 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)	EG020A-F	<0.05 mg/L	
Lead (Pb)	EG020A-T		<0.001 mg/L
Magnesium (Mg)	ED093T-UL		26.2 mg/L
Manganese (Mn)	EG020A-F	0.932 mg/L	
Molybdenum (Mo)	EG020A-T		<0.001 mg/L
Nickel (Ni)	EG020A-T		<0.001 mg/L
Potassium (K)	ED093T-UL		7.63 mg/L
Selenium (Se)	EG094B-T		<0.0002 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		21.4 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 MPW019575
Date Sampled 7-Dec-2017 10:02
Date Received 12-Dec-2017
Date Completed 19-Dec-2017
Date Authorised 20-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:** 012 **Sampling Code:** D7 **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)	0.123 mg/L	
Chloride (Cl)	19.6 mg/L	
Sulfate (SO4)	19.6 mg/L	

Alkalinity Test Method: ED037-P		Total
Total Alkalinity (CaCO3)		253 mg/L

Physical Test Method: EA015H		Total
Total Dissolved Solids @ 180°C		286 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1731285. Report Date: 15-Dec-2017

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 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Nikki Tomlinson

Sample Number MPW019576
Date Sampled 8-Dec-2017 08:08
Date Received 12-Dec-2017
Date Completed 19-Dec-2017
Date Authorised 20-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:** 007 **Sampling Code:** D2 **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	67 L
Recharge Bore Level	*Analysis in Field	2.6 m
pH	CA12125	5.38
Conductivity	CA12125	1850 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		0.022 mg/L
Boron (B)	EG020A-T		0.35 mg/L
Cadmium (Cd)	EG020A-T		0.0002 mg/L
Calcium (Ca)	ED093T-UL		107 mg/L
Chromium (Cr)	EG020A-T		<0.001 mg/L
Copper (Cu)	EG020A-T		0.002 mg/L
Iron (Fe)	EG020A-F	2.90 mg/L	
Lead (Pb)	EG020A-T		<0.001 mg/L
Magnesium (Mg)	ED093T-UL		89.9 mg/L
Manganese (Mn)	EG020A-F	4.01 mg/L	
Molybdenum (Mo)	EG020A-T		<0.001 mg/L
Nickel (Ni)	EG020A-T		0.163 mg/L
Potassium (K)	ED093T-UL		11.0 mg/L
Selenium (Se)	EG094B-T		<0.0002 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		186 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 MPW019576
Date Sampled 8-Dec-2017 08:08
Date Received 12-Dec-2017
Date Completed 19-Dec-2017
Date Authorised 20-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:** 007 **Sampling Code:** D2 **Sample Frequency:** Month

Testing Laboratory: ALS Environmental

Zinc (Zn) EG020A-T 0.200 mg/L

Anions Test Method: ED009-X

	Filtered
Fluoride (F)	0.064 mg/L
Chloride (Cl)	121 mg/L
Sulfate (SO4)	888 mg/L

Alkalinity Test Method: ED037-P

	Total
Total Alkalinity (CaCO3)	7 mg/L

Physical Test Method: EA015H

	Total
Total Dissolved Solids @ 180°C	1170 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1731285. Report Date: 15-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: Nikki Tomlinson

Sample Number MPW019577
Date Sampled 7-Dec-2017 10:50
Date Received 12-Dec-2017
Date Completed 19-Dec-2017
Date Authorised 20-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:** 009 **Sampling Code:** D4 **Sample Frequency:** Month

Testing Laboratory: Mount Piper
Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	1.4 m
Bore Volume Pumped	*Analysis in Field	126 L
Recharge Bore Level	*Analysis in Field	1.4 m
pH	CA12125	3.33
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		20.5 mg/L
Arsenic (As)	EG020A-T		0.048 mg/L
Barium (Ba)	EG020A-T		0.012 mg/L
Boron (B)	EG020A-T		<0.05 mg/L
Cadmium (Cd)	EG020A-T		0.0008 mg/L
Calcium (Ca)	ED093T-UL		14.2 mg/L
Chromium (Cr)	EG020A-T		0.003 mg/L
Copper (Cu)	EG020A-T		<0.001 mg/L
Iron (Fe)	EG020A-F	132 mg/L	
Lead (Pb)	EG020A-T		0.024 mg/L
Magnesium (Mg)	ED093T-UL		8.70 mg/L
Manganese (Mn)	EG020A-F	0.840 mg/L	
Molybdenum (Mo)	EG020A-T		<0.001 mg/L
Nickel (Ni)	EG020A-T		0.023 mg/L
Potassium (K)	ED093T-UL		5.46 mg/L
Selenium (Se)	EG094B-T		<0.0002 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		18.1 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 MPW019577
Date Sampled 7-Dec-2017 10:50
Date Received 12-Dec-2017
Date Completed 19-Dec-2017
Date Authorised 20-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:** 009 **Sampling Code:** D4 **Sample Frequency:** Month

Testing Laboratory: ALS Environmental

Zinc (Zn) EG020A-T 0.230 mg/L

Anions Test Method: ED009-X

	Filtered
Fluoride (F)	0.112 mg/L
Chloride (Cl)	11.7 mg/L
Sulfate (SO4)	506 mg/L

Alkalinity Test Method: ED037-P

	Total
Total Alkalinity (CaCO3)	<1 mg/L

Physical Test Method: EA015H

	Total
Total Dissolved Solids @ 180°C	836 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1731285. Report Date: 15-Dec-2017

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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 MPW019578
Date Sampled 8-Dec-2017 08:23
Date Received 12-Dec-2017
Date Completed 18-Dec-2017
Date Authorised 20-Dec-2017

Summary Report

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

Sampling point: Groundwater Bore MPGM5

Source: MP **Customer Sampling Point:** 024 **Sampling Code:** D5 **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	16 L
Recharge Bore Level	*Analysis in Field	7.0 m
pH	CA12125	6.16
Conductivity	CA12125	2000 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		0.068 mg/L
Boron (B)	EG020A-T		0.06 mg/L
Cadmium (Cd)	EG020A-T		<0.0001 mg/L
Calcium (Ca)	ED093T-UL		120 mg/L
Chromium (Cr)	EG020A-T		<0.001 mg/L
Copper (Cu)	EG020A-T		<0.001 mg/L
Iron (Fe)	EG094B-F	0.141 mg/L	
Lead (Pb)	EG020A-T		<0.001 mg/L
Magnesium (Mg)	ED093T-UL		132 mg/L
Manganese (Mn)	EG020A-F	18.5 mg/L	
Molybdenum (Mo)	EG020A-T		<0.001 mg/L
Nickel (Ni)	EG020A-T		0.142 mg/L
Potassium (K)	ED093T-UL		8.07 mg/L
Selenium (Se)	EG094B-T		<0.0002 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		121 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 MPW019578
Date Sampled 8-Dec-2017 08:23
Date Received 12-Dec-2017
Date Completed 18-Dec-2017
Date Authorised 20-Dec-2017

Summary Report

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

Sampling point: Groundwater Bore MPGM5

Source: MP **Customer Sampling Point:** 024 **Sampling Code:** D5 **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)	0.090 mg/L	
Chloride (Cl)	170 mg/L	
Sulfate (SO4)	552 mg/L	

Alkalinity Test Method: ED037-P		Total
Total Alkalinity (CaCO3)		452 mg/L

Physical Test Method: EA015H		Total
Total Dissolved Solids @ 180°C		1330 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: ES1731285. Report Date: 15-Dec-2017

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 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Nikki Tomlinson

Sample Number MPW019579
Date Sampled 8-Dec-2017 08:30
Date Received 12-Dec-2017
Date Completed 19-Dec-2017
Date Authorised 20-Dec-2017

Summary Report

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

Sampling point: Groundwater Bore MPGM5

Source: MP **Customer Sampling Point:** 025 **Sampling Code:** D6 **Sample Frequency:** Month

Testing Laboratory: Mount Piper
 Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	8.9 m
Bore Volume Pumped	*Analysis in Field	2 L
Recharge Bore Level	*Analysis in Field	9.2 m
pH	CA12125	5.89
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		0.10 mg/L
Arsenic (As)	EG020A-T		0.003 mg/L
Barium (Ba)	EG020A-T		0.051 mg/L
Boron (B)	EG020A-T		<0.05 mg/L
Cadmium (Cd)	EG020A-T		<0.0001 mg/L
Calcium (Ca)	ED093T-UL		11.9 mg/L
Chromium (Cr)	EG020A-T		<0.001 mg/L
Copper (Cu)	EG020A-T		<0.001 mg/L
Iron (Fe)	EG020A-F	60.4 mg/L	
Lead (Pb)	EG020A-T		<0.001 mg/L
Magnesium (Mg)	ED093T-UL		36.1 mg/L
Manganese (Mn)	EG020A-F	3.90 mg/L	
Molybdenum (Mo)	EG020A-T		<0.001 mg/L
Nickel (Ni)	EG020A-T		0.060 mg/L
Potassium (K)	ED093T-UL		2.07 mg/L
Selenium (Se)	EG094B-T		<0.0002 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		175 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 MPW019579
Date Sampled 8-Dec-2017 08:30
Date Received 12-Dec-2017
Date Completed 19-Dec-2017
Date Authorised 20-Dec-2017

Summary Report

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

Sampling point: Groundwater Bore MPGM5

Source: MP **Customer Sampling Point:** 025 **Sampling Code:** D6 **Sample Frequency:** Month

Testing Laboratory: ALS Environmental

Zinc (Zn)	EG020A-T	0.026 mg/L
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Anions Test Method: ED009-X	Filtered	
Fluoride (F)	0.030 mg/L	
Chloride (Cl)	163 mg/L	
Sulfate (SO4)	291 mg/L	

Alkalinity Test Method: ED037-P	Total	
Total Alkalinity (CaCO3)	137 mg/L	

Physical Test Method: EA015H	Total	
Total Dissolved Solids @ 180°C	783 mg/L	

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1731285. Report Date: 15-Dec-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: 2220326
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 MPW019580
Date Sampled 8-Dec-2017 08:35
Date Received 8-Dec-2017
Date Completed 8-Dec-2017
Date Authorised 8-Dec-2017

Summary Report

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

Sampling point: Groundwater Bore MPGM5

Source: MP

Customer Sampling Point: 027

Sampling Code: D8

Sample Frequency: Month

Testing Laboratory: Mount Piper
Water

Field Analysis	Test Method: Analysis in Field	Total
Initial Bore Level		9.8 m
Bore Volume Pumped		5 L

Did Not Recharge

N Tomlinson

Authorised by Nikki Tomlinson
Senior Chemist

Final - Report Number: 2220326
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 MPW019581
Date Sampled 8-Dec-2017 08:40
Date Received 12-Dec-2017
Date Completed 18-Dec-2017
Date Authorised 20-Dec-2017

Summary Report

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

Sampling point: Groundwater Bore MPGM5

Source: MP **Customer Sampling Point:** 028 **Sampling Code:** D9 **Sample Frequency:** Month

Testing Laboratory: Mount Piper
Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	9.4 m
Bore Volume Pumped	*Analysis in Field	51 L
Recharge Bore Level	*Analysis in Field	12.3 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		0.99 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		43.1 mg/L
Chromium (Cr)	EG020A-T		<0.001 mg/L
Copper (Cu)	EG020A-T		0.002 mg/L
Iron (Fe)	EG094B-F	0.038 mg/L	
Lead (Pb)	EG020A-T		0.002 mg/L
Magnesium (Mg)	ED093T-UL		52.5 mg/L
Manganese (Mn)	EG020A-F	0.017 mg/L	
Molybdenum (Mo)	EG020A-T		<0.001 mg/L
Nickel (Ni)	EG020A-T		0.015 mg/L
Potassium (K)	ED093T-UL		7.16 mg/L
Selenium (Se)	EG094B-T		0.0002 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		60.0 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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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 MPW019581
Date Sampled 8-Dec-2017 08:40
Date Received 12-Dec-2017
Date Completed 18-Dec-2017
Date Authorised 20-Dec-2017

Summary Report

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

Sampling point: Groundwater Bore MPGM5

Source: MP **Customer Sampling Point:** 028 **Sampling Code:** D9 **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)		0.083 mg/L
Chloride (Cl)		24.1 mg/L
Sulfate (SO4)		330 mg/L

Alkalinity	Test Method: ED037-P	Total
Total Alkalinity (CaCO3)		141 mg/L

Physical	Test Method: EA015H	Total
Total Dissolved Solids @ 180°C		639 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1731285. Report Date: 15-Dec-2017

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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 MPW019582
Date Sampled 8-Dec-2017 08:50
Date Received 12-Dec-2017
Date Completed 18-Dec-2017
Date Authorised 20-Dec-2017

Summary Report

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

Sampling point: Groundwater Bore MPGM5

Source: MP **Customer Sampling Point:** 026 **Sampling Code:** D7 **Sample Frequency:** Month

Testing Laboratory: Mount Piper
Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	19.2 m
Bore Volume Pumped	*Analysis in Field	2 L
Recharge Bore Level	*Analysis in Field	19.6 m
pH	CA12125	4.91
Conductivity	CA12125	190 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		3.39 mg/L
Arsenic (As)	EG020A-T		0.002 mg/L
Barium (Ba)	EG020A-T		0.055 mg/L
Boron (B)	EG020A-T		0.05 mg/L
Cadmium (Cd)	EG020A-T		0.0002 mg/L
Calcium (Ca)	ED093T-UL		10.6 mg/L
Chromium (Cr)	EG020A-T		0.005 mg/L
Copper (Cu)	EG020A-T		0.011 mg/L
Iron (Fe)	EG094B-F	0.061 mg/L	
Lead (Pb)	EG020A-T		0.062 mg/L
Magnesium (Mg)	ED093T-UL		7.55 mg/L
Manganese (Mn)	EG020A-F	0.502 mg/L	
Molybdenum (Mo)	EG020A-T		<0.001 mg/L
Nickel (Ni)	EG020A-T		0.032 mg/L
Potassium (K)	ED093T-UL		4.23 mg/L
Selenium (Se)	EG094B-T		0.0010 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		8.31 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 MPW019582
Date Sampled 8-Dec-2017 08:50
Date Received 12-Dec-2017
Date Completed 18-Dec-2017
Date Authorised 20-Dec-2017

Summary Report

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

Sampling point: Groundwater Bore MPGM5

Source: MP **Customer Sampling Point:** 026 **Sampling Code:** D7 **Sample Frequency:** Month

Testing Laboratory: ALS Environmental

Zinc (Zn) EG020A-T 0.120 mg/L

Anions Test Method: ED009-X

	Filtered
Fluoride (F)	0.035 mg/L
Chloride (Cl)	5.82 mg/L
Sulfate (SO4)	56.9 mg/L

Alkalinity Test Method: ED037-P

	Total
Total Alkalinity (CaCO3)	10 mg/L

Physical Test Method: EA015H

	Total
Total Dissolved Solids @ 180°C	176 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1731285. Report Date: 15-Dec-2017

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PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Nikki Tomlinson

Sample Number MPW019583
Date Sampled 8-Dec-2017 09:00
Date Received 8-Dec-2017
Date Completed 8-Dec-2017
Date Authorised 8-Dec-2017

Summary Report

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

Sampling point: Groundwater Bore MPGM5

Source: MP

Customer Sampling Point: 023

Sampling Code: D4

Sample Frequency: Month

Testing Laboratory: Mount Piper
Water

Field Analysis Test Method: Analysis in Field
Initial Bore Level

Total
21.9 m

Volume Not Extractable

N Tomlinson

Authorised by Nikki Tomlinson
Senior Chemist

Final - Report Number: 2220326
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 MPW019584
Date Sampled 7-Dec-2017 13:41
Date Received 12-Dec-2017
Date Completed 19-Dec-2017
Date Authorised 20-Dec-2017

Summary Report

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

Sampling point: Groundwater Bore MPGM5

Source: MP **Customer Sampling Point:** 022 **Sampling Code:** D3 **Sample Frequency:** Month

Testing Laboratory: Mount Piper
Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	11.6 m
Bore Volume Pumped	*Analysis in Field	119 L
Recharge Bore Level	*Analysis in Field	11.6 m
pH	CA12125	5.93
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		0.09 mg/L
Arsenic (As)	EG020A-T		0.001 mg/L
Barium (Ba)	EG020A-T		0.023 mg/L
Boron (B)	EG020A-T		<0.05 mg/L
Cadmium (Cd)	EG020A-T		<0.0001 mg/L
Calcium (Ca)	ED093T-UL		50.5 mg/L
Chromium (Cr)	EG020A-T		<0.001 mg/L
Copper (Cu)	EG020A-T		<0.001 mg/L
Iron (Fe)	EG020A-F	6.06 mg/L	
Lead (Pb)	EG020A-T		0.004 mg/L
Magnesium (Mg)	ED093T-UL		55.9 mg/L
Manganese (Mn)	EG020A-F	6.72 mg/L	
Molybdenum (Mo)	EG020A-T		<0.001 mg/L
Nickel (Ni)	EG020A-T		0.390 mg/L
Potassium (K)	ED093T-UL		6.91 mg/L
Selenium (Se)	EG094B-T		<0.0002 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		39.5 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: 2220326
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 MPW019584
Date Sampled 7-Dec-2017 13:41
Date Received 12-Dec-2017
Date Completed 19-Dec-2017
Date Authorised 20-Dec-2017

Summary Report

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

Sampling point: Groundwater Bore MPGM5

Source: MP **Customer Sampling Point:** 022 **Sampling Code:** D3 **Sample Frequency:** Month

Testing Laboratory: ALS Environmental

Zinc (Zn)	EG020A-T	0.115 mg/L
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Anions Test Method: ED009-X

Fluoride (F)	Filtered	0.074 mg/L
Chloride (Cl)		33.8 mg/L
Sulfate (SO4)		298 mg/L

Alkalinity Test Method: ED037-P

Total Alkalinity (CaCO3)	Total
	164 mg/L

Physical Test Method: EA015H

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

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1731285. Report Date: 15-Dec-2017

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 Senior Chemist

Final - Report Number: 2220326
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 MPW019585
Date Sampled 7-Dec-2017 14:05
Date Received 12-Dec-2017
Date Completed 19-Dec-2017
Date Authorised 20-Dec-2017

Summary Report

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

Sampling point: Groundwater Bore MPGM5

Source: MP **Customer Sampling Point:** 020 **Sampling Code:** D1 **Sample Frequency:** Month

Testing Laboratory: Mount Piper
Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	11.7 m
Bore Volume Pumped	*Analysis in Field	115 L
Recharge Bore Level	*Analysis in Field	11.7 m
pH	CA12125	6.16
Conductivity	CA12125	580 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		0.047 mg/L
Boron (B)	EG020A-T		<0.05 mg/L
Cadmium (Cd)	EG020A-T		<0.0001 mg/L
Calcium (Ca)	ED093T-UL		43.8 mg/L
Chromium (Cr)	EG020A-T		<0.001 mg/L
Copper (Cu)	EG020A-T		<0.001 mg/L
Iron (Fe)	EG020A-F	6.48 mg/L	
Lead (Pb)	EG020A-T		<0.001 mg/L
Magnesium (Mg)	ED093T-UL		27.6 mg/L
Manganese (Mn)	EG020A-F	0.932 mg/L	
Molybdenum (Mo)	EG020A-T		<0.001 mg/L
Nickel (Ni)	EG020A-T		0.007 mg/L
Potassium (K)	ED093T-UL		6.49 mg/L
Selenium (Se)	EG094B-T		<0.0002 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		21.8 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: Nikki Tomlinson

Sample Number MPW019585
Date Sampled 7-Dec-2017 14:05
Date Received 12-Dec-2017
Date Completed 19-Dec-2017
Date Authorised 20-Dec-2017

Summary Report

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

Sampling point: Groundwater Bore MPGM5

Source: MP **Customer Sampling Point:** 020 **Sampling Code:** D1 **Sample Frequency:** Month

Testing Laboratory: ALS Environmental

Zinc (Zn) EG020A-T <0.005 mg/L

Anions Test Method: ED009-X

	Filtered
Fluoride (F)	0.067 mg/L
Chloride (Cl)	19.5 mg/L
Sulfate (SO4)	92.4 mg/L

Alkalinity Test Method: ED037-P

	Total
Total Alkalinity (CaCO3)	190 mg/L

Physical Test Method: EA015H

	Total
Total Dissolved Solids @ 180°C	342 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1731285. Report Date: 15-Dec-2017

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Final - Report Number: 2220326
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 MPW019586
Date Sampled 7-Dec-2017 14:20
Date Received 12-Dec-2017
Date Completed 19-Dec-2017
Date Authorised 20-Dec-2017

Summary Report

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

Sampling point: Groundwater Bore MPGM5

Source: MP **Customer Sampling Point:** 021 **Sampling Code:** D2 **Sample Frequency:** Month

Testing Laboratory: Mount Piper
Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	12.1 m
Bore Volume Pumped	*Analysis in Field	33 L
Recharge Bore Level	*Analysis in Field	12.1 m
pH	CA12125	5.83
Conductivity	CA12125	870 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		0.004 mg/L
Barium (Ba)	EG020A-T		0.028 mg/L
Boron (B)	EG020A-T		<0.05 mg/L
Cadmium (Cd)	EG020A-T		0.0002 mg/L
Calcium (Ca)	ED093T-UL		59.3 mg/L
Chromium (Cr)	EG020A-T		0.002 mg/L
Copper (Cu)	EG020A-T		0.003 mg/L
Iron (Fe)	EG020A-F	14.0 mg/L	
Lead (Pb)	EG020A-T		0.004 mg/L
Magnesium (Mg)	ED093T-UL		57.2 mg/L
Manganese (Mn)	EG020A-F	7.08 mg/L	
Molybdenum (Mo)	EG020A-T		<0.001 mg/L
Nickel (Ni)	EG020A-T		0.290 mg/L
Potassium (K)	ED093T-UL		8.34 mg/L
Selenium (Se)	EG094B-T		<0.0002 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		23.1 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: 2220326
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 MPW019586
Date Sampled 7-Dec-2017 14:20
Date Received 12-Dec-2017
Date Completed 19-Dec-2017
Date Authorised 20-Dec-2017

Summary Report

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

Sampling point: Groundwater Bore MPGM5

Source: MP **Customer Sampling Point:** 021 **Sampling Code:** D2 **Sample Frequency:** Month

Testing Laboratory: ALS Environmental

Zinc (Zn)	EG020A-T	0.385 mg/L
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Anions Test Method: ED009-X	Filtered	
Fluoride (F)	0.053 mg/L	
Chloride (Cl)	16.7 mg/L	
Sulfate (SO4)	325 mg/L	

Alkalinity Test Method: ED037-P	Total	
Total Alkalinity (CaCO3)	150 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: ES1731285. Report Date: 15-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: Nikki Tomlinson

Sample Number MPW019587
Date Sampled 7-Dec-2017 11:55
Date Received 12-Dec-2017
Date Completed 19-Dec-2017
Date Authorised 20-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:** 010 **Sampling Code:** D5 **Sample Frequency:** Month

Testing Laboratory: Mount Piper

Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	11.0 m
Bore Volume Pumped	*Analysis in Field	248 L
Recharge Bore Level	*Analysis in Field	11.0 m
pH	CA12125	5.97
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		0.04 mg/L
Arsenic (As)	EG020A-T		<0.001 mg/L
Barium (Ba)	EG020A-T		0.018 mg/L
Boron (B)	EG020A-T		0.12 mg/L
Cadmium (Cd)	EG020A-T		<0.0001 mg/L
Calcium (Ca)	ED093T-UL		98.3 mg/L
Chromium (Cr)	EG020A-T		<0.001 mg/L
Copper (Cu)	EG020A-T		<0.001 mg/L
Iron (Fe)	EG020A-F	36.7 mg/L	
Lead (Pb)	EG020A-T		<0.001 mg/L
Magnesium (Mg)	ED093T-UL		74.0 mg/L
Manganese (Mn)	EG020A-F	8.77 mg/L	
Molybdenum (Mo)	EG020A-T		<0.001 mg/L
Nickel (Ni)	EG020A-T		0.050 mg/L
Potassium (K)	ED093T-UL		6.93 mg/L
Selenium (Se)	EG094B-T		0.0002 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		25.5 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: 2220326
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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 MPW019587
Date Sampled 7-Dec-2017 11:55
Date Received 12-Dec-2017
Date Completed 19-Dec-2017
Date Authorised 20-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:** 010 **Sampling Code:** D5 **Sample Frequency:** Month

Testing Laboratory: ALS Environmental

Zinc (Zn) EG020A-T 0.032 mg/L

Anions Test Method: ED009-X

	Filtered
Fluoride (F)	0.141 mg/L
Chloride (Cl)	24.7 mg/L
Sulfate (SO4)	638 mg/L

Alkalinity Test Method: ED037-P

	Total
Total Alkalinity (CaCO3)	86 mg/L

Physical Test Method: EA015H

	Total
Total Dissolved Solids @ 180°C	986 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1731285. Report Date: 15-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

Final - Report Number: 2220326
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 MPW019588
Date Sampled 7-Dec-2017 12:05
Date Received 8-Dec-2017
Date Completed 8-Dec-2017
Date Authorised 8-Dec-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:** 011 **Sampling Code:** D6 **Sample Frequency:** Month

Testing Laboratory: Mount Piper
Water

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

N Tomlinson

Authorised by Nikki Tomlinson
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



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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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 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 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

* 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 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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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

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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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 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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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 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

* 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: 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: 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

* 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 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

* 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 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	

* 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 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

* 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 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

* 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 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
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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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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	

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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 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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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: 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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 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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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: 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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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	

* NATA accreditation does not cover the performance of this service



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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

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 Alkalinity (CaCO3)	Total 32 mg/L
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Physical Test Method: EA015H

Total Dissolved Solids @ 180°C	Total 2700 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 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

* 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 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
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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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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: 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

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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 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

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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 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: 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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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: 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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 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
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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
Total Alkalinity (CaCO3)		102 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: 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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 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

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 Alkalinity (CaCO3)	Total 39 mg/L
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Physical Test Method: EA015H

Total Dissolved Solids @ 180°C	Total 2580 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 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
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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 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
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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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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 **Test Method:** Analysis in Field
Dry

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

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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 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

* 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: 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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 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
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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

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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

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Authorised by Thanh Hoang Le
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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

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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 (CaCO3)		73 mg/L
Phenolphthalein Alkalinity (CaCO3)		<1 mg/L
Bicarbonate (CaCO3)		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 (NH3-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



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Authorised by Thanh Hoang Le
 Senior Chemist

Final - Report Number: 2242411
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 MPW020003
Date Sampled 10-Jan-2018 08:55
Date Received 11-Jan-2018
Date Completed 19-Jan-2018
Date Authorised 22-Jan-2018

Summary Report

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

Sampling point: Groundwater Bore MPGM5

Source: MP **Customer Sampling Point:** 030 **Sampling Code:** D11 **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	74 L
Recharge Bore Level	*Analysis in Field	7.5 m
pH	CA12125	6.06
Conductivity	CA12125	710 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		0.018 mg/L
Boron (B)	EG020A-T		<0.05 mg/L
Cadmium (Cd)	EG020A-T		<0.0001 mg/L
Calcium (Ca)	ED093T-UL		44.8 mg/L
Chromium (Cr)	EG020A-T		<0.001 mg/L
Copper (Cu)	EG020A-T		<0.001 mg/L
Iron (Fe)	EG020A-F	8.09 mg/L	
Lead (Pb)	EG020A-T		<0.001 mg/L
Magnesium (Mg)	ED093T-UL		48.7 mg/L
Manganese (Mn)	EG020A-F	1.56 mg/L	
Molybdenum (Mo)	EG020A-T		<0.001 mg/L
Nickel (Ni)	EG020A-T		0.069 mg/L
Potassium (K)	ED093T-UL		7.68 mg/L
Selenium (Se)	EG094B-T		<0.0002 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		20.8 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: 2242411
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 MPW020003
Date Sampled 10-Jan-2018 08:55
Date Received 11-Jan-2018
Date Completed 19-Jan-2018
Date Authorised 22-Jan-2018

Summary Report

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

Sampling point: Groundwater Bore MPGM5

Source: MP **Customer Sampling Point:** 030 **Sampling Code:** D11 **Sample Frequency:** Month

Testing Laboratory: ALS Environmental

Zinc (Zn) EG020A-T 0.057 mg/L

Anions Test Method: ED009-X

	Filtered
Fluoride (F)	0.069 mg/L
Chloride (Cl)	14.0 mg/L
Sulfate (SO4)	253 mg/L

Alkalinity Test Method: ED037-P

	Total
Total Alkalinity (CaCO3)	121 mg/L

Physical Test Method: EA015H

	Total
Total Dissolved Solids @ 180°C	435 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1801611. Report Date: 18-Jan-2018

* NATA accreditation does not cover the performance of this service



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 Accredited for compliance with ISO/IEC 17025.

Authorised by Thanh Hoang Le
 Senior Chemist

Final - Report Number: 2242411
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 MPW020004
Date Sampled 11-Jan-2018 07:50
Date Received 11-Jan-2018
Date Completed 19-Jan-2018
Date Authorised 22-Jan-2018

Summary Report

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

Sampling point: Groundwater Bore MPGM5

Source: MP **Customer Sampling Point:** 031 **Sampling Code:** D12 **Sample Frequency:** Month

Testing Laboratory: Mount Piper
Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	4.6 m
Bore Volume Pumped	*Analysis in Field	5 L
Recharge Bore Level	*Analysis in Field	5.5 m
pH	CA12125	6.15
Conductivity	CA12125	640 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		0.122 mg/L
Boron (B)	EG020A-T		<0.05 mg/L
Cadmium (Cd)	EG020A-T		<0.0001 mg/L
Calcium (Ca)	ED093T-UL		25.0 mg/L
Chromium (Cr)	EG020A-T		<0.001 mg/L
Copper (Cu)	EG020A-T		0.001 mg/L
Iron (Fe)	EG020A-F	22.5 mg/L	
Lead (Pb)	EG020A-T		0.002 mg/L
Magnesium (Mg)	ED093T-UL		28.7 mg/L
Manganese (Mn)	EG020A-F	6.94 mg/L	
Molybdenum (Mo)	EG020A-T		<0.001 mg/L
Nickel (Ni)	EG020A-T		0.073 mg/L
Potassium (K)	ED093T-UL		3.23 mg/L
Selenium (Se)	EG094B-T		<0.0002 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		40.1 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: 2242411
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 MPW020004
Date Sampled 11-Jan-2018 07:50
Date Received 11-Jan-2018
Date Completed 19-Jan-2018
Date Authorised 22-Jan-2018

Summary Report

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

Sampling point: Groundwater Bore MPGM5

Source: MP **Customer Sampling Point:** 031 **Sampling Code:** D12 **Sample Frequency:** Month

Testing Laboratory: ALS Environmental

Zinc (Zn)	EG020A-T	0.024 mg/L
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Anions	Test Method: ED009-X	Filtered
Fluoride (F)		0.072 mg/L
Chloride (Cl)		51.2 mg/L
Sulfate (SO4)		70.8 mg/L

Alkalinity	Test Method: ED037-P	Total
Total Alkalinity (CaCO3)		151 mg/L

Physical	Test Method: EA015H	Total
Total Dissolved Solids @ 180°C		352 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1801611. Report Date: 18-Jan-2018

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Authorised by Thanh Hoang Le
 Senior Chemist

Final - Report Number: 2242411
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 MPW020005
Date Sampled 10-Jan-2018 09:35
Date Received 11-Jan-2018
Date Completed 19-Jan-2018
Date Authorised 22-Jan-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:** 012 **Sampling Code:** D7 **Sample Frequency:** Month

Testing Laboratory: Mount Piper
Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	1.4 m
Bore Volume Pumped	*Analysis in Field	38 L
Recharge Bore Level	*Analysis in Field	1.4 m
pH	CA12125	6.57
Conductivity	CA12125	572 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		0.101 mg/L
Boron (B)	EG020A-T		<0.05 mg/L
Cadmium (Cd)	EG020A-T		<0.0001 mg/L
Calcium (Ca)	ED093T-UL		49.4 mg/L
Chromium (Cr)	EG020A-T		<0.001 mg/L
Copper (Cu)	EG020A-T		0.001 mg/L
Iron (Fe)	EG020A-F	13.2 mg/L	
Lead (Pb)	EG020A-T		0.003 mg/L
Magnesium (Mg)	ED093T-UL		26.1 mg/L
Manganese (Mn)	EG020A-F	0.921 mg/L	
Molybdenum (Mo)	EG020A-T		<0.001 mg/L
Nickel (Ni)	EG020A-T		<0.001 mg/L
Potassium (K)	ED093T-UL		10.1 mg/L
Selenium (Se)	EG094B-T		<0.0002 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		23.4 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: 2242411
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 MPW020005
Date Sampled 10-Jan-2018 09:35
Date Received 11-Jan-2018
Date Completed 19-Jan-2018
Date Authorised 22-Jan-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:** 012 **Sampling Code:** D7 **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)		0.080 mg/L
Chloride (Cl)		19.5 mg/L
Sulfate (SO4)		19.8 mg/L

Alkalinity Test Method: ED037-P		Total
Total Alkalinity (CaCO3)		243 mg/L

Physical Test Method: EA015H		Total
Total Dissolved Solids @ 180°C		250 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1801611. Report Date: 18-Jan-2018

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 Senior Chemist

Final - Report Number: 2242411
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 MPW020006
Date Sampled 11-Jan-2018 08:10
Date Received 11-Jan-2018
Date Completed 19-Jan-2018
Date Authorised 22-Jan-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:** 007 **Sampling Code:** D2 **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	65 L
Recharge Bore Level	*Analysis in Field	2.7 m
pH	CA12125	5.50
Conductivity	CA12125	2400 µS/cm

appearance and condy variation noted during purging

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		<0.001 mg/L
Barium (Ba)	EG020A-T		0.025 mg/L
Boron (B)	EG020A-T		0.39 mg/L
Cadmium (Cd)	EG020A-T		<0.0001 mg/L
Calcium (Ca)	ED093T-UL		148 mg/L
Chromium (Cr)	EG020A-T		<0.001 mg/L
Copper (Cu)	EG020A-T		0.004 mg/L
Iron (Fe)	EG020A-F	10.8 mg/L	
Lead (Pb)	EG020A-T		0.007 mg/L
Magnesium (Mg)	ED093T-UL		121 mg/L
Manganese (Mn)	EG020A-F	5.35 mg/L	
Molybdenum (Mo)	EG020A-T		<0.001 mg/L
Nickel (Ni)	EG020A-T		0.217 mg/L
Potassium (K)	ED093T-UL		16.3 mg/L
Selenium (Se)	EG094B-T		0.0002 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		234 mg/L

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 Senior Chemist

Final - Report Number: 2242411
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 MPW020006
Date Sampled 11-Jan-2018 08:10
Date Received 11-Jan-2018
Date Completed 19-Jan-2018
Date Authorised 22-Jan-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:** 007 **Sampling Code:** D2 **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		0.240 mg/L

Anions	Test Method: ED009-X	Filtered	
Fluoride (F)		0.039 mg/L	
Chloride (Cl)		147 mg/L	
Sulfate (SO4)		1060 mg/L	

Alkalinity	Test Method: ED037-P	Total
Total Alkalinity (CaCO3)		2 mg/L

Physical	Test Method: EA015H	Total
Total Dissolved Solids @ 180°C		1510 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1801611. Report Date: 18-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: 2242411
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 MPW020007
Date Sampled 10-Jan-2018 10:30
Date Received 11-Jan-2018
Date Completed 19-Jan-2018
Date Authorised 22-Jan-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:** 009 **Sampling Code:** D4 **Sample Frequency:** Month

Testing Laboratory: Mount Piper

Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	1.6 m
Bore Volume Pumped	*Analysis in Field	122 L
Recharge Bore Level	*Analysis in Field	1.6 m
pH	CA12125	3.35
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		19.1 mg/L
Arsenic (As)	EG020A-T		0.051 mg/L
Barium (Ba)	EG020A-T		0.012 mg/L
Boron (B)	EG020A-T		<0.05 mg/L
Cadmium (Cd)	EG020A-T		0.0008 mg/L
Calcium (Ca)	ED093T-UL		13.9 mg/L
Chromium (Cr)	EG020A-T		0.002 mg/L
Copper (Cu)	EG020A-T		0.004 mg/L
Iron (Fe)	EG020A-F	112 mg/L	
Lead (Pb)	EG020A-T		0.028 mg/L
Magnesium (Mg)	ED093T-UL		8.57 mg/L
Manganese (Mn)	EG020A-F	0.785 mg/L	
Molybdenum (Mo)	EG020A-T		<0.001 mg/L
Nickel (Ni)	EG020A-T		0.021 mg/L
Potassium (K)	ED093T-UL		7.30 mg/L
Selenium (Se)	EG094B-T		0.0002 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		19.7 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: 2242411
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 MPW020007
Date Sampled 10-Jan-2018 10:30
Date Received 11-Jan-2018
Date Completed 19-Jan-2018
Date Authorised 22-Jan-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:** 009 **Sampling Code:** D4 **Sample Frequency:** Month

Testing Laboratory: ALS Environmental

Zinc (Zn) EG020A-T 0.224 mg/L

Anions Test Method: ED009-X

	Filtered
Fluoride (F)	0.149 mg/L
Chloride (Cl)	10.4 mg/L
Sulfate (SO4)	468 mg/L

Alkalinity Test Method: ED037-P

	Total
Total Alkalinity (CaCO3)	<1 mg/L

Physical Test Method: EA015H

	Total
Total Dissolved Solids @ 180°C	678 mg/L

TDS by method EA-015 may bias high 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: ES1801611. Report Date: 18-Jan-2018

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 Senior Chemist

Final - Report Number: 2242411
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 MPW020008
Date Sampled 11-Jan-2018 08:30
Date Received 11-Jan-2018
Date Completed 19-Jan-2018
Date Authorised 22-Jan-2018

Summary Report

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

Sampling point: Groundwater Bore MPGM5

Source: MP **Customer Sampling Point:** 024 **Sampling Code:** D5 **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	16 L
Recharge Bore Level	*Analysis in Field	7.0 m
pH	CA12125	6.14
Conductivity	CA12125	2150 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		0.13 mg/L
Arsenic (As)	EG020A-T		<0.001 mg/L
Barium (Ba)	EG020A-T		0.073 mg/L
Boron (B)	EG020A-T		<0.05 mg/L
Cadmium (Cd)	EG020A-T		<0.0001 mg/L
Calcium (Ca)	ED093T-UL		132 mg/L
Chromium (Cr)	EG020A-T		<0.001 mg/L
Copper (Cu)	EG020A-T		0.004 mg/L
Iron (Fe)	EG094B-F	0.584 mg/L	
Lead (Pb)	EG020A-T		0.012 mg/L
Magnesium (Mg)	ED093T-UL		147 mg/L
Manganese (Mn)	EG020A-F	21.4 mg/L	
Molybdenum (Mo)	EG020A-T		<0.001 mg/L
Nickel (Ni)	EG020A-T		0.154 mg/L
Potassium (K)	ED093T-UL		12.5 mg/L
Selenium (Se)	EG094B-T		<0.0002 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		136 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: Allan Bowcher

Sample Number MPW020008
Date Sampled 11-Jan-2018 08:30
Date Received 11-Jan-2018
Date Completed 19-Jan-2018
Date Authorised 22-Jan-2018

Summary Report

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

Sampling point: Groundwater Bore MPGM5

Source: MP **Customer Sampling Point:** 024 **Sampling Code:** D5 **Sample Frequency:** Month

Testing Laboratory: ALS Environmental

Zinc (Zn)	EG020A-T	0.063 mg/L
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Anions Test Method: ED009-X	Filtered
Fluoride (F)	0.060 mg/L
Chloride (Cl)	181 mg/L
Sulfate (SO4)	576 mg/L

Alkalinity Test Method: ED037-P	Total
Total Alkalinity (CaCO3)	463 mg/L

Physical Test Method: EA015H	Total
Total Dissolved Solids @ 180°C	1410 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1801611. Report Date: 18-Jan-2018

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 Senior Chemist

Final - Report Number: 2242411
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 MPW020009
Date Sampled 11-Jan-2018 08:35
Date Received 11-Jan-2018
Date Completed 19-Jan-2018
Date Authorised 22-Jan-2018

Summary Report

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

Sampling point: Groundwater Bore MPGM5

Source: MP **Customer Sampling Point:** 025 **Sampling Code:** D6 **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	2.5 L
Recharge Bore Level	*Analysis in Field	9.2 m
pH	CA12125	5.87
Conductivity	CA12125	1300 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		0.003 mg/L
Barium (Ba)	EG020A-T		0.050 mg/L
Boron (B)	EG020A-T		<0.05 mg/L
Cadmium (Cd)	EG020A-T		<0.0001 mg/L
Calcium (Ca)	ED093T-UL		12.6 mg/L
Chromium (Cr)	EG020A-T		<0.001 mg/L
Copper (Cu)	EG020A-T		0.002 mg/L
Iron (Fe)	EG020A-F	59.1 mg/L	
Lead (Pb)	EG020A-T		0.004 mg/L
Magnesium (Mg)	ED093T-UL		35.6 mg/L
Manganese (Mn)	EG020A-F	4.00 mg/L	
Molybdenum (Mo)	EG020A-T		<0.001 mg/L
Nickel (Ni)	EG020A-T		0.053 mg/L
Potassium (K)	ED093T-UL		3.15 mg/L
Selenium (Se)	EG094B-T		<0.0002 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		173 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: 2242411
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 MPW020009
Date Sampled 11-Jan-2018 08:35
Date Received 11-Jan-2018
Date Completed 19-Jan-2018
Date Authorised 22-Jan-2018

Summary Report

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

Sampling point: Groundwater Bore MPGM5

Source: MP **Customer Sampling Point:** 025 **Sampling Code:** D6 **Sample Frequency:** Month

Testing Laboratory: ALS Environmental

Zinc (Zn) EG020A-T 0.030 mg/L

Anions Test Method: ED009-X

	Filtered
Fluoride (F)	0.016 mg/L
Chloride (Cl)	150 mg/L
Sulfate (SO4)	272 mg/L

Alkalinity Test Method: ED037-P

	Total
Total Alkalinity (CaCO3)	148 mg/L

Physical Test Method: EA015H

	Total
Total Dissolved Solids @ 180°C	720 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1801611. Report Date: 18-Jan-2018

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 Senior Chemist

Final - Report Number: 2242411
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 MPW020010
Date Sampled 10-Jan-2018 11:05
Date Received 11-Jan-2018
Date Completed 12-Jan-2018
Date Authorised 12-Jan-2018

Summary Report

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

Sampling point: Groundwater Bore MPM5

Source: MP

Customer Sampling Point: 027

Sampling Code: D8

Sample Frequency: 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: 2242411
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 MPW020011
Date Sampled 11-Jan-2018 08:50
Date Received 11-Jan-2018
Date Completed 19-Jan-2018
Date Authorised 22-Jan-2018

Summary Report

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

Sampling point: Groundwater Bore MPGM5

Source: MP **Customer Sampling Point:** 028 **Sampling Code:** D9 **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	31 L
Recharge Bore Level	*Analysis in Field	12.3 m
pH	CA12125	5.92
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		0.021 mg/L
Boron (B)	EG020A-T		<0.05 mg/L
Cadmium (Cd)	EG020A-T		<0.0001 mg/L
Calcium (Ca)	ED093T-UL		43.5 mg/L
Chromium (Cr)	EG020A-T		<0.001 mg/L
Copper (Cu)	EG020A-T		<0.001 mg/L
Iron (Fe)	EG094B-F	0.047 mg/L	
Lead (Pb)	EG020A-T		<0.001 mg/L
Magnesium (Mg)	ED093T-UL		52.2 mg/L
Manganese (Mn)	EG020A-F	0.026 mg/L	
Molybdenum (Mo)	EG020A-T		<0.001 mg/L
Nickel (Ni)	EG020A-T		0.014 mg/L
Potassium (K)	ED093T-UL		8.68 mg/L
Selenium (Se)	EG094B-T		0.0002 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		63.4 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: 2242411
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 MPW020011
Date Sampled 11-Jan-2018 08:50
Date Received 11-Jan-2018
Date Completed 19-Jan-2018
Date Authorised 22-Jan-2018

Summary Report

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

Sampling point: Groundwater Bore MPGM5

Source: MP **Customer Sampling Point:** 028 **Sampling Code:** D9 **Sample Frequency:** Month

Testing Laboratory: ALS Environmental

Zinc (Zn) EG020A-T 0.055 mg/L

Anions Test Method: ED009-X

	Filtered
Fluoride (F)	0.039 mg/L
Chloride (Cl)	24.0 mg/L
Sulfate (SO4)	335 mg/L

Alkalinity Test Method: ED037-P

	Total
Total Alkalinity (CaCO3)	121 mg/L

Physical Test Method: EA015H

	Total
Total Dissolved Solids @ 180°C	519 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1801611. Report Date: 18-Jan-2018

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 Senior Chemist

Final - Report Number: 2242411
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 MPW020012
Date Sampled 10-Jan-2018 11:25
Date Received 11-Jan-2018
Date Completed 12-Jan-2018
Date Authorised 12-Jan-2018

Summary Report

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

Sampling point: Groundwater Bore MPGM5

Source: MP

Customer Sampling Point: 026

Sampling Code: D7

Sample Frequency: Month

Testing Laboratory: Mount Piper
Water

Field Analysis Test Method: Analysis in Field
Initial Bore Level

Total
19.8 m

insufficient volume to sample

N Tomlinson

Authorised by Nikki Tomlinson
Senior Chemist

Final - Report Number: 2242411
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 MPW020013
Date Sampled 11-Jan-2018 09:00
Date Received 11-Jan-2018
Date Completed 12-Jan-2018
Date Authorised 12-Jan-2018

Summary Report

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

Sampling point: Groundwater Bore MPGM5

Source: MP **Customer Sampling Point:** 023 **Sampling Code:** D4 **Sample Frequency:** Month

Testing Laboratory: Mount Piper
Water

Field Analysis	Test Method: Analysis in Field	Total
Initial Bore Level		21.9 m
Bore Volume Pumped		0.5 L
Recharge Bore Level		22.0 m

volume not extractable

N Tomlinson

Authorised by Nikki Tomlinson
 Senior Chemist

Final - Report Number: 2242411
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 MPW020014
Date Sampled 10-Jan-2018 12:00
Date Received 11-Jan-2018
Date Completed 19-Jan-2018
Date Authorised 22-Jan-2018

Summary Report

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

Sampling point: Groundwater Bore MPGM5

Source: MP **Customer Sampling Point:** 022 **Sampling Code:** D3 **Sample Frequency:** Month

Testing Laboratory: Mount Piper
Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	11.6 m
Bore Volume Pumped	*Analysis in Field	120 L
Recharge Bore Level	*Analysis in Field	11.7 m
pH	CA12125	5.92
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		0.022 mg/L
Boron (B)	EG020A-T		<0.05 mg/L
Cadmium (Cd)	EG020A-T		<0.0001 mg/L
Calcium (Ca)	ED093T-UL		49.8 mg/L
Chromium (Cr)	EG020A-T		<0.001 mg/L
Copper (Cu)	EG020A-T		<0.001 mg/L
Iron (Fe)	EG020A-F	6.73 mg/L	
Lead (Pb)	EG020A-T		0.003 mg/L
Magnesium (Mg)	ED093T-UL		54.9 mg/L
Manganese (Mn)	EG020A-F	6.39 mg/L	
Molybdenum (Mo)	EG020A-T		<0.001 mg/L
Nickel (Ni)	EG020A-T		0.386 mg/L
Potassium (K)	ED093T-UL		8.93 mg/L
Selenium (Se)	EG094B-T		<0.0002 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		42.3 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: 2242411
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 MPW020014
Date Sampled 10-Jan-2018 12:00
Date Received 11-Jan-2018
Date Completed 19-Jan-2018
Date Authorised 22-Jan-2018

Summary Report

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

Sampling point: Groundwater Bore MPGM5

Source: MP **Customer Sampling Point:** 022 **Sampling Code:** D3 **Sample Frequency:** Month

Testing Laboratory: ALS Environmental

Zinc (Zn)	EG020A-T	0.120 mg/L
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Anions Test Method: ED009-X	Filtered	
Fluoride (F)	0.025 mg/L	
Chloride (Cl)	31.3 mg/L	
Sulfate (SO4)	286 mg/L	

Alkalinity Test Method: ED037-P		Total
Total Alkalinity (CaCO3)		157 mg/L

Physical Test Method: EA015H		Total
Total Dissolved Solids @ 180°C		378 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1801611. Report Date: 18-Jan-2018

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Authorised by Thanh Hoang Le
 Senior Chemist

Final - Report Number: 2242411
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 MPW020015
Date Sampled 10-Jan-2018 12:30
Date Received 11-Jan-2018
Date Completed 19-Jan-2018
Date Authorised 22-Jan-2018

Summary Report

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

Sampling point: Groundwater Bore MPGM5

Source: MP **Customer Sampling Point:** 020 **Sampling Code:** D1 **Sample Frequency:** Month

Testing Laboratory: Mount Piper
Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	11.6 m
Bore Volume Pumped	*Analysis in Field	117 L
Recharge Bore Level	*Analysis in Field	11.6 m
pH	CA12125	6.16
Conductivity	CA12125	590 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		0.047 mg/L
Boron (B)	EG020A-T		<0.05 mg/L
Cadmium (Cd)	EG020A-T		<0.0001 mg/L
Calcium (Ca)	ED093T-UL		44.8 mg/L
Chromium (Cr)	EG020A-T		<0.001 mg/L
Copper (Cu)	EG020A-T		<0.001 mg/L
Iron (Fe)	EG020A-F	14.8 mg/L	
Lead (Pb)	EG020A-T		<0.001 mg/L
Magnesium (Mg)	ED093T-UL		28.2 mg/L
Manganese (Mn)	EG020A-F	0.900 mg/L	
Molybdenum (Mo)	EG020A-T		<0.001 mg/L
Nickel (Ni)	EG020A-T		0.006 mg/L
Potassium (K)	ED093T-UL		8.26 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

* 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: 2242411
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 MPW020015
Date Sampled 10-Jan-2018 12:30
Date Received 11-Jan-2018
Date Completed 19-Jan-2018
Date Authorised 22-Jan-2018

Summary Report

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

Sampling point: Groundwater Bore MPGM5

Source: MP **Customer Sampling Point:** 020 **Sampling Code:** D1 **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)	0.049 mg/L	
Chloride (Cl)	18.7 mg/L	
Sulfate (SO4)	92.3 mg/L	

Alkalinity Test Method: ED037-P	Total	
Total Alkalinity (CaCO3)	189 mg/L	

Physical Test Method: EA015H	Total	
Total Dissolved Solids @ 180°C	271 mg/L	

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1801611. Report Date: 18-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: 2242411
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 MPW020016
Date Sampled 10-Jan-2018 12:50
Date Received 11-Jan-2018
Date Completed 19-Jan-2018
Date Authorised 22-Jan-2018

Summary Report

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

Sampling point: Groundwater Bore MPGM5

Source: MP **Customer Sampling Point:** 021 **Sampling Code:** D2 **Sample Frequency:** Month

Testing Laboratory: Mount Piper
Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	12.2 m
Bore Volume Pumped	*Analysis in Field	31 L
Recharge Bore Level	*Analysis in Field	12.2 m
pH	CA12125	5.86
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		0.40 mg/L
Arsenic (As)	EG020A-T		0.004 mg/L
Barium (Ba)	EG020A-T		0.023 mg/L
Boron (B)	EG020A-T		<0.05 mg/L
Cadmium (Cd)	EG020A-T		<0.0001 mg/L
Calcium (Ca)	ED093T-UL		56.6 mg/L
Chromium (Cr)	EG020A-T		<0.001 mg/L
Copper (Cu)	EG020A-T		0.002 mg/L
Iron (Fe)	EG020A-F	16.2 mg/L	
Lead (Pb)	EG020A-T		0.004 mg/L
Magnesium (Mg)	ED093T-UL		53.5 mg/L
Manganese (Mn)	EG020A-F	7.23 mg/L	
Molybdenum (Mo)	EG020A-T		<0.001 mg/L
Nickel (Ni)	EG020A-T		0.274 mg/L
Potassium (K)	ED093T-UL		9.41 mg/L
Selenium (Se)	EG094B-T		<0.0002 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		23.6 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: 2242411
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 MPW020016
Date Sampled 10-Jan-2018 12:50
Date Received 11-Jan-2018
Date Completed 19-Jan-2018
Date Authorised 22-Jan-2018

Summary Report

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

Sampling point: Groundwater Bore MPGM5

Source: MP **Customer Sampling Point:** 021 **Sampling Code:** D2 **Sample Frequency:** Month

Testing Laboratory: ALS Environmental

Zinc (Zn)	EG020A-T	0.284 mg/L
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Anions Test Method: ED009-X	Filtered	
Fluoride (F)		0.035 mg/L
Chloride (Cl)		16.1 mg/L
Sulfate (SO4)		293 mg/L

Alkalinity Test Method: ED037-P	Total	
Total Alkalinity (CaCO3)		153 mg/L

Physical Test Method: EA015H	Total	
Total Dissolved Solids @ 180°C		452 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1801611. Report Date: 18-Jan-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: 2242411
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 MPW020017
Date Sampled 10-Jan-2018 13:40
Date Received 11-Jan-2018
Date Completed 19-Jan-2018
Date Authorised 22-Jan-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:** 010 **Sampling Code:** D5 **Sample Frequency:** Month

Testing Laboratory: Mount Piper
Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	11.0 m
Bore Volume Pumped	*Analysis in Field	270 L
Recharge Bore Level	*Analysis in Field	11.0 m
pH	CA12125	5.97
Conductivity	CA12125	1290 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		0.023 mg/L
Boron (B)	EG020A-T		0.10 mg/L
Cadmium (Cd)	EG020A-T		<0.0001 mg/L
Calcium (Ca)	ED093T-UL		101 mg/L
Chromium (Cr)	EG020A-T		<0.001 mg/L
Copper (Cu)	EG020A-T		<0.001 mg/L
Iron (Fe)	EG020A-F	53.8 mg/L	
Lead (Pb)	EG020A-T		<0.001 mg/L
Magnesium (Mg)	ED093T-UL		75.0 mg/L
Manganese (Mn)	EG020A-F	8.54 mg/L	
Molybdenum (Mo)	EG020A-T		<0.001 mg/L
Nickel (Ni)	EG020A-T		0.053 mg/L
Potassium (K)	ED093T-UL		9.72 mg/L
Selenium (Se)	EG094B-T		0.0003 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		27.8 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: 2242411
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 MPW020017
Date Sampled 10-Jan-2018 13:40
Date Received 11-Jan-2018
Date Completed 19-Jan-2018
Date Authorised 22-Jan-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:** 010 **Sampling Code:** D5 **Sample Frequency:** Month

Testing Laboratory: ALS Environmental

Zinc (Zn) EG020A-T 0.025 mg/L

Anions Test Method: ED009-X

	Filtered
Fluoride (F)	0.117 mg/L
Chloride (Cl)	23.1 mg/L
Sulfate (SO4)	652 mg/L

Alkalinity Test Method: ED037-P

	Total
Total Alkalinity (CaCO3)	109 mg/L

Physical Test Method: EA015H

	Total
Total Dissolved Solids @ 180°C	867 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1801611. Report Date: 18-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: 2242411
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 MPW020018
Date Sampled 10-Jan-2018 13:50
Date Received 11-Jan-2018
Date Completed 12-Jan-2018
Date Authorised 12-Jan-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:** 011 **Sampling Code:** D6 **Sample Frequency:** Month

Testing Laboratory: Mount Piper
Water

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

N Tomlinson

Authorised by Nikki Tomlinson
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

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



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	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 MPMG4

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

Fluoride (F)	Filtered	
	<0.200 mg/L	
Chloride (Cl)	157 mg/L	
Sulfate (SO4)	1680 mg/L	

Alkalinity Test Method: ED037-P

Total Alkalinity (CaCO3)	Total	
	117 mg/L	

Physical Test Method: EA015H

Total Dissolved Solids @ 180°C	Total	
	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
 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

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



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

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

* 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	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			Total
Total Dissolved Solids @ 180°C		EA015H	1380 mg/L
Turbidity		EA045	1.9 NTU
Other			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
 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

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	

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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	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 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	0.119 mg/L

Anions Test Method: ED009-X

Fluoride (F)	Filtered	
	<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	

Physical Test Method: EA015H

Total Dissolved Solids @ 180°C	Total	
	4830 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

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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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

	Filtered
Fluoride (F)	<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
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Physical Test Method: EA015H

Total Dissolved Solids @ 180°C	Total 376 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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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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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

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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	

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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 MPM4

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
--------------------------------	--------------------------

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1803177. Report Date: 2-Feb-2018

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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

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

* 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

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

Total Alkalinity (CaCO3)	80 mg/L
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Physical Test Method: EA015H

Total

Total Dissolved Solids @ 180°C	54800 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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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

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

* 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	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

* 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

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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 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 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
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Physical Test Method: EA015H

Total Dissolved Solids @ 180°C	Total 4080 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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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	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

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

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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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

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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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

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

	Filtered
Fluoride (F)	<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

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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

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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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

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
--------------------------------	--------------------------

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1803177. Report Date: 2-Feb-2018

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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

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

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	

* 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	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 MPM4

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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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

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	

* 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

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

	Filtered
Fluoride (F)	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
--------------------------------	---------------------------

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

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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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 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 MPMG4

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

	Filtered
Fluoride (F)	<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

* 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	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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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	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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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	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	

* 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	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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 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
Total Alkalinity (CaCO3)	118 mg/L

Physical Test Method: EA015H	Total
Total Dissolved Solids @ 180°C	51500 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

Final - Report Number: 2265314

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

MPW020404

Date Sampled

7-Feb-2018 08:35

Date Received

8-Feb-2018

Date Completed

16-Feb-2018

Date Authorised

20-Feb-2018

Summary Report

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

Sampling point: Groundwater Bore MPGM5

Source: MP

Customer Sampling Point: 030

Sampling Code: D11

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	74 L
Recharge Bore Level	*Analysis in Field	7.5 m
pH	CA12125	6.02
Conductivity	CA12125	710 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		0.018 mg/L
Boron (B)	EG020A-T		<0.05 mg/L
Cadmium (Cd)	EG020A-T		<0.0001 mg/L
Calcium (Ca)	ED093T-UL		46.7 mg/L
Chromium (Cr)	EG020A-T		<0.001 mg/L
Copper (Cu)	EG020A-T		<0.001 mg/L
Iron (Fe)	EG020A-F	7.35 mg/L	
Lead (Pb)	EG020A-T		<0.001 mg/L
Magnesium (Mg)	ED093T-UL		49.5 mg/L
Manganese (Mn)	EG020A-F	1.47 mg/L	
Molybdenum (Mo)	EG020A-T		<0.001 mg/L
Nickel (Ni)	EG020A-T		0.070 mg/L
Potassium (K)	ED093T-UL		7.88 mg/L
Selenium (Se)	EG094B-T		<0.0002 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		21.7 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: 2265314
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 MPW020404
Date Sampled 7-Feb-2018 08:35
Date Received 8-Feb-2018
Date Completed 16-Feb-2018
Date Authorised 20-Feb-2018

Summary Report

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

Sampling point: Groundwater Bore MPGM5

Source: MP **Customer Sampling Point:** 030 **Sampling Code:** D11 **Sample Frequency:** Month

Testing Laboratory: ALS Environmental

Zinc (Zn)	EG020A-T	0.056 mg/L
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Anions Test Method: ED009-X	Filtered	
Fluoride (F)	0.053 mg/L	
Chloride (Cl)	13.2 mg/L	
Sulfate (SO4)	253 mg/L	

Alkalinity Test Method: ED037-P		Total
Total Alkalinity (CaCO3)		125 mg/L

Physical Test Method: EA015H		Total
Total Dissolved Solids @ 180°C		386 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1804340. Report Date: 15-Feb-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 MPW020405
Date Sampled 8-Feb-2018 08:10
Date Received 8-Feb-2018
Date Completed 16-Feb-2018
Date Authorised 20-Feb-2018

Summary Report

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

Sampling point: Groundwater Bore MPGM5

Source: MP **Customer Sampling Point:** 031 **Sampling Code:** D12 **Sample Frequency:** Month

Testing Laboratory: Mount Piper
Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	4.8 m
Bore Volume Pumped	*Analysis in Field	5 L
Recharge Bore Level	*Analysis in Field	5.4 m
pH	CA12125	6.09
Conductivity	CA12125	610 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		0.13 mg/L
Arsenic (As)	EG020A-T		0.002 mg/L
Barium (Ba)	EG020A-T		0.120 mg/L
Boron (B)	EG020A-T		<0.05 mg/L
Cadmium (Cd)	EG020A-T		<0.0001 mg/L
Calcium (Ca)	ED093T-UL		24.1 mg/L
Chromium (Cr)	EG020A-T		<0.001 mg/L
Copper (Cu)	EG020A-T		<0.001 mg/L
Iron (Fe)	EG020A-F	18.0 mg/L	
Lead (Pb)	EG020A-T		<0.001 mg/L
Magnesium (Mg)	ED093T-UL		27.1 mg/L
Manganese (Mn)	EG020A-F	6.63 mg/L	
Molybdenum (Mo)	EG020A-T		<0.001 mg/L
Nickel (Ni)	EG020A-T		0.069 mg/L
Potassium (K)	ED093T-UL		3.44 mg/L
Selenium (Se)	EG094B-T		<0.0002 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		38.6 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: Allan Bowcher

Sample Number MPW020405
Date Sampled 8-Feb-2018 08:10
Date Received 8-Feb-2018
Date Completed 16-Feb-2018
Date Authorised 20-Feb-2018

Summary Report

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

Sampling point: Groundwater Bore MPGM5

Source: MP **Customer Sampling Point:** 031 **Sampling Code:** D12 **Sample Frequency:** Month

Testing Laboratory: ALS Environmental

Zinc (Zn) EG020A-T 0.034 mg/L

Anions Test Method: ED009-X

	Filtered
Fluoride (F)	0.084 mg/L
Chloride (Cl)	50.5 mg/L
Sulfate (SO4)	80.1 mg/L

Alkalinity Test Method: ED037-P

	Total
Total Alkalinity (CaCO3)	142 mg/L

Physical Test Method: EA015H

	Total
Total Dissolved Solids @ 180°C	289 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1804340. Report Date: 15-Feb-2018

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 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Allan Bowcher

Sample Number MPW020406
Date Sampled 7-Feb-2018 09:25
Date Received 8-Feb-2018
Date Completed 16-Feb-2018
Date Authorised 20-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:** 012 **Sampling Code:** D7 **Sample Frequency:** Month

Testing Laboratory: Mount Piper

Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	1.4 m
Bore Volume Pumped	*Analysis in Field	37 L
Recharge Bore Level	*Analysis in Field	1.4 m
pH	CA12125	6.44
Conductivity	CA12125	572 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		0.101 mg/L
Boron (B)	EG020A-T		<0.05 mg/L
Cadmium (Cd)	EG020A-T		<0.0001 mg/L
Calcium (Ca)	ED093T-UL		49.5 mg/L
Chromium (Cr)	EG020A-T		<0.001 mg/L
Copper (Cu)	EG020A-T		<0.001 mg/L
Iron (Fe)	EG020A-F	8.08 mg/L	
Lead (Pb)	EG020A-T		<0.001 mg/L
Magnesium (Mg)	ED093T-UL		25.1 mg/L
Manganese (Mn)	EG020A-F	0.862 mg/L	
Molybdenum (Mo)	EG020A-T		<0.001 mg/L
Nickel (Ni)	EG020A-T		<0.001 mg/L
Potassium (K)	ED093T-UL		9.22 mg/L
Selenium (Se)	EG094B-T		<0.0002 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		22.3 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: Allan Bowcher

Sample Number MPW020406
Date Sampled 7-Feb-2018 09:25
Date Received 8-Feb-2018
Date Completed 16-Feb-2018
Date Authorised 20-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:** 012 **Sampling Code:** D7 **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)	18.3 mg/L
Sulfate (SO4)	21.2 mg/L

Alkalinity Test Method: ED037-P

	Total
Total Alkalinity (CaCO3)	261 mg/L

Physical Test Method: EA015H

	Total
Total Dissolved Solids @ 180°C	264 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1804340. Report Date: 15-Feb-2018

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 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Allan Bowcher

Sample Number MPW020407
Date Sampled 8-Feb-2018 08:40
Date Received 8-Feb-2018
Date Completed 16-Feb-2018
Date Authorised 20-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:** 007 **Sampling Code:** D2 **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	59 L
Recharge Bore Level	*Analysis in Field	2.7 m
pH	CA12125	5.62
Conductivity	CA12125	3010 µS/cm

conductivity stability not achieved during purging. Discolouration of water observed during purging. Strong odour detected in water at purge end.

Testing Laboratory: ALS Environmental
Water

Cations - Metals	Test Method	Filtered	Total
Mercury (Hg)	EG035T-LL		<0.00004 mg/L
Aluminium (Al)	EG020A-T		0.37 mg/L
Arsenic (As)	EG020A-T		<0.001 mg/L
Barium (Ba)	EG020A-T		0.027 mg/L
Boron (B)	EG020A-T		0.47 mg/L
Cadmium (Cd)	EG020A-T		<0.0001 mg/L
Calcium (Ca)	ED093T-UL		199 mg/L
Chromium (Cr)	EG020A-T		<0.001 mg/L
Copper (Cu)	EG020A-T		0.002 mg/L
Iron (Fe)	EG020A-F	18.9 mg/L	
Lead (Pb)	EG020A-T		0.002 mg/L
Magnesium (Mg)	ED093T-UL		158 mg/L
Manganese (Mn)	EG020A-F	6.91 mg/L	
Molybdenum (Mo)	EG020A-T		<0.001 mg/L
Nickel (Ni)	EG020A-T		0.285 mg/L
Potassium (K)	ED093T-UL		20.3 mg/L
Selenium (Se)	EG094B-T		0.0002 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L

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Representative: Clive Stacey
Sampled By: Allan Bowcher

Sample Number MPW020407
Date Sampled 8-Feb-2018 08:40
Date Received 8-Feb-2018
Date Completed 16-Feb-2018
Date Authorised 20-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:** 007 **Sampling Code:** D2 **Sample Frequency:** Month

Testing Laboratory: ALS Environmental

Sodium (Na)	ED093T-UL	303 mg/L
Vanadium (V)	EG020A-F	<0.01 mg/L
Vanadium (V)	EG020A-T	<0.01 mg/L
Zinc (Zn)	EG020A-T	0.271 mg/L

Anions	Test Method	Filtered
Fluoride (F)	ED009-X	<0.100 mg/L
Chloride (Cl)	ED009-X	196 mg/L
Sulfate (SO4)	ED009-X	1400 mg/L

ED009x: samples ES1804340-6, 9 and 11 required dilution due to matrix interferences. LOR values 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	1800 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1804340. Report Date: 15-Feb-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 MPW020408
Date Sampled 7-Feb-2018 10:15
Date Received 8-Feb-2018
Date Completed 16-Feb-2018
Date Authorised 20-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:** 009 **Sampling Code:** D4 **Sample Frequency:** Month

Testing Laboratory: Mount Piper
Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	1.6 m
Bore Volume Pumped	*Analysis in Field	122 L
Recharge Bore Level	*Analysis in Field	1.6 m
pH	CA12125	3.36
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		19.3 mg/L
Arsenic (As)	EG020A-T		0.049 mg/L
Barium (Ba)	EG020A-T		0.012 mg/L
Boron (B)	EG020A-T		<0.05 mg/L
Cadmium (Cd)	EG020A-T		0.0007 mg/L
Calcium (Ca)	ED093T-UL		14.3 mg/L
Chromium (Cr)	EG020A-T		0.002 mg/L
Copper (Cu)	EG020A-T		0.001 mg/L
Iron (Fe)	EG020A-F	116 mg/L	
Lead (Pb)	EG020A-T		0.022 mg/L
Magnesium (Mg)	ED093T-UL		8.46 mg/L
Manganese (Mn)	EG020A-F	0.752 mg/L	
Molybdenum (Mo)	EG020A-T		<0.001 mg/L
Nickel (Ni)	EG020A-T		0.021 mg/L
Potassium (K)	ED093T-UL		7.48 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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 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Allan Bowcher

Sample Number MPW020408
Date Sampled 7-Feb-2018 10:15
Date Received 8-Feb-2018
Date Completed 16-Feb-2018
Date Authorised 20-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:** 009 **Sampling Code:** D4 **Sample Frequency:** Month

Testing Laboratory: ALS Environmental

Zinc (Zn) EG020A-T 0.224 mg/L

Anions Test Method: ED009-X

	Filtered
Fluoride (F)	0.124 mg/L
Chloride (Cl)	10.2 mg/L
Sulfate (SO4)	490 mg/L

Alkalinity Test Method: ED037-P

	Total
Total Alkalinity (CaCO3)	<1 mg/L

Physical Test Method: EA015H

	Total
Total Dissolved Solids @ 180°C	790 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: ES1804340. Report Date: 15-Feb-2018

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 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Allan Bowcher

Sample Number MPW020409
Date Sampled 8-Feb-2018 08:55
Date Received 8-Feb-2018
Date Completed 16-Feb-2018
Date Authorised 20-Feb-2018

Summary Report

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

Sampling point: Groundwater Bore MPGM5

Source: MP **Customer Sampling Point:** 024 **Sampling Code:** D5 **Sample Frequency:** Month

Testing Laboratory: Mount Piper
Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	6.9 m
Bore Volume Pumped	*Analysis in Field	16 L
Recharge Bore Level	*Analysis in Field	6.9 m
pH	CA12125	6.14
Conductivity	CA12125	2190 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		0.30 mg/L
Arsenic (As)	EG020A-T		<0.001 mg/L
Barium (Ba)	EG020A-T		0.073 mg/L
Boron (B)	EG020A-T		<0.05 mg/L
Cadmium (Cd)	EG020A-T		<0.0001 mg/L
Calcium (Ca)	ED093T-UL		135 mg/L
Chromium (Cr)	EG020A-T		<0.001 mg/L
Copper (Cu)	EG020A-T		<0.001 mg/L
Iron (Fe)	EG094B-F	0.648 mg/L	
Lead (Pb)	EG020A-T		<0.001 mg/L
Magnesium (Mg)	ED093T-UL		148 mg/L
Manganese (Mn)	EG020A-F	21.3 mg/L	
Molybdenum (Mo)	EG020A-T		<0.001 mg/L
Nickel (Ni)	EG020A-T		0.150 mg/L
Potassium (K)	ED093T-UL		12.6 mg/L
Selenium (Se)	EG094B-T		<0.0002 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		140 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 MPW020409
Date Sampled 8-Feb-2018 08:55
Date Received 8-Feb-2018
Date Completed 16-Feb-2018
Date Authorised 20-Feb-2018

Summary Report

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

Sampling point: Groundwater Bore MPGM5

Source: MP **Customer Sampling Point:** 024 **Sampling Code:** D5 **Sample Frequency:** Month

Testing Laboratory: ALS Environmental

Zinc (Zn)	EG020A-T	0.061 mg/L
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Anions Test Method: ED009-X	Filtered	
Fluoride (F)		0.060 mg/L
Chloride (Cl)		192 mg/L
Sulfate (SO4)		572 mg/L

Alkalinity Test Method: ED037-P		Total
Total Alkalinity (CaCO3)		474 mg/L

Physical Test Method: EA015H		Total
Total Dissolved Solids @ 180°C		1280 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1804340. Report Date: 15-Feb-2018

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Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Allan Bowcher

Sample Number MPW020410
Date Sampled 8-Feb-2018 09:05
Date Received 8-Feb-2018
Date Completed 16-Feb-2018
Date Authorised 20-Feb-2018

Summary Report

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

Sampling point: Groundwater Bore MPGM5

Source: MP **Customer Sampling Point:** 025 **Sampling Code:** D6 **Sample Frequency:** Month

Testing Laboratory: Mount Piper
Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	9.1 m
Bore Volume Pumped	*Analysis in Field	1 L
Recharge Bore Level	*Analysis in Field	9.2 m
pH	CA12125	5.84
Conductivity	CA12125	1300 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		0.003 mg/L
Barium (Ba)	EG020A-T		0.049 mg/L
Boron (B)	EG020A-T		<0.05 mg/L
Cadmium (Cd)	EG020A-T		<0.0001 mg/L
Calcium (Ca)	ED093T-UL		12.7 mg/L
Chromium (Cr)	EG020A-T		<0.001 mg/L
Copper (Cu)	EG020A-T		<0.001 mg/L
Iron (Fe)	EG020A-F	57.6 mg/L	
Lead (Pb)	EG020A-T		0.001 mg/L
Magnesium (Mg)	ED093T-UL		35.5 mg/L
Manganese (Mn)	EG020A-F	3.59 mg/L	
Molybdenum (Mo)	EG020A-T		<0.001 mg/L
Nickel (Ni)	EG020A-T		0.056 mg/L
Potassium (K)	ED093T-UL		3.04 mg/L
Selenium (Se)	EG094B-T		<0.0002 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		179 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: 2265314
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 MPW020410
Date Sampled 8-Feb-2018 09:05
Date Received 8-Feb-2018
Date Completed 16-Feb-2018
Date Authorised 20-Feb-2018

Summary Report

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

Sampling point: Groundwater Bore MPGM5

Source: MP **Customer Sampling Point:** 025 **Sampling Code:** D6 **Sample Frequency:** Month

Testing Laboratory: ALS Environmental

Zinc (Zn)	EG020A-T	0.030 mg/L
Anions	Test Method	Filtered
Fluoride (F)	ED009-X	<0.050 mg/L
Chloride (Cl)	ED009-X	155 mg/L
Sulfate (SO4)	ED009-X	293 mg/L

ED009x: samples ES1804340-6, 9 and 11 required dilution due to matrix interferences. LOR values have been adjusted accordingly.

Alkalinity Test Method: ED037-P	Total
Total Alkalinity (CaCO3)	136 mg/L

Physical Test Method: EA015H	Total
Total Dissolved Solids @ 180°C	796 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1804340. Report Date: 15-Feb-2018

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 Senior Chemist

Final - Report Number: 2265314
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 MPW020411
Date Sampled 7-Feb-2018 11:00
Date Received 8-Feb-2018
Date Completed 8-Feb-2018
Date Authorised 8-Feb-2018

Summary Report

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

Sampling point: Groundwater Bore MPM5

Source: MP

Customer Sampling Point: 027

Sampling Code: D8

Sample Frequency: 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: 2265314
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 MPW020412
Date Sampled 8-Feb-2018 09:15
Date Received 8-Feb-2018
Date Completed 16-Feb-2018
Date Authorised 20-Feb-2018

Summary Report

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

Sampling point: Groundwater Bore MPGM5

Source: MP **Customer Sampling Point:** 028 **Sampling Code:** D9 **Sample Frequency:** Month

Testing Laboratory: Mount Piper
Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	10.5 m
Bore Volume Pumped	*Analysis in Field	29 L
Recharge Bore Level	*Analysis in Field	12.4 m
pH	CA12125	5.85
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		0.09 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		45.8 mg/L
Chromium (Cr)	EG020A-T		<0.001 mg/L
Copper (Cu)	EG020A-T		<0.001 mg/L
Iron (Fe)	EG094B-F	0.047 mg/L	
Lead (Pb)	EG020A-T		<0.001 mg/L
Magnesium (Mg)	ED093T-UL		53.5 mg/L
Manganese (Mn)	EG020A-F	0.023 mg/L	
Molybdenum (Mo)	EG020A-T		<0.001 mg/L
Nickel (Ni)	EG020A-T		0.015 mg/L
Potassium (K)	ED093T-UL		9.10 mg/L
Selenium (Se)	EG094B-T		<0.0002 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		67.2 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: Allan Bowcher

Sample Number MPW020412
Date Sampled 8-Feb-2018 09:15
Date Received 8-Feb-2018
Date Completed 16-Feb-2018
Date Authorised 20-Feb-2018

Summary Report

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

Sampling point: Groundwater Bore MPGM5

Source: MP **Customer Sampling Point:** 028 **Sampling Code:** D9 **Sample Frequency:** Month

Testing Laboratory: ALS Environmental

Zinc (Zn) EG020A-T 0.066 mg/L

Anions Test Method: ED009-X

	Filtered
Fluoride (F)	0.055 mg/L
Chloride (Cl)	24.1 mg/L
Sulfate (SO4)	363 mg/L

Alkalinity Test Method: ED037-P

Total Alkalinity (CaCO3)	Total 124 mg/L
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Physical Test Method: EA015H

Total Dissolved Solids @ 180°C	Total 518 mg/L
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Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1804340. Report Date: 15-Feb-2018

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 Senior Chemist

Final - Report Number: 2265314
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 MPW020413
Date Sampled 7-Feb-2018 11:15
Date Received 8-Feb-2018
Date Completed 8-Feb-2018
Date Authorised 8-Feb-2018

Summary Report

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

Sampling point: Groundwater Bore MPGM5

Source: MP

Customer Sampling Point: 026

Sampling Code: D7

Sample Frequency: Month

Testing Laboratory: Mount Piper
Water

Field Analysis Test Method: Analysis in Field
Initial Bore Level

Total
19.8 m

insufficient volume to sample

Allan Bowcher

Authorised by Allan Bowcher
Chemist

Final - Report Number: 2265314
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 MPW020414
Date Sampled 8-Feb-2018 09:25
Date Received 8-Feb-2018
Date Completed 8-Feb-2018
Date Authorised 8-Feb-2018

Summary Report

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

Sampling point: Groundwater Bore MPGM5

Source: MP

Customer Sampling Point: 023

Sampling Code: D4

Sample Frequency: Month

Testing Laboratory: Mount Piper
Water

Field Analysis	Test Method: Analysis in Field	Total
Initial Bore Level		21.9 m
Bore Volume Pumped		0.1 L
Recharge Bore Level		22.0 m

volume not extractable

Allan Bowcher

Authorised by Allan Bowcher
Chemist

Final - Report Number: 2265314
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 MPW020415
Date Sampled 7-Feb-2018 11:50
Date Received 8-Feb-2018
Date Completed 16-Feb-2018
Date Authorised 20-Feb-2018

Summary Report

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

Sampling point: Groundwater Bore MPGM5

Source: MP **Customer Sampling Point:** 022 **Sampling Code:** D3 **Sample Frequency:** Month

Testing Laboratory: Mount Piper
Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	11.7 m
Bore Volume Pumped	*Analysis in Field	117 L
Recharge Bore Level	*Analysis in Field	11.7 m
pH	CA12125	5.92
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		0.04 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		52.5 mg/L
Chromium (Cr)	EG020A-T		<0.001 mg/L
Copper (Cu)	EG020A-T		<0.001 mg/L
Iron (Fe)	EG020A-F	6.82 mg/L	
Lead (Pb)	EG020A-T		0.002 mg/L
Magnesium (Mg)	ED093T-UL		56.5 mg/L
Manganese (Mn)	EG020A-F	6.40 mg/L	
Molybdenum (Mo)	EG020A-T		<0.001 mg/L
Nickel (Ni)	EG020A-T		0.399 mg/L
Potassium (K)	ED093T-UL		9.86 mg/L
Selenium (Se)	EG094B-T		<0.0002 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		44.7 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 MPW020415
Date Sampled 7-Feb-2018 11:50
Date Received 8-Feb-2018
Date Completed 16-Feb-2018
Date Authorised 20-Feb-2018

Summary Report

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

Sampling point: Groundwater Bore MPGM5

Source: MP **Customer Sampling Point:** 022 **Sampling Code:** D3 **Sample Frequency:** Month

Testing Laboratory: ALS Environmental

Zinc (Zn)	EG020A-T	0.127 mg/L
Anions	Test Method	Filtered
Fluoride (F)	ED009-X	<0.050 mg/L
Chloride (Cl)	ED009-X	31.4 mg/L
Sulfate (SO4)	ED009-X	308 mg/L

ED009x: samples ES1804340-6, 9 and 11 required dilution due to matrix interferences. LOR values have been adjusted accordingly.

Alkalinity Test Method: ED037-P	Total
Total Alkalinity (CaCO3)	167 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: ES1804340. Report Date: 15-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 MPW020416
Date Sampled 7-Feb-2018 12:25
Date Received 8-Feb-2018
Date Completed 16-Feb-2018
Date Authorised 20-Feb-2018

Summary Report

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

Sampling point: Groundwater Bore MPGM5

Source: MP **Customer Sampling Point:** 020 **Sampling Code:** D1 **Sample Frequency:** Month

Testing Laboratory: Mount Piper
Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	11.6 m
Bore Volume Pumped	*Analysis in Field	117 L
Recharge Bore Level	*Analysis in Field	11.6 m
pH	CA12125	6.13
Conductivity	CA12125	590 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		0.048 mg/L
Boron (B)	EG020A-T		<0.05 mg/L
Cadmium (Cd)	EG020A-T		<0.0001 mg/L
Calcium (Ca)	ED093T-UL		47.1 mg/L
Chromium (Cr)	EG020A-T		<0.001 mg/L
Copper (Cu)	EG020A-T		0.001 mg/L
Iron (Fe)	EG020A-F	13.5 mg/L	
Lead (Pb)	EG020A-T		<0.001 mg/L
Magnesium (Mg)	ED093T-UL		28.5 mg/L
Manganese (Mn)	EG020A-F	0.853 mg/L	
Molybdenum (Mo)	EG020A-T		<0.001 mg/L
Nickel (Ni)	EG020A-T		0.006 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		21.3 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 MPW020416
Date Sampled 7-Feb-2018 12:25
Date Received 8-Feb-2018
Date Completed 16-Feb-2018
Date Authorised 20-Feb-2018

Summary Report

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

Sampling point: Groundwater Bore MPGM5

Source: MP **Customer Sampling Point:** 020 **Sampling Code:** D1 **Sample Frequency:** Month

Testing Laboratory: ALS Environmental

Zinc (Zn) EG020A-T 0.006 mg/L

Anions Test Method: ED009-X

	Filtered
Fluoride (F)	0.072 mg/L
Chloride (Cl)	18.5 mg/L
Sulfate (SO4)	94.3 mg/L

Alkalinity Test Method: ED037-P

	Total
Total Alkalinity (CaCO3)	191 mg/L

Physical Test Method: EA015H

	Total
Total Dissolved Solids @ 180°C	272 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1804340. Report Date: 15-Feb-2018

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 Senior Chemist

Final - Report Number: 2265314
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 MPW020417
Date Sampled 8-Feb-2018 09:45
Date Received 8-Feb-2018
Date Completed 16-Feb-2018
Date Authorised 20-Feb-2018

Summary Report

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

Sampling point: Groundwater Bore MPGM5

Source: MP **Customer Sampling Point:** 021 **Sampling Code:** D2 **Sample Frequency:** Month

Testing Laboratory: Mount Piper
Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	12.2 m
Bore Volume Pumped	*Analysis in Field	30 L
Recharge Bore Level	*Analysis in Field	12.2 m
pH	CA12125	5.83
Conductivity	CA12125	870 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		1.17 mg/L
Arsenic (As)	EG020A-T		0.003 mg/L
Barium (Ba)	EG020A-T		0.023 mg/L
Boron (B)	EG020A-T		<0.05 mg/L
Cadmium (Cd)	EG020A-T		<0.0001 mg/L
Calcium (Ca)	ED093T-UL		59.5 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		0.003 mg/L
Magnesium (Mg)	ED093T-UL		55.1 mg/L
Manganese (Mn)	EG020A-F	7.12 mg/L	
Molybdenum (Mo)	EG020A-T		<0.001 mg/L
Nickel (Ni)	EG020A-T		0.304 mg/L
Potassium (K)	ED093T-UL		10.5 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: 2265314
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 MPW020417
Date Sampled 8-Feb-2018 09:45
Date Received 8-Feb-2018
Date Completed 16-Feb-2018
Date Authorised 20-Feb-2018

Summary Report

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

Sampling point: Groundwater Bore MPGM5

Source: MP **Customer Sampling Point:** 021 **Sampling Code:** D2 **Sample Frequency:** Month

Testing Laboratory: ALS Environmental

Zinc (Zn)	EG020A-T	0.314 mg/L
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Anions Test Method: ED009-X	Filtered	
Fluoride (F)	0.067 mg/L	
Chloride (Cl)	16.3 mg/L	
Sulfate (SO4)	320 mg/L	

Alkalinity Test Method: ED037-P		Total
Total Alkalinity (CaCO3)		148 mg/L

Physical Test Method: EA015H		Total
Total Dissolved Solids @ 180°C		488 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1804340. Report Date: 15-Feb-2018

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Final - Report Number: 2265314
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 MPW020418
Date Sampled 7-Feb-2018 13:05
Date Received 8-Feb-2018
Date Completed 16-Feb-2018
Date Authorised 20-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:** 010 **Sampling Code:** D5 **Sample Frequency:** Month

Testing Laboratory: Mount Piper
Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	11.0 m
Bore Volume Pumped	*Analysis in Field	248 L
Recharge Bore Level	*Analysis in Field	11.0 m
pH	CA12125	5.95
Conductivity	CA12125	1300 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		0.12 mg/L
Cadmium (Cd)	EG020A-T		<0.0001 mg/L
Calcium (Ca)	ED093T-UL		102 mg/L
Chromium (Cr)	EG020A-T		<0.001 mg/L
Copper (Cu)	EG020A-T		<0.001 mg/L
Iron (Fe)	EG020A-F	54.9 mg/L	
Lead (Pb)	EG020A-T		<0.001 mg/L
Magnesium (Mg)	ED093T-UL		73.9 mg/L
Manganese (Mn)	EG020A-F	8.65 mg/L	
Molybdenum (Mo)	EG020A-T		<0.001 mg/L
Nickel (Ni)	EG020A-T		0.052 mg/L
Potassium (K)	ED093T-UL		8.97 mg/L
Selenium (Se)	EG094B-T		0.0002 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		27.6 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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Final - Report Number: 2265314
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 MPW020418
Date Sampled 7-Feb-2018 13:05
Date Received 8-Feb-2018
Date Completed 16-Feb-2018
Date Authorised 20-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:** 010 **Sampling Code:** D5 **Sample Frequency:** Month

Testing Laboratory: ALS Environmental

Zinc (Zn) EG020A-T 0.024 mg/L

Anions Test Method: ED009-X

	Filtered
Fluoride (F)	0.108 mg/L
Chloride (Cl)	23.1 mg/L
Sulfate (SO4)	613 mg/L

Alkalinity Test Method: ED037-P

	Total
Total Alkalinity (CaCO3)	98 mg/L

Physical Test Method: EA015H

	Total
Total Dissolved Solids @ 180°C	920 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1804340. Report Date: 15-Feb-2018

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Accreditation Number 1099
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 Senior Chemist

Final - Report Number: 2265314
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 MPW020419
Date Sampled 7-Feb-2018 13:20
Date Received 8-Feb-2018
Date Completed 8-Feb-2018
Date Authorised 8-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: 011

Sampling Code: D6

Sample Frequency: 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: 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
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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

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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 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 (CaCO ₃)		86 mg/L
Phenolphthalein Alkalinity (CaCO ₃)		<1 mg/L
Bicarbonate (CaCO ₃)		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 (NH ₃ -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



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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 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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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

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

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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 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

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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 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.

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 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

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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 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

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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 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

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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: 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

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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 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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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 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

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 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	

* NATA accreditation does not cover the performance of this service



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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 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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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 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

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 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

Authorised by Nikki Tomlinson
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 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

Authorised by Nikki Tomlinson
Senior Chemist

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ENERGY AUSTRALIA C/- MT PIPER POWER
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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	

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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: 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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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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 BOULDER ROAD
 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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 PORTLAND NSW 2847 AUSTRALIA
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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 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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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: 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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 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
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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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 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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 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
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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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: 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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 BOULDER ROAD
 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
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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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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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 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

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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 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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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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 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



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 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

* 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 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

* NATA accreditation does not cover the performance of this service



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Authorised by Thanh Hoang Le
 Senior Chemist

Final - Report Number: 2296055
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 MPW020828
Date Sampled 7-Mar-2018 08:40
Date Received 13-Mar-2018
Date Completed 15-Mar-2018
Date Authorised 19-Mar-2018

Summary Report

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

Sampling point: Groundwater Bore MPGM5

Source: MP **Customer Sampling Point:** 030 **Sampling Code:** D11 **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	74 L
Recharge Bore Level	*Analysis in Field	7.5 m
pH	CA12125	5.99
Conductivity	CA12125	710 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		0.017 mg/L
Boron (B)	EG020A-T		<0.05 mg/L
Cadmium (Cd)	EG020A-T		<0.0001 mg/L
Calcium (Ca)	ED093T-UL		43.6 mg/L
Chromium (Cr)	EG020A-T		<0.001 mg/L
Copper (Cu)	EG020A-T		<0.001 mg/L
Iron (Fe)	EG020A-F	8.92 mg/L	
Lead (Pb)	EG020A-T		<0.001 mg/L
Magnesium (Mg)	ED093T-UL		44.6 mg/L
Manganese (Mn)	EG020A-F	1.56 mg/L	
Molybdenum (Mo)	EG020A-T		<0.001 mg/L
Nickel (Ni)	EG020A-T		0.069 mg/L
Potassium (K)	ED093T-UL		7.66 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

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 Senior Chemist

Final - Report Number: 2296055
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 MPW020828
Date Sampled 7-Mar-2018 08:40
Date Received 13-Mar-2018
Date Completed 15-Mar-2018
Date Authorised 19-Mar-2018

Summary Report

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

Sampling point: Groundwater Bore MPGM5

Source: MP **Customer Sampling Point:** 030 **Sampling Code:** D11 **Sample Frequency:** Month

Testing Laboratory: ALS Environmental

Zinc (Zn)	EG020A-T	0.055 mg/L
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Anions Test Method: ED009-X	Filtered	
Fluoride (F)	0.056 mg/L	
Chloride (Cl)	14.3 mg/L	
Sulfate (SO4)	238 mg/L	

Alkalinity Test Method: ED037-P		Total
Total Alkalinity (CaCO3)		135 mg/L

Physical Test Method: EA015H		Total
Total Dissolved Solids @ 180°C		450 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1807217. Report Date: 15-Mar-2018

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 Senior Chemist

Final - Report Number: 2296055
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 MPW020829
Date Sampled 8-Mar-2018 08:00
Date Received 13-Mar-2018
Date Completed 15-Mar-2018
Date Authorised 19-Mar-2018

Summary Report

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

Sampling point: Groundwater Bore MPGM5

Source: MP **Customer Sampling Point:** 031 **Sampling Code:** D12 **Sample Frequency:** Month

Testing Laboratory: Mount Piper

Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	5.0 m
Bore Volume Pumped	*Analysis in Field	5 L
Recharge Bore Level	*Analysis in Field	5.6 m
pH	CA12125	6.01
Conductivity	CA12125	591 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		0.105 mg/L
Boron (B)	EG020A-T		<0.05 mg/L
Cadmium (Cd)	EG020A-T		<0.0001 mg/L
Calcium (Ca)	ED093T-UL		24.2 mg/L
Chromium (Cr)	EG020A-T		<0.001 mg/L
Copper (Cu)	EG020A-T		0.026 mg/L
Iron (Fe)	EG020A-F	20.4 mg/L	
Lead (Pb)	EG020A-T		0.001 mg/L
Magnesium (Mg)	ED093T-UL		26.0 mg/L
Manganese (Mn)	EG020A-F	8.33 mg/L	
Molybdenum (Mo)	EG020A-T		<0.001 mg/L
Nickel (Ni)	EG020A-T		0.068 mg/L
Potassium (K)	ED093T-UL		3.42 mg/L
Selenium (Se)	EG094B-T		<0.0002 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		37.0 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: 2296055
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 MPW020829
Date Sampled 8-Mar-2018 08:00
Date Received 13-Mar-2018
Date Completed 15-Mar-2018
Date Authorised 19-Mar-2018

Summary Report

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

Sampling point: Groundwater Bore MPM5

Source: MP **Customer Sampling Point:** 031 **Sampling Code:** D12 **Sample Frequency:** Month

Testing Laboratory: ALS Environmental

Zinc (Zn)	EG020A-T	0.045 mg/L
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Anions Test Method: ED009-X	Filtered
Fluoride (F)	0.130 mg/L
Chloride (Cl)	49.4 mg/L
Sulfate (SO4)	75.0 mg/L

Alkalinity Test Method: ED037-P	Total
Total Alkalinity (CaCO3)	151 mg/L

Physical Test Method: EA015H	Total
Total Dissolved Solids @ 180°C	306 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1807217. Report Date: 15-Mar-2018

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 Senior Chemist

Final - Report Number: 2296055
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 MPW020830
Date Sampled 7-Mar-2018 09:20
Date Received 13-Mar-2018
Date Completed 15-Mar-2018
Date Authorised 19-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:** 012 **Sampling Code:** D7 **Sample Frequency:** Month

Testing Laboratory: Mount Piper
Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	1.4 m
Bore Volume Pumped	*Analysis in Field	36 L
Recharge Bore Level	*Analysis in Field	1.4 m
pH	CA12125	6.49
Conductivity	CA12125	569 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		0.095 mg/L
Boron (B)	EG020A-T		<0.05 mg/L
Cadmium (Cd)	EG020A-T		<0.0001 mg/L
Calcium (Ca)	ED093T-UL		49.1 mg/L
Chromium (Cr)	EG020A-T		<0.001 mg/L
Copper (Cu)	EG020A-T		<0.001 mg/L
Iron (Fe)	EG020A-F	11.4 mg/L	
Lead (Pb)	EG020A-T		<0.001 mg/L
Magnesium (Mg)	ED093T-UL		24.7 mg/L
Manganese (Mn)	EG020A-F	0.929 mg/L	
Molybdenum (Mo)	EG020A-T		<0.001 mg/L
Nickel (Ni)	EG020A-T		<0.001 mg/L
Potassium (K)	ED093T-UL		10.1 mg/L
Selenium (Se)	EG094B-T		<0.0002 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		22.8 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: 2296055
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 MPW020830
Date Sampled 7-Mar-2018 09:20
Date Received 13-Mar-2018
Date Completed 15-Mar-2018
Date Authorised 19-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:** 012 **Sampling Code:** D7 **Sample Frequency:** Month

Testing Laboratory: ALS Environmental

Zinc (Zn) EG020A-T 0.006 mg/L

Anions Test Method: ED009-X

	Filtered
Fluoride (F)	0.065 mg/L
Chloride (Cl)	19.7 mg/L
Sulfate (SO4)	22.3 mg/L

Alkalinity Test Method: ED037-P

	Total
Total Alkalinity (CaCO3)	277 mg/L

Physical Test Method: EA015H

	Total
Total Dissolved Solids @ 180°C	257 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1807217. Report Date: 15-Mar-2018

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 Senior Chemist

Final - Report Number: 2296055
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 MPW020831
Date Sampled 8-Mar-2018 08:20
Date Received 13-Mar-2018
Date Completed 15-Mar-2018
Date Authorised 19-Mar-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:** 007 **Sampling Code:** D2 **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	62 L
Recharge Bore Level	*Analysis in Field	2.6 m
pH	CA12125	5.76
Conductivity	CA12125	1570 µS/cm

conductivity stability not achieved during purging. Dark colour and strong odour detected in purged water.

Testing Laboratory: ALS Environmental
Water

Cations - Metals	Test Method	Filtered	Total
Mercury (Hg)	EG035T-LL		<0.00004 mg/L
Aluminium (Al)	EG020A-T		0.51 mg/L
Arsenic (As)	EG020A-T		<0.001 mg/L
Barium (Ba)	EG020A-T		0.022 mg/L
Boron (B)	EG020A-T		0.33 mg/L
Cadmium (Cd)	EG020A-T		<0.0001 mg/L
Calcium (Ca)	ED093T-UL		91.0 mg/L
Chromium (Cr)	EG020A-T		<0.001 mg/L
Copper (Cu)	EG020A-T		0.003 mg/L
Iron (Fe)	EG020A-F	10.3 mg/L	
Lead (Pb)	EG020A-T		0.003 mg/L
Magnesium (Mg)	ED093T-UL		67.9 mg/L
Manganese (Mn)	EG020A-F	3.12 mg/L	
Molybdenum (Mo)	EG020A-T		<0.001 mg/L
Nickel (Ni)	EG020A-T		0.138 mg/L
Potassium (K)	ED093T-UL		12.5 mg/L
Selenium (Se)	EG094B-T		0.0003 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		151 mg/L

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 Senior Chemist

Final - Report Number: 2296055
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 MPW020831
Date Sampled 8-Mar-2018 08:20
Date Received 13-Mar-2018
Date Completed 15-Mar-2018
Date Authorised 19-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:** 007 **Sampling Code:** D2 **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		0.085 mg/L

Anions Test Method: ED009-X

	Filtered	
Fluoride (F)	0.057 mg/L	
Chloride (Cl)	95.5 mg/L	
Sulfate (SO4)	636 mg/L	

Alkalinity Test Method: ED037-P

Total Alkalinity (CaCO3)	Total
	17 mg/L

Physical Test Method: EA015H

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

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1807217. Report Date: 15-Mar-2018

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 Senior Chemist

Final - Report Number: 2296055
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 MPW020832
Date Sampled 7-Mar-2018 10:15
Date Received 13-Mar-2018
Date Completed 15-Mar-2018
Date Authorised 19-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:** 009 **Sampling Code:** D4 **Sample Frequency:** Month

Testing Laboratory: Mount Piper
Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	1.6 m
Bore Volume Pumped	*Analysis in Field	122 L
Recharge Bore Level	*Analysis in Field	1.6 m
pH	CA12125	3.36
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		17.5 mg/L
Arsenic (As)	EG020A-T		0.049 mg/L
Barium (Ba)	EG020A-T		0.011 mg/L
Boron (B)	EG020A-T		<0.05 mg/L
Cadmium (Cd)	EG020A-T		0.0007 mg/L
Calcium (Ca)	ED093T-UL		14.9 mg/L
Chromium (Cr)	EG020A-T		0.003 mg/L
Copper (Cu)	EG020A-T		<0.001 mg/L
Iron (Fe)	EG020A-F	116 mg/L	
Lead (Pb)	EG020A-T		0.019 mg/L
Magnesium (Mg)	ED093T-UL		8.55 mg/L
Manganese (Mn)	EG020A-F	0.741 mg/L	
Molybdenum (Mo)	EG020A-T		<0.001 mg/L
Nickel (Ni)	EG020A-T		0.020 mg/L
Potassium (K)	ED093T-UL		7.46 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
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: 2296055
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 MPW020832
Date Sampled 7-Mar-2018 10:15
Date Received 13-Mar-2018
Date Completed 15-Mar-2018
Date Authorised 19-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:** 009 **Sampling Code:** D4 **Sample Frequency:** Month

Testing Laboratory: ALS Environmental

Zinc (Zn) EG020A-T 0.180 mg/L

Anions Test Method: ED009-X

	Filtered
Fluoride (F)	0.164 mg/L
Chloride (Cl)	12.8 mg/L
Sulfate (SO4)	444 mg/L

Alkalinity Test Method: ED037-P

	Total
Total Alkalinity (CaCO3)	<1 mg/L

Physical Test Method: EA015H

	Total
Total Dissolved Solids @ 180°C	656 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1807217. Report Date: 15-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: 2296055
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 MPW020833
Date Sampled 8-Mar-2018 08:35
Date Received 13-Mar-2018
Date Completed 15-Mar-2018
Date Authorised 19-Mar-2018

Summary Report

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

Sampling point: Groundwater Bore MPGM5

Source: MP **Customer Sampling Point:** 024 **Sampling Code:** D5 **Sample Frequency:** Month

Testing Laboratory: Mount Piper

Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	6.8 m
Bore Volume Pumped	*Analysis in Field	17 L
Recharge Bore Level	*Analysis in Field	6.8 m
pH	CA12125	6.17
Conductivity	CA12125	2140 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		0.068 mg/L
Boron (B)	EG020A-T		<0.05 mg/L
Cadmium (Cd)	EG020A-T		<0.0001 mg/L
Calcium (Ca)	ED093T-UL		133 mg/L
Chromium (Cr)	EG020A-T		<0.001 mg/L
Copper (Cu)	EG020A-T		<0.001 mg/L
Iron (Fe)	EG094B-F	0.338 mg/L	
Lead (Pb)	EG020A-T		<0.001 mg/L
Magnesium (Mg)	ED093T-UL		138 mg/L
Manganese (Mn)	EG020A-F	24.6 mg/L	
Molybdenum (Mo)	EG020A-T		<0.001 mg/L
Nickel (Ni)	EG020A-T		0.139 mg/L
Potassium (K)	ED093T-UL		12.5 mg/L
Selenium (Se)	EG094B-T		<0.0002 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		133 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: 2296055
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 MPW020833
Date Sampled 8-Mar-2018 08:35
Date Received 13-Mar-2018
Date Completed 15-Mar-2018
Date Authorised 19-Mar-2018

Summary Report

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

Sampling point: Groundwater Bore MPGM5

Source: MP **Customer Sampling Point:** 024 **Sampling Code:** D5 **Sample Frequency:** Month

Testing Laboratory: ALS Environmental

Zinc (Zn) EG020A-T 0.048 mg/L

Anions Test Method: ED009-X

	Filtered
Fluoride (F)	0.164 mg/L
Chloride (Cl)	182 mg/L
Sulfate (SO4)	552 mg/L

Alkalinity Test Method: ED037-P

Total Alkalinity (CaCO3)	Total 482 mg/L
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Physical Test Method: EA015H

Total Dissolved Solids @ 180°C	Total 1500 mg/L
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Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1807217. Report Date: 15-Mar-2018

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Accreditation Number 1099
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Authorised by Thanh Hoang Le
 Senior Chemist

Final - Report Number: 2296055
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 MPW020834
Date Sampled 8-Mar-2018 08:45
Date Received 13-Mar-2018
Date Completed 15-Mar-2018
Date Authorised 19-Mar-2018

Summary Report

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

Sampling point: Groundwater Bore MPGM5

Source: MP **Customer Sampling Point:** 025 **Sampling Code:** D6 **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	2.4 L
Recharge Bore Level	*Analysis in Field	9.2 m
pH	CA12125	5.81
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		0.10 mg/L
Arsenic (As)	EG020A-T		0.003 mg/L
Barium (Ba)	EG020A-T		0.048 mg/L
Boron (B)	EG020A-T		<0.05 mg/L
Cadmium (Cd)	EG020A-T		<0.0001 mg/L
Calcium (Ca)	ED093T-UL		12.3 mg/L
Chromium (Cr)	EG020A-T		<0.001 mg/L
Copper (Cu)	EG020A-T		<0.001 mg/L
Iron (Fe)	EG020A-F	67.3 mg/L	
Lead (Pb)	EG020A-T		<0.001 mg/L
Magnesium (Mg)	ED093T-UL		33.1 mg/L
Manganese (Mn)	EG020A-F	4.76 mg/L	
Molybdenum (Mo)	EG020A-T		<0.001 mg/L
Nickel (Ni)	EG020A-T		0.056 mg/L
Potassium (K)	ED093T-UL		2.92 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

* 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: 2296055
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 MPW020834
Date Sampled 8-Mar-2018 08:45
Date Received 13-Mar-2018
Date Completed 15-Mar-2018
Date Authorised 19-Mar-2018

Summary Report

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

Sampling point: Groundwater Bore MPGM5

Source: MP **Customer Sampling Point:** 025 **Sampling Code:** D6 **Sample Frequency:** Month

Testing Laboratory: ALS Environmental

Zinc (Zn)	EG020A-T	0.030 mg/L
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Anions Test Method: ED009-X	Filtered
Fluoride (F)	0.020 mg/L
Chloride (Cl)	152 mg/L
Sulfate (SO4)	276 mg/L

Alkalinity Test Method: ED037-P	Total
Total Alkalinity (CaCO3)	179 mg/L

Physical Test Method: EA015H	Total
Total Dissolved Solids @ 180°C	682 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1807217. Report Date: 15-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

Customer Analytical Services

Mount Piper Power Station 350 Boulder Road Portland 2847 NSW

Email: customeranalyticalservices@nalco.com



Final - Report Number: 2296055

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

MPW020835

Date Sampled

7-Mar-2018 11:10

Date Received

8-Mar-2018

Date Completed

8-Mar-2018

Date Authorised

9-Mar-2018

Summary Report

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

Sampling point: Groundwater Bore MPM5

Source: MP

Customer Sampling Point: 027

Sampling Code: D8

Sample Frequency: Month

Testing Laboratory: Mount Piper

Water

Field Analysis Test Method: Analysis in Field
Dry

Total

Authorised by Nikki Tomlinson
Senior Chemist

Final - Report Number: 2296055
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 MPW020836
Date Sampled 8-Mar-2018 09:00
Date Received 13-Mar-2018
Date Completed 15-Mar-2018
Date Authorised 19-Mar-2018

Summary Report

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

Sampling point: Groundwater Bore MPGM5

Source: MP **Customer Sampling Point:** 028 **Sampling Code:** D9 **Sample Frequency:** Month

Testing Laboratory: Mount Piper
Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	11.0 m
Bore Volume Pumped	*Analysis in Field	18 L
Recharge Bore Level	*Analysis in Field	12.5 m
pH	CA12125	5.82
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		0.07 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		46.0 mg/L
Chromium (Cr)	EG020A-T		<0.001 mg/L
Copper (Cu)	EG020A-T		<0.001 mg/L
Iron (Fe)	EG094B-F	0.079 mg/L	
Lead (Pb)	EG020A-T		<0.001 mg/L
Magnesium (Mg)	ED093T-UL		53.5 mg/L
Manganese (Mn)	EG020A-F	0.039 mg/L	
Molybdenum (Mo)	EG020A-T		<0.001 mg/L
Nickel (Ni)	EG020A-T		0.016 mg/L
Potassium (K)	ED093T-UL		9.58 mg/L
Selenium (Se)	EG094B-T		<0.0002 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		77.3 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.

Authorised by Thanh Hoang Le
 Senior Chemist

Final - Report Number: 2296055
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 MPW020836
Date Sampled 8-Mar-2018 09:00
Date Received 13-Mar-2018
Date Completed 15-Mar-2018
Date Authorised 19-Mar-2018

Summary Report

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

Sampling point: Groundwater Bore MPGM5

Source: MP **Customer Sampling Point:** 028 **Sampling Code:** D9 **Sample Frequency:** Month

Testing Laboratory: ALS Environmental

Zinc (Zn) EG020A-T 0.059 mg/L

Anions Test Method: ED009-X

	Filtered
Fluoride (F)	0.037 mg/L
Chloride (Cl)	24.9 mg/L
Sulfate (SO4)	363 mg/L

Alkalinity Test Method: ED037-P

	Total
Total Alkalinity (CaCO3)	127 mg/L

Physical Test Method: EA015H

	Total
Total Dissolved Solids @ 180°C	674 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1807217. Report Date: 15-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: 2296055
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 MPW020837
Date Sampled 8-Mar-2018 09:05
Date Received 8-Mar-2018
Date Completed 8-Mar-2018
Date Authorised 9-Mar-2018

Summary Report

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

Sampling point: Groundwater Bore MPGM5

Source: MP

Customer Sampling Point: 026

Sampling Code: D7

Sample Frequency: Month

Testing Laboratory: Mount Piper
Water

Field Analysis	Test Method: Analysis in Field	Total
Initial Bore Level		19.7 m
Bore Volume Pumped		0.6 L
Recharge Bore Level		19.8 m

insufficient volume to sample

N Tomlinson

Authorised by Nikki Tomlinson
Senior Chemist

Final - Report Number: 2296055
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 MPW020838
Date Sampled 8-Mar-2018 09:10
Date Received 8-Mar-2018
Date Completed 8-Mar-2018
Date Authorised 9-Mar-2018

Summary Report

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

Sampling point: Groundwater Bore MPGM5

Source: MP

Customer Sampling Point: 023

Sampling Code: D4

Sample Frequency: Month

Testing Laboratory: Mount Piper
Water

Field Analysis	Test Method: Analysis in Field	Total
Initial Bore Level		21.3 m
Bore Volume Pumped		2 L
Recharge Bore Level		21.5 m

volume not extractable

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

NALCO Water
An Ecolab Company

Final - Report Number: 2296055

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

MPW020839

Date Sampled

7-Mar-2018 12:00

Date Received

13-Mar-2018

Date Completed

15-Mar-2018

Date Authorised

19-Mar-2018

Summary Report

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

Sampling point: Groundwater Bore MPGM5

Source: MP

Customer Sampling Point: 022

Sampling Code: D3

Sample Frequency: Month

Testing Laboratory: Mount Piper

Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	11.6 m
Bore Volume Pumped	*Analysis in Field	112 L
Recharge Bore Level	*Analysis in Field	11.6 m
pH	CA12125	5.89
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		0.01 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		52.7 mg/L
Chromium (Cr)	EG020A-T		<0.001 mg/L
Copper (Cu)	EG020A-T		<0.001 mg/L
Iron (Fe)	EG020A-F	8.19 mg/L	
Lead (Pb)	EG020A-T		0.002 mg/L
Magnesium (Mg)	ED093T-UL		55.1 mg/L
Manganese (Mn)	EG020A-F	8.30 mg/L	
Molybdenum (Mo)	EG020A-T		<0.001 mg/L
Nickel (Ni)	EG020A-T		0.392 mg/L
Potassium (K)	ED093T-UL		10.1 mg/L
Selenium (Se)	EG094B-T		<0.0002 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

* 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: 2296055
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 MPW020839
Date Sampled 7-Mar-2018 12:00
Date Received 13-Mar-2018
Date Completed 15-Mar-2018
Date Authorised 19-Mar-2018

Summary Report

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

Sampling point: Groundwater Bore MPGM5

Source: MP **Customer Sampling Point:** 022 **Sampling Code:** D3 **Sample Frequency:** Month

Testing Laboratory: ALS Environmental

Zinc (Zn)	EG020A-T	0.107 mg/L
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Anions Test Method: ED009-X	Filtered	
Fluoride (F)		0.044 mg/L
Chloride (Cl)		32.5 mg/L
Sulfate (SO4)		295 mg/L

Alkalinity Test Method: ED037-P	Total	
Total Alkalinity (CaCO3)		166 mg/L

Physical Test Method: EA015H	Total	
Total Dissolved Solids @ 180°C		534 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1807217. Report Date: 15-Mar-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: 2296055
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 MPW020840
Date Sampled 7-Mar-2018 12:35
Date Received 13-Mar-2018
Date Completed 15-Mar-2018
Date Authorised 19-Mar-2018

Summary Report

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

Sampling point: Groundwater Bore MPGM5

Source: MP **Customer Sampling Point:** 020 **Sampling Code:** D1 **Sample Frequency:** Month

Testing Laboratory: Mount Piper
Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	11.6 m
Bore Volume Pumped	*Analysis in Field	117 L
Recharge Bore Level	*Analysis in Field	11.6 m
pH	CA12125	6.14
Conductivity	CA12125	580 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		0.047 mg/L
Boron (B)	EG020A-T		<0.05 mg/L
Cadmium (Cd)	EG020A-T		<0.0001 mg/L
Calcium (Ca)	ED093T-UL		44.9 mg/L
Chromium (Cr)	EG020A-T		<0.001 mg/L
Copper (Cu)	EG020A-T		<0.001 mg/L
Iron (Fe)	EG020A-F	15.7 mg/L	
Lead (Pb)	EG020A-T		<0.001 mg/L
Magnesium (Mg)	ED093T-UL		27.0 mg/L
Manganese (Mn)	EG020A-F	0.888 mg/L	
Molybdenum (Mo)	EG020A-T		<0.001 mg/L
Nickel (Ni)	EG020A-T		0.006 mg/L
Potassium (K)	ED093T-UL		8.91 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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Authorised by Thanh Hoang Le
 Senior Chemist

Final - Report Number: 2296055
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 MPW020840
Date Sampled 7-Mar-2018 12:35
Date Received 13-Mar-2018
Date Completed 15-Mar-2018
Date Authorised 19-Mar-2018

Summary Report

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

Sampling point: Groundwater Bore MPM5

Source: MP **Customer Sampling Point:** 020 **Sampling Code:** D1 **Sample Frequency:** Month

Testing Laboratory: ALS Environmental

Zinc (Zn) EG020A-T <0.005 mg/L

Anions Test Method: ED009-X

	Filtered
Fluoride (F)	0.045 mg/L
Chloride (Cl)	19.0 mg/L
Sulfate (SO4)	92.8 mg/L

Alkalinity Test Method: ED037-P

	Total
Total Alkalinity (CaCO3)	192 mg/L

Physical Test Method: EA015H

	Total
Total Dissolved Solids @ 180°C	338 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1807217. Report Date: 15-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: 2296055
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 MPW020841
Date Sampled 7-Mar-2018 22:00
Date Received 13-Mar-2018
Date Completed 15-Mar-2018
Date Authorised 19-Mar-2018

Summary Report

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

Sampling point: Groundwater Bore MPGM5

Source: MP **Customer Sampling Point:** 021 **Sampling Code:** D2 **Sample Frequency:** Month

Testing Laboratory: Mount Piper
Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	12.1 m
Bore Volume Pumped	*Analysis in Field	33 L
Recharge Bore Level	*Analysis in Field	12.1 m
pH	CA12125	5.81
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		0.27 mg/L
Arsenic (As)	EG020A-T		0.003 mg/L
Barium (Ba)	EG020A-T		0.018 mg/L
Boron (B)	EG020A-T		<0.05 mg/L
Cadmium (Cd)	EG020A-T		0.0002 mg/L
Calcium (Ca)	ED093T-UL		56.9 mg/L
Chromium (Cr)	EG020A-T		<0.001 mg/L
Copper (Cu)	EG020A-T		<0.001 mg/L
Iron (Fe)	EG020A-F	16.2 mg/L	
Lead (Pb)	EG020A-T		0.002 mg/L
Magnesium (Mg)	ED093T-UL		51.0 mg/L
Manganese (Mn)	EG020A-F	8.56 mg/L	
Molybdenum (Mo)	EG020A-T		<0.001 mg/L
Nickel (Ni)	EG020A-T		0.283 mg/L
Potassium (K)	ED093T-UL		10.5 mg/L
Selenium (Se)	EG094B-T		<0.0002 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		24.3 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
 Accredited for compliance with ISO/IEC 17025.

Authorised by Thanh Hoang Le
 Senior Chemist

Final - Report Number: 2296055
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 MPW020841
Date Sampled 7-Mar-2018 22:00
Date Received 13-Mar-2018
Date Completed 15-Mar-2018
Date Authorised 19-Mar-2018

Summary Report

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

Sampling point: Groundwater Bore MPGM5

Source: MP **Customer Sampling Point:** 021 **Sampling Code:** D2 **Sample Frequency:** Month

Testing Laboratory: ALS Environmental

Zinc (Zn)	EG020A-T	0.266 mg/L
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Anions Test Method: ED009-X		Filtered
Fluoride (F)		0.035 mg/L
Chloride (Cl)		18.0 mg/L
Sulfate (SO4)		282 mg/L

Alkalinity Test Method: ED037-P		Total
Total Alkalinity (CaCO3)		150 mg/L

Physical Test Method: EA015H		Total
Total Dissolved Solids @ 180°C		532 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1807217. Report Date: 15-Mar-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: 2296055
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 MPW020842
Date Sampled 7-Mar-2018 13:45
Date Received 13-Mar-2018
Date Completed 15-Mar-2018
Date Authorised 19-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:** 010 **Sampling Code:** D5 **Sample Frequency:** Month

Testing Laboratory: Mount Piper
Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	11.0 m
Bore Volume Pumped	*Analysis in Field	248 L
Recharge Bore Level	*Analysis in Field	11.1 m
pH	CA12125	5.96
Conductivity	CA12125	1290 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		0.017 mg/L
Boron (B)	EG020A-T		0.11 mg/L
Cadmium (Cd)	EG020A-T		<0.0001 mg/L
Calcium (Ca)	ED093T-UL		103 mg/L
Chromium (Cr)	EG020A-T		<0.001 mg/L
Copper (Cu)	EG020A-T		<0.001 mg/L
Iron (Fe)	EG020A-F	64.6 mg/L	
Lead (Pb)	EG020A-T		<0.001 mg/L
Magnesium (Mg)	ED093T-UL		71.7 mg/L
Manganese (Mn)	EG020A-F	10.4 mg/L	
Molybdenum (Mo)	EG020A-T		<0.001 mg/L
Nickel (Ni)	EG020A-T		0.052 mg/L
Potassium (K)	ED093T-UL		9.73 mg/L
Selenium (Se)	EG094B-T		0.0003 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		28.1 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: 2296055
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 MPW020842
Date Sampled 7-Mar-2018 13:45
Date Received 13-Mar-2018
Date Completed 15-Mar-2018
Date Authorised 19-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:** 010 **Sampling Code:** D5 **Sample Frequency:** Month

Testing Laboratory: ALS Environmental

Zinc (Zn) EG020A-T 0.022 mg/L

Anions Test Method: ED009-X

	Filtered
Fluoride (F)	0.122 mg/L
Chloride (Cl)	23.6 mg/L
Sulfate (SO4)	583 mg/L

Alkalinity Test Method: ED037-P

	Total
Total Alkalinity (CaCO3)	116 mg/L

Physical Test Method: EA015H

	Total
Total Dissolved Solids @ 180°C	1010 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1807217. Report Date: 15-Mar-2018

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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: 2296055

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

MPW020843

Date Sampled

7-Mar-2018 13:55

Date Received

8-Mar-2018

Date Completed

8-Mar-2018

Date Authorised

9-Mar-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: 011

Sampling Code: D6

Sample Frequency: Month

Testing Laboratory: Mount Piper

Water

Field Analysis Test Method: Analysis in Field
Dry

Total

Authorised by Nikki Tomlinson
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

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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.

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 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: 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

* 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 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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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: 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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 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: 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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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 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

* 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 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

* 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 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

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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 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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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 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

Nominson

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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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 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

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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 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	

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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 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

* 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 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
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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	
Total Alkalinity (CaCO3)	151 mg/L	

Physical Test Method: EA015H	Total	
Total Dissolved Solids @ 180°C	5210 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 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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 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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 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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 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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 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: 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

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

* 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 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
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Anions Test Method: ED009-X

Fluoride (F)	Filtered	0.203 mg/L
Chloride (Cl)		51.3 mg/L
Sulfate (SO4)		519 mg/L

Alkalinity Test Method: ED037-P

Total Alkalinity (CaCO3)	Total
	239 mg/L

Physical Test Method: EA015H

Total Dissolved Solids @ 180°C	Total
	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



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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
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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

* 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 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



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: 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

* 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: 2327388
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 MPW021280
Date Sampled 11-Apr-2018 09:55
Date Received 13-Apr-2018
Date Completed 23-Apr-2018
Date Authorised 24-Apr-2018

Summary Report

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

Sampling point: Groundwater Bore MPGM5

Source: MP **Customer Sampling Point:** 030 **Sampling Code:** D11 **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	74 L
Recharge Bore Level	*Analysis in Field	7.5 m
pH	CA12125	5.99
Conductivity	CA12125	710 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		0.017 mg/L
Boron (B)	EG020A-T		<0.05 mg/L
Cadmium (Cd)	EG020A-T		<0.0001 mg/L
Calcium (Ca)	ED093T-UL		41.8 mg/L
Chromium (Cr)	EG020A-T		<0.001 mg/L
Copper (Cu)	EG020A-T		<0.001 mg/L
Iron (Fe)	EG020A-F	6.95 mg/L	
Lead (Pb)	EG020A-T		<0.001 mg/L
Magnesium (Mg)	ED093T-UL		48.5 mg/L
Manganese (Mn)	EG020A-F	1.40 mg/L	
Molybdenum (Mo)	EG020A-T		<0.001 mg/L
Nickel (Ni)	EG020A-T		0.067 mg/L
Potassium (K)	ED093T-UL		7.58 mg/L
Selenium (Se)	EG094B-T		<0.0002 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		20.8 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: 2327388
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 MPW021280
Date Sampled 11-Apr-2018 09:55
Date Received 13-Apr-2018
Date Completed 23-Apr-2018
Date Authorised 24-Apr-2018

Summary Report

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

Sampling point: Groundwater Bore MPGM5

Source: MP **Customer Sampling Point:** 030 **Sampling Code:** D11 **Sample Frequency:** Month

Testing Laboratory: ALS Environmental

Zinc (Zn)	EG020A-T	0.054 mg/L
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Anions Test Method: ED009-X

Fluoride (F)	Filtered	0.052 mg/L
Chloride (Cl)		14.9 mg/L
Sulfate (SO4)		222 mg/L

Alkalinity Test Method: ED037-P

Total Alkalinity (CaCO3)	Total
	121 mg/L

Physical Test Method: EA015H

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

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1810451. Report Date: 20-Apr-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: 2327388
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 MPW021281
Date Sampled 12-Apr-2018 07:55
Date Received 13-Apr-2018
Date Completed 23-Apr-2018
Date Authorised 24-Apr-2018

Summary Report

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

Sampling point: Groundwater Bore MPGM5

Source: MP **Customer Sampling Point:** 031 **Sampling Code:** D12 **Sample Frequency:** Month

Testing Laboratory: Mount Piper

Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	5.1 m
Bore Volume Pumped	*Analysis in Field	3.5 L
Recharge Bore Level	*Analysis in Field	5.9 m
pH	CA12125	6.01
Conductivity	CA12125	620 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		0.109 mg/L
Boron (B)	EG020A-T		<0.05 mg/L
Cadmium (Cd)	EG020A-T		<0.0001 mg/L
Calcium (Ca)	ED093T-UL		24.4 mg/L
Chromium (Cr)	EG020A-T		<0.001 mg/L
Copper (Cu)	EG020A-T		<0.001 mg/L
Iron (Fe)	EG020A-F	17.8 mg/L	
Lead (Pb)	EG020A-T		<0.001 mg/L
Magnesium (Mg)	ED093T-UL		29.0 mg/L
Manganese (Mn)	EG020A-F	6.24 mg/L	
Molybdenum (Mo)	EG020A-T		<0.001 mg/L
Nickel (Ni)	EG020A-T		0.068 mg/L
Potassium (K)	ED093T-UL		3.03 mg/L
Selenium (Se)	EG094B-T		<0.0002 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		39.4 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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 Accredited for compliance with ISO/IEC 17025.

Authorised by Thanh Hoang Le
 Senior Chemist

Final - Report Number: 2327388
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 MPW021281
Date Sampled 12-Apr-2018 07:55
Date Received 13-Apr-2018
Date Completed 23-Apr-2018
Date Authorised 24-Apr-2018

Summary Report

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

Sampling point: Groundwater Bore MPM5

Source: MP **Customer Sampling Point:** 031 **Sampling Code:** D12 **Sample Frequency:** Month

Testing Laboratory: ALS Environmental

Zinc (Zn)	EG020A-T	0.021 mg/L
-----------	----------	------------

Anions Test Method: ED009-X

Fluoride (F)	Filtered	0.092 mg/L
Chloride (Cl)		52.7 mg/L
Sulfate (SO4)		76.1 mg/L

Alkalinity Test Method: ED037-P

Total Alkalinity (CaCO3)	Total
	148 mg/L

Physical Test Method: EA015H

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

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1810451. Report Date: 20-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: 2327388
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 MPW021282
Date Sampled 11-Apr-2018 08:20
Date Received 13-Apr-2018
Date Completed 23-Apr-2018
Date Authorised 24-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:** 012 **Sampling Code:** D7 **Sample Frequency:** Month

Testing Laboratory: Mount Piper
Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	1.4 m
Bore Volume Pumped	*Analysis in Field	15 L
Recharge Bore Level	*Analysis in Field	1.4 m
pH	CA12125	6.32
Conductivity	CA12125	570 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		0.097 mg/L
Boron (B)	EG020A-T		<0.05 mg/L
Cadmium (Cd)	EG020A-T		<0.0001 mg/L
Calcium (Ca)	ED093T-UL		44.4 mg/L
Chromium (Cr)	EG020A-T		<0.001 mg/L
Copper (Cu)	EG020A-T		<0.001 mg/L
Iron (Fe)	EG020A-F	5.51 mg/L	
Lead (Pb)	EG020A-T		<0.001 mg/L
Magnesium (Mg)	ED093T-UL		24.3 mg/L
Manganese (Mn)	EG020A-F	0.806 mg/L	
Molybdenum (Mo)	EG020A-T		<0.001 mg/L
Nickel (Ni)	EG020A-T		<0.001 mg/L
Potassium (K)	ED093T-UL		8.84 mg/L
Selenium (Se)	EG094B-T		<0.0002 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		21.8 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: 2327388
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 MPW021282
Date Sampled 11-Apr-2018 08:20
Date Received 13-Apr-2018
Date Completed 23-Apr-2018
Date Authorised 24-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:** 012 **Sampling Code:** D7 **Sample Frequency:** Month

Testing Laboratory: ALS Environmental

Zinc (Zn) EG020A-T 0.009 mg/L

Anions Test Method: ED009-X

	Filtered
Fluoride (F)	0.093 mg/L
Chloride (Cl)	19.4 mg/L
Sulfate (SO4)	19.7 mg/L

Alkalinity Test Method: ED037-P

	Total
Total Alkalinity (CaCO3)	260 mg/L

Physical Test Method: EA015H

	Total
Total Dissolved Solids @ 180°C	282 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1810451. Report Date: 20-Apr-2018

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Final - Report Number: 2327388
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 MPW021283
Date Sampled 12-Apr-2018 08:25
Date Received 13-Apr-2018
Date Completed 23-Apr-2018
Date Authorised 24-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:** 007 **Sampling Code:** D2 **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	65 L
Recharge Bore Level	*Analysis in Field	2.7 m
pH	CA12125	5.77
Conductivity	CA12125	2750 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		0.47 mg/L
Arsenic (As)	EG020A-T		<0.001 mg/L
Barium (Ba)	EG020A-T		0.034 mg/L
Boron (B)	EG020A-T		0.45 mg/L
Cadmium (Cd)	EG020A-T		<0.0001 mg/L
Calcium (Ca)	ED093T-UL		164 mg/L
Chromium (Cr)	EG020A-T		<0.001 mg/L
Copper (Cu)	EG020A-T		0.002 mg/L
Iron (Fe)	EG020A-F	25.8 mg/L	
Lead (Pb)	EG020A-T		0.003 mg/L
Magnesium (Mg)	ED093T-UL		138 mg/L
Manganese (Mn)	EG020A-F	5.86 mg/L	
Molybdenum (Mo)	EG020A-T		<0.001 mg/L
Nickel (Ni)	EG020A-T		0.246 mg/L
Potassium (K)	ED093T-UL		17.3 mg/L
Selenium (Se)	EG094B-T		0.0003 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		283 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: 2327388
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 MPW021283
Date Sampled 12-Apr-2018 08:25
Date Received 13-Apr-2018
Date Completed 23-Apr-2018
Date Authorised 24-Apr-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:** 007 **Sampling Code:** D2 **Sample Frequency:** Month

Testing Laboratory: ALS Environmental

Zinc (Zn) EG020A-T 0.090 mg/L

Anions Test Method: ED009-X

	Filtered
Fluoride (F)	0.048 mg/L
Chloride (Cl)	184 mg/L
Sulfate (SO4)	1060 mg/L

Alkalinity Test Method: ED037-P

Total Alkalinity (CaCO3)	Total 23 mg/L
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Physical Test Method: EA015H

Total Dissolved Solids @ 180°C	Total 2030 mg/L
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TDS by method EA-015 may bias high for sample 5 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: ES1810451. Report Date: 20-Apr-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: Nikki Tomlinson

Sample Number MPW021284
Date Sampled 11-Apr-2018 09:20
Date Received 13-Apr-2018
Date Completed 23-Apr-2018
Date Authorised 24-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:** 009 **Sampling Code:** D4 **Sample Frequency:** Month

Testing Laboratory: Mount Piper

Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	1.7 m
Bore Volume Pumped	*Analysis in Field	119 L
Recharge Bore Level	*Analysis in Field	1.7 m
pH	CA12125	3.37
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		17.0 mg/L
Arsenic (As)	EG020A-T		0.049 mg/L
Barium (Ba)	EG020A-T		0.012 mg/L
Boron (B)	EG020A-T		<0.05 mg/L
Cadmium (Cd)	EG020A-T		0.0007 mg/L
Calcium (Ca)	ED093T-UL		13.1 mg/L
Chromium (Cr)	EG020A-T		0.002 mg/L
Copper (Cu)	EG020A-T		0.002 mg/L
Iron (Fe)	EG020A-F	95.8 mg/L	
Lead (Pb)	EG020A-T		0.022 mg/L
Magnesium (Mg)	ED093T-UL		8.18 mg/L
Manganese (Mn)	EG020A-F	0.672 mg/L	
Molybdenum (Mo)	EG020A-T		<0.001 mg/L
Nickel (Ni)	EG020A-T		0.018 mg/L
Potassium (K)	ED093T-UL		6.59 mg/L
Selenium (Se)	EG094B-T		0.0002 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		18.0 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: 2327388
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 MPW021284
Date Sampled 11-Apr-2018 09:20
Date Received 13-Apr-2018
Date Completed 23-Apr-2018
Date Authorised 24-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:** 009 **Sampling Code:** D4 **Sample Frequency:** Month

Testing Laboratory: ALS Environmental

Zinc (Zn)	EG020A-T	0.200 mg/L
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Anions Test Method: ED009-X	Filtered
Fluoride (F)	0.148 mg/L
Chloride (Cl)	11.5 mg/L
Sulfate (SO4)	436 mg/L

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

Physical Test Method: EA015H	Total
Total Dissolved Solids @ 180°C	858 mg/L

TDS by method EA-015 may bias high for sample 5 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: ES1810451. Report Date: 20-Apr-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: Nikki Tomlinson

Sample Number MPW021285
Date Sampled 12-Apr-2018 08:40
Date Received 13-Apr-2018
Date Completed 23-Apr-2018
Date Authorised 24-Apr-2018

Summary Report

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

Sampling point: Groundwater Bore MPGM5

Source: MP **Customer Sampling Point:** 024 **Sampling Code:** D5 **Sample Frequency:** Month

Testing Laboratory: Mount Piper

Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	6.8 m
Bore Volume Pumped	*Analysis in Field	18 L
Recharge Bore Level	*Analysis in Field	6.8 m
pH	CA12125	6.09
Conductivity	CA12125	2160 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		0.001 mg/L
Barium (Ba)	EG020A-T		0.069 mg/L
Boron (B)	EG020A-T		0.05 mg/L
Cadmium (Cd)	EG020A-T		<0.0001 mg/L
Calcium (Ca)	ED093T-UL		128 mg/L
Chromium (Cr)	EG020A-T		<0.001 mg/L
Copper (Cu)	EG020A-T		<0.001 mg/L
Iron (Fe)	EG094B-F	0.734 mg/L	
Lead (Pb)	EG020A-T		<0.001 mg/L
Magnesium (Mg)	ED093T-UL		146 mg/L
Manganese (Mn)	EG020A-F	19.7 mg/L	
Molybdenum (Mo)	EG020A-T		<0.001 mg/L
Nickel (Ni)	EG020A-T		0.143 mg/L
Potassium (K)	ED093T-UL		11.6 mg/L
Selenium (Se)	EG094B-T		<0.0002 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		132 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 MPW021285
Date Sampled 12-Apr-2018 08:40
Date Received 13-Apr-2018
Date Completed 23-Apr-2018
Date Authorised 24-Apr-2018

Summary Report

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

Sampling point: Groundwater Bore MPM5

Source: MP **Customer Sampling Point:** 024 **Sampling Code:** D5 **Sample Frequency:** Month

Testing Laboratory: ALS Environmental

Zinc (Zn)	EG020A-T	0.054 mg/L
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Anions	Test Method: ED009-X	Filtered
Fluoride (F)		0.073 mg/L
Chloride (Cl)		183 mg/L
Sulfate (SO4)		539 mg/L

Alkalinity	Test Method: ED037-P	Total
Total Alkalinity (CaCO3)		466 mg/L

Physical	Test Method: EA015H	Total
Total Dissolved Solids @ 180°C		1380 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1810451. Report Date: 20-Apr-2018

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 Senior Chemist

Final - Report Number: 2327388
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 MPW021286
Date Sampled 12-Apr-2018 08:50
Date Received 13-Apr-2018
Date Completed 23-Apr-2018
Date Authorised 24-Apr-2018

Summary Report

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

Sampling point: Groundwater Bore MPGM5

Source: MP **Customer Sampling Point:** 025 **Sampling Code:** D6 **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	4 L
Recharge Bore Level	*Analysis in Field	9.4 m
pH	CA12125	5.75
Conductivity	CA12125	1240 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		0.003 mg/L
Barium (Ba)	EG020A-T		0.049 mg/L
Boron (B)	EG020A-T		<0.05 mg/L
Cadmium (Cd)	EG020A-T		<0.0001 mg/L
Calcium (Ca)	ED093T-UL		11.8 mg/L
Chromium (Cr)	EG020A-T		<0.001 mg/L
Copper (Cu)	EG020A-T		0.001 mg/L
Iron (Fe)	EG020A-F	50.6 mg/L	
Lead (Pb)	EG020A-T		0.002 mg/L
Magnesium (Mg)	ED093T-UL		33.6 mg/L
Manganese (Mn)	EG020A-F	3.65 mg/L	
Molybdenum (Mo)	EG020A-T		<0.001 mg/L
Nickel (Ni)	EG020A-T		0.053 mg/L
Potassium (K)	ED093T-UL		2.98 mg/L
Selenium (Se)	EG094B-T		<0.0002 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		165 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: 2327388
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 MPW021286
Date Sampled 12-Apr-2018 08:50
Date Received 13-Apr-2018
Date Completed 23-Apr-2018
Date Authorised 24-Apr-2018

Summary Report

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

Sampling point: Groundwater Bore MPGM5

Source: MP **Customer Sampling Point:** 025 **Sampling Code:** D6 **Sample Frequency:** Month

Testing Laboratory: ALS Environmental

Zinc (Zn)	EG020A-T	0.032 mg/L
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Anions Test Method: ED009-X	Filtered	
Fluoride (F)	<0.050 mg/L	
Chloride (Cl)	152 mg/L	
Sulfate (SO4)	260 mg/L	

Alkalinity Test Method: ED037-P	Total	
Total Alkalinity (CaCO3)	143 mg/L	

Physical Test Method: EA015H	Total	
Total Dissolved Solids @ 180°C	679 mg/L	

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1810451. Report Date: 20-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: Nikki Tomlinson

Sample Number MPW021287
Date Sampled 11-Apr-2018 10:45
Date Received 12-Apr-2018
Date Completed 12-Apr-2018
Date Authorised 12-Apr-2018

Summary Report

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

Sampling point: Groundwater Bore MPM5

Source: MP

Customer Sampling Point: 027

Sampling Code: D8

Sample Frequency: 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: 2327388
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 MPW021288
Date Sampled 12-Apr-2018 09:20
Date Received 13-Apr-2018
Date Completed 23-Apr-2018
Date Authorised 24-Apr-2018

Summary Report

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

Sampling point: Groundwater Bore MPGM5

Source: MP **Customer Sampling Point:** 028 **Sampling Code:** D9 **Sample Frequency:** Month

Testing Laboratory: Mount Piper
Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	11.6 m
Bore Volume Pumped	*Analysis in Field	10 L
Recharge Bore Level	*Analysis in Field	12.6 m
pH	CA12125	5.77
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		0.20 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		44.1 mg/L
Chromium (Cr)	EG020A-T		<0.001 mg/L
Copper (Cu)	EG020A-T		<0.001 mg/L
Iron (Fe)	EG094B-F	0.018 mg/L	
Lead (Pb)	EG020A-T		<0.001 mg/L
Magnesium (Mg)	ED093T-UL		56.9 mg/L
Manganese (Mn)	EG020A-F	0.030 mg/L	
Molybdenum (Mo)	EG020A-T		<0.001 mg/L
Nickel (Ni)	EG020A-T		0.014 mg/L
Potassium (K)	ED093T-UL		8.61 mg/L
Selenium (Se)	EG094B-T		<0.0002 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		67.7 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: 2327388
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 MPW021288
Date Sampled 12-Apr-2018 09:20
Date Received 13-Apr-2018
Date Completed 23-Apr-2018
Date Authorised 24-Apr-2018

Summary Report

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

Sampling point: Groundwater Bore MPGM5

Source: MP **Customer Sampling Point:** 028 **Sampling Code:** D9 **Sample Frequency:** Month

Testing Laboratory: ALS Environmental

Zinc (Zn)	EG020A-T	0.069 mg/L
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Anions Test Method: ED009-X

Fluoride (F)	Filtered	0.064 mg/L
Chloride (Cl)		24.8 mg/L
Sulfate (SO4)		363 mg/L

Alkalinity Test Method: ED037-P

Total Alkalinity (CaCO3)	Total
	121 mg/L

Physical Test Method: EA015H

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

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1810451. Report Date: 20-Apr-2018

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 Senior Chemist

Final - Report Number: 2327388
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 MPW021289
Date Sampled 11-Apr-2018 10:55
Date Received 12-Apr-2018
Date Completed 12-Apr-2018
Date Authorised 12-Apr-2018

Summary Report

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

Sampling point: Groundwater Bore MPGM5

Source: MP

Customer Sampling Point: 026

Sampling Code: D7

Sample Frequency: Month

Testing Laboratory: Mount Piper
Water

Field Analysis Test Method: Analysis in Field
Initial Bore Level

Total
19.9 m

Insufficient Volume to Sample

N Tomlinson

Authorised by Nikki Tomlinson
Senior Chemist

Final - Report Number: 2327388
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 MPW021290
Date Sampled 12-Apr-2018 09:30
Date Received 12-Apr-2018
Date Completed 12-Apr-2018
Date Authorised 12-Apr-2018

Summary Report

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

Sampling point: Groundwater Bore MPGM5

Source: MP

Customer Sampling Point: 023

Sampling Code: D4

Sample Frequency: Month

Testing Laboratory: Mount Piper
Water

Field Analysis Test Method: Analysis in Field
Initial Bore Level

Total
21.8 m

Volume Not Extractable

N Tomlinson

Authorised by Nikki Tomlinson
Senior Chemist

Final - Report Number: 2327388
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 MPW021291
Date Sampled 11-Apr-2018 11:35
Date Received 13-Apr-2018
Date Completed 23-Apr-2018
Date Authorised 24-Apr-2018

Summary Report

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

Sampling point: Groundwater Bore MPGM5

Source: MP **Customer Sampling Point:** 022 **Sampling Code:** D3 **Sample Frequency:** Month

Testing Laboratory: Mount Piper
Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	11.6 m
Bore Volume Pumped	*Analysis in Field	119 L
Recharge Bore Level	*Analysis in Field	11.6 m
pH	CA12125	5.88
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		0.02 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		46.5 mg/L
Chromium (Cr)	EG020A-T		<0.001 mg/L
Copper (Cu)	EG020A-T		<0.001 mg/L
Iron (Fe)	EG020A-F	6.08 mg/L	
Lead (Pb)	EG020A-T		0.002 mg/L
Magnesium (Mg)	ED093T-UL		55.6 mg/L
Manganese (Mn)	EG020A-F	5.72 mg/L	
Molybdenum (Mo)	EG020A-T		<0.001 mg/L
Nickel (Ni)	EG020A-T		0.417 mg/L
Potassium (K)	ED093T-UL		9.03 mg/L
Selenium (Se)	EG094B-T		<0.0002 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		40.5 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: 2327388
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 MPW021291
Date Sampled 11-Apr-2018 11:35
Date Received 13-Apr-2018
Date Completed 23-Apr-2018
Date Authorised 24-Apr-2018

Summary Report

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

Sampling point: Groundwater Bore MPGM5

Source: MP **Customer Sampling Point:** 022 **Sampling Code:** D3 **Sample Frequency:** Month

Testing Laboratory: ALS Environmental

Zinc (Zn)	EG020A-T	0.113 mg/L
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Anions Test Method: ED009-X	Filtered	
Fluoride (F)		0.045 mg/L
Chloride (Cl)		30.7 mg/L
Sulfate (SO4)		276 mg/L

Alkalinity Test Method: ED037-P	Total	
Total Alkalinity (CaCO3)		175 mg/L

Physical Test Method: EA015H	Total	
Total Dissolved Solids @ 180°C		605 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1810451. Report Date: 20-Apr-2018

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Final - Report Number: 2327388
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 MPW021292
Date Sampled 11-Apr-2018 12:00
Date Received 13-Apr-2018
Date Completed 23-Apr-2018
Date Authorised 24-Apr-2018

Summary Report

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

Sampling point: Groundwater Bore MPGM5

Source: MP **Customer Sampling Point:** 020 **Sampling Code:** D1 **Sample Frequency:** Month

Testing Laboratory: Mount Piper

Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	11.6 m
Bore Volume Pumped	*Analysis in Field	140 L
Recharge Bore Level	*Analysis in Field	11.6 m
pH	CA12125	6.12
Conductivity	CA12125	580 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		0.047 mg/L
Boron (B)	EG020A-T		<0.05 mg/L
Cadmium (Cd)	EG020A-T		<0.0001 mg/L
Calcium (Ca)	ED093T-UL		39.9 mg/L
Chromium (Cr)	EG020A-T		<0.001 mg/L
Copper (Cu)	EG020A-T		<0.001 mg/L
Iron (Fe)	EG020A-F	12.2 mg/L	
Lead (Pb)	EG020A-T		<0.001 mg/L
Magnesium (Mg)	ED093T-UL		26.0 mg/L
Manganese (Mn)	EG020A-F	0.783 mg/L	
Molybdenum (Mo)	EG020A-T		<0.001 mg/L
Nickel (Ni)	EG020A-T		0.005 mg/L
Potassium (K)	ED093T-UL		7.32 mg/L
Selenium (Se)	EG094B-T		<0.0002 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		18.2 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: Nikki Tomlinson

Sample Number MPW021292
Date Sampled 11-Apr-2018 12:00
Date Received 13-Apr-2018
Date Completed 23-Apr-2018
Date Authorised 24-Apr-2018

Summary Report

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

Sampling point: Groundwater Bore MPGM5

Source: MP **Customer Sampling Point:** 020 **Sampling Code:** D1 **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)		0.109 mg/L
Chloride (Cl)		20.8 mg/L
Sulfate (SO4)		92.6 mg/L

Alkalinity Test Method: ED037-P		Total
Total Alkalinity (CaCO3)		234 mg/L

Physical Test Method: EA015H		Total
Total Dissolved Solids @ 180°C		286 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1810451. Report Date: 20-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: Nikki Tomlinson

Sample Number MPW021293
Date Sampled 12-Apr-2018 09:00
Date Received 13-Apr-2018
Date Completed 23-Apr-2018
Date Authorised 24-Apr-2018

Summary Report

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

Sampling point: Groundwater Bore MPGM5

Source: MP **Customer Sampling Point:** 021 **Sampling Code:** D2 **Sample Frequency:** Month

Testing Laboratory: Mount Piper
Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	12.2 m
Bore Volume Pumped	*Analysis in Field	30 L
Recharge Bore Level	*Analysis in Field	12.2 m
pH	CA12125	5.81
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		0.93 mg/L
Arsenic (As)	EG020A-T		0.004 mg/L
Barium (Ba)	EG020A-T		0.020 mg/L
Boron (B)	EG020A-T		<0.05 mg/L
Cadmium (Cd)	EG020A-T		0.0002 mg/L
Calcium (Ca)	ED093T-UL		51.4 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		0.002 mg/L
Magnesium (Mg)	ED093T-UL		51.6 mg/L
Manganese (Mn)	EG020A-F	6.02 mg/L	
Molybdenum (Mo)	EG020A-T		<0.001 mg/L
Nickel (Ni)	EG020A-T		0.236 mg/L
Potassium (K)	ED093T-UL		9.34 mg/L
Selenium (Se)	EG094B-T		<0.0002 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		23.8 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 MPW021293
Date Sampled 12-Apr-2018 09:00
Date Received 13-Apr-2018
Date Completed 23-Apr-2018
Date Authorised 24-Apr-2018

Summary Report

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

Sampling point: Groundwater Bore MPGM5

Source: MP **Customer Sampling Point:** 021 **Sampling Code:** D2 **Sample Frequency:** Month

Testing Laboratory: ALS Environmental

Zinc (Zn) EG020A-T 0.304 mg/L

Anions Test Method: ED009-X

	Filtered
Fluoride (F)	0.045 mg/L
Chloride (Cl)	18.1 mg/L
Sulfate (SO4)	277 mg/L

Alkalinity Test Method: ED037-P

	Total
Total Alkalinity (CaCO3)	148 mg/L

Physical Test Method: EA015H

	Total
Total Dissolved Solids @ 180°C	527 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1810451. Report Date: 20-Apr-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 MPW021294
Date Sampled 12-Apr-2018 10:00
Date Received 13-Apr-2018
Date Completed 23-Apr-2018
Date Authorised 24-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:** 010 **Sampling Code:** D5 **Sample Frequency:** Month

Testing Laboratory: Mount Piper
Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	11.1 m
Bore Volume Pumped	*Analysis in Field	246 L
Recharge Bore Level	*Analysis in Field	11.1 m
pH	CA12125	5.95
Conductivity	CA12125	1260 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		0.016 mg/L
Boron (B)	EG020A-T		0.12 mg/L
Cadmium (Cd)	EG020A-T		<0.0001 mg/L
Calcium (Ca)	ED093T-UL		94.1 mg/L
Chromium (Cr)	EG020A-T		<0.001 mg/L
Copper (Cu)	EG020A-T		<0.001 mg/L
Iron (Fe)	EG020A-F	51.1 mg/L	
Lead (Pb)	EG020A-T		<0.001 mg/L
Magnesium (Mg)	ED093T-UL		72.0 mg/L
Manganese (Mn)	EG020A-F	7.55 mg/L	
Molybdenum (Mo)	EG020A-T		<0.001 mg/L
Nickel (Ni)	EG020A-T		0.048 mg/L
Potassium (K)	ED093T-UL		8.55 mg/L
Selenium (Se)	EG094B-T		0.0003 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		26.8 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
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 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Nikki Tomlinson

Sample Number MPW021294
Date Sampled 12-Apr-2018 10:00
Date Received 13-Apr-2018
Date Completed 23-Apr-2018
Date Authorised 24-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:** 010 **Sampling Code:** D5 **Sample Frequency:** Month

Testing Laboratory: ALS Environmental

Zinc (Zn)	EG020A-T	0.023 mg/L
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Anions Test Method: ED009-X

Fluoride (F)	Filtered	0.130 mg/L
Chloride (Cl)		23.4 mg/L
Sulfate (SO4)		501 mg/L

Alkalinity Test Method: ED037-P

Total Alkalinity (CaCO3)	Total
	119 mg/L

Physical Test Method: EA015H

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

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1810451. Report Date: 20-Apr-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 MPW021295
Date Sampled 11-Apr-2018 12:05
Date Received 12-Apr-2018
Date Completed 12-Apr-2018
Date Authorised 12-Apr-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:** 011 **Sampling Code:** D6 **Sample Frequency:** Month

Testing Laboratory: Mount Piper
Water

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

N Tomlinson

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Senior Chemist

Final - Report Number: 2327388
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 MPW021280
Date Sampled 11-Apr-2018 09:55
Date Received 13-Apr-2018
Date Completed 23-Apr-2018
Date Authorised 24-Apr-2018

Summary Report

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

Sampling point: Groundwater Bore MPGM5

Source: MP **Customer Sampling Point:** 030 **Sampling Code:** D11 **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	74 L
Recharge Bore Level	*Analysis in Field	7.5 m
pH	CA12125	5.99
Conductivity	CA12125	710 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		0.017 mg/L
Boron (B)	EG020A-T		<0.05 mg/L
Cadmium (Cd)	EG020A-T		<0.0001 mg/L
Calcium (Ca)	ED093T-UL		41.8 mg/L
Chromium (Cr)	EG020A-T		<0.001 mg/L
Copper (Cu)	EG020A-T		<0.001 mg/L
Iron (Fe)	EG020A-F	6.95 mg/L	
Lead (Pb)	EG020A-T		<0.001 mg/L
Magnesium (Mg)	ED093T-UL		48.5 mg/L
Manganese (Mn)	EG020A-F	1.40 mg/L	
Molybdenum (Mo)	EG020A-T		<0.001 mg/L
Nickel (Ni)	EG020A-T		0.067 mg/L
Potassium (K)	ED093T-UL		7.58 mg/L
Selenium (Se)	EG094B-T		<0.0002 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		20.8 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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Final - Report Number: 2327388
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 MPW021280
Date Sampled 11-Apr-2018 09:55
Date Received 13-Apr-2018
Date Completed 23-Apr-2018
Date Authorised 24-Apr-2018

Summary Report

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

Sampling point: Groundwater Bore MPGM5

Source: MP **Customer Sampling Point:** 030 **Sampling Code:** D11 **Sample Frequency:** Month

Testing Laboratory: ALS Environmental

Zinc (Zn)	EG020A-T	0.054 mg/L
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Anions Test Method: ED009-X

Fluoride (F)	Filtered	0.052 mg/L
Chloride (Cl)		14.9 mg/L
Sulfate (SO4)		222 mg/L

Alkalinity Test Method: ED037-P

Total Alkalinity (CaCO3)	Total
	121 mg/L

Physical Test Method: EA015H

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

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1810451. Report Date: 20-Apr-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 MPW021281
Date Sampled 12-Apr-2018 07:55
Date Received 13-Apr-2018
Date Completed 23-Apr-2018
Date Authorised 24-Apr-2018

Summary Report

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

Sampling point: Groundwater Bore MPGM5

Source: MP **Customer Sampling Point:** 031 **Sampling Code:** D12 **Sample Frequency:** Month

Testing Laboratory: Mount Piper
Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	5.1 m
Bore Volume Pumped	*Analysis in Field	3.5 L
Recharge Bore Level	*Analysis in Field	5.9 m
pH	CA12125	6.01
Conductivity	CA12125	620 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		0.109 mg/L
Boron (B)	EG020A-T		<0.05 mg/L
Cadmium (Cd)	EG020A-T		<0.0001 mg/L
Calcium (Ca)	ED093T-UL		24.4 mg/L
Chromium (Cr)	EG020A-T		<0.001 mg/L
Copper (Cu)	EG020A-T		<0.001 mg/L
Iron (Fe)	EG020A-F	17.8 mg/L	
Lead (Pb)	EG020A-T		<0.001 mg/L
Magnesium (Mg)	ED093T-UL		29.0 mg/L
Manganese (Mn)	EG020A-F	6.24 mg/L	
Molybdenum (Mo)	EG020A-T		<0.001 mg/L
Nickel (Ni)	EG020A-T		0.068 mg/L
Potassium (K)	ED093T-UL		3.03 mg/L
Selenium (Se)	EG094B-T		<0.0002 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		39.4 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 MPW021281
Date Sampled 12-Apr-2018 07:55
Date Received 13-Apr-2018
Date Completed 23-Apr-2018
Date Authorised 24-Apr-2018

Summary Report

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

Sampling point: Groundwater Bore MPM5

Source: MP **Customer Sampling Point:** 031 **Sampling Code:** D12 **Sample Frequency:** Month

Testing Laboratory: ALS Environmental

Zinc (Zn)	EG020A-T	0.021 mg/L
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Anions	Test Method: ED009-X	Filtered
Fluoride (F)		0.092 mg/L
Chloride (Cl)		52.7 mg/L
Sulfate (SO4)		76.1 mg/L

Alkalinity	Test Method: ED037-P	Total
Total Alkalinity (CaCO3)		148 mg/L

Physical	Test Method: EA015H	Total
Total Dissolved Solids @ 180°C		366 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1810451. Report Date: 20-Apr-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 MPW021282
Date Sampled 11-Apr-2018 08:20
Date Received 13-Apr-2018
Date Completed 23-Apr-2018
Date Authorised 24-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:** 012 **Sampling Code:** D7 **Sample Frequency:** Month

Testing Laboratory: Mount Piper
Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	1.4 m
Bore Volume Pumped	*Analysis in Field	15 L
Recharge Bore Level	*Analysis in Field	1.4 m
pH	CA12125	6.32
Conductivity	CA12125	570 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		0.097 mg/L
Boron (B)	EG020A-T		<0.05 mg/L
Cadmium (Cd)	EG020A-T		<0.0001 mg/L
Calcium (Ca)	ED093T-UL		44.4 mg/L
Chromium (Cr)	EG020A-T		<0.001 mg/L
Copper (Cu)	EG020A-T		<0.001 mg/L
Iron (Fe)	EG020A-F	5.51 mg/L	
Lead (Pb)	EG020A-T		<0.001 mg/L
Magnesium (Mg)	ED093T-UL		24.3 mg/L
Manganese (Mn)	EG020A-F	0.806 mg/L	
Molybdenum (Mo)	EG020A-T		<0.001 mg/L
Nickel (Ni)	EG020A-T		<0.001 mg/L
Potassium (K)	ED093T-UL		8.84 mg/L
Selenium (Se)	EG094B-T		<0.0002 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		21.8 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: 2327388
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 MPW021282
Date Sampled 11-Apr-2018 08:20
Date Received 13-Apr-2018
Date Completed 23-Apr-2018
Date Authorised 24-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:** 012 **Sampling Code:** D7 **Sample Frequency:** Month

Testing Laboratory: ALS Environmental

Zinc (Zn)	EG020A-T	0.009 mg/L
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Anions Test Method: ED009-X	Filtered	
Fluoride (F)	0.093 mg/L	
Chloride (Cl)	19.4 mg/L	
Sulfate (SO4)	19.7 mg/L	

Alkalinity Test Method: ED037-P		Total
Total Alkalinity (CaCO3)		260 mg/L

Physical Test Method: EA015H		Total
Total Dissolved Solids @ 180°C		282 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1810451. Report Date: 20-Apr-2018

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 Senior Chemist

Final - Report Number: 2327388
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 MPW021283
Date Sampled 12-Apr-2018 08:25
Date Received 13-Apr-2018
Date Completed 23-Apr-2018
Date Authorised 24-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:** 007 **Sampling Code:** D2 **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	65 L
Recharge Bore Level	*Analysis in Field	2.7 m
pH	CA12125	5.77
Conductivity	CA12125	2750 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		0.47 mg/L
Arsenic (As)	EG020A-T		<0.001 mg/L
Barium (Ba)	EG020A-T		0.034 mg/L
Boron (B)	EG020A-T		0.45 mg/L
Cadmium (Cd)	EG020A-T		<0.0001 mg/L
Calcium (Ca)	ED093T-UL		164 mg/L
Chromium (Cr)	EG020A-T		<0.001 mg/L
Copper (Cu)	EG020A-T		0.002 mg/L
Iron (Fe)	EG020A-F	25.8 mg/L	
Lead (Pb)	EG020A-T		0.003 mg/L
Magnesium (Mg)	ED093T-UL		138 mg/L
Manganese (Mn)	EG020A-F	5.86 mg/L	
Molybdenum (Mo)	EG020A-T		<0.001 mg/L
Nickel (Ni)	EG020A-T		0.246 mg/L
Potassium (K)	ED093T-UL		17.3 mg/L
Selenium (Se)	EG094B-T		0.0003 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		283 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: 2327388
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 MPW021283
Date Sampled 12-Apr-2018 08:25
Date Received 13-Apr-2018
Date Completed 23-Apr-2018
Date Authorised 24-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:** 007 **Sampling Code:** D2 **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)	0.048 mg/L	
Chloride (Cl)	184 mg/L	
Sulfate (SO4)	1060 mg/L	

Alkalinity Test Method: ED037-P		Total
Total Alkalinity (CaCO3)		23 mg/L

Physical Test Method: EA015H		Total
Total Dissolved Solids @ 180°C		2030 mg/L

TDS by method EA-015 may bias high for sample 5 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: ES1810451. Report Date: 20-Apr-2018

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Final - Report Number: 2327388
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 MPW021284
Date Sampled 11-Apr-2018 09:20
Date Received 13-Apr-2018
Date Completed 23-Apr-2018
Date Authorised 24-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:** 009 **Sampling Code:** D4 **Sample Frequency:** Month

Testing Laboratory: Mount Piper

Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	1.7 m
Bore Volume Pumped	*Analysis in Field	119 L
Recharge Bore Level	*Analysis in Field	1.7 m
pH	CA12125	3.37
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		17.0 mg/L
Arsenic (As)	EG020A-T		0.049 mg/L
Barium (Ba)	EG020A-T		0.012 mg/L
Boron (B)	EG020A-T		<0.05 mg/L
Cadmium (Cd)	EG020A-T		0.0007 mg/L
Calcium (Ca)	ED093T-UL		13.1 mg/L
Chromium (Cr)	EG020A-T		0.002 mg/L
Copper (Cu)	EG020A-T		0.002 mg/L
Iron (Fe)	EG020A-F	95.8 mg/L	
Lead (Pb)	EG020A-T		0.022 mg/L
Magnesium (Mg)	ED093T-UL		8.18 mg/L
Manganese (Mn)	EG020A-F	0.672 mg/L	
Molybdenum (Mo)	EG020A-T		<0.001 mg/L
Nickel (Ni)	EG020A-T		0.018 mg/L
Potassium (K)	ED093T-UL		6.59 mg/L
Selenium (Se)	EG094B-T		0.0002 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		18.0 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: 2327388
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 MPW021284
Date Sampled 11-Apr-2018 09:20
Date Received 13-Apr-2018
Date Completed 23-Apr-2018
Date Authorised 24-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:** 009 **Sampling Code:** D4 **Sample Frequency:** Month

Testing Laboratory: ALS Environmental

Zinc (Zn) EG020A-T 0.200 mg/L

Anions Test Method: ED009-X

	Filtered
Fluoride (F)	0.148 mg/L
Chloride (Cl)	11.5 mg/L
Sulfate (SO4)	436 mg/L

Alkalinity Test Method: ED037-P

	Total
Total Alkalinity (CaCO3)	<1 mg/L

Physical Test Method: EA015H

	Total
Total Dissolved Solids @ 180°C	858 mg/L

TDS by method EA-015 may bias high for sample 5 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: ES1810451. Report Date: 20-Apr-2018

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 Senior Chemist

Final - Report Number: 2327388
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 MPW021285
Date Sampled 12-Apr-2018 08:40
Date Received 13-Apr-2018
Date Completed 23-Apr-2018
Date Authorised 24-Apr-2018

Summary Report

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

Sampling point: Groundwater Bore MPGM5

Source: MP **Customer Sampling Point:** 024 **Sampling Code:** D5 **Sample Frequency:** Month

Testing Laboratory: Mount Piper

Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	6.8 m
Bore Volume Pumped	*Analysis in Field	18 L
Recharge Bore Level	*Analysis in Field	6.8 m
pH	CA12125	6.09
Conductivity	CA12125	2160 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		0.001 mg/L
Barium (Ba)	EG020A-T		0.069 mg/L
Boron (B)	EG020A-T		0.05 mg/L
Cadmium (Cd)	EG020A-T		<0.0001 mg/L
Calcium (Ca)	ED093T-UL		128 mg/L
Chromium (Cr)	EG020A-T		<0.001 mg/L
Copper (Cu)	EG020A-T		<0.001 mg/L
Iron (Fe)	EG094B-F	0.734 mg/L	
Lead (Pb)	EG020A-T		<0.001 mg/L
Magnesium (Mg)	ED093T-UL		146 mg/L
Manganese (Mn)	EG020A-F	19.7 mg/L	
Molybdenum (Mo)	EG020A-T		<0.001 mg/L
Nickel (Ni)	EG020A-T		0.143 mg/L
Potassium (K)	ED093T-UL		11.6 mg/L
Selenium (Se)	EG094B-T		<0.0002 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		132 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 MPW021285
Date Sampled 12-Apr-2018 08:40
Date Received 13-Apr-2018
Date Completed 23-Apr-2018
Date Authorised 24-Apr-2018

Summary Report

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

Sampling point: Groundwater Bore MPGM5

Source: MP **Customer Sampling Point:** 024 **Sampling Code:** D5 **Sample Frequency:** Month

Testing Laboratory: ALS Environmental

Zinc (Zn)	EG020A-T	0.054 mg/L
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Anions Test Method: ED009-X	Filtered	
Fluoride (F)	0.073 mg/L	
Chloride (Cl)	183 mg/L	
Sulfate (SO4)	539 mg/L	

Alkalinity Test Method: ED037-P		Total
Total Alkalinity (CaCO3)		466 mg/L

Physical Test Method: EA015H		Total
Total Dissolved Solids @ 180°C		1380 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1810451. Report Date: 20-Apr-2018

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 Senior Chemist

Final - Report Number: 2327388
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 MPW021286
Date Sampled 12-Apr-2018 08:50
Date Received 13-Apr-2018
Date Completed 23-Apr-2018
Date Authorised 24-Apr-2018

Summary Report

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

Sampling point: Groundwater Bore MPGM5

Source: MP **Customer Sampling Point:** 025 **Sampling Code:** D6 **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	4 L
Recharge Bore Level	*Analysis in Field	9.4 m
pH	CA12125	5.75
Conductivity	CA12125	1240 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		0.003 mg/L
Barium (Ba)	EG020A-T		0.049 mg/L
Boron (B)	EG020A-T		<0.05 mg/L
Cadmium (Cd)	EG020A-T		<0.0001 mg/L
Calcium (Ca)	ED093T-UL		11.8 mg/L
Chromium (Cr)	EG020A-T		<0.001 mg/L
Copper (Cu)	EG020A-T		0.001 mg/L
Iron (Fe)	EG020A-F	50.6 mg/L	
Lead (Pb)	EG020A-T		0.002 mg/L
Magnesium (Mg)	ED093T-UL		33.6 mg/L
Manganese (Mn)	EG020A-F	3.65 mg/L	
Molybdenum (Mo)	EG020A-T		<0.001 mg/L
Nickel (Ni)	EG020A-T		0.053 mg/L
Potassium (K)	ED093T-UL		2.98 mg/L
Selenium (Se)	EG094B-T		<0.0002 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		165 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: 2327388
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 MPW021286
Date Sampled 12-Apr-2018 08:50
Date Received 13-Apr-2018
Date Completed 23-Apr-2018
Date Authorised 24-Apr-2018

Summary Report

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

Sampling point: Groundwater Bore MPGM5

Source: MP **Customer Sampling Point:** 025 **Sampling Code:** D6 **Sample Frequency:** Month

Testing Laboratory: ALS Environmental

Zinc (Zn)	EG020A-T	0.032 mg/L
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Anions Test Method: ED009-X	Filtered	
Fluoride (F)	<0.050 mg/L	
Chloride (Cl)	152 mg/L	
Sulfate (SO4)	260 mg/L	

Alkalinity Test Method: ED037-P		Total
Total Alkalinity (CaCO3)		143 mg/L

Physical Test Method: EA015H		Total
Total Dissolved Solids @ 180°C		679 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1810451. Report Date: 20-Apr-2018

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Final - Report Number: 2327388
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 MPW021287
Date Sampled 11-Apr-2018 10:45
Date Received 12-Apr-2018
Date Completed 12-Apr-2018
Date Authorised 12-Apr-2018

Summary Report

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

Sampling point: Groundwater Bore MPGM5

Source: MP

Customer Sampling Point: 027

Sampling Code: D8

Sample Frequency: 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: 2327388
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 MPW021288
Date Sampled 12-Apr-2018 09:20
Date Received 13-Apr-2018
Date Completed 23-Apr-2018
Date Authorised 24-Apr-2018

Summary Report

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

Sampling point: Groundwater Bore MPGM5

Source: MP **Customer Sampling Point:** 028 **Sampling Code:** D9 **Sample Frequency:** Month

Testing Laboratory: Mount Piper
Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	11.6 m
Bore Volume Pumped	*Analysis in Field	10 L
Recharge Bore Level	*Analysis in Field	12.6 m
pH	CA12125	5.77
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		0.20 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		44.1 mg/L
Chromium (Cr)	EG020A-T		<0.001 mg/L
Copper (Cu)	EG020A-T		<0.001 mg/L
Iron (Fe)	EG094B-F	0.018 mg/L	
Lead (Pb)	EG020A-T		<0.001 mg/L
Magnesium (Mg)	ED093T-UL		56.9 mg/L
Manganese (Mn)	EG020A-F	0.030 mg/L	
Molybdenum (Mo)	EG020A-T		<0.001 mg/L
Nickel (Ni)	EG020A-T		0.014 mg/L
Potassium (K)	ED093T-UL		8.61 mg/L
Selenium (Se)	EG094B-T		<0.0002 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		67.7 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: 2327388
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 MPW021288
Date Sampled 12-Apr-2018 09:20
Date Received 13-Apr-2018
Date Completed 23-Apr-2018
Date Authorised 24-Apr-2018

Summary Report

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

Sampling point: Groundwater Bore MPGM5

Source: MP **Customer Sampling Point:** 028 **Sampling Code:** D9 **Sample Frequency:** Month

Testing Laboratory: ALS Environmental

Zinc (Zn)	EG020A-T	0.069 mg/L
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Anions Test Method: ED009-X	Filtered
Fluoride (F)	0.064 mg/L
Chloride (Cl)	24.8 mg/L
Sulfate (SO4)	363 mg/L

Alkalinity Test Method: ED037-P	Total
Total Alkalinity (CaCO3)	121 mg/L

Physical Test Method: EA015H	Total
Total Dissolved Solids @ 180°C	654 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1810451. Report Date: 20-Apr-2018

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 Senior Chemist

Final - Report Number: 2327388
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 MPW021289
Date Sampled 11-Apr-2018 10:55
Date Received 12-Apr-2018
Date Completed 12-Apr-2018
Date Authorised 12-Apr-2018

Summary Report

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

Sampling point: Groundwater Bore MPGM5

Source: MP

Customer Sampling Point: 026

Sampling Code: D7

Sample Frequency: Month

Testing Laboratory: Mount Piper
Water

Field Analysis Test Method: Analysis in Field
Initial Bore Level

Total
19.9 m

Insufficient Volume to Sample

N Tomlinson

Authorised by Nikki Tomlinson
Senior Chemist

Final - Report Number: 2327388
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 MPW021290
Date Sampled 12-Apr-2018 09:30
Date Received 12-Apr-2018
Date Completed 12-Apr-2018
Date Authorised 12-Apr-2018

Summary Report

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

Sampling point: Groundwater Bore MPGM5

Source: MP

Customer Sampling Point: 023

Sampling Code: D4

Sample Frequency: Month

Testing Laboratory: Mount Piper
Water

Field Analysis Test Method: Analysis in Field
Initial Bore Level

Total
21.8 m

Volume Not Extractable

N Tomlinson

Authorised by Nikki Tomlinson
Senior Chemist

Final - Report Number: 2327388
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 MPW021291
Date Sampled 11-Apr-2018 11:35
Date Received 13-Apr-2018
Date Completed 23-Apr-2018
Date Authorised 24-Apr-2018

Summary Report

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

Sampling point: Groundwater Bore MPGM5

Source: MP **Customer Sampling Point:** 022 **Sampling Code:** D3 **Sample Frequency:** Month

Testing Laboratory: Mount Piper
Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	11.6 m
Bore Volume Pumped	*Analysis in Field	119 L
Recharge Bore Level	*Analysis in Field	11.6 m
pH	CA12125	5.88
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		0.02 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		46.5 mg/L
Chromium (Cr)	EG020A-T		<0.001 mg/L
Copper (Cu)	EG020A-T		<0.001 mg/L
Iron (Fe)	EG020A-F	6.08 mg/L	
Lead (Pb)	EG020A-T		0.002 mg/L
Magnesium (Mg)	ED093T-UL		55.6 mg/L
Manganese (Mn)	EG020A-F	5.72 mg/L	
Molybdenum (Mo)	EG020A-T		<0.001 mg/L
Nickel (Ni)	EG020A-T		0.417 mg/L
Potassium (K)	ED093T-UL		9.03 mg/L
Selenium (Se)	EG094B-T		<0.0002 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		40.5 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: 2327388
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 MPW021291
Date Sampled 11-Apr-2018 11:35
Date Received 13-Apr-2018
Date Completed 23-Apr-2018
Date Authorised 24-Apr-2018

Summary Report

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

Sampling point: Groundwater Bore MPGM5

Source: MP **Customer Sampling Point:** 022 **Sampling Code:** D3 **Sample Frequency:** Month

Testing Laboratory: ALS Environmental

Zinc (Zn)	EG020A-T	0.113 mg/L
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Anions Test Method: ED009-X	Filtered	
Fluoride (F)		0.045 mg/L
Chloride (Cl)		30.7 mg/L
Sulfate (SO4)		276 mg/L

Alkalinity Test Method: ED037-P	Total	
Total Alkalinity (CaCO3)		175 mg/L

Physical Test Method: EA015H	Total	
Total Dissolved Solids @ 180°C		605 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1810451. Report Date: 20-Apr-2018

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 Senior Chemist

Final - Report Number: 2327388
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 MPW021292
Date Sampled 11-Apr-2018 12:00
Date Received 13-Apr-2018
Date Completed 23-Apr-2018
Date Authorised 24-Apr-2018

Summary Report

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

Sampling point: Groundwater Bore MPGM5

Source: MP **Customer Sampling Point:** 020 **Sampling Code:** D1 **Sample Frequency:** Month

Testing Laboratory: Mount Piper

Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	11.6 m
Bore Volume Pumped	*Analysis in Field	140 L
Recharge Bore Level	*Analysis in Field	11.6 m
pH	CA12125	6.12
Conductivity	CA12125	580 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		0.047 mg/L
Boron (B)	EG020A-T		<0.05 mg/L
Cadmium (Cd)	EG020A-T		<0.0001 mg/L
Calcium (Ca)	ED093T-UL		39.9 mg/L
Chromium (Cr)	EG020A-T		<0.001 mg/L
Copper (Cu)	EG020A-T		<0.001 mg/L
Iron (Fe)	EG020A-F	12.2 mg/L	
Lead (Pb)	EG020A-T		<0.001 mg/L
Magnesium (Mg)	ED093T-UL		26.0 mg/L
Manganese (Mn)	EG020A-F	0.783 mg/L	
Molybdenum (Mo)	EG020A-T		<0.001 mg/L
Nickel (Ni)	EG020A-T		0.005 mg/L
Potassium (K)	ED093T-UL		7.32 mg/L
Selenium (Se)	EG094B-T		<0.0002 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		18.2 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: 2327388
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 MPW021292
Date Sampled 11-Apr-2018 12:00
Date Received 13-Apr-2018
Date Completed 23-Apr-2018
Date Authorised 24-Apr-2018

Summary Report

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

Sampling point: Groundwater Bore MPGM5

Source: MP **Customer Sampling Point:** 020 **Sampling Code:** D1 **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)		0.109 mg/L
Chloride (Cl)		20.8 mg/L
Sulfate (SO4)		92.6 mg/L

Alkalinity Test Method: ED037-P	Total	
Total Alkalinity (CaCO3)		234 mg/L

Physical Test Method: EA015H	Total	
Total Dissolved Solids @ 180°C		286 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1810451. Report Date: 20-Apr-2018

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 Senior Chemist

Final - Report Number: 2327388
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 MPW021293
Date Sampled 12-Apr-2018 09:00
Date Received 13-Apr-2018
Date Completed 23-Apr-2018
Date Authorised 24-Apr-2018

Summary Report

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

Sampling point: Groundwater Bore MPGM5

Source: MP **Customer Sampling Point:** 021 **Sampling Code:** D2 **Sample Frequency:** Month

Testing Laboratory: Mount Piper
Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	12.2 m
Bore Volume Pumped	*Analysis in Field	30 L
Recharge Bore Level	*Analysis in Field	12.2 m
pH	CA12125	5.81
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		0.93 mg/L
Arsenic (As)	EG020A-T		0.004 mg/L
Barium (Ba)	EG020A-T		0.020 mg/L
Boron (B)	EG020A-T		<0.05 mg/L
Cadmium (Cd)	EG020A-T		0.0002 mg/L
Calcium (Ca)	ED093T-UL		51.4 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		0.002 mg/L
Magnesium (Mg)	ED093T-UL		51.6 mg/L
Manganese (Mn)	EG020A-F	6.02 mg/L	
Molybdenum (Mo)	EG020A-T		<0.001 mg/L
Nickel (Ni)	EG020A-T		0.236 mg/L
Potassium (K)	ED093T-UL		9.34 mg/L
Selenium (Se)	EG094B-T		<0.0002 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		23.8 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: 2327388
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 MPW021293
Date Sampled 12-Apr-2018 09:00
Date Received 13-Apr-2018
Date Completed 23-Apr-2018
Date Authorised 24-Apr-2018

Summary Report

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

Sampling point: Groundwater Bore MPM5

Source: MP **Customer Sampling Point:** 021 **Sampling Code:** D2 **Sample Frequency:** Month

Testing Laboratory: ALS Environmental

Zinc (Zn) EG020A-T 0.304 mg/L

Anions Test Method: ED009-X

	Filtered
Fluoride (F)	0.045 mg/L
Chloride (Cl)	18.1 mg/L
Sulfate (SO4)	277 mg/L

Alkalinity Test Method: ED037-P

	Total
Total Alkalinity (CaCO3)	148 mg/L

Physical Test Method: EA015H

	Total
Total Dissolved Solids @ 180°C	527 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1810451. Report Date: 20-Apr-2018

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 Senior Chemist

Final - Report Number: 2327388
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 MPW021294
Date Sampled 12-Apr-2018 10:00
Date Received 13-Apr-2018
Date Completed 23-Apr-2018
Date Authorised 24-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:** 010 **Sampling Code:** D5 **Sample Frequency:** Month

Testing Laboratory: Mount Piper

Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	11.1 m
Bore Volume Pumped	*Analysis in Field	246 L
Recharge Bore Level	*Analysis in Field	11.1 m
pH	CA12125	5.95
Conductivity	CA12125	1260 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		0.016 mg/L
Boron (B)	EG020A-T		0.12 mg/L
Cadmium (Cd)	EG020A-T		<0.0001 mg/L
Calcium (Ca)	ED093T-UL		94.1 mg/L
Chromium (Cr)	EG020A-T		<0.001 mg/L
Copper (Cu)	EG020A-T		<0.001 mg/L
Iron (Fe)	EG020A-F	51.1 mg/L	
Lead (Pb)	EG020A-T		<0.001 mg/L
Magnesium (Mg)	ED093T-UL		72.0 mg/L
Manganese (Mn)	EG020A-F	7.55 mg/L	
Molybdenum (Mo)	EG020A-T		<0.001 mg/L
Nickel (Ni)	EG020A-T		0.048 mg/L
Potassium (K)	ED093T-UL		8.55 mg/L
Selenium (Se)	EG094B-T		0.0003 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		26.8 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: 2327388
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 MPW021294
Date Sampled 12-Apr-2018 10:00
Date Received 13-Apr-2018
Date Completed 23-Apr-2018
Date Authorised 24-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:** 010 **Sampling Code:** D5 **Sample Frequency:** Month

Testing Laboratory: ALS Environmental

Zinc (Zn) EG020A-T 0.023 mg/L

Anions Test Method: ED009-X

	Filtered
Fluoride (F)	0.130 mg/L
Chloride (Cl)	23.4 mg/L
Sulfate (SO4)	501 mg/L

Alkalinity Test Method: ED037-P

	Total
Total Alkalinity (CaCO3)	119 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: ES1810451. Report Date: 20-Apr-2018

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 Senior Chemist

Final - Report Number: 2327388
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 MPW021295
Date Sampled 11-Apr-2018 12:05
Date Received 12-Apr-2018
Date Completed 12-Apr-2018
Date Authorised 12-Apr-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:** 011 **Sampling Code:** D6 **Sample Frequency:** Month

Testing Laboratory: Mount Piper
Water

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

N Tomlinson

Authorised by Nikki Tomlinson
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



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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

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

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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

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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



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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: 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

* 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 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



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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: 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

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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 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

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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 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

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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: 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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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
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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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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 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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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 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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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 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
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 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	

* 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 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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 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 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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 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 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
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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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 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 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	

* 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 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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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 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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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 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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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: 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	

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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 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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 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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 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: 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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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 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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 BOULDER ROAD
 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: 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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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 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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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 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
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Anions Test Method: ED009-X

Fluoride (F)	Filtered	0.089 mg/L
Chloride (Cl)		28.8 mg/L
Sulfate (SO4)		296 mg/L

Alkalinity Test Method: ED037-P

Total Alkalinity (CaCO3)	Total
	137 mg/L

Physical Test Method: EA015H

Total Dissolved Solids @ 180°C	Total
	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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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 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

* 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 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 MPM4

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

* 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 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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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 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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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: 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

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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 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 MPM4

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

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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 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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 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: 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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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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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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 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: 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

* NATA accreditation does not cover the performance of this service



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Authorised by Thanh Hoang Le
 Senior Chemist

Final - Report Number: 2347320
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 MPW021686
Date Sampled 9-May-2018 08:30
Date Received 10-May-2018
Date Completed 18-May-2018
Date Authorised 18-May-2018

Summary Report

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

Sampling point: Groundwater Bore MPGM5

Source: MP **Customer Sampling Point:** 030 **Sampling Code:** D11 **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	72 L
Recharge Bore Level	*Analysis in Field	7.6 m
pH	CA12125	5.96
Conductivity	CA12125	710 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		43.9 mg/L
Chromium (Cr)	EG020A-T		<0.001 mg/L
Copper (Cu)	EG020A-T		<0.001 mg/L
Iron (Fe)	EG020A-F	7.44 mg/L	
Lead (Pb)	EG020A-T		<0.001 mg/L
Magnesium (Mg)	ED093T-UL		47.6 mg/L
Manganese (Mn)	EG020A-F	1.45 mg/L	
Molybdenum (Mo)	EG020A-T		<0.001 mg/L
Nickel (Ni)	EG020A-T		0.065 mg/L
Potassium (K)	ED093T-UL		7.73 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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 PORTLAND NSW 2847 AUSTRALIA
Sold To: 0500082301 **Ship To:** 0500082301
Representative: Clive Stacey
Sampled By: Allan Bowcher

Sample Number MPW021686
Date Sampled 9-May-2018 08:30
Date Received 10-May-2018
Date Completed 18-May-2018
Date Authorised 18-May-2018

Summary Report

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

Sampling point: Groundwater Bore MPGM5

Source: MP **Customer Sampling Point:** 030 **Sampling Code:** D11 **Sample Frequency:** Month

Testing Laboratory: ALS Environmental

Zinc (Zn)	EG020A-T	0.052 mg/L
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Anions Test Method: ED009-X

Fluoride (F)	Filtered	0.081 mg/L
Chloride (Cl)		12.0 mg/L
Sulfate (SO4)		240 mg/L

Alkalinity Test Method: ED037-P

Total Alkalinity (CaCO3)	Total
	122 mg/L

Physical Test Method: EA015H

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

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1813362. Report Date: 17-May-2018

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Final - Report Number: 2347320
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 MPW021687
Date Sampled 10-May-2018 10:10
Date Received 10-May-2018
Date Completed 18-May-2018
Date Authorised 18-May-2018

Summary Report

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

Sampling point: Groundwater Bore MPGM5

Source: MP **Customer Sampling Point:** 031 **Sampling Code:** D12 **Sample Frequency:** Month

Testing Laboratory: Mount Piper
Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	5.2 m
Bore Volume Pumped	*Analysis in Field	4 L
Recharge Bore Level	*Analysis in Field	5.8 m
pH	CA12125	5.98
Conductivity	CA12125	650 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		0.103 mg/L
Boron (B)	EG020A-T		<0.05 mg/L
Cadmium (Cd)	EG020A-T		<0.0001 mg/L
Calcium (Ca)	ED093T-UL		25.5 mg/L
Chromium (Cr)	EG020A-T		<0.001 mg/L
Copper (Cu)	EG020A-T		<0.001 mg/L
Iron (Fe)	EG020A-F	19.7 mg/L	
Lead (Pb)	EG020A-T		<0.001 mg/L
Magnesium (Mg)	ED093T-UL		28.3 mg/L
Manganese (Mn)	EG020A-F	6.94 mg/L	
Molybdenum (Mo)	EG020A-T		<0.001 mg/L
Nickel (Ni)	EG020A-T		0.074 mg/L
Potassium (K)	ED093T-UL		2.94 mg/L
Selenium (Se)	EG094B-T		<0.0002 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		41.4 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 MPW021687
Date Sampled 10-May-2018 10:10
Date Received 10-May-2018
Date Completed 18-May-2018
Date Authorised 18-May-2018

Summary Report

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

Sampling point: Groundwater Bore MPGM5

Source: MP **Customer Sampling Point:** 031 **Sampling Code:** D12 **Sample Frequency:** Month

Testing Laboratory: ALS Environmental

Zinc (Zn)	EG020A-T	0.015 mg/L
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Anions Test Method: ED009-X		Filtered
Fluoride (F)		0.097 mg/L
Chloride (Cl)		53.0 mg/L
Sulfate (SO4)		78.4 mg/L

Alkalinity Test Method: ED037-P		Total
Total Alkalinity (CaCO3)		162 mg/L

Physical Test Method: EA015H		Total
Total Dissolved Solids @ 180°C		341 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1813362. Report Date: 17-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 MPW021688
Date Sampled 10-May-2018 10:35
Date Received 10-May-2018
Date Completed 18-May-2018
Date Authorised 18-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:** 012 **Sampling Code:** D7 **Sample Frequency:** Month

Testing Laboratory: Mount Piper
 Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	1.4 m
Bore Volume Pumped	*Analysis in Field	33 L
Recharge Bore Level	*Analysis in Field	1.4 m
pH	CA12125	6.60
Conductivity	CA12125	573 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		0.089 mg/L
Boron (B)	EG020A-T		<0.05 mg/L
Cadmium (Cd)	EG020A-T		<0.0001 mg/L
Calcium (Ca)	ED093T-UL		47.8 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		24.8 mg/L
Manganese (Mn)	EG020A-F	0.810 mg/L	
Molybdenum (Mo)	EG020A-T		<0.001 mg/L
Nickel (Ni)	EG020A-T		<0.001 mg/L
Potassium (K)	ED093T-UL		9.17 mg/L
Selenium (Se)	EG094B-T		<0.0002 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		22.8 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 MPW021688
Date Sampled 10-May-2018 10:35
Date Received 10-May-2018
Date Completed 18-May-2018
Date Authorised 18-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:** 012 **Sampling Code:** D7 **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)		0.099 mg/L
Chloride (Cl)		18.8 mg/L
Sulfate (SO4)		17.4 mg/L

Alkalinity Test Method: ED037-P		Total
Total Alkalinity (CaCO3)		249 mg/L

Physical Test Method: EA015H		Total
Total Dissolved Solids @ 180°C		280 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1813362. Report Date: 17-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 MPW021689
Date Sampled 10-May-2018 11:25
Date Received 10-May-2018
Date Completed 18-May-2018
Date Authorised 18-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:** 007 **Sampling Code:** D2 **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	59 L
Recharge Bore Level	*Analysis in Field	2.7 m
pH	CA12125	5.64
Conductivity	CA12125	3540 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		<0.001 mg/L
Barium (Ba)	EG020A-T		0.037 mg/L
Boron (B)	EG020A-T		0.51 mg/L
Cadmium (Cd)	EG020A-T		<0.0001 mg/L
Calcium (Ca)	ED093T-UL		234 mg/L
Chromium (Cr)	EG020A-T		<0.001 mg/L
Copper (Cu)	EG020A-T		0.001 mg/L
Iron (Fe)	EG020A-F	23.5 mg/L	
Lead (Pb)	EG020A-T		0.001 mg/L
Magnesium (Mg)	ED093T-UL		186 mg/L
Manganese (Mn)	EG020A-F	8.04 mg/L	
Molybdenum (Mo)	EG020A-T		<0.001 mg/L
Nickel (Ni)	EG020A-T		0.323 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		361 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: 2347320
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 MPW021689
Date Sampled 10-May-2018 11:25
Date Received 10-May-2018
Date Completed 18-May-2018
Date Authorised 18-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:** 007 **Sampling Code:** D2 **Sample Frequency:** Month

Testing Laboratory: ALS Environmental

Zinc (Zn)	EG020A-T	0.141 mg/L
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Anions Test Method: ED009-X	Filtered
Fluoride (F)	0.055 mg/L
Chloride (Cl)	252 mg/L
Sulfate (SO4)	1850 mg/L

Alkalinity Test Method: ED037-P	Total
Total Alkalinity (CaCO3)	16 mg/L

Physical Test Method: EA015H	Total
Total Dissolved Solids @ 180°C	3050 mg/L

TDS by method EA-015 may bias high for sample 4 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: ES1813362. Report Date: 17-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: Allan Bowcher

Sample Number MPW021690
Date Sampled 9-May-2018 09:50
Date Received 10-May-2018
Date Completed 18-May-2018
Date Authorised 18-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:** 009 **Sampling Code:** D4 **Sample Frequency:** Month

Testing Laboratory: Mount Piper
Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	1.7 m
Bore Volume Pumped	*Analysis in Field	119 L
Recharge Bore Level	*Analysis in Field	1.8 m
pH	CA12125	3.37
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		15.0 mg/L
Arsenic (As)	EG020A-T		0.052 mg/L
Barium (Ba)	EG020A-T		0.012 mg/L
Boron (B)	EG020A-T		<0.05 mg/L
Cadmium (Cd)	EG020A-T		0.0006 mg/L
Calcium (Ca)	ED093T-UL		15.1 mg/L
Chromium (Cr)	EG020A-T		0.003 mg/L
Copper (Cu)	EG020A-T		0.001 mg/L
Iron (Fe)	EG020A-F	92.4 mg/L	
Lead (Pb)	EG020A-T		0.021 mg/L
Magnesium (Mg)	ED093T-UL		8.95 mg/L
Manganese (Mn)	EG020A-F	0.692 mg/L	
Molybdenum (Mo)	EG020A-T		<0.001 mg/L
Nickel (Ni)	EG020A-T		0.017 mg/L
Potassium (K)	ED093T-UL		6.98 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
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: Allan Bowcher

Sample Number MPW021690
Date Sampled 9-May-2018 09:50
Date Received 10-May-2018
Date Completed 18-May-2018
Date Authorised 18-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:** 009 **Sampling Code:** D4 **Sample Frequency:** Month

Testing Laboratory: ALS Environmental

Zinc (Zn) EG020A-T 0.184 mg/L

Anions	Test Method: ED009-X	Filtered
Fluoride (F)		0.127 mg/L
Chloride (Cl)		13.4 mg/L
Sulfate (SO4)		386 mg/L

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

Physical **Test Method: EA015H** **Total**
 Total Dissolved Solids @ 180°C 768 mg/L

EA015 TDS, result has been confirmed for sample 5 by re-analysis.

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1813362. Report Date: 17-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 MPW021691
Date Sampled 10-May-2018 11:45
Date Received 10-May-2018
Date Completed 18-May-2018
Date Authorised 18-May-2018

Summary Report

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

Sampling point: Groundwater Bore MPGM5

Source: MP **Customer Sampling Point:** 024 **Sampling Code:** D5 **Sample Frequency:** Month

Testing Laboratory: Mount Piper
Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	6.8 m
Bore Volume Pumped	*Analysis in Field	18 L
Recharge Bore Level	*Analysis in Field	6.8 m
pH	CA12125	6.13
Conductivity	CA12125	2180 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		0.067 mg/L
Boron (B)	EG020A-T		<0.05 mg/L
Cadmium (Cd)	EG020A-T		<0.0001 mg/L
Calcium (Ca)	ED093T-UL		138 mg/L
Chromium (Cr)	EG020A-T		<0.001 mg/L
Copper (Cu)	EG020A-T		0.001 mg/L
Iron (Fe)	EG094B-F	1.13 mg/L	
Lead (Pb)	EG020A-T		<0.001 mg/L
Magnesium (Mg)	ED093T-UL		146 mg/L
Manganese (Mn)	EG020A-F	20.3 mg/L	
Molybdenum (Mo)	EG020A-T		<0.001 mg/L
Nickel (Ni)	EG020A-T		0.142 mg/L
Potassium (K)	ED093T-UL		12.5 mg/L
Selenium (Se)	EG094B-T		<0.0002 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		135 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 MPW021691
Date Sampled 10-May-2018 11:45
Date Received 10-May-2018
Date Completed 18-May-2018
Date Authorised 18-May-2018

Summary Report

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

Sampling point: Groundwater Bore MPGM5

Source: MP **Customer Sampling Point:** 024 **Sampling Code:** D5 **Sample Frequency:** Month

Testing Laboratory: ALS Environmental

Zinc (Zn) EG020A-T 0.051 mg/L

Anions Test Method: ED009-X

	Filtered
Fluoride (F)	0.100 mg/L
Chloride (Cl)	178 mg/L
Sulfate (SO4)	565 mg/L

Alkalinity Test Method: ED037-P

	Total
Total Alkalinity (CaCO3)	479 mg/L

Physical Test Method: EA015H

	Total
Total Dissolved Solids @ 180°C	1550 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1813362. Report Date: 17-May-2018

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 Senior Chemist

Final - Report Number: 2347320
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 MPW021692
Date Sampled 10-May-2018 11:50
Date Received 10-May-2018
Date Completed 18-May-2018
Date Authorised 18-May-2018

Summary Report

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

Sampling point: Groundwater Bore MPGM5

Source: MP **Customer Sampling Point:** 025 **Sampling Code:** D6 **Sample Frequency:** Month

Testing Laboratory: Mount Piper
Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	9.1 m
Bore Volume Pumped	*Analysis in Field	9 L
Recharge Bore Level	*Analysis in Field	9.7 m
pH	CA12125	5.76
Conductivity	CA12125	1290 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		1.62 mg/L
Arsenic (As)	EG020A-T		0.007 mg/L
Barium (Ba)	EG020A-T		0.061 mg/L
Boron (B)	EG020A-T		<0.05 mg/L
Cadmium (Cd)	EG020A-T		<0.0001 mg/L
Calcium (Ca)	ED093T-UL		11.4 mg/L
Chromium (Cr)	EG020A-T		0.003 mg/L
Copper (Cu)	EG020A-T		0.018 mg/L
Iron (Fe)	EG020A-F	54.1 mg/L	
Lead (Pb)	EG020A-T		0.033 mg/L
Magnesium (Mg)	ED093T-UL		33.7 mg/L
Manganese (Mn)	EG020A-F	3.22 mg/L	
Molybdenum (Mo)	EG020A-T		<0.001 mg/L
Nickel (Ni)	EG020A-T		0.064 mg/L
Potassium (K)	ED093T-UL		2.85 mg/L
Selenium (Se)	EG094B-T		0.0007 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		184 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: 2347320
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 MPW021692
Date Sampled 10-May-2018 11:50
Date Received 10-May-2018
Date Completed 18-May-2018
Date Authorised 18-May-2018

Summary Report

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

Sampling point: Groundwater Bore MPGM5

Source: MP **Customer Sampling Point:** 025 **Sampling Code:** D6 **Sample Frequency:** Month

Testing Laboratory: ALS Environmental

Zinc (Zn)	EG020A-T	0.065 mg/L
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Anions Test Method: ED009-X	Filtered	
Fluoride (F)	0.030 mg/L	
Chloride (Cl)	156 mg/L	
Sulfate (SO4)	279 mg/L	

Alkalinity Test Method: ED037-P	Total	
Total Alkalinity (CaCO3)	96 mg/L	

Physical Test Method: EA015H	Total	
Total Dissolved Solids @ 180°C	740 mg/L	

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1813362. Report Date: 17-May-2018

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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: 2347320

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

MPW021693

Date Sampled

9-May-2018 10:50

Date Received

10-May-2018

Date Completed

11-May-2018

Date Authorised

11-May-2018

Summary Report

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

Sampling point: Groundwater Bore MPM5

Source: MP

Customer Sampling Point: 027

Sampling Code: D8

Sample Frequency: Month

Testing Laboratory: Mount Piper

Water

Field Analysis Test Method: Analysis in Field
Dry

Total

Authorised by Nikki Tomlinson
Senior Chemist

Final - Report Number: 2347320
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 MPW021694
Date Sampled 10-May-2018 12:10
Date Received 10-May-2018
Date Completed 18-May-2018
Date Authorised 18-May-2018

Summary Report

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

Sampling point: Groundwater Bore MPGM5

Source: MP **Customer Sampling Point:** 028 **Sampling Code:** D9 **Sample Frequency:** Month

Testing Laboratory: Mount Piper

Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	12.2 m
Bore Volume Pumped	*Analysis in Field	2 L
Recharge Bore Level	*Analysis in Field	12.4 m
pH	CA12125	5.77
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		0.45 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		47.3 mg/L
Chromium (Cr)	EG020A-T		<0.001 mg/L
Copper (Cu)	EG020A-T		0.001 mg/L
Iron (Fe)	EG094B-F	0.050 mg/L	
Lead (Pb)	EG020A-T		<0.001 mg/L
Magnesium (Mg)	ED093T-UL		57.1 mg/L
Manganese (Mn)	EG020A-F	0.056 mg/L	
Molybdenum (Mo)	EG020A-T		<0.001 mg/L
Nickel (Ni)	EG020A-T		0.016 mg/L
Potassium (K)	ED093T-UL		9.12 mg/L
Selenium (Se)	EG094B-T		0.0002 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		73.3 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 MPW021694
Date Sampled 10-May-2018 12:10
Date Received 10-May-2018
Date Completed 18-May-2018
Date Authorised 18-May-2018

Summary Report

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

Sampling point: Groundwater Bore MPGM5

Source: MP **Customer Sampling Point:** 028 **Sampling Code:** D9 **Sample Frequency:** Month

Testing Laboratory: ALS Environmental

Zinc (Zn) EG020A-T 0.073 mg/L

Anions Test Method: ED009-X

	Filtered
Fluoride (F)	0.045 mg/L
Chloride (Cl)	25.4 mg/L
Sulfate (SO4)	359 mg/L

Alkalinity Test Method: ED037-P

	Total
Total Alkalinity (CaCO3)	117 mg/L

Physical Test Method: EA015H

	Total
Total Dissolved Solids @ 180°C	632 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1813362. Report Date: 17-May-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 MPW021695
Date Sampled 9-May-2018 11:05
Date Received 10-May-2018
Date Completed 11-May-2018
Date Authorised 11-May-2018

Summary Report

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

Sampling point: Groundwater Bore MPGM5

Source: MP

Customer Sampling Point: 026

Sampling Code: D7

Sample Frequency: Month

Testing Laboratory: Mount Piper
Water

Field Analysis Test Method: Analysis in Field
Initial Bore Level

Total
19.8 m

Insufficient Volume to Sample

N Tomlinson

Authorised by Nikki Tomlinson
Senior Chemist

Final - Report Number: 2347320
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 MPW021696
Date Sampled 10-May-2018 12:15
Date Received 10-May-2018
Date Completed 11-May-2018
Date Authorised 11-May-2018

Summary Report

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

Sampling point: Groundwater Bore MPGM5

Source: MP

Customer Sampling Point: 023

Sampling Code: D4

Sample Frequency: Month

Testing Laboratory: Mount Piper
Water

Field Analysis Test Method: Analysis in Field
Initial Bore Level

Total
21.9 m

Volume Not Extractable

N Tomlinson

Authorised by Nikki Tomlinson
Senior Chemist

Final - Report Number: 2347320
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 MPW021697
Date Sampled 9-May-2018 11:40
Date Received 10-May-2018
Date Completed 18-May-2018
Date Authorised 18-May-2018

Summary Report

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

Sampling point: Groundwater Bore MPGM5

Source: MP **Customer Sampling Point:** 022 **Sampling Code:** D3 **Sample Frequency:** Month

Testing Laboratory: Mount Piper
Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	11.7 m
Bore Volume Pumped	*Analysis in Field	117 L
Recharge Bore Level	*Analysis in Field	11.7 m
pH	CA12125	5.83
Conductivity	CA12125	940 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		0.020 mg/L
Boron (B)	EG020A-T		<0.05 mg/L
Cadmium (Cd)	EG020A-T		<0.0001 mg/L
Calcium (Ca)	ED093T-UL		53.0 mg/L
Chromium (Cr)	EG020A-T		<0.001 mg/L
Copper (Cu)	EG020A-T		<0.001 mg/L
Iron (Fe)	EG020A-F	6.99 mg/L	
Lead (Pb)	EG020A-T		0.002 mg/L
Magnesium (Mg)	ED093T-UL		57.5 mg/L
Manganese (Mn)	EG020A-F	6.15 mg/L	
Molybdenum (Mo)	EG020A-T		<0.001 mg/L
Nickel (Ni)	EG020A-T		0.394 mg/L
Potassium (K)	ED093T-UL		9.51 mg/L
Selenium (Se)	EG094B-T		<0.0002 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		44.6 mg/L
Vanadium (V)	EG020A-F	<0.01 mg/L	
Vanadium (V)	EG020A-T		<0.01 mg/L

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 Senior Chemist

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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 MPW021697
Date Sampled 9-May-2018 11:40
Date Received 10-May-2018
Date Completed 18-May-2018
Date Authorised 18-May-2018

Summary Report

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

Sampling point: Groundwater Bore MPGM5

Source: MP **Customer Sampling Point:** 022 **Sampling Code:** D3 **Sample Frequency:** Month

Testing Laboratory: ALS Environmental

Zinc (Zn) EG020A-T 0.116 mg/L

Anions Test Method: ED009-X

	Filtered
Fluoride (F)	0.044 mg/L
Chloride (Cl)	32.6 mg/L
Sulfate (SO4)	284 mg/L

Alkalinity Test Method: ED037-P

	Total
Total Alkalinity (CaCO3)	168 mg/L

Physical Test Method: EA015H

	Total
Total Dissolved Solids @ 180°C	583 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1813362. Report Date: 17-May-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 MPW021698
Date Sampled 9-May-2018 12:10
Date Received 10-May-2018
Date Completed 18-May-2018
Date Authorised 18-May-2018

Summary Report

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

Sampling point: Groundwater Bore MPGM5

Source: MP **Customer Sampling Point:** 020 **Sampling Code:** D1 **Sample Frequency:** Month

Testing Laboratory: Mount Piper

Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	11.7 m
Bore Volume Pumped	*Analysis in Field	115 L
Recharge Bore Level	*Analysis in Field	11.7 m
pH	CA12125	6.10
Conductivity	CA12125	590 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		0.042 mg/L
Boron (B)	EG020A-T		<0.05 mg/L
Cadmium (Cd)	EG020A-T		<0.0001 mg/L
Calcium (Ca)	ED093T-UL		43.8 mg/L
Chromium (Cr)	EG020A-T		<0.001 mg/L
Copper (Cu)	EG020A-T		<0.001 mg/L
Iron (Fe)	EG020A-F	13.0 mg/L	
Lead (Pb)	EG020A-T		<0.001 mg/L
Magnesium (Mg)	ED093T-UL		27.3 mg/L
Manganese (Mn)	EG020A-F	0.812 mg/L	
Molybdenum (Mo)	EG020A-T		<0.001 mg/L
Nickel (Ni)	EG020A-T		0.004 mg/L
Potassium (K)	ED093T-UL		8.15 mg/L
Selenium (Se)	EG094B-T		<0.0002 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		20.5 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: 2347320
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 MPW021698
Date Sampled 9-May-2018 12:10
Date Received 10-May-2018
Date Completed 18-May-2018
Date Authorised 18-May-2018

Summary Report

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

Sampling point: Groundwater Bore MPM5

Source: MP **Customer Sampling Point:** 020 **Sampling Code:** D1 **Sample Frequency:** Month

Testing Laboratory: ALS Environmental

Zinc (Zn) EG020A-T <0.005 mg/L

Anions Test Method: ED009-X

	Filtered
Fluoride (F)	0.061 mg/L
Chloride (Cl)	18.9 mg/L
Sulfate (SO4)	91.4 mg/L

Alkalinity Test Method: ED037-P

	Total
Total Alkalinity (CaCO3)	192 mg/L

Physical Test Method: EA015H

	Total
Total Dissolved Solids @ 180°C	336 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1813362. Report Date: 17-May-2018

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 Senior Chemist

Final - Report Number: 2347320
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 MPW021699
Date Sampled 9-May-2018 12:30
Date Received 10-May-2018
Date Completed 18-May-2018
Date Authorised 18-May-2018

Summary Report

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

Sampling point: Groundwater Bore MPGM5

Source: MP **Customer Sampling Point:** 021 **Sampling Code:** D2 **Sample Frequency:** Month

Testing Laboratory: Mount Piper
Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	12.2 m
Bore Volume Pumped	*Analysis in Field	30 L
Recharge Bore Level	*Analysis in Field	12.2 m
pH	CA12125	5.73
Conductivity	CA12125	830 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		0.003 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		54.0 mg/L
Chromium (Cr)	EG020A-T		<0.001 mg/L
Copper (Cu)	EG020A-T		0.003 mg/L
Iron (Fe)	EG020A-F	12.4 mg/L	
Lead (Pb)	EG020A-T		0.002 mg/L
Magnesium (Mg)	ED093T-UL		51.1 mg/L
Manganese (Mn)	EG020A-F	5.91 mg/L	
Molybdenum (Mo)	EG020A-T		<0.001 mg/L
Nickel (Ni)	EG020A-T		0.228 mg/L
Potassium (K)	ED093T-UL		9.96 mg/L
Selenium (Se)	EG094B-T		<0.0002 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		25.3 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: 2347320
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 MPW021699
Date Sampled 9-May-2018 12:30
Date Received 10-May-2018
Date Completed 18-May-2018
Date Authorised 18-May-2018

Summary Report

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

Sampling point: Groundwater Bore MPM5

Source: MP **Customer Sampling Point:** 021 **Sampling Code:** D2 **Sample Frequency:** Month

Testing Laboratory: ALS Environmental

Zinc (Zn)	EG020A-T	0.308 mg/L
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Anions Test Method: ED009-X	Filtered	
Fluoride (F)		0.043 mg/L
Chloride (Cl)		18.6 mg/L
Sulfate (SO4)		272 mg/L

Alkalinity Test Method: ED037-P	Total	
Total Alkalinity (CaCO3)		140 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: ES1813362. Report Date: 17-May-2018

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Final - Report Number: 2347320
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 MPW021700
Date Sampled 9-May-2018 13:25
Date Received 10-May-2018
Date Completed 18-May-2018
Date Authorised 18-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:** 010 **Sampling Code:** D5 **Sample Frequency:** Month

Testing Laboratory: Mount Piper
Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	11.1 m
Bore Volume Pumped	*Analysis in Field	246 L
Recharge Bore Level	*Analysis in Field	11.1 m
pH	CA12125	5.93
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		0.05 mg/L
Arsenic (As)	EG020A-T		0.001 mg/L
Barium (Ba)	EG020A-T		0.017 mg/L
Boron (B)	EG020A-T		0.09 mg/L
Cadmium (Cd)	EG020A-T		<0.0001 mg/L
Calcium (Ca)	ED093T-UL		99.2 mg/L
Chromium (Cr)	EG020A-T		<0.001 mg/L
Copper (Cu)	EG020A-T		<0.001 mg/L
Iron (Fe)	EG020A-F	51.1 mg/L	
Lead (Pb)	EG020A-T		<0.001 mg/L
Magnesium (Mg)	ED093T-UL		71.7 mg/L
Manganese (Mn)	EG020A-F	7.37 mg/L	
Molybdenum (Mo)	EG020A-T		<0.001 mg/L
Nickel (Ni)	EG020A-T		0.048 mg/L
Potassium (K)	ED093T-UL		8.80 mg/L
Selenium (Se)	EG094B-T		0.0004 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		28.4 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: 2347320
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 MPW021700
Date Sampled 9-May-2018 13:25
Date Received 10-May-2018
Date Completed 18-May-2018
Date Authorised 18-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:** 010 **Sampling Code:** D5 **Sample Frequency:** Month

Testing Laboratory: ALS Environmental

Zinc (Zn) EG020A-T 0.021 mg/L

Anions Test Method: ED009-X

	Filtered
Fluoride (F)	0.124 mg/L
Chloride (Cl)	23.5 mg/L
Sulfate (SO4)	593 mg/L

Alkalinity Test Method: ED037-P

	Total
Total Alkalinity (CaCO3)	115 mg/L

Physical Test Method: EA015H

	Total
Total Dissolved Solids @ 180°C	966 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1813362. Report Date: 17-May-2018

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 Senior Chemist

Final - Report Number: 2347320
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 MPW021701
Date Sampled 9-May-2018 12:40
Date Received 10-May-2018
Date Completed 11-May-2018
Date Authorised 11-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: 011

Sampling Code: D6

Sample Frequency: 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: 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
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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

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
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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 (CaCO ₃)		110 mg/L
Phenolphthalein Alkalinity (CaCO ₃)		<1 mg/L
Bicarbonate (CaCO ₃)		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 (NH ₃ -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



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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 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

* 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 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

Anions Test Method: ED009-X

	Filtered
Fluoride (F)	0.138 mg/L
Chloride (Cl)	151 mg/L
Sulfate (SO4)	1600 mg/L

Alkalinity Test Method: ED037-P

	Total
Total Alkalinity (CaCO3)	139 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: ES1815170. Report Date: 4-Jun-2018

* NATA accreditation does not cover the performance of this service



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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 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

* 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: 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

* 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: 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

* 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 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

* 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 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
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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	
Total Alkalinity (CaCO3)	22 mg/L	

Physical Test Method: EA015H	Total	
Total Dissolved Solids @ 180°C	952 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



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 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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 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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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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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
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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
Total Alkalinity (CaCO3)	369 mg/L

Physical Test Method: EA015H	Total
Total Dissolved Solids @ 180°C	534 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1815170. Report Date: 4-Jun-2018

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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

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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

N Tomlinson

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Senior Chemist

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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	

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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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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	

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 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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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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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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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
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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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 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
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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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 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: 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

* 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 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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 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

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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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: 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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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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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: 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

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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 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

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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 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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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 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
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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
Total Alkalinity (CaCO3)	47 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: ES1815170. Report Date: 4-Jun-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 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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 Senior Chemist

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 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
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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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 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 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

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 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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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

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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 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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Final - Report Number: 2379644
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 MPW022169
Date Sampled 15-Jun-2018 08:35
Date Received 18-Jun-2018
Date Completed 25-Jun-2018
Date Authorised 28-Jun-2018

Summary Report

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

Sampling point: Groundwater Bore MPGM5

Source: MP **Customer Sampling Point:** 030 **Sampling Code:** D11 **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	72 L
Recharge Bore Level	*Analysis in Field	7.6 m
pH	CA12125	6.06
Conductivity	CA12125	690 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		0.018 mg/L
Boron (B)	EG020A-T		<0.05 mg/L
Cadmium (Cd)	EG020A-T		<0.0001 mg/L
Calcium (Ca)	ED093T-UL		44.1 mg/L
Chromium (Cr)	EG020A-T		<0.001 mg/L
Copper (Cu)	EG020A-T		<0.001 mg/L
Iron (Fe)	EG020A-F	7.56 mg/L	
Lead (Pb)	EG020A-T		<0.001 mg/L
Magnesium (Mg)	ED093T-UL		46.7 mg/L
Manganese (Mn)	EG020A-F	1.58 mg/L	
Molybdenum (Mo)	EG020A-T		<0.001 mg/L
Nickel (Ni)	EG020A-T		0.070 mg/L
Potassium (K)	ED093T-UL		8.36 mg/L
Selenium (Se)	EG094B-T		<0.0002 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		22.3 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 MPW022169
Date Sampled 15-Jun-2018 08:35
Date Received 18-Jun-2018
Date Completed 25-Jun-2018
Date Authorised 28-Jun-2018

Summary Report

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

Sampling point: Groundwater Bore MPGM5

Source: MP **Customer Sampling Point:** 030 **Sampling Code:** D11 **Sample Frequency:** Month

Testing Laboratory: ALS Environmental

Zinc (Zn)	EG020A-T	0.055 mg/L
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Anions Test Method: ED009-X	Filtered	
Fluoride (F)		0.036 mg/L
Chloride (Cl)		14.4 mg/L
Sulfate (SO4)		236 mg/L

Alkalinity Test Method: ED037-P	Total	
Total Alkalinity (CaCO3)		117 mg/L

Physical Test Method: EA015H	Total	
Total Dissolved Solids @ 180°C		429 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1817465. Report Date: 22-Jun-2018

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Final - Report Number: 2379644
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 MPW022170
Date Sampled 15-Jun-2018 08:55
Date Received 18-Jun-2018
Date Completed 25-Jun-2018
Date Authorised 28-Jun-2018

Summary Report

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

Sampling point: Groundwater Bore MPGM5

Source: MP **Customer Sampling Point:** 031 **Sampling Code:** D12 **Sample Frequency:** Month

Testing Laboratory: Mount Piper
Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	5.4 m
Bore Volume Pumped	*Analysis in Field	5 L
Recharge Bore Level	*Analysis in Field	6.0 m
pH	CA12125	6.02
Conductivity	CA12125	660 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		0.13 mg/L
Arsenic (As)	EG020A-T		0.002 mg/L
Barium (Ba)	EG020A-T		0.098 mg/L
Boron (B)	EG020A-T		<0.05 mg/L
Cadmium (Cd)	EG020A-T		<0.0001 mg/L
Calcium (Ca)	ED093T-UL		27.2 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		29.0 mg/L
Manganese (Mn)	EG020A-F	8.18 mg/L	
Molybdenum (Mo)	EG020A-T		<0.001 mg/L
Nickel (Ni)	EG020A-T		0.083 mg/L
Potassium (K)	ED093T-UL		2.70 mg/L
Selenium (Se)	EG094B-T		<0.0002 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		44.0 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 MPW022170
Date Sampled 15-Jun-2018 08:55
Date Received 18-Jun-2018
Date Completed 25-Jun-2018
Date Authorised 28-Jun-2018

Summary Report

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

Sampling point: Groundwater Bore MPGM5

Source: MP **Customer Sampling Point:** 031 **Sampling Code:** D12 **Sample Frequency:** Month

Testing Laboratory: ALS Environmental

Zinc (Zn)	EG020A-T	0.023 mg/L
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Anions Test Method: ED009-X	Filtered	
Fluoride (F)		0.078 mg/L
Chloride (Cl)		54.8 mg/L
Sulfate (SO4)		82.3 mg/L

Alkalinity Test Method: ED037-P	Total	
Total Alkalinity (CaCO3)		161 mg/L

Physical Test Method: EA015H	Total	
Total Dissolved Solids @ 180°C		346 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1817465. Report Date: 22-Jun-2018

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Final - Report Number: 2379644
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 MPW022171
Date Sampled 15-Jun-2018 09:20
Date Received 18-Jun-2018
Date Completed 25-Jun-2018
Date Authorised 28-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:** 012 **Sampling Code:** D7 **Sample Frequency:** Month

Testing Laboratory: Mount Piper
Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	1.6 m
Bore Volume Pumped	*Analysis in Field	33 L
Recharge Bore Level	*Analysis in Field	1.5 m
pH	CA12125	6.70
Conductivity	CA12125	527 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		0.072 mg/L
Boron (B)	EG020A-T		<0.05 mg/L
Cadmium (Cd)	EG020A-T		<0.0001 mg/L
Calcium (Ca)	ED093T-UL		46.7 mg/L
Chromium (Cr)	EG020A-T		<0.001 mg/L
Copper (Cu)	EG020A-T		<0.001 mg/L
Iron (Fe)	EG020A-F	2.18 mg/L	
Lead (Pb)	EG020A-T		<0.001 mg/L
Magnesium (Mg)	ED093T-UL		23.9 mg/L
Manganese (Mn)	EG020A-F	0.221 mg/L	
Molybdenum (Mo)	EG020A-T		<0.001 mg/L
Nickel (Ni)	EG020A-T		<0.001 mg/L
Potassium (K)	ED093T-UL		9.34 mg/L
Selenium (Se)	EG094B-T		<0.0002 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		23.0 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 MPW022171
Date Sampled 15-Jun-2018 09:20
Date Received 18-Jun-2018
Date Completed 25-Jun-2018
Date Authorised 28-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:** 012 **Sampling Code:** D7 **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)		0.079 mg/L
Chloride (Cl)		20.0 mg/L
Sulfate (SO4)		21.2 mg/L

Alkalinity Test Method: ED037-P	Total	
Total Alkalinity (CaCO3)		232 mg/L

Physical Test Method: EA015H	Total	
Total Dissolved Solids @ 180°C		268 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1817465. Report Date: 22-Jun-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 MPW022172
Date Sampled 15-Jun-2018 09:35
Date Received 18-Jun-2018
Date Completed 25-Jun-2018
Date Authorised 28-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:** 007 **Sampling Code:** D2 **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	59 L
Recharge Bore Level	*Analysis in Field	2.8 m
pH	CA12125	5.52
Conductivity	CA12125	3650 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		0.41 mg/L
Arsenic (As)	EG020A-T		<0.001 mg/L
Barium (Ba)	EG020A-T		0.030 mg/L
Boron (B)	EG020A-T		0.52 mg/L
Cadmium (Cd)	EG020A-T		<0.0001 mg/L
Calcium (Ca)	ED093T-UL		241 mg/L
Chromium (Cr)	EG020A-T		<0.001 mg/L
Copper (Cu)	EG020A-T		0.002 mg/L
Iron (Fe)	EG020A-F	23.7 mg/L	
Lead (Pb)	EG020A-T		0.001 mg/L
Magnesium (Mg)	ED093T-UL		192 mg/L
Manganese (Mn)	EG020A-F	9.24 mg/L	
Molybdenum (Mo)	EG020A-T		<0.001 mg/L
Nickel (Ni)	EG020A-T		0.337 mg/L
Potassium (K)	ED093T-UL		24.3 mg/L
Selenium (Se)	EG094B-T		<0.0002 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		354 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: 2379644
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 MPW022172
Date Sampled 15-Jun-2018 09:35
Date Received 18-Jun-2018
Date Completed 25-Jun-2018
Date Authorised 28-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:** 007 **Sampling Code:** D2 **Sample Frequency:** Month

Testing Laboratory: ALS Environmental

Zinc (Zn) EG020A-T 0.163 mg/L

Anions Test Method: ED009-X

	Filtered
Fluoride (F)	0.029 mg/L
Chloride (Cl)	280 mg/L
Sulfate (SO4)	2280 mg/L

Alkalinity Test Method: ED037-P

Total Alkalinity (CaCO3)	Total 10 mg/L
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Physical Test Method: EA015H

Total Dissolved Solids @ 180°C	Total 2900 mg/L
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Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1817465. Report Date: 22-Jun-2018

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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: Nikki Tomlinson

Sample Number MPW022173
Date Sampled 15-Jun-2018 10:00
Date Received 18-Jun-2018
Date Completed 25-Jun-2018
Date Authorised 28-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:** 009 **Sampling Code:** D4 **Sample Frequency:** Month

Testing Laboratory: Mount Piper

Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	1.8 m
Bore Volume Pumped	*Analysis in Field	117 L
Recharge Bore Level	*Analysis in Field	1.8 m
pH	CA12125	3.38
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		16.2 mg/L
Arsenic (As)	EG020A-T		0.055 mg/L
Barium (Ba)	EG020A-T		0.012 mg/L
Boron (B)	EG020A-T		<0.05 mg/L
Cadmium (Cd)	EG020A-T		0.0006 mg/L
Calcium (Ca)	ED093T-UL		14.3 mg/L
Chromium (Cr)	EG020A-T		0.003 mg/L
Copper (Cu)	EG020A-T		<0.001 mg/L
Iron (Fe)	EG020A-F	99.1 mg/L	
Lead (Pb)	EG020A-T		0.022 mg/L
Magnesium (Mg)	ED093T-UL		8.40 mg/L
Manganese (Mn)	EG020A-F	0.730 mg/L	
Molybdenum (Mo)	EG020A-T		<0.001 mg/L
Nickel (Ni)	EG020A-T		0.019 mg/L
Potassium (K)	ED093T-UL		7.28 mg/L
Selenium (Se)	EG094B-T		<0.0002 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		19.3 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: 2379644
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 MPW022173
Date Sampled 15-Jun-2018 10:00
Date Received 18-Jun-2018
Date Completed 25-Jun-2018
Date Authorised 28-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:** 009 **Sampling Code:** D4 **Sample Frequency:** Month

Testing Laboratory: ALS Environmental

Zinc (Zn) EG020A-T 0.184 mg/L

Anions Test Method: ED009-X

	Filtered
Fluoride (F)	0.085 mg/L
Chloride (Cl)	11.8 mg/L
Sulfate (SO4)	401 mg/L

Alkalinity Test Method: ED037-P

	Total
Total Alkalinity (CaCO3)	<1 mg/L

Physical Test Method: EA015H

	Total
Total Dissolved Solids @ 180°C	818 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: ES1817465. Report Date: 22-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: 2379644
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 MPW022174
Date Sampled 15-Jun-2018 10:25
Date Received 18-Jun-2018
Date Completed 25-Jun-2018
Date Authorised 28-Jun-2018

Summary Report

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

Sampling point: Groundwater Bore MPGM5

Source: MP **Customer Sampling Point:** 024 **Sampling Code:** D5 **Sample Frequency:** Month

Testing Laboratory: Mount Piper

Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	6.9 m
Bore Volume Pumped	*Analysis in Field	18 L
Recharge Bore Level	*Analysis in Field	6.9 m
pH	CA12125	6.05
Conductivity	CA12125	2110 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		0.068 mg/L
Boron (B)	EG020A-T		<0.05 mg/L
Cadmium (Cd)	EG020A-T		<0.0001 mg/L
Calcium (Ca)	ED093T-UL		132 mg/L
Chromium (Cr)	EG020A-T		<0.001 mg/L
Copper (Cu)	EG020A-T		0.029 mg/L
Iron (Fe)	EG094B-F	0.760 mg/L	
Lead (Pb)	EG020A-T		0.002 mg/L
Magnesium (Mg)	ED093T-UL		142 mg/L
Manganese (Mn)	EG020A-F	22.1 mg/L	
Molybdenum (Mo)	EG020A-T		<0.001 mg/L
Nickel (Ni)	EG020A-T		0.151 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		124 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 MPW022174
Date Sampled 15-Jun-2018 10:25
Date Received 18-Jun-2018
Date Completed 25-Jun-2018
Date Authorised 28-Jun-2018

Summary Report

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

Sampling point: Groundwater Bore MPM5

Source: MP **Customer Sampling Point:** 024 **Sampling Code:** D5 **Sample Frequency:** Month

Testing Laboratory: ALS Environmental

Zinc (Zn) EG020A-T 0.073 mg/L

Anions Test Method: ED009-X

	Filtered
Fluoride (F)	0.039 mg/L
Chloride (Cl)	166 mg/L
Sulfate (SO4)	553 mg/L

Alkalinity Test Method: ED037-P

	Total
Total Alkalinity (CaCO3)	448 mg/L

Physical Test Method: EA015H

	Total
Total Dissolved Solids @ 180°C	1570 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 MPW022175
Date Sampled 15-Jun-2018 10:35
Date Received 18-Jun-2018
Date Completed 25-Jun-2018
Date Authorised 28-Jun-2018

Summary Report

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

Sampling point: Groundwater Bore MPGM5

Source: MP **Customer Sampling Point:** 025 **Sampling Code:** D6 **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	4 L
Recharge Bore Level	*Analysis in Field	9.3 m
pH	CA12125	5.65
Conductivity	CA12125	1250 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		0.22 mg/L
Arsenic (As)	EG020A-T		0.003 mg/L
Barium (Ba)	EG020A-T		0.040 mg/L
Boron (B)	EG020A-T		<0.05 mg/L
Cadmium (Cd)	EG020A-T		<0.0001 mg/L
Calcium (Ca)	ED093T-UL		10.1 mg/L
Chromium (Cr)	EG020A-T		<0.001 mg/L
Copper (Cu)	EG020A-T		<0.001 mg/L
Iron (Fe)	EG020A-F	52.8 mg/L	
Lead (Pb)	EG020A-T		<0.001 mg/L
Magnesium (Mg)	ED093T-UL		30.9 mg/L
Manganese (Mn)	EG020A-F	3.51 mg/L	
Molybdenum (Mo)	EG020A-T		<0.001 mg/L
Nickel (Ni)	EG020A-T		0.063 mg/L
Potassium (K)	ED093T-UL		2.20 mg/L
Selenium (Se)	EG094B-T		0.0002 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		164 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 MPW022175
Date Sampled 15-Jun-2018 10:35
Date Received 18-Jun-2018
Date Completed 25-Jun-2018
Date Authorised 28-Jun-2018

Summary Report

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

Sampling point: Groundwater Bore MPGM5

Source: MP **Customer Sampling Point:** 025 **Sampling Code:** D6 **Sample Frequency:** Month

Testing Laboratory: ALS Environmental

Zinc (Zn)	EG020A-T	0.040 mg/L
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Anions Test Method: ED009-X	Filtered	
Fluoride (F)		0.038 mg/L
Chloride (Cl)		156 mg/L
Sulfate (SO4)		274 mg/L

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

Physical Test Method: EA015H	Total	
Total Dissolved Solids @ 180°C		779 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1817465. Report Date: 22-Jun-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 MPW022176
Date Sampled 14-Jun-2018 13:20
Date Received 15-Jun-2018
Date Completed 15-Jun-2018
Date Authorised 15-Jun-2018

Summary Report

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

Sampling point: Groundwater Bore MPGM5

Source: MP

Customer Sampling Point: 027

Sampling Code: D8

Sample Frequency: 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: 2379644
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 MPW022177
Date Sampled 15-Jun-2018 10:45
Date Received 18-Jun-2018
Date Completed 25-Jun-2018
Date Authorised 28-Jun-2018

Summary Report

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

Sampling point: Groundwater Bore MPGM5

Source: MP **Customer Sampling Point:** 028 **Sampling Code:** D9 **Sample Frequency:** Month

Testing Laboratory: Mount Piper
Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	12.1 m
Bore Volume Pumped	*Analysis in Field	6 L
Recharge Bore Level	*Analysis in Field	12.7 m
pH	CA12125	5.77
Conductivity	CA12125	940 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		7.12 mg/L
Arsenic (As)	EG020A-T		0.006 mg/L
Barium (Ba)	EG020A-T		0.040 mg/L
Boron (B)	EG020A-T		<0.05 mg/L
Cadmium (Cd)	EG020A-T		<0.0001 mg/L
Calcium (Ca)	ED093T-UL		44.2 mg/L
Chromium (Cr)	EG020A-T		0.006 mg/L
Copper (Cu)	EG020A-T		0.011 mg/L
Iron (Fe)	EG094B-F	0.043 mg/L	
Lead (Pb)	EG020A-T		0.019 mg/L
Magnesium (Mg)	ED093T-UL		51.3 mg/L
Manganese (Mn)	EG020A-F	0.025 mg/L	
Molybdenum (Mo)	EG020A-T		0.002 mg/L
Nickel (Ni)	EG020A-T		0.035 mg/L
Potassium (K)	ED093T-UL		10.3 mg/L
Selenium (Se)	EG094B-T		0.0013 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		69.6 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: 2379644
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 MPW022177
Date Sampled 15-Jun-2018 10:45
Date Received 18-Jun-2018
Date Completed 25-Jun-2018
Date Authorised 28-Jun-2018

Summary Report

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

Sampling point: Groundwater Bore MPM5

Source: MP **Customer Sampling Point:** 028 **Sampling Code:** D9 **Sample Frequency:** Month

Testing Laboratory: ALS Environmental

Zinc (Zn) EG020A-T 0.148 mg/L

Anions Test Method: ED009-X

	Filtered
Fluoride (F)	0.045 mg/L
Chloride (Cl)	25.6 mg/L
Sulfate (SO4)	331 mg/L

Alkalinity Test Method: ED037-P

	Total
Total Alkalinity (CaCO3)	104 mg/L

Physical Test Method: EA015H

	Total
Total Dissolved Solids @ 180°C	596 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1817465. Report Date: 22-Jun-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 MPW022178
Date Sampled 14-Jun-2018 13:35
Date Received 15-Jun-2018
Date Completed 15-Jun-2018
Date Authorised 15-Jun-2018

Summary Report

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

Sampling point: Groundwater Bore MPM5

Source: MP

Customer Sampling Point: 026

Sampling Code: D7

Sample Frequency: Month

Testing Laboratory: Mount Piper
Water

Field Analysis Test Method: Analysis in Field
Initial Bore Level

Total
19.9 m

Insufficient Volume to Sample

N Tomlinson

Authorised by Nikki Tomlinson
Senior Chemist

Final - Report Number: 2379644
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 MPW022179
Date Sampled 15-Jun-2018 10:50
Date Received 15-Jun-2018
Date Completed 15-Jun-2018
Date Authorised 15-Jun-2018

Summary Report

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

Sampling point: Groundwater Bore MPGM5

Source: MP **Customer Sampling Point:** 023 **Sampling Code:** D4 **Sample Frequency:** Month

Testing Laboratory: Mount Piper
Water

Field Analysis	Test Method: Analysis in Field	Total
Initial Bore Level		21.9 m
Bore Volume Pumped		0 L
Recharge Bore Level		21.9 m

Volume Not Extractable

N Tomlinson

Authorised by Nikki Tomlinson
Senior Chemist

Final - Report Number: 2379644
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 MPW022180
Date Sampled 14-Jun-2018 14:00
Date Received 18-Jun-2018
Date Completed 25-Jun-2018
Date Authorised 28-Jun-2018

Summary Report

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

Sampling point: Groundwater Bore MPGM5

Source: MP **Customer Sampling Point:** 022 **Sampling Code:** D3 **Sample Frequency:** Month

Testing Laboratory: Mount Piper
Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	11.8 m
Bore Volume Pumped	*Analysis in Field	115 L
Recharge Bore Level	*Analysis in Field	11.8 m
pH	CA12125	5.74
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		0.02 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		53.3 mg/L
Chromium (Cr)	EG020A-T		<0.001 mg/L
Copper (Cu)	EG020A-T		<0.001 mg/L
Iron (Fe)	EG020A-F	7.38 mg/L	
Lead (Pb)	EG020A-T		0.002 mg/L
Magnesium (Mg)	ED093T-UL		55.6 mg/L
Manganese (Mn)	EG020A-F	7.08 mg/L	
Molybdenum (Mo)	EG020A-T		<0.001 mg/L
Nickel (Ni)	EG020A-T		0.394 mg/L
Potassium (K)	ED093T-UL		9.99 mg/L
Selenium (Se)	EG094B-T		<0.0002 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		46.9 mg/L
Vanadium (V)	EG020A-F	<0.01 mg/L	
Vanadium (V)	EG020A-T		<0.01 mg/L

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 Senior Chemist

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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 MPW022180
Date Sampled 14-Jun-2018 14:00
Date Received 18-Jun-2018
Date Completed 25-Jun-2018
Date Authorised 28-Jun-2018

Summary Report

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

Sampling point: Groundwater Bore MPM5

Source: MP **Customer Sampling Point:** 022 **Sampling Code:** D3 **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)		0.033 mg/L
Chloride (Cl)		36.6 mg/L
Sulfate (SO4)		304 mg/L

Alkalinity	Test Method: ED037-P	Total
Total Alkalinity (CaCO3)		166 mg/L

Physical	Test Method: EA015H	Total
Total Dissolved Solids @ 180°C		602 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1817465. Report Date: 22-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 MPW022181
Date Sampled 14-Jun-2018 14:30
Date Received 18-Jun-2018
Date Completed 25-Jun-2018
Date Authorised 28-Jun-2018

Summary Report

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

Sampling point: Groundwater Bore MPGM5

Source: MP **Customer Sampling Point:** 020 **Sampling Code:** D1 **Sample Frequency:** Month

Testing Laboratory: Mount Piper
Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	11.6 m
Bore Volume Pumped	*Analysis in Field	117 L
Recharge Bore Level	*Analysis in Field	11.6 m
pH	CA12125	6.10
Conductivity	CA12125	554 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		0.044 mg/L
Boron (B)	EG020A-T		<0.05 mg/L
Cadmium (Cd)	EG020A-T		<0.0001 mg/L
Calcium (Ca)	ED093T-UL		41.8 mg/L
Chromium (Cr)	EG020A-T		<0.001 mg/L
Copper (Cu)	EG020A-T		<0.001 mg/L
Iron (Fe)	EG020A-F	13.7 mg/L	
Lead (Pb)	EG020A-T		<0.001 mg/L
Magnesium (Mg)	ED093T-UL		26.0 mg/L
Manganese (Mn)	EG020A-F	0.872 mg/L	
Molybdenum (Mo)	EG020A-T		<0.001 mg/L
Nickel (Ni)	EG020A-T		0.005 mg/L
Potassium (K)	ED093T-UL		8.40 mg/L
Selenium (Se)	EG094B-T		<0.0002 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		20.8 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 MPW022181
Date Sampled 14-Jun-2018 14:30
Date Received 18-Jun-2018
Date Completed 25-Jun-2018
Date Authorised 28-Jun-2018

Summary Report

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

Sampling point: Groundwater Bore MPGM5

Source: MP **Customer Sampling Point:** 020 **Sampling Code:** D1 **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)		0.045 mg/L
Chloride (Cl)		17.2 mg/L
Sulfate (SO4)		82.4 mg/L

Alkalinity Test Method: ED037-P	Total	
Total Alkalinity (CaCO3)		184 mg/L

Physical Test Method: EA015H	Total	
Total Dissolved Solids @ 180°C		295 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1817465. Report Date: 22-Jun-2018

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 Senior Chemist

Final - Report Number: 2379644
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 MPW022182
Date Sampled 14-Jun-2018 14:55
Date Received 18-Jun-2018
Date Completed 25-Jun-2018
Date Authorised 28-Jun-2018

Summary Report

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

Sampling point: Groundwater Bore MPGM5

Source: MP **Customer Sampling Point:** 021 **Sampling Code:** D2 **Sample Frequency:** Month

Testing Laboratory: Mount Piper
Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	12.3 m
Bore Volume Pumped	*Analysis in Field	28 L
Recharge Bore Level	*Analysis in Field	12.3 m
pH	CA12125	5.76
Conductivity	CA12125	830 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		2.32 mg/L
Arsenic (As)	EG020A-T		0.008 mg/L
Barium (Ba)	EG020A-T		0.053 mg/L
Boron (B)	EG020A-T		<0.05 mg/L
Cadmium (Cd)	EG020A-T		0.0001 mg/L
Calcium (Ca)	ED093T-UL		54.6 mg/L
Chromium (Cr)	EG020A-T		0.004 mg/L
Copper (Cu)	EG020A-T		0.016 mg/L
Iron (Fe)	EG020A-F	13.3 mg/L	
Lead (Pb)	EG020A-T		0.008 mg/L
Magnesium (Mg)	ED093T-UL		50.4 mg/L
Manganese (Mn)	EG020A-F	6.96 mg/L	
Molybdenum (Mo)	EG020A-T		<0.001 mg/L
Nickel (Ni)	EG020A-T		0.272 mg/L
Potassium (K)	ED093T-UL		10.8 mg/L
Selenium (Se)	EG094B-T		0.0004 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		25.3 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.

Authorised by Thanh Hoang Le
 Senior Chemist

Final - Report Number: 2379644
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 MPW022182
Date Sampled 14-Jun-2018 14:55
Date Received 18-Jun-2018
Date Completed 25-Jun-2018
Date Authorised 28-Jun-2018

Summary Report

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

Sampling point: Groundwater Bore MPGM5

Source: MP **Customer Sampling Point:** 021 **Sampling Code:** D2 **Sample Frequency:** Month

Testing Laboratory: ALS Environmental

Zinc (Zn)	EG020A-T	0.432 mg/L
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Anions Test Method: ED009-X	Filtered	
Fluoride (F)		0.038 mg/L
Chloride (Cl)		19.2 mg/L
Sulfate (SO4)		286 mg/L

Alkalinity Test Method: ED037-P	Total	
Total Alkalinity (CaCO3)		125 mg/L

Physical Test Method: EA015H	Total	
Total Dissolved Solids @ 180°C		516 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1817465. Report Date: 22-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: 2379644
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 MPW022183
Date Sampled 14-Jun-2018 15:35
Date Received 18-Jun-2018
Date Completed 25-Jun-2018
Date Authorised 28-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:** 010 **Sampling Code:** D5 **Sample Frequency:** Month

Testing Laboratory: Mount Piper
Water

Field Analysis	Test Method	Total
Initial Bore Level	*Analysis in Field	11.1 m
Bore Volume Pumped	*Analysis in Field	245 L
Recharge Bore Level	*Analysis in Field	11.1 m
pH	CA12125	5.97
Conductivity	CA12125	1240 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		0.016 mg/L
Boron (B)	EG020A-T		0.13 mg/L
Cadmium (Cd)	EG020A-T		<0.0001 mg/L
Calcium (Ca)	ED093T-UL		96.3 mg/L
Chromium (Cr)	EG020A-T		<0.001 mg/L
Copper (Cu)	EG020A-T		<0.001 mg/L
Iron (Fe)	EG020A-F	50.0 mg/L	
Lead (Pb)	EG020A-T		<0.001 mg/L
Magnesium (Mg)	ED093T-UL		67.9 mg/L
Manganese (Mn)	EG020A-F	8.33 mg/L	
Molybdenum (Mo)	EG020A-T		<0.001 mg/L
Nickel (Ni)	EG020A-T		0.045 mg/L
Potassium (K)	ED093T-UL		8.93 mg/L
Selenium (Se)	EG094B-T		0.0002 mg/L
Silver (Ag)	EG020B-T		<0.001 mg/L
Sodium (Na)	ED093T-UL		28.1 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: 2379644
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 MPW022183
Date Sampled 14-Jun-2018 15:35
Date Received 18-Jun-2018
Date Completed 25-Jun-2018
Date Authorised 28-Jun-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:** 010 **Sampling Code:** D5 **Sample Frequency:** Month

Testing Laboratory: ALS Environmental

Zinc (Zn)	EG020A-T	0.021 mg/L
-----------	----------	------------

Anions Test Method: ED009-X	Filtered
Fluoride (F)	0.100 mg/L
Chloride (Cl)	23.5 mg/L
Sulfate (SO4)	579 mg/L

Alkalinity Test Method: ED037-P	Total
Total Alkalinity (CaCO3)	92 mg/L

Physical Test Method: EA015H	Total
Total Dissolved Solids @ 180°C	952 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1817465. Report Date: 22-Jun-2018

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 Senior Chemist

Final - Report Number: 2379644
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 MPW022184
Date Sampled 14-Jun-2018 15:45
Date Received 15-Jun-2018
Date Completed 15-Jun-2018
Date Authorised 15-Jun-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:** 011 **Sampling Code:** D6 **Sample Frequency:** 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: 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

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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

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 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 (CaCO ₃)		92 mg/L
Phenolphthalein Alkalinity (CaCO ₃)		<1 mg/L
Bicarbonate (CaCO ₃)		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 (NH ₃ -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



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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
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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



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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

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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 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

* NATA accreditation does not cover the performance of this service



Accreditation Number 1099
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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 MPM4

Source: MP **Customer Sampling Point:** 006 **Sampling Code:** D1 **Sample Frequency:** Month

Testing Laboratory: ALS Environmental

Zinc (Zn) EG020A-T 0.079 mg/L

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

* 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 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

Anions Test Method: ED009-X

	Filtered
Fluoride (F)	0.016 mg/L
Chloride (Cl)	61.2 mg/L
Sulfate (SO4)	391 mg/L

Alkalinity Test Method: ED037-P

	Total
Total Alkalinity (CaCO3)	23 mg/L

Physical Test Method: EA015H

	Total
Total Dissolved Solids @ 180°C	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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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 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 MPM4

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
Total Alkalinity (CaCO3)	366 mg/L

Physical Test Method: EA015H

	Total
Total Dissolved Solids @ 180°C	477 mg/L

Testing services provided by: ALS Environmental. NATA Accreditation no. 825. Report Number: ES1819119. Report Date: 5-Jul-2018

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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 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

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 **Test Method:** Analysis in Field
Dry

Total

Nomlison

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

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 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	

* 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 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

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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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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: 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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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 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	

* 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 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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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 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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 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: ALS Environmental

Zinc (Zn) EG020A-T 0.543 mg/L

Anions Test Method: ED009-X

	Filtered
Fluoride (F)	0.080 mg/L
Chloride (Cl)	506 mg/L
Sulfate (SO4)	3260 mg/L

Alkalinity Test Method: ED037-P

	Total
Total Alkalinity (CaCO3)	141 mg/L

Physical Test Method: EA015H

	Total
Total Dissolved Solids @ 180°C	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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 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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 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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 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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 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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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: 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: 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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 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

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 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

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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: 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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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

* 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 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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 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 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

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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

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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: 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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 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

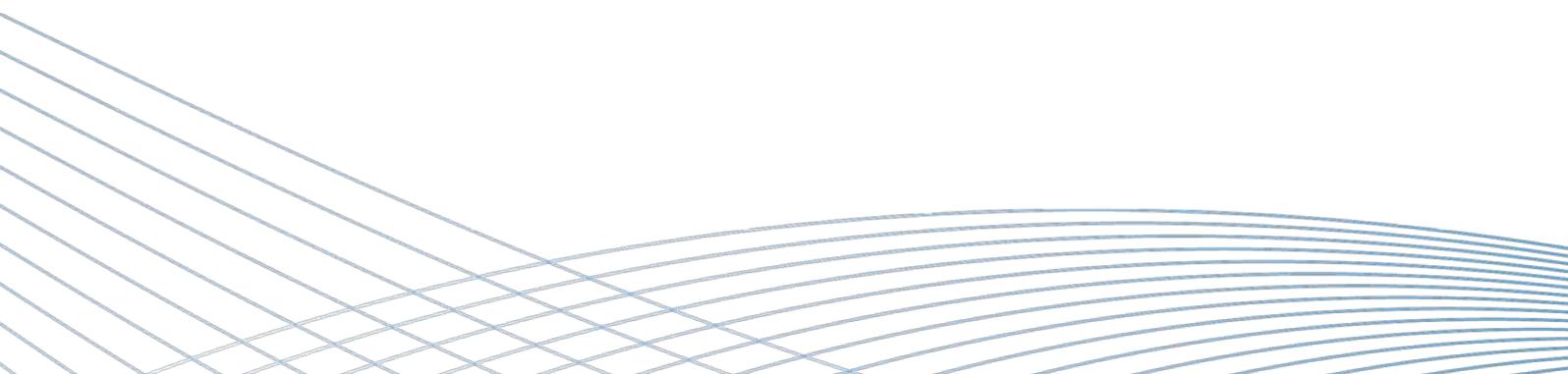
- All sampling is performed by trained personnel in accordance with procedure A-2.18 and relevant parts of Australian Standard 5667, for which NATA accreditation is held.
- Site measurements (DO, pH, turbidity, temperature and conductivity) and sampling observations (water depth) are recorded and reported 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.



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across the following
countries and territories
worldwide

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India	Spain
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