

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.

CopperChem Ltd (ACN: 130 641 691)
Level 2, 160 Pitt Street
SYDNEY NSW 2000

Your reference: EPML00876013

Our reference: STAT1096

Date: 2 December 2016

Dear Sir/Madam

Take notice: that under the *Environmental Protection Act 1994* (the Act) this environmental protection order (EPO) is issued to CopperChem 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 the activities of CopperChem Ltd at Great Australia Operation on land described as mining lease 90065 (ML90065) and 90108 (ML90108) situated at Round Oak Road, located approximately 2 kilometres south of Cloncurry (GAO).

A. Grounds

This EPO is issued on the following grounds:

- To secure compliance with condition (C1) of environmental authority EPML00876013 which states:
Contaminants that will, or have the potential to cause environmental harm, must not be released directly or indirectly to any waters except as permitted under the conditions of this environmental authority.
- To secure compliance with condition (C41) of environmental authority EPML00876013 which states:
Monitoring of groundwater from compliance bores identified in Schedule C – Table C10 (Groundwater Monitoring Locations and Frequency), must not exceed any of the contaminant limits defined in Schedule C – Table C11 (Groundwater Contaminant and Trigger Limits).
- To secure compliance with the general environmental duty, which pursuant to section 319 of the *Environmental Protection Act 1994* specifies that a person must not carry out an activity that causes, or is likely to cause, environmental harm unless that person takes all reasonable and practicable measures to prevent or minimise the harm.

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

Client History

- Environmental Authority EPML00876013 (EA) was issued by the administering authority in respect to carrying out mining activities on mining leases 2751, 6710, 7510, 90065 and 90108.
- CopperChem Limited (CopperChem) is the holder of the EA and carries out mining activities at the Great Australia Operation (GAO) on mining leases 90065 and 90108.
- Mining activities conducted on the site by CopperChem include the operation of a copper oxide and copper sulphide ore processing plant, tailings storage facility (TSF), regulated structures, active and historic heap leach pads, and channels lined with high density polyethylene for storage and conveyance of process waters.
- The GAO has been in care and maintenance since August 2015. Copper sulphate and copper concentrate is produced by the mining activities undertaken at the site. The geochemistry of the waste products generated by the mineral processing undertaken on the site includes sulphate, cobalt, copper and zinc.

Relevant Compliance History

- On 16 May 2014, the Department of Environment and Heritage Protection (the department) issued CopperChem two penalty infringement notices pursuant to section 430(3) of the EP Act for offences of contravening then conditions (C40) and (C46) of the EA. These conditions prescribed contaminant release quality limits for groundwater (C40) and prohibited the release of contaminants to areas outside the lined area of the heap leach pads (C46).
- On 12 June 2014, the department issued CopperChem a notice to conduct or commission an environmental evaluation (STAT877) pursuant to section 326B of the EP Act to address the groundwater contamination issues identified at the GAO.
- The notice required Copperchem to:
 - assess the actual and potential impact of the contaminants released from the site as a result of the mining activities to groundwater on the environmental values of the receiving environment;
 - identify the reason for discharge and distribution of contaminants, including but not limited to sulfate from the site in the groundwaters in the receiving environment;
 - undertake an assessment of the site water management system and infrastructure in place at the site as it relates to groundwater quality;
 - include a report that details all relevant options and detailed remedial works required to address the cause of contamination and impacts on the receiving environment.
- In reviewing the environmental reports the department identified a number of deficiencies and on 27 October 2014 requested further information via a '*Notice – Request for information – Great Australia Mine*'. Key requirements of the Notice included:
 - further information to evaluate the extent to which the current water management system is effective in protecting the groundwater quality from impacts of mining activities;
 - a report outlining remediation options to ensure protection of the environmental values of the receiving environment, including those that were not previously identified.
- In response to the Notice, on 14 May 2015 Copperchem submitted a report titled '*Notice: Request for Information Great Australia Mine*' (Reference: eDoc# 4897287). The report states "as a result of the

general lack of groundwater reference data at GAM, specifically "baseline" data where it is recorded that groundwater samples were collected and analysed as per best industry practice, CopperChem cannot accurately define if mine-site operations are causing elevated concentrations of analytes in groundwater". The department also determined that as the cause of the contamination had still not been adequately assessed or identified, remediation options to address any potential contamination to groundwater had still not been proposed. The report stated "based on the information presented in the RFI report, and in accordance with the Regulatory Approved EMP (Amended 2012), CopperChem will continue to apply Control Strategies aimed at protecting groundwater resources and EVs."

- It is reasonable to expect that addressing these requirements would have allowed CopperChem and the department to have an understanding of the issues resulting in the groundwater contamination and remedial options to address this ongoing issue.

Groundwater contamination

- Groundwater monitoring bores at GAO have been installed to determine whether the mining activities undertaken at the site are having any impact on the groundwater. The 'Annual Groundwater Report 2016' group the groundwater bores by location:
 - the general GAO groundwater monitoring bores used to monitor groundwater conditions across the mine site (designated as OB, OB2, etc.);
 - the TSF groundwater monitoring bores used to specifically monitor groundwater conditions around the TSF (designated as TSF-OB1, TSF-OB2, etc.);
 - the Paddock Lode groundwater monitoring bores used to specifically monitor groundwater conditions around the Paddock Lode open cut pit (designated as PL-OB1, PL-OB2, etc.);
 - the Orphan Shear groundwater monitoring bores used to specifically monitor groundwater conditions around the Orphan Shear open cut pit (designated as OS-OB1, OS-OB2, etc.);
 - the reference groundwater monitoring bores (designated as OS-OB 1a and PL-OB3).
- In accordance with Schedule C - Condition (C39) of the EA, CopperChem is required to monitor the quality and level of water in groundwater bores stipulated in Schedule C – Table 10 (Groundwater Monitoring Locations and Frequency) of the EA.
- In accordance with Schedule C - Condition (C45) of the EA, CopperChem is required to monitor the quality of groundwater in leak detection bores stipulated in Schedule C – Table 12 (Leak Detection Devices) of the EA.
- In accordance with Schedule C – Conditions C41 and C46, the quality of water detected in monitoring locations stipulated in Schedule C – Table 10 (Groundwater Monitoring Locations and Frequency) and Schedule C – Table 12 (Leak Detection Devices) of the EA must not exceed the contaminant and trigger limits specified in Schedule C – Table C11 (Groundwater Contaminant and Trigger Limits) of the EA.
- Between December 2015 and September 2016, CopperChem have notified the department of exceedances of the EA Groundwater Contaminant and Trigger Limits. Over this period, which includes a dry and wet season, the sulphate contaminant limit has been exceeded on six occasions, at both compliance and leak detection monitoring bores, and only one occasion at reference monitoring bore (PLOB3).
- The data could not be correlated against the reference monitoring bore (OS-OB1a) during this period, as the bore was not accessible for sampling as reported in the 'Annual Groundwater Report 2016'.

- On 22 May 2015 CopperChem notified the department of a release of approximately 1,000-2,000 litres of raffinate solution from beneath the liner of the raffinate pond due to a hole being worn in the liner from concentrated acid flow caused by a faulty valve. At the time the release was discovered, CopperChem inserted a pump under the liner to retrieve any solution and pump back to the raffinate pond.
- On 18 March 2015 CopperChem notified the department of a release of approximately 1,000 litres of copper crystal solution from the solvent extraction (SX) plant outside of the bunded area. The incident did not result in a release of contaminants to receiving waters, and it was reported that all contaminated soils were excavated and placed on the heap leach pad. Despite the relatively minor nature of this incident, the site has a history of many similar incidents including:
 - On 29 September 2014, 1,000 litres of copper crystal solution leaked into soils outside of the bunded area of the SX plant.
 - On 5 May 2014, 20-30 litres of sulphuric acid leaked into soils as a result of a break in the raffinate pipe.
 - On 7 January 2014, CopperChem notified the department that contaminated soils had been found under the 'W drain' (which transfers pregnant liquor from the heap leach pad to the pregnant liquor ponds) whilst repairs were being undertaken.
 - On 7 December 2013, CopperChem notified the department of a spill of raffinate solution due to a pipework failure.
 - On 4 December 2013, CopperChem notified the department of a release of TSF return water from a burst pipe. This water released to land but not to receiving waters.
 - On 20 November 2013, CopperChem notified the department that contaminated soils had been found under the W drain whilst repairs were being undertaken.
- It is the opinion of the department, that the frequency and nature of the incidents is likely due to an ongoing failure of infrastructure at the site.
- The department considers that these incidents have the potential to cause environmental harm and has the potential to contribute to groundwater contamination at the site.

Contaminant source, pathway and remediation

- It is reported in the '*Annual Groundwater Report 2016*' that the groundwater monitoring bores reported to exceed the EA groundwater contaminant limits are generally located down hydraulic gradient of the processing operations and TSF.
- It is reported in the '*Annual Groundwater Report 2016*' that sulphate and EC concentrations in groundwater bores down hydraulic gradient of the TSF have significantly reduced over the past 24 months, correlating to the fact that the TSF has not been receiving any operational inputs.
- Historic groundwater monitoring data for the heap leach area shows that the leak detection bores were generally dry between April 2012 and Nov 2013, but from May 2013 onwards contaminants were detected. The sulphate concentrations detected in the leak detection bores was significantly greater than the concentrations detected in the general groundwater monitoring bores.
- On 17 June 2013 CopperChem had notified the department that seepage had been identified in the leak detection devices around the PLS Ponds and HLP Cell Bore 1, and that the geotechnical liner associated with this infrastructure was being repaired as a result of the seepage.

- The environmental evaluation required CopperChem to identify the reason for discharge and distribution of contaminants, including but not limited to sulphate, from the GAO in the groundwaters in the receiving environment. CopperChem did not adequately address this requirement in that the TSF, heap leach pads and PLS ponds were identified as possible sources of contaminants to groundwater, but it was not identified to what extent these features contributed to groundwater contamination, or the cause of their contribution to groundwater contamination.
- The request for information notice required that CopperChem provide an assessment of all potential contaminants to groundwater rather than focusing on sulphate alone. In the *'Notice – Request for information – Great Australia Mine'* provided on 14 May 2015, CopperChem provided some discussion around the elevated concentrations of copper in groundwater across the site but did not investigate the elevated concentrations of copper and other contaminants in groundwater in the immediate vicinity of impacted areas such as the heap leach pads and pregnant leach ponds. For example, the pregnant leach pond detection bores (PLS Pond East and PLS Pond West) have shown highly elevated levels of various metals and metalloids (which are above EA contaminant limits) but there is no investigation or discussion into this seemingly apparent release of contaminants to groundwaters.
- As the cause of the contamination has still not been adequately assessed or by CopperChem, remediation options to address any potential contamination of groundwater have still not been proposed.

Potential to cause environmental harm

- There is insufficient reference groundwater quality data available for analytical purposes, as the reference bores (OS-OB1 and PL-OB3) were installed in September 2014 and the recent monitoring issues detailed in the *'Annual Groundwater Report 2016'*. CopperChem acknowledge in their report *'Notice – Request for information – Great Australia Mine'* that *"as a result of the general lack of groundwater reference data at GAO, specifically 'baseline' data where it is recorded that groundwater samples were collected and analysed as per best industry practice, CopperChem cannot accurately define if mine-site operations are causing elevated concentrations of analytes in groundwater."*
- The release limit for sulphate is equivalent to the guideline value specified in section 4.3 of the *Australian and New Zealand Guidelines for Fresh and Marine Water Quality 2000* (ANZECC & ARMCANZ (2000)) for livestock drinking water quality guideline. The limit is appropriate as livestock drinking water is an identified environmental value for the groundwater in the general Cloncurry area. Groundwater may also express to surface waters such as the Coppermine Creek which runs adjacent to the site and is also utilised for livestock watering purposes.
- It is stated in ANZECC & ARMCANZ (2000) that adverse effects may occur to the health of stock at sulphate concentrations between 1,000 and 2,000 mg/L, and chronic or acute health problems at concentrations above 2,000 mg/L.
- The sulphate concentration detected at a number of monitoring bores is significantly greater than the ANZECC & ARMCANZ (2000) livestock water quality guideline value and is therefore likely to cause environmental harm if used for livestock watering and/or expresses to surface waters.

Summary

- The contemporary exceedances highlight an ongoing failure of infrastructure at the site to adequately contain contaminants. The frequency of the exceedances, information and findings presented in the environmental reports and *'2016 Annual Groundwater Report'* indicate that the mining infrastructure is the likely source of groundwater contamination at GAO.
- The department is satisfied that mining activities at the site is likely to cause environmental harm.

B. Requirements

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

Requirement 1.

By 17 March 2017 you must submit to the department a report that assesses the **site water management system and infrastructure** at the site in relation to impacts to groundwater quality. The report must include but not be limited to:

- a. Identification of the source of all contaminants that have potential to cause harm resulting from the mining activities. Any contaminants that have exceeded any groundwater EA limits in the past 5 years (as a minimum) must be included;
- b. Identification of the pathways these contaminants are reporting to the receiving environment;
- c. Assessment of the impacts of these contaminants on the receiving environments environmental values, with consideration to industry standards and guidelines (e.g. ANZECC & ARMCANZ 2000, Queensland Water Quality Guidelines);
- d. Identification of practical measures to cease, prevent or contain the release of contaminants to the receiving environment in exceedence of the EA limits;
- e. Details of existing water management systems and infrastructure for mitigation of groundwater impacts;
- f. The effectiveness of existing water management systems and infrastructure to protect groundwater quality from impacts of mining activities undertaken at the site;
- g. An Action Plan for addressing any issues identified from the assessment of the site water management system and infrastructure at the site. The Action Plan must include, but not necessarily be limited to, the following:
 - i. detail all relevant options and remedial works required to address the cause of the contamination and impacts on the receiving environment;
 - ii. justification for the nominated option/s to address the cause of contamination and impacts on the receiving environment;
 - iii. timeframes and dates (including completion of each action), not extending beyond 31 October 2017, for implementing the nominated option/s to address the cause of contamination and impacts on the receiving environment.

Requirement 2.

The assessment and report required by Requirement 1 of this EPO must be undertaken by an **appropriately qualified person**.

Requirement 3.

The nominated option/s referred to in Requirement (1)(g)(iii), must be completed within the timeframes stated in the Action Plan.

Requirement 4.

By 7 November 2017 you must provide the administering authority certification by an **appropriately qualified person** that the nominated option/s referred to in Requirement (1)(g)(iii) have been successfully implemented.

Requirement 5.

You are required to provide a written report to the department detailing all actions taken to ensure compliance with the requirements of this EPO on the following dates:

- 27 January 2017;
- 16 June 2017;
- 16 September 2017.

C. Definitions

“appropriately qualified person” means an independent third party/person who has professional qualifications, training, skills and experience relevant to the nominated subject matter and can give authoritative assessment, advice and analysis on performance relative to the subject matter using the relevant protocols, standards, methods or literature.

“site water management system and infrastructure” means all dams, ponds, containment structures, drains, waste rock dumps, voids, tailings storage facility, ore stockpiles, chemical storages, pipes, and all related infrastructure.

D. Obligations

The requirements of this EPO remain in force until the EPO is revoked or otherwise concluded by the department.

The requirements of the EPO continue to apply to you despite environmental authority EPML00876013 being cancelled, surrendered, suspended or otherwise brought to an end including by force of law.

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.

E. 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 \$761,875 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 \$30,475.

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

F. 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 (EM709).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*.

For further information about reviews and appeals see the information sheet – ‘*Internal review and appeals*’ (ESR/2015/1742). 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 Arun Baskaran, Senior Environmental Officer on telephone number (07) 4222 5318.

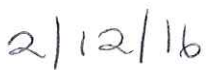
¹ This is the publication number. The publication number can be used as a search term to find the latest version of a publication at <www.ehp.qld.gov.au>.

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Signature

Rebecca Booker
Delegate of the Chief Executive
Department of
Environment and Heritage Protection
Environmental Protection Act 1994



Date

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