

Notice

Environmental Protection Act 1994

Environmental Protection Order

This environmental protection order is issued by the administering authority pursuant to section 358 of the Environmental Protection Act 1994.

Mt Moss Mining Pty Ltd
44-46 SIXTH STREET,
SOUTH TOWNSVILLE, QLD, 4810

Your reference: EPML00557513

Our reference: STAT1067

17 October 2016

Dear Sir

Take notice: that under the *Environmental Protection Act 1994* (the Act) this environmental protection order (EPO) is issued to Mt Moss Mining Pty Ltd (you) by the administering authority. The administering authority is the Chief Executive of the Department of Environment and Heritage Protection (the department).

The EPO is issued in respect to your activities at Mining Leases 10171 and 10359 on land described as Lot 513 on OL404 and Lot 2 on SP266632 (the project site).

A. Grounds

This EPO is issued on the following grounds:

1. To secure compliance with the general environmental duty, which pursuant to section 319 of the Act, requires that a person must not carry out any activity that causes, or is likely to cause, environmental harm unless the person takes all reasonable and practicable measures to prevent or minimise the harm.

The facts and circumstances forming the basis for these grounds are:

1. You are the holder of Environmental Authority EPML00557513 (the EA) for the project site.
2. The Mt Moss mine is located on Zig Zag Station near the old mining town of Ewan. The mine is approximately 105km west North West of Townsville and 40km west south west of Paluma.
3. Current infrastructure at the mine includes waste rock dumps, tailings storage facility, three open pits, haul roads, ROM pad, processing area, office and workshops, and various laydown and former stockpile areas. The mine site has been securely fenced to prevent vandalism and theft.
4. The following environmentally relevant activities (ERAs) stipulated under the *Environmental Protection Regulation 2008* are authorised to be undertaken at the project site:

- a. ERA 8(1)(c) more than 500m³ chemicals of class C1 or C2 combustible liquids under AS1940 or dangerous goods class 3;
- b. ERA 31(2)(b) processing, in a year, the following quantities of mineral products, other than coke – more than 10000t;
- c. ERA 33 crushing, grinding, milling or screening more than 5000t of material in a yr;
- d. ERA 56 receiving and storing regulated waste;
- e. ERA 63(1)(b)(i) operating sewage treatment works, other than no-release works, with a total daily peak design capacity of more than 100 but not more than 1500EP if treated effluent is discharged from the works to an infiltration trench through an irrigation scheme;

Schedule 2A

- f. ERA 9 a mining activity involving drilling, costeaning, pitting or carrying out geological surveys causing significant disturbance;
 - g. ERA 10 investigating the potential development of a mineral resource by large bulk sampling or constructing an exploratory shaft, adit or open pit; and
 - h. ERA 14 mining iron ore.
5. The Mt Moss mine site is currently in care and maintenance. Activities carried out at the site include activities to monitor and prevent environmental harm caused by the release of contaminants from the site waste rock dumps, tailings storage facility and other disturbance areas.
6. C&R Consulting submitted a report on your behalf titled: Mt Moss Mine Annual Environmental Monitoring Report 2015 (the report). The report was prepared in accordance with Condition (C5-3) of the EA which states:

Prepare an annual environmental report that provides details of the water monitoring program and waste rock and tailings sediment geochemical program by 31 October each year.

The report was dated 30 October 2015 and covered monitoring during the period 1 November 2014 to 31 October 2015.

Waste characterisation

7. The report included section 4.5 Waste Characterisation, which included details of waste rock disposal at the mine site. This included the following information from Page 37 of the report:

Waste products occur in several different forms. Tailings from the Ball Mill enter the TSF, DMS waste rock is directly transported to waste rock dumps, while the slimes from the Wet Plant are pumped to the settling ponds where once solid are then transported and positioned in the waste rock dump.

The XRF data will be supplied to the Administering Authority with the 2015 Annual Environmental Monitoring Report in electronic form as the dataset is extensive.

8. The report included details of sediment contamination on site and downstream of the mine in Zig Zag dam (SW8) and North Dam (SW1) which were sourced from the mining activity and are at risk of further offsite migration during stream flow events.
9. The department sent Mt Moss a letter titled: Mt Moss Annual Environmental Monitoring Report 2015 – Environmental Authority EPML00557513, dated 23 March 2016. This letter identified a number of non-

compliances with the conditions of the EA including non-compliance with Condition (F4-1), which requires the collection of waste characterisation data.

10. The letter identified that: The electronic dataset referred to in the 2015 Annual Environmental Monitoring Report has not been received by EHP. The letter further stated that the information must be provided to EHP and include waste rock characterisation and relative disposal locations in accordance with Condition (F4-1).
11. Mt Moss responded via letter dated 8 April 2016. This letter response included waste characterisation for the outputs of the Wet Plant, Ball Mill and Dry Magnetic Separator. This letter response did not include relative disposal locations within the waste rock dumps as required by Condition (F4-1) of the EA.
12. The monitoring data provided included hand-held XRF results from analysis of waste streams from the processing plant including wet plant slimes, dry magnetic separator (DMS) and ball mill. The maximum and mean of the data for key contaminants of concern are summarised in the table below. High and Low levels from the ANZECC 2000 Interim Sediment Quality Guideline Levels are also provided for reference.

Source	Mg/Kg	Copper	Zinc	Chromium	Nickel	Arsenic	Silver	Cadmium	Antimony	Lead
Wet Plant	Max	4,640	15,610	620	650	230	220	3,520	18360	5,880
	Mean	3,255	7,991	469	140	113	146	71.8	84.3	1,988
DMS	Max	3,150	7,260	510	460	170	170	40	30	1,910
	Mean	2,935	5,701	401	208	135	146	32.5	3.75	1,553
Ball Mill	Max	4,720	13,160	690	530	190	190	2,680	30	4,200
	Mean	2,848	6,276	441	122	87.7	139	83.9	0.75	1,382
ISQG	High	270	410	370	52	70	3.7	10	25	220
	Low	65	200	80	21	25	1	1.5	2	50

Key:

Contaminant level above ISQG High
Contaminant level above ISQG Low
Contaminant level below ISQG Low

The monitoring data summarised above indicates that these waste streams have contaminant levels that are above ISQG high levels for a number of contaminants of concern.

13. The department met with Mt Moss on 14 June 2016 and discussed the issue of waste characterisation and the requirement for the relative locations of contaminated wastes to be provided to EHP.
14. Mt Moss responded via letter dated 28 June 2016. This letter response indicated that the Ball Mill and Wet Plant material had been taken from the TSF and buried on the mine site backfilling Mt Moss Pit, mineralised waste from Willet's Pit has been stored immediately adjacent to and upstream of Willets Pit, and contaminated sediments from Zig Zag dam have been deposit on the plan site/laydown area.
15. The department conducted a site inspection on 1 July 2016. During the inspection officers of the department further identified that DMS product was distributed around the site on haul roads and hard stands as road base.

16. Following this inspection the department sent Mt Moss a letter dated 15 July 2016. In relation to waste characterisation the letter stated:

.. from the supplied information and from observations during the inspection, EHP has identified further areas of the mine site that may represent sources of contaminants for which characterisation information is inadequate.

Groundwater contamination

17. The report included section 4.4 Groundwater, which included details of groundwater monitoring results at the mine site. This included the following summarised groundwater monitoring data:

Table 23: Groundwater Contaminant Trigger Level Comparison

Parameter	MB1	MB2	MB3	MB5	MB7	MB8	MB2	MB3	MB7	MB8	MB1	MB2	MB3	MB5	MB7	MB8
	8/04/2016						8/08/2016				11/08/2016					
pH	6.69	7.81	7.47	6.76	7.31	6.79	7.16	7.73	7.87	7.55	7.57	7.14	7.73	7.5	7.78	7.54
Electrical Conductivity @ 25°C	825	652	1130	839	1120	1600	646	1130	1420	1560	812	662	1140	822	1380	1530
Sulfate as SO ₄ ²⁻ Turbidimetric	5	84	57	8	256	12	87	61	242	10	6	90	66	9	298	2
Arsenic	0.002	0.006	0.003	0.002	0.003	0.006	0.004	0.003	0.006	0.01	0.003	0.015	0.005	0.001	0.011	0.008
Cadmium	0.0007	0.0074	0.0099	0.0016	0.0004	0.001	0.0058	0.0084	0.0004	0.0006	0.0005	0.0027	0.0076	0.0007	0.00005	0.0015
Copper	0.036	0.13	0.235	0.011	0.037	0.062	0.036	0.17	0.034	0.054	0.161	0.043	0.078	0.084	0.004	0.05
Lead	0.057	0.122	0.067	0.004	0.005	0.009	0.017	0.152	0.006	0.064	0.209	0.025	0.031	0.005	0.008	0.158
Zinc	0.43	1.12	0.782	0.47	0.091	0.127	0.382	0.886	0.217	0.344	1.43	0.384	0.447	0.59	0.054	0.187

Table 24: Groundwater Contaminant Limits Comparison

Parameter	MB1	MB2	MB3	MB5	MB7	MB8	MB2	MB3	MB7	MB8	MB1	MB2	MB3	MB5	MB7	MB8
	8/04/2016						8/08/2016				11/08/2016					
pH	6.69	7.81	7.47	6.76	7.31	6.79	7.16	7.73	7.87	7.55	7.57	7.14	7.73	7.5	7.78	7.54
Electrical Conductivity @ 25°C	825	652	1130	839	1120	1600	646	1130	1420	1560	812	662	1140	822	1380	1530
Sulfate as SO ₄ ²⁻ Turbidimetric	5	84	57	8	256	12	87	61	242	10	6	90	66	9	298	2
Arsenic	0.002	0.006	0.003	0.002	0.003	0.006	0.004	0.003	0.006	0.01	0.003	0.015	0.005	0.001	0.011	0.008
Cadmium	0.0007	0.0074	0.0099	0.0016	0.0004	0.001	0.0058	0.0084	0.0004	0.0006	0.0005	0.0027	0.0076	0.0007	0.00005	0.0015
Copper	0.036	0.13	0.235	0.011	0.037	0.062	0.036	0.17	0.034	0.054	0.161	0.043	0.078	0.084	0.004	0.05
Lead	0.057	0.122	0.067	0.004	0.005	0.009	0.017	0.152	0.006	0.064	0.209	0.025	0.031	0.005	0.008	0.158
Zinc	0.43	1.12	0.782	0.47	0.091	0.127	0.382	0.886	0.217	0.344	1.43	0.384	0.447	0.59	0.054	0.187

The monitoring data summarised above indicates that groundwater at the site has lead contaminant levels that are above ANZECC 2000 levels set for stock water quality protection.

18. The department sent Mt Moss a letter titled: Mt Moss Annual Environmental Monitoring Report 2015 – Environmental Authority EPML00557513, dated 23 March 2016. This letter identified a number of non-compliances with the conditions of the EA including non-compliance with Condition (C6-3) which sets groundwater contaminant limits.
19. Mt Moss responded via letter dated 8 April 2016. This letter response stated on Page 5 that:

The 2015 Annual Environmental Monitoring Report states the difficulties comparing the groundwater contaminant limits against the dataset produced from the six groundwater monitoring bores. Without the presence of a nominated reference bore located upstream of the mining impact, data is compared to ANZECC Stockwater Drinking Guidelines (2000). MB7 and MB8 bores were only drilled in 2014 and therefore have a limited dataset. The ability to appropriately assess groundwater quality has also been impacted with a historically poor groundwater monitoring record, leaving a small historical database to identify trends and

alterations within the system. Consequently, Mt Moss have significantly improved groundwater monitoring over the past eighteen months and continue to build a dataset that will enable an increased understanding of the groundwater system/s surrounding the mine.

Given the limited information available on the groundwater system at Mt Moss such a restriction is compounded by the faulted and fractured nature of the surrounding geology increasing the difficulty in positioning a reference bore that will adequately represent the current groundwater monitoring network. The drilling, development and consequent monitoring of a reference bore would need to in place for a period of three years prior to new contaminant trigger levels and limits being applied to the surrounding groundwater monitoring network. This time period is consistent with quarterly monitoring. Mt Moss will further investigate the option to drill a background reference bore and commit to a strategy to provide a dataset whereby applicable contaminant limits can be produced. This strategy will be delivered to the administering authority on the 31 October 2016 with the 2016 Annual Environmental Monitoring Report.

**Corrected by C&R Consulting on 29 September 2016, should read: ANZECC (2000) Trigger Levels for:*

(a) Aquatic Ecosystem of Slightly-Moderately Disturbed Systems at the 95% Species Protection Level (Table 3.4.1) and

(b) Tropical Australia Upland Rivers (Tables 3.3.4 and 3.3.5)

20. The department met with Mt Moss on 14 June 2016 and discussed the issue of groundwater monitoring and contaminant levels and the need for more information to be provided to EHP.
21. Mt Moss responded via letter dated 28 June 2016. This letter response stated on Page 4 that:

Following further discussions with EHP on the 14 June 2016, Mt Moss will continue to monitor the current groundwater monitoring network on the quarterly basis in accordance with the EA. Whilst investigating a location and monitoring program for a suitable Reference Bore, Mt Moss proposes to alter the comparative analysis undertaken on groundwater quality incorporated in the Annual Environmental Monitoring Report. In addition to the comparative analysis of Contaminant Limits (EA Schedule C Table 9), long term individual monitoring borehole trends will be incorporated to determine levels of variation over the reporting period. This determination of trends for each monitoring bore aims to provide additional information to the administering authority and reassurances that no impact is occurring within the groundwater monitoring network as a result of mining activities.

An extended monitoring period of 24 months is anticipated as the length of time required to undertake the investigation as well as drilling, commissioning, monitoring and analysis of a new Reference Bore suitable for the proposed new contaminant limits. This time frame will allow Mt Moss to achieve 12 points of reference for comparison if monitoring is increased to a bi-monthly (2 months) basis.

22. The department conducted a site inspection on 1 July 2016. Following this inspection the department sent Mt Moss a letter dated 15 July 2016. In relation to groundwater monitoring, and the plans outlined in Mt Moss's letter dated 28 June above. The letter stated:

EHP considers that this action is necessary to determine the source, cause and extent of any contaminant release to groundwater and to separate any potential influence of localised mineralisation. EHP has considered this approach in light of ongoing non-compliance and considers that at the finalisation of the action the EA groundwater conditions may need to be

amended to reflect a new monitoring regime. There may also be other actions required to address any identified impacts.

EHP is therefore considering the need to formalise the investigation of this issue and will organise a meeting to discuss in due course.

23. EHP met with Mt Moss on 26 July 2016 and discussed the requirements to investigate the groundwater dynamics at the Mt Moss mine site to develop an effective groundwater monitoring program, and to further characterise waste stored on site, including the materials potential to mobilise and enter the receiving environment.

24. On 22 September 2016 you wrote to EHP and in relation to the passing of Michael Curtain stated that:

There is therefore no director or ultimate executive of Mt Moss at present. Therefore no one has the authority, or can be delegated the authority to bind the company to anything until probate has been obtained.

25. Therefore the department considers that the current management status at the site is unclear and on the basis of the risks identified above actions are required to secure compliance with the general environmental duty.

Summary

26. The above summarised monitoring data indicates that there are contaminants in surface soils/sediments at levels above the ISQG high levels and in groundwaters that are above the ANZECC guideline livestock drinking water quality levels.
27. The contaminant levels in surface sediments and soils are associated with mining activities at the Mt Moss Mine and the contaminants have potential to migrate southward from the mine toward Zig Zag dam, tributaries of Williams Creek and Running River.
28. The contaminant levels in groundwaters may be associated with mining activities at the Mt Moss Mine and the contaminants have potential to migrate southward from the mine toward Zig Zag dam, tributaries of Williams Creek and Running River.
29. The likely impacts, suspected source and extent of contamination needs to be investigated and understood to determine the most appropriate measures required to be implemented at the site to reduce the potential for environmental harm, including to inform rehabilitation of the site.
30. The groundwater dynamics and character, and location of appropriate reference bores, need to be investigated to develop an effective groundwater monitoring program for the Mt Moss mine site.
31. Care and maintenance activities are required to be operated to ensure compliance with the general environmental duty (GED) and to prevent the release of contaminants from the project site to the receiving environment.
32. Therefore the department considers that additional reasonable and practicable actions are required to prevent or minimise environmental harm in accordance with the general environmental duty.

B. Requirements

In accordance with this EPO, you are required to do the following:

1. Immediately upon receipt of this EPO, you must take all necessary actions to prevent any unauthorised release of contaminants from the project site to the receiving environment.
2. At all times you must:

- a. Ensure appropriately qualified and experienced personal are at the project site to ensure compliance with this EPO; and
 - b. Secure and maintain all infrastructure necessary to ensure compliance with the requirements of the EPO and that may be required for the ongoing mitigation of environmental risks and/or site rehabilitation is functional and operable; and
 - c. Maintain fuel supplies and access to power to ensure the ongoing operation of required measures, plant and equipment to ensure compliance with this EPO.
3. Undertake an investigation to assess the actual and potential impact of the contaminants released from the site to soils and sediments on the environmental values of the receiving environment. The investigation must:
 - a. Identify and define the environmental values of the receiving environment in accordance with ANZECC 2000 methodology.
 - b. Determine the spatial extent of soil and sediment contaminants across the mine.
 - c. Determine the mobility, bioavailability and toxicity of contaminants identified on mine site soil and sediments in accordance with the ANZECC 2000 methodology.
 - d. Identify the degree of attenuation of metals in the receiving environment.
 - e. Include a comparison and review of previous relevant studies undertaken.
 - f. Include identification of and comparison with the soil and sediment quality at relevant reference sites.
4. Assess the actual and potential impact of the contaminants released from the site to groundwater on the environmental values of the receiving environment. The investigation must:
 - a. Identify and define the environmental values of the receiving environment in accordance with ANZECC 2000 methodology.
 - b. Include the results of monthly groundwater monitoring from monitoring bores at the mine site.
 - c. Determine the source of groundwater contaminants detected in monitoring bores at the mine site.
 - d. Identify the degree of attenuation of metals in the receiving environment.
 - e. Include a comparison and review of previous relevant studies undertaken.
 - f. Include identification of and comparison with the groundwater quality at relevant reference sites.
 - g. Include identification of the location, types and geochemical description of groundwater aquifers present at the mine to determine the contribution to contaminant levels;
 - h. Include identification of the degree of hydraulic conductivity and transmissivity of the aquifers below the mine site;
 - i. Include measures for mitigation of groundwater impacts;
5. Include a report that details all relevant options for:
 - a. Management of current and potential future impacts from groundwater contaminants.
 - b. Remediation of point source emissions of groundwater contaminants.

6. Provide written quarterly updates to the administering authority on the progress of the investigations and findings to date and inclusive of all groundwater monitoring and analysis conducted during each period.
7. The environmental investigations detailed in requirements 3 and 4 above must be carried out, and the environmental reports prepared, by a suitably qualified person. Suitably qualified person means a person who has professional qualifications, training, skills or experience relevant to the nominated subject matter and can give authoritative assessment, advice and analysis on performance relating to the subject matter using the relevant protocols, standards, methods or literature.
8. A report addressing requirement 3 relating to soils and sediments must be submitted to the department on or before:
 - 1 August 2017
9. A report addressing requirements 4, 5 and 6 relating to groundwater must be submitted to the department on or before:
 - 1 November 2018

The Environmental report must be addressed to:

Department of Environment and Heritage Protection

PO Box 5391

Townsville QLD 4810

Or

ESTownsville@ehp.qld.gov.au

10. You must not, without the administering authority's prior written approval, materially alter or dispose of any infrastructure on the project site that is necessary to ensure compliance with the requirements of this EPO, and that may be required for the ongoing mitigation of environmental risks and/or rehabilitation.
11. Provide written monthly reports to the department detailing all actions taken to ensure compliance with the requirements of this EPO.
12. The requirements of this EPO remain in force until the EPO is revoked or otherwise concluded by the department.
13. The requirements of the EPO continue to apply to you despite environmental authority EPML0077557513 being cancelled, surrendered, suspended or otherwise brought to an end including by force of law.

C. Obligations

If you propose to dispose of the place or business to which the EPO relates, you **must** advise the buyer of the existence of this EPO.

If you cease to carry out the activity to which this EPO relates, you **must** give written notice of ceasing to carry out the activity to the department within 10 days of ceasing the activity.

Take notice:

- the requirements of this order take effect immediately upon service of the order;
- failure to comply with this order is an offence under the Act;

- this order remains in force until further notice from the administering authority.

D. Penalty

Failure to comply with an EPO is an offence.

- The maximum penalty for an individual for wilfully contravening an EPO is 6250 penalty units, totalling \$761,675 or five years imprisonment.
- The maximum penalty for a corporation for wilfully contravening an EPO is 31,250 penalty units, totalling \$3,809,375.
- The maximum penalty for an individual for contravening an EPO is 4500 penalty units, totalling \$548,550.
- The maximum penalty for a corporation for contravening an EPO is 22,500 penalty units, totalling \$2,742,750.

Failure to provide written notice to the buyer is an offence.

- The maximum penalty for an individual is 50 penalty units, totalling \$6,095.
- The maximum penalty for a corporation is 250 penalty units, totalling \$30,475.

Failure to provide written notice within 10 business days of ceasing the activity to the department is an offence.

- The maximum penalty for an individual is 50 penalty units, totalling \$6,095.
- The maximum penalty for a corporation is 250 penalty units, totalling \$30,745.

Section 3 of the Penalties and Sentences Regulation 2015 prescribes the monetary value of a penalty unit.

E. Reviews and appeals

The provisions regarding review of decisions and appeals may be found in sections 519 to 539 of the Act.

A person who is dissatisfied with certain decisions of the department, may be able to apply to have the department review that original decision.

Generally, a request to have a decision reviewed must be made:

- within 10 business days of the decision being notified to the person;
- be supported by enough information to enable the department to decide the application for review; and
- be made using the application for review of an original decision form ([ESR/2015/1573](#)).¹

Where an application has been made for a decision to be reviewed, the applicant may also apply to the relevant court for a stay of the decision to secure the effectiveness of the review.

Once the original decision has been reviewed, a person who is dissatisfied with the review decision may be able to appeal against that decision to the relevant court within 22 business days after receiving notice of the review decision.

A person whose interests are or would be adversely affected by a decision of the department may also be able to request a statement of reasons for a decision or a statutory order review under the *Judicial Review Act 1991*.

¹ This is the publication number. The publication number can be used as a search term to find the latest version of a publication at <www.ehp.qld.gov.au>.

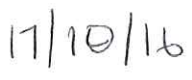
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For further information about reviews and appeals see the information sheet - internal review and appeal to the Planning and Environment Court ([ESR/2015/1572](#)). You may have other legal rights or obligations and should seek your own legal advice.

Should you have any queries in relation to the notice, please contact Andrew Wallace on telephone number (07) 4722 5366.



Signature



Date

Rebecca Booker
A/Manager(Compliance)
Delegate of the Chief Executive
Department of Environment and Heritage Protection
Environmental Protection Act 1994

Enquiries:

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