



Environmental Protection Order (Varied)

Section 360 Environmental Protection Act 1994

This Environmental Protection Order is issued in accordance with section 360 of the Environmental Protection Act 1994.

Under the provisions of the *Environmental Protection Act 1994* an Environmental Protection Order is issued:

To: CopperCo Limited (ACN 004434904)
Attention Messrs Gary Peter Doran and David John Frank Lombe
Receiver Managers for CopperCo Limited
Deloitte Touche Tohmatsu

of: Woodside Plaza Level 14
240 St Georges Terrace
PERTH WA 6000

TAKE NOTICE that under the provisions of the *Environmental Protection Act 1994*, an Environmental Protection Order is issued to you by the administering authority. The administering authority is the Chief Executive of the Environmental Protection Agency (referred to below as the EPA).

The Environmental Protection Order (STAT 443) is issued in respect of the activities of CopperCo Limited and related entities conducted under Environmental Authority MIN100401006 (the EA) at premises/place on land described as ML5426, ML5435, ML5446, ML5447, ML5448, ML5474, ML5476, ML5478, ML90168, ML90169, ML90170, ML90178, ML901079, ML90184 (the mine), which is located approximately 100 kilometres north of Mount Isa to secure compliance by the person with the general environmental duty under section 319 of the *Environmental Protection Act 1994*.

A. Grounds

The Environmental Protection Order is issued on the following grounds:-

1. To secure compliance with the general environmental duty, which pursuant to section 319 of the *Environmental Protection Act 1994* ('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 grounds are:

2. Lady Annie operations carries out mining activities on the mine.
3. During normal operating conditions, the mining activities cause, or are likely to cause, environmental harm. The EA authorises the mining activity and limits the actual and potential environmental harm that can lawfully be caused.
4. Rainfall records indicate that between 1 January 2009 and 17 February 2009, approximately 1000 mm of rain has fallen on, or in the vicinity of, the mine.

3. During normal operating conditions, the mining activities cause, or are likely to cause, environmental harm. The EA authorises the mining activity and limits the actual and potential environmental harm that can lawfully be caused.
4. Rainfall records indicate that between 1 January 2009 and 17 February 2009, approximately 1000 mm of rain has fallen on, or in the vicinity of, the mine.
5. On 30 January 2009 and 7 February 2009 the EPA was advised by Jason Alexander of Lady Annie that discharges had occurred from the mine into Saga Creek. Saga Creek flows into Inca Creek, and then the Buckley River.
6. The EPA took water samples from Inca Creek on 23 February 2009. Insitu analysis of the water samples indicates that the water had low pH levels.
7. On 30 January 2009, Lady Annie provided the EPA with data relating to discharge water over the pond spillways. That data indicated that:
 - a. the water in Stormwater Pond 2 contained 0.04 g/l copper and had a pH of 4.26;
 - b. the water in the Stormwater Pond 2 spillway contained 0.22 g/l copper and had a pH of 2.51.
 - c. The depth of the water over the spillways was approximately 200mm, flow was approximately 12.1 cubic metres per second.
 - d. the water at monitoring point MKDSO4 had a pH of 3.45 and Electrical Conductivity of 862 μ S/cm.
8. On 21 February 2009, an owner of land located 20 kilometres downstream from the mine advised the EPA of poor water quality in Inca Creek.
9. Authorised Persons took water samples from Saga and Inca Creeks at locations downstream of the mine, and carried out insitu water quality monitoring.
10. The insitu water quality monitoring indicated that the water was acidic with pH ranging from 3.3 to 4.7.
11. EPA Officers also made observations that the water in Saga and Inca Creek was clear, with an obvious green tinge, and had a strong and unusual odour. The water in Saga and Inca Creeks is usually turbid.
12. EPA Officers observed dead fish (species included spangled perch and catfish) and a dead crab. They collected six (6) dead fish for investigation/ post mortem.
13. On 25 February 2009, EPA officers took water samples from Saga and Inca Creeks and carried out insitu water quality monitoring in the waters from the mine and downstream for a distance of approximately 30 kilometres.
14. Insitu testing indicated that the water in Inca Creek at the point closest to the mine was acidic with a pH of 2.2.
15. Insitu testing conducted at the downstream sites indicated that the pH in the water gradually increased as distance from the mine increased. Insitu testing at the monitoring point 30 kilometres from the mine indicated pH at 5.7.
16. On 5 January 2009, Lady Annie Ltd advised the EPA of subsidence in the wall of Stormwater Pond 2 on the mine.

17. On 17 February 2009, EPA Officers attended the mine and inspected the wall of Stormwater Pond 2. They observed waters discharging from the pond to Inca Creek. The subsidence was observed to be significant, and greatly reduced the capacity of the pond to contain hazardous material as intended.
18. The information provided to the EPA and investigations undertaken by the EPA indicate that:
 - a. A release of a large volume of water with a low pH has been discharged from Stormwater Pond 2 on the mine to Inca Creek; and
 - b. Environmental harm has been caused.
19. Works are required to be carried out on the mine to prevent or minimise the risk of further discharge of water to Inca Creek.

B. Requirements

Pursuant to this Environmental Protection Order you are required to:

1. From the date of receipt of this Environmental Protection Order prevent any discharge from Stormwater Pond 2 off the mining lease.
2. As soon as possible, and by no later than 5.00pm (AEST) on Monday 9 March 2009, undertake works to ensure that all stormwater which is generated outside the process and stormwater system on the premises is diverted around and away from the process and stormwater system.
3. As soon as possible and by no later than 5.00 pm (AEST) on Monday 9 March 2009, take action to commence reducing the level of waters contained in all processing and stormwater ponds on the premises to ensure that the storage capacity of the water storage infrastructure has the capacity to capture and retain on site the likely rainfall events for the remainder of the wet season.
4. Complete actions commenced under paragraph 3 as soon as practicable.
5. As soon as possible and by no later than 5.00pm (AEST) on 20 March 2009 ensure that there is the ability on the premises to treat contaminated waters contained within the process and stormwater pond system to meet as a minimum the water quality limits as contained in Schedule C Table 5 of the EA (MIN100401006).
6. By no later than 5.00 pm (AEST) on Friday 13 March 2009, provide a report to the administering authority outlining the measures taken and/ or proposed to be taken in order to comply with the requirements of this Environmental Protection Order.
7. By no later than 5.00 pm on Friday 20 March 2009, provide the administering authority with an interim report detailing a proposed plan of works (tasks and timeframes) to repair or decommission Stormwater Pond 2.
8. By no later than 5.00 pm on Thursday 2 April 2009, provide the administering authority with a final plan detailing a proposed schedule of works (tasks and timeframes) to repair or decommission Stormwater Pond 2.

And also **TAKE NOTICE** that:

1. The requirements of this Order take effect immediately upon service of the Order.
2. Failure to comply with this Environmental Protection Order is an offence under the *Environmental Protection Act 1994 (Qld)*.

3. This Order remains in force until further notice from the administering authority.
4. This Order replaces the Environmental Protection Order dated 26 February 2009.
5. You may apply for a review of or appeal against the decision to issue the Environmental Protection Order within ten business days of the service of the order. Information regarding the reviews and appeals are attached to this order.

Obligations

Should you propose to dispose of the place or business to which this Environmental Protection Order relates, you must advise the buyer of the existence of this Environmental Protection Order (Section 362).

s.49 - Signature

(Signed)

6/3/09
(Date)

Rob Lawrence

Delegate of Administering Authority
(Environmental Protection Act 1994)

RTI/DL RELEASE - EHP

EXTRACTS FROM THE ACT REGARDING REVIEWS AND APPEALS

Procedure for review

521.(1) A dissatisfied person may apply for a review of an original decision.

- (2) The application must-
 - (a) be made in the approved form to the administering authority within-
 - (i) 10 business days after the day on which the person receives notice of the original decision or the administering authority is taken to have made the decision (the "**review date**"); or
 - (ii) the longer period the authority in special circumstances allows; and
 - (b) be supported by enough information to enable the authority to decide the application.
- (3) On or before making the application, the applicant must send the following documents to the other persons who were given notice of the original decision-
 - (a) notice of the application (the "**review notice**"); and
 - (b) a copy of the application and supporting documents.
- (4) The review notice must inform the recipient that submission on the application may be made to the administering authority within 5 business days after the application is made to the authority.
- (5) If the administering authority is satisfied the applicant has complied with subsection (2) and (3), the authority must within 10 business days after receiving the application -
 - (a) review the original decision; and
 - (b) consider any submissions properly made by a recipient of the review notice; and
 - (c) make a decision (the "**review decision**") to-
 - (i) confirm or revoke the original decision; or
 - (ii) vary the original decision in a way the administering authority considers appropriate.
- (6) The application does not stay the original decision.
- (7) The application must not be dealt with by-
 - (a) the person who made the original decision; or
 - (b) a person in a less senior office than the person who made the original decision.
- (8) Within 10 business days after making the review decision, the administering authority must give written notice of the decision to the applicant and persons who were given notice of the original decision.
- (9) The notice must-
 - (a) include the reasons for the review decision; and
 - (b) inform the person of their right of appeal against the decision.
- (10) If the administering authority does not comply with subsection (5) or (8) the authority is taken to have made a decision confirming the original decision.
- (11) Subsection (7) applies despite the *Acts Interpretation Act 1954, section 27A*.¹¹²
- (12) This section does not apply to an original decision made by-
 - (a) for a matter, the administration and enforcement of which has been devolved to a local government - the local government itself or the chief executive officer of the local government personally; or
 - (b) for another matter the chief executive personally.

Stay of operation of original decisions

522

- (1) If an application is made for review of an original decision, the applicant may immediately apply for a stay of the decision to-
 - (a) for an original decision mentioned in schedule 1, part 1 – the tribunal; or
 - (b) for an original decision mentioned in schedule 1, part 2 – the Court.
- (2) The tribunal or the Court may stay the decision to secure the effectiveness of the review and any later appeal to the tribunal or the Court.
- (3) A stay may be given on conditions the tribunal or the Court considers appropriate and has effect for the period stated by the tribunal or the Court.
- (4) The period of a stay must not extend past the time when the administering authority reviews the decision and any later period the tribunal or the Court allows the applicant to enable the applicant to appeal against the review decision.

Who may appeal

- 531**
- (1) A dissatisfied person who is dissatisfied with a review decision, other than a review decision to which subdivision 1 applies, may appeal against the decision to the Court.
 - (2) The chief executive may appeal against another administering authority 's decision (whether an original or review decision) to the Court.
 - (3) A dissatisfied person who is dissatisfied with an original decision to which section 521 does not apply may appeal against the decision to the Court.

RTI/DL RELEASE - EHP

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.....
(Signed)

.....
(Date)

Rob Lawrence
Delegate of Administering Authority
(*Environmental Protection Act 1994*)

RTI/DL RELEASE - EHP

EXTRACTS FROM THE ACT REGARDING REVIEWS AND APPEALS

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Who may appeal

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- (2) The chief executive may appeal against another administering authority 's decision (whether an original or review decision) to the Court.
- (3) A dissatisfied person who is dissatisfied with an original decision to which section 521 does not apply may appeal against the decision to the Court.

From: Rob Lawrence
Sent: Monday, 30 March 2009 11:06 AM
To: gdoran@deloitte.com.au; Fainton, Brian
Cc: Crystal Whittaker; Hollie Wakefield
Subject: Letter
Attachments: Letter_Deloitte re EPO progress report 270309.pdf

Dear Gary

Please find attached a letter for your information

Regards

Rob

Rob Lawrence

*Director,
Department of the Environment and Resource Management
Level 2, 5B Sheridan St,
Cairns. QLD. 4870.*

Ph 07 40466638

Fax 07 404666771

Email: rob.lawrence@epa.qld.gov.au



**Queensland
Government**

Enquiries Rob Lawrence
Telephone (07) 40466638
Your reference
Our reference ISA658

Environmental Protection Agency

Incorporating the
Queensland Parks and Wildlife Service

27 March 2009

CopperCo Limited (ACN 004434904)
Attention Messrs Gary Peter Doran and David John Frank Lombe
Receiver Managers for CopperCo Limited
Deloitte Touche Tohmatsu
Woodside Plaza Level 14
240 St Georges Terrace
PERTH WA 6000

Dear Sirs

RE: Environmental Protection Order (Varied) issued on 6 March 2009 to CopperCo Limited (ACN 00443494)

I refer to correspondence dated 13 March 2009 and 20 March 2009 received from Parsons Brinckerhoff Australia Pty Ltd, who are acting for CopperCo Limited in relation to the abovementioned Environmental Protection Order (EPO).

I note the information contained in those documents outlining the actions taken by your company to date to comply with the requirements of the EPO. I also note, that the report dated 13 March 2009 identifies further works are needed to ensure the integrity of stormwater pond spillways leading to Saga Creek. I trust that CopperCo Limited will not only implement those additional works in a timely manner but will also maintain them.

With regards to Requirement seven (7) of the EPO and the proposed works outlined in the document dated 20 March 2009, the Department is reviewing the proposed works schedule and will provide further comment shortly. It is noted however that in order to repair the liner on stormwater pond two (2) that the pond will have to be dewatered. I understand to do that, stormwater pond one (1) is also likely to have to be dewatered. Given the current contamination downstream in Saga and Inca Creeks any further discharge from the mine irrespective of the water quality is almost certain to cause further environmental harm and is therefore not acceptable to this Department.

As such, your works schedule will need to identify how the significant volumes of contaminated water contained within these stormwater ponds can be removed without discharge to Saga and Inca Creeks.

Should you have any queries in relation to this correspondence, please contact me on telephone (07) 4046 6638.

Yours Sincerely

s.49 - Signature

Rob Lawrence

Director

Department of the Environment and Resource Management

Far Northern Region



**Queensland
Government**

Enquiries Rob Lawrence
Telephone (07) 40466638
Your reference
Our reference ISA658

Environmental Protection Agency

Incorporating the
Queensland Parks and Wildlife Service

13 March 2009

CopperCo Limited (ACN 004434904)
Attention Messrs Gary Peter Doran and David John Frank Lombe
Receiver Managers for CopperCo Limited
Deloitte Touche Tohmatsu
Woodside Plaza Level 14
240 St Georges Terrace, Perth
WA 6000

Dear Sirs

RE: Contamination of Saga and Inca Creeks from the Lady Annie Mine

I refer to the discharge of contaminated water offsite from the Lady Annie mine in January and February 2009, and the impacts of that discharge in Saga and Inca Creeks downstream of the mine.

On 3 March 2009 I provided you by email preliminary results obtained from sampling carried out by the EPA downstream of the mine. Attached for your information are the complete sample results which have now been received from the laboratory.

The EPA has sought professional independent advice regarding the incident that has occurred at the mine, assessment of impacts downstream creeks and possible cleanup options. In doing so the EPA has incurred significant costs and intends to realise a portion of the Financial Assurance currently held for this project to recover those costs. Please find attached a notice proposing this action as required under section 367 of the *Environmental Protection Act 1994 (Qld)*.

Taking into account the results of sampling downstream and the assessment of the impact that has occurred it is considered unlikely that the creek system will recover without intervention. The area of impact is very extensive and apart from the environmental impacts the contamination has resulted in isolation of important stock watering points over approximately a 30 km stretch of the creek system.

To date it would appear that no action has been taken by you to address these impacts. The EPA considers that urgent action is required to return the impacted watercourses to an acceptable environmental standard. In order to achieve this consideration has been given to imposing conditions upon you through a statutory notice. Please find attached a draft version

of the conditions and actions that will be contained in that notice.

I would like to provide you with an opportunity to review the draft requirements and timeframes and discuss them with the EPA prior to issue of the notice. Given the urgency of the situation I am available after 2pm on Tuesday 17 March 2009 to meet either in person, in the EPA Cairns office, or by teleconference.

Should you have any queries in relation to this correspondence, please contact me on telephone (07) 4046 6638.

Yours Sincerely

s.49 - Signature

Rob Lawrence
Director
Regional Services
Environmental Services



**Queensland
Government**

Enquiries Rob Lawrence
Telephone (07) 4046 6638
Your reference
Our reference

Environmental Protection Agency

Incorporating the
Queensland Parks and Wildlife Service

17 April 2009

Matthew Jeffs and Brian Fainton
Parsons Brinckerhoff Australia Pty Ltd
GPO Box 2907
BRISBANE QLD 4001

Lady Annie Operations Pty Ltd
Attention Messrs Gary Peter Doran and David John Frank Lombe
Receiver Managers for Lady Annie Operations Pty Ltd
Deloitte Touche Tohmatsu
Woodside Plaza Level 14
240 St Georges Terrace
PERTH WA 6000

Dear Sirs

I refer to your letter dated 9 April 2009 regarding the Environmental Protection Order (EPO) dated 30 March 2009.

Officers from the Department of Environment and Resource Management (DERM) have reviewed the report regarding measures taken and/ or proposed to be taken in order to comply with the requirements of the EPO. In reviewing the proposal DERM have sought comment and advice from the Primary Industries and Fisheries (PI&F) and Mines and Energy (M&E) sections of the Department of Employment, Economic Development and Innovation (DEEDI). The following comments are offered on the proposal:

Item 1

Progress and suggested timeframes are noted.

PI&F have noted that the ANZECC 2000 water quality guidelines aren't aligned with animal welfare or product safety measures and to date there has been no evidence of contamination levels in animals that indicate significant risks from an acute exposure.

However, a risk assessment has not yet been done that looks at possible long term exposure. Results are not yet available for soil and pasture contamination or quantification of areas of land where mine water contamination may have flowed. PI&F ability to undertake a risk assessment using this information (when available) has not yet been determined.

That being the case, preventing stock access to contamination in water, soils and pasture via fencing is suitable preventative measures.

Item 2

The evaluation of treatment options lacks detail in terms of a comparison of available options and a risk assessment which considers all aspects of each treatment option.

In particular, consideration should be given to *ex situ* treatment for larger water bodies such as, the farm dams, as this will ensure that any sludge and precipitates produced in the treatment are able to be removed from the affected areas and disposed of at an appropriately licensed place. It may be that other areas have to be treated *in situ* or waters removed by tanker truck and treated at alternate locations. It is understood that the clean up will be complex and may require a range of methods to be deployed.

If a risk assessment identifies *in situ* treatment as the preferable option, then bench trials need to be conducted in relation to the phase change of metals and associated toxicity testing must be done as part of the strategy development. This work must be conducted prior to deployment of any treatment within the creek system to ensure that the proposed option will not cause any environmental harm now or in the future.

In addition, consideration must be given in relation to any residues within the creeks being taken up by wildlife or cattle and an assessment carried out as to whether these compounds are bioavailability when ingested.

In relation to the application of "red mud" for remediation of waters affected by releases from Lady Annie Mine the DERM has serious concerns with this proposal:

The proposed method for rehabilitation of the waters in Inca and Saga Creek involves the application of "red mud" (referred to as ViroMine Bauxsol Treatment). The basis is that the high ion exchange capacity of the red mud (refined waste product from bauxite refining) will cause sorption of metals onto the fine particles, forming compounds that can not remain in solution.

The report incorrectly states a precipitate will be formed. Precipitates occur during a phase shift the metal from the liquid to solid phase, driven by a chemical reaction. Red Mud "sludge" is not precipitates, but rather sorption compounds. The contaminants (in this case metals) will adsorb (i.e. accumulate on surface of mud particles) to the red mud, and as such increase the molecular weight of the individual particles. In low flow (i.e. low energy) creek environments, the molecular weight overcomes the kinetic energy in the hydrological flow, allowing settling of the red mud compound which incorporates the metals.

The process facilitates the adsorption is ion exchange potential. As pH is caused by cations of hydrogen (H^+), these cations are also adsorbed to solid particles, resulting in a significant pH shift from acidic to alkaline (pH range 8-10) conditions. This method is still in development phases; however, trial results would appear to be promising for the removal of heavy metals from acidic solutions.

There are several key limitations to the technology when used as per the methods nominated by Parsons Brinckerhoff (PB). These are:

- The red mud primarily attacks metals suspended in solution, the dissolved fraction is often left behind
- The formation of sludge provides a highly contaminated solid layer at the base of the creek. This is of environmental concern because:
 - a) Cattle may still consume the sludge containing concentrated heavy metals, and the acid contained within cattle stomachs will mobilize the heavy metals bound in the mud matrix;
 - b) High flow events or disturbance to the creek bed may cause the compounds to be suspended in solution, and contamination will be contained as suspended solids in the creek system;
 - c) Any further acidic flushing or release of acidic waters will re-mobilize many of the heavy metals previously contained within the red mud matrix;
- Sulphate, due to its solubility, will not readily adsorb onto other compounds, and as such, will likely show minor reductions when red mud is applied
- The pH shift to an alkaline system may be extensive enough to cause further harm to the creek ecosystem. If a creek system is normally operating at pH range of around 6-6.5 (for example), then an increase to pH 9 may cause complications for aquatic ecosystem health

Some of the problems identified with red mud (i.e. formation of contaminated sludge) are also a problem with potential substitutes. Conversely however, carbonate treatment forms a precipitate rather than sludge. The carbonates will not primarily cause adsorption of metals, but will rather preferentially bind with H^+ ions, causing a shift in pH conditions. This will in turn induce chemical reactions, as under neutral pH conditions, many metals will be chemically unstable and preferentially react to form precipitates. Depending of the geochemical environment, sulphates may co-precipitate out to facilitate the precipitation of metals such as copper.

PB nominates the removal of sulphates from solution via use of a wetland settling system that facilitates biological removal of sulphate. While theoretically plausible, large-scale field trials have shown inconsistencies with the application and success of this technology. While sulphates are elevated in the system, it is considered that in comparison to the acidity and heavy metal loads, sulphate is of relatively minor concern.

The expense and time associated with constructed off-stream wetland polishing systems is deemed disproportional to the benefits. The greatest focus should remain on adjustment of pH and removal of metals and from the system.

It would be recommended that if off-stream wetlands are proposed to manage sulphate, such off-stream techniques be used to remove heavy metals (whether red mud or alternative techniques are utilised).

Due to cost-benefit analysis, it may be appropriate to use red mud in-stream in some confined locations; however, it is recommended that as a whole, techniques that result in the formation of solid contaminants (i.e. sludge or precipitates) is primarily used in off-stream scenarios, and limited application to on-stream treatment is used where viable alternatives do not exist.

The application of the Bauxsol and settling processes may result in heterogeneous settlement of the mud and metals (i.e. sludge accumulation in certain areas) which may heighten the risk of adverse impacts if ingested by wildlife and cattle. In addition the settlement of mud will change the substrate environment, and therefore habitat for in-stream fauna, potentially smothering benthic fauna. In addition the settled mud may be mobilised in subsequent flow events and accumulate in the downstream environment or pools of reduced stream flow (i.e. formation of downstream red mud beaches).

It is noted that validation sampling will be carried out once treatment is completed; however as outlined above, testing should be conducted in relation to toxicity of potential precipitates / sediments prior treatment on the field. These tests need to be conducted under a range of circumstances which reflect variability in ambient water quality, and the dynamic nature of natural creek systems.

M&E have provided further comments on this section:

Water quality information has not been provided as context for selected water treatment technology. The proposed use of the Bauxsol product may succeed in treating the ponded water but would require supporting validation through appropriate testwork.

In-stream Bauxsol treatment would require rigorous assessment to ensure no further water quality deterioration, in particular with regards to salts (sulphates), iron and aluminium. It is noted that manganese is unlikely to be dealt at pH indicated. High cobalt concentrations may also be a significant issue.

The analytical results from the sampling program have returned significant acidity of up to 650 off site. Based on the results from the Saga Creek DS1 sample, the acidity is driven by the Al, Fe, Mn and Cu metal content with Al content the highest contributor. With a pH of 3 the contribution of this to the total acidity is only about 50-60 mg/L CaCO₃.

No real discussion on naturally occurring background levels of metals with respect to the ANZECC guidelines is given in the proposal.

The treatment of the surface waters is likely to be able to be achieved through the use of the product but no explanation of any subsurface water volumes and treatment is discussed. The question is are the water bodies in the stream interconnected through subsurface flow and if so, is this water able to be managed.

The concept for in stream treatment has not been well defined. How will the process be controlled and managed. The implications for interactions with potentially significant groundwater/alluvial flows will need to be defined.

Additionally, what is the timeframe for this treatment strategy? Will ongoing treatment be required or is limited campaign treatment planned?

A risk assessment needs to be undertaken and modifying actions identified if system failure does occur.

The turbidity potential of the product would need to take into account the naturally occurring turbidity during flow events and whether this material would be of a significant contributor.

Further, M&E have provided comments on the proposed wetland system for removal of sulphates. The following points have been identified:

- The proposal does not identify the risk of failure of the wetlands to be able to satisfactorily treat the water as required. If the system fails to remove the sulphate, then is there another option available to be undertaken prior to the 2010 wet season.
- No account of subsurface water management options – only treating surface flows. Assessment of subsurface water and flow potential needed.
- Wetlands have a long history of failure to treat water as designed especially with metalliferous contamination. There is sufficient evidence that the systems can work but suffer from maintenance issues and armouring of limestone beds rendering them ineffective.
- 20L/s (1.7ML/day) is significant wetland throughput. The required VFS wetland system based on input water quality and anticipated flow may be very large and there may be construction constraints. No detail on design or assessment of effective size of wetland areas or exposure required to complete treatment.

- What is the time required for such a wetlands system to “bed in” and reach top performance?
- What is the range of expected input water quality is crucial to wetland design? This is not provided in the document provided.
- There is a lack of information regarding anticipated lifetime and volume throughput for the wetland system. The end management for the wetland system is not clearly defined. This forms a key part of overall design. Can an overall conceptual design figure and layout for the surrounding area (water sources, contaminated creeks etc) be provided? Is it logistically possible given the objective for treating all on stream farm dams in this manner? Wetland systems can take significant time to install to an ‘operational’ state.
- In terms of the geochemical suitability of this type of wetland system, based on limited data available, there may be issues associated with:
 - High aluminium to iron ratio has been known cause issues.
 - Existing oxidized conditions for metals such as iron and copper may be a problem for an anoxic based system.
 - Gypsum precipitation issues for sulphate levels greater the ~2,000mg/L, issues may arise from gypsum precipitation and armouring of limestone media
 - Aluminium and iron precipitate issues will occur (in particular if treating raw acidic water) and there is a potential for system armouring/clogging.
 - An assessment of armouring potential and management options is required
- Subsurface seepage form a permanent wetland system may need to be addressed.

M&E has identified that James Cook University has been undertaking research on the use of organic material as passive treatment of Acid Mine Drainage and may be worth consulting with.

Item 3

Progress and suggested timeframes are noted.

Item 4

Refer comments in item 2 in relation to DERM’s concern for the potential of environmental harm to be caused by the treatment.

In terms of in-stream monitoring, what remedial actions will be taken in case that pH or Electrical Conductivity (EC) is of values which exceed the requirements and may cause environmental harm?

Additionally, what actions will be taken if TCLP (or similar leach testing) shows concentrations of contaminants in the creek environment with potential to leach? As previously mentioned, laboratory testing should be undertaken on toxicity and leachability of potential precipitates and sediments prior to application.

M&E has provided comments on the subject of environmental harm.

1. Will the method be successful?
2. Are the methods proposed going to be able to treat all waters, including subsurface water, to ensure no harm occurs?
3. Is the non-removal of the product from the stream going to be a long term issue or possibly cause recontamination in the future?
4. Are they going to be able to meet the requirements of the ANZECC guidelines during flow events?
5. Is the construction of the dam as proposed in section 5 realistic given that some of the water quality results indicate a naturally elevated level in some of the metals of concern?

Item 5

The remedial action proposed in this item is to construct a dam within 24 hours if an exceedance has been identified and water quality in the Buckley River is potentially affected. The issue with this proposal is that potentially contaminated waters would have discharged into the Buckley River over a 24hour period. A contingency plan which prevents any contaminated water from entering into the Buckley River needs to be developed so it can be implemented immediately following an exceedance.

M&E have further stated that this technique is only likely to work for extremely small flows (trickles) and for limited duration and a more active approach may need to be undertaken. Major flows are likely to be over by the time an issue is identified and this structure can be installed. The ability of this proposal to sufficiently address the potential volumes during flow events is questionable and is a reactive response rather than proactive. If the actions in sections 2 and 3 are not totally successful in treating all water, then they will certainly fail on this point in future flow events.

This section should be revised after a risk assessment is undertaken on the treatment options.

Item 6

DERM has provided detailed comments on the impact assessment proposal on 23 March 2009.

Item 7

Refer to previous comments made in relation to wetland treatment and sediments. It is deemed that leaving the sludge generated from the "red mud" application in the creek bed is not a sufficient method to remediate contamination of sediments. As previously stated, the

application of red mud in stream will likely result in further sediment contamination, which has potential to cause environmental harm for reasons identified in item 2.

M&E also noted the definition of ground waters does not discuss subsurface flows in the streams, if they exist. As this water has the potential to be significant then an assessment should be undertaken. A method for treating this water could be bores in the stream that pump to a treatment site like used in the Gilt Edge Mine passive trench example – this could also be used to treat the water in the current pools and would allow for the containment of metals outside of the creek systems.

Item 8

Progress and suggested timeframes are noted.

Item 9

Noted

Item 10

Progress and suggested timeframes are noted.

Item 11

Progress and suggested ongoing consultation are noted.

If you have any queries with regards to the contents of this letter please call me on telephone (07) 4046 6638.

Yours faithfully

s.49 - Signature

Rob Lawrence

Director

Department of Environment and Resource Management

Notice

Environmental Services

Proposal to realise or claim on financial assurance

This statutory notice is issued by the administering authority pursuant to section 367 of the Environmental Protection Act 1994, to advise you of a proposal to realise or claim on financial assurance for your environmental authority.

CopperCo Limited (ACN 004434904)
Att: Messrs Gary Peter Doran and David John Frank Lombe
Receiver Managers for CopperCo Limited
Deloitte Touche Tohmatsu
Woodside Plaza Level 14
240 St Georges Terrace
PERTH WA 6000

Your reference :

Our reference : ISA658

Attention: Gary Doran,

Re: Proposal to realise part of financial assurance for an environmental authority held by Lady Annie Operations Pty Ltd (ACN 076289097) and Savannah Resources Pty Ltd (ACN 096358735)

The administering authority intends to realise the above mentioned financial assurance as it has incurred costs in the amount of \$20,000 as a result of taking the following action:

Undertaking the service of external environmental consultants to assess and report on;

- Water management on the mine site,
- Integrity of Stormwater Pond 2 wall/s,
- Downstream impacts resulting from the release of contaminants from the minesite on 20 January 2009 and 7 February 2009,
- Rehabilitation solutions to address those environmental impacts.

Costs in relation to the action that has been taken have been estimated and costs in excess of this estimated amount may result in a further claim or realisation of the remaining financial assurance.

The EPA is proposing to claim 100 percent of the estimated costs involved with taking the action. The amount of the financial assurance being realised is \$20,000.

Proposal to realise or claim on financial assurance

You may make written representations to the administering authority by 14 April 2009 to show why the financial assurance should not be realised in part as proposed.

Please forward your written response to the Environmental Protection Agency office listed in this notice.

Should you have any queries in relation to this Notice please contact Rob Lawrence of the EPA telephone (07) 4046 6638.

s.49 - Signature

Signature

13 March 2009

Date

Rob Lawrence
Director
Environmental Protection Agency

Enquiries:
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CAIRNS QLD 4870
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