Submission to Inquiry**: Environment Protection and Biodiversity Conservation Amendment Bill 2013 [Provisions]**

Question: Will the EPBC Amendment Bill 2013 protect biodiversity values of national significance from abandoned mine impacts due to Acid and Metalliferous Drainage (AMD) and other contaminants?

As this Senate Committee review of the amendments to the EPBC Act is undertaken, the committee is advised to consider inclusion of "existing and new abandoned/legacy mines" under the water trigger so that national biodiversity, land and water use values impacted, or with potential to be impacted, from abandoned/legacy sites are protected.

Abandoned mines

Abandoned mines in Australia are those mines which have no owner. By default these have become the responsibility of state and Northern Territory governments. Three out of seven jurisdictions have formal abandoned mine programs (QLD, NSW and TAS)[1]. The Queensland Commission of Audit interim report estimated the total liability from abandoned mines as approximately $1 billion (July 2012[2]). While there are more than 50,000 abandoned mine records in Australia, different classification and mapping systems in each jurisdiction mean that data quality is variable and it is not yet possible to develop a national predictive model of impacts on national biodiversity values (Unger et al, 2012). Refer to Appendix A for a national map and description of data quality and the context of this in predicting impacts on national biodiversity values.

QLD Floods commission inquiry (2012)

Currently there is no state or federal legislation in QLD addressing abandoned mine environmental impacts at any scale – not locally or at a national level (QFCI, 2012[3]). In many jurisdictions it requires one agency to regulate another and the Queensland Flood Commission Inquiry (2012) found that this does not happen in QLD where the mines department (then DEEDI, now Qld NRM) are responsible for abandoned mines[4]. Also it was argued that the environment department (then DERM, now DEHP) does not have appropriate legislation with which to manage abandoned mine sites, unlike that for mining companies which have responsibility for active exploration and mining tenure (leases)[5]. DEEDI (now Qld NRM) stated the blue coloured water indicated metal contamination which is toxic and could impact cattle and wildlife (see extract below) and also that there were no programs in place to regulate discharges[6].

[1] Unger C, Lechner A M, Glenn V, Edraki M, Mulligan, D R (2012) Mapping and Prioritising Rehabilitation of Abandoned Mines in Australia (in press) Life of Mine Conference 2012, CMLR/AusIMM July 2012

[2] http://www.commissionofaudit.qld.gov.au/reports/interim-report-risks-contingent-liabilities.pdf

[3] http://www.floodcommission.qld.gov.au/publications/final-report

[4] http://www.floodcommission.qld.gov.au/__data/assets/pdf_file/0016/10861/QFCI_Exhibit_930_Statement_of_Verdun_Spreadborough_with_attachments.pdf

[5] http://www.floodcommission.qld.gov.au/__data/assets/file/0005/10688/Lawrence_Robert_re_Mt_Oxide_Mine.pdf

[6] http://www.floodcommission.qld.gov.au/__data/assets/file/0017/10682/Kadletz_Oskar.pdf

27. Potential adverse impacts downstream could arise from the uptake of copper and possibly other metals as cattle and wildlife drink the water or lick mineralised salts in the first few kilometres of the stream downstream of the mine site. The water from this zone is not used for potable purposes. The stream metal levels could be toxic to fish and other aquatic fauna. DEEDI is investigating these impacts through its monitoring program as discussed in paragraph 25 above, and is also consulting with Biosecurity Queensland to assess and address potential livestock impacts.

The QLD Environmental Protection Act does not address environmental impacts from abandoned mines.
http://www.legislation.qld.gov.au/legisltn/current/e/envprota94.pdf

The Flood inquiry also highlighted that NRM (then DEEDI) did not consider abandoned mines on private land to be their responsibility[7]. Under this scenario abandoned mines draining AMD or other pollution to the Great Barrier Reef would be left to the landholder to control.

Three recommendations were made in the QFCI, 2012 to address some of these issues but no time frames for implementation are publicly available (Chapter 13, Recommendations 13.17, 13.18, 13.19). The first of these recommendations related to responsibilities of the two departments and the need for strategic oversight by both DEHP and NRM but did not go as far as requiring legislative changes so legislative gaps remain.

If ecological, land and water use values of national significance, (ie. aquatic, riparian, terrestrial, marine as well as surface and groundwaters) in the vicinity of and downstream of abandoned mines are not protected by state legislation and not by the current amendments to the EPBC Act or GBR Bill, then further amendments may be required to both QLD Environmental Protection and Commonwealth EPBC Acts to redress this situation and those amendments need to address all of Australia, not only protection of the Great Barrier Reef. The case study referred to by the QFCI (2012) was Mt Oxide which drains into the Southern Gulf Catchments natural resource management region.

QLD State government handsard (2010)

In earlier hansard Scott Emerson (14 April 2010) noted the environmental regulatory black hole which existed for abandoned mines:

> Having spoken of the need to speed up approvals for mining lease applications where there are no objections, I now raise the issue of abandoned mines. There is an inconsistent treatment between government managed abandoned mines and those managed by the industry when water is impacted by contamination. While there is a robust regulatory regime in place regarding industry managed active and abandoned mines, this is not the case for government managed abandoned mines. There is a black hole in the legislation, which means there is no regulatory tool to manage abandoned mines or their pollution, or a mechanism for a department to be held accountable and penalised for pollution from one of its sites. If there is no legislation, then one government department is limited in what it can do to another.
>
> This appears to be a loophole or black hole in the environmental legislation. This must be frustrating to the neighbouring landholders and graziers to these mines. It is not simply a lack of legislation; there is also no complete inventory of abandoned mines in Queensland so the Queensland government is not fully accounting for its liabilities in this area. There is also no performance reporting by DEEDI on its abandoned mine land program, how much is spent each year, how a site is prioritised, whether there are management plans for sites or areas of underground workings, how much is spent where and how much benefit has been achieved.

Mount Morgan abandoned mine

There are many abandoned mines in Queensland (refer to Appendix A) some which drain into the Fitzroy River catchment which flows to the Great Barrier Reef, eg. the Mount Morgan abandoned mine.

AMD sources from Mount Morgan mine have comprised chronic seepage impacts (with seepage interception improving progressively over time), acute impacts from overland flow during rainfall events, and open cut pit discharges to the Dee River (2012 and 2013 – reported via stakeholder engagement processes).

Cumulative impact study for the Fitzroy Basin

A study of the cumulative impacts on water quality of mining activities in the Fitzroy River Basin (April 2009)[8] focussed largely on coal mine discharges into the Fitzroy River catchment. The study noted however, that the Dee River had the worst water quality in the whole Fitzroy River catchment, but was then not discussed further because it was 'NRM's responsibility'. This is another example of the regulatory blind spot. See extracts below

> (on Page 20)
> **3.2.1 Electrical conductivity (EC)**
> EC is related to the number of dissolved ionic solids in water. Typically the most common ions are those found in salt (sodium chloride), so that EC is typically a reliable surrogate for salinity.
> All three studies found that by far the majority of sites had EC levels less than 800µS/cm.
> The major location where higher EC levels were recorded were on the Dee River downstream from the Mount Morgan copper mine site which has a long history of water quality issues that are now managed by the Department of Mines and Energy.
> DEH (1999) recorded only one site close to current coal mines (Crinum Creek) with a median conductivity above 800µS/cm. Noble (1996) recorded two sites (both on the Dee River) with median EC levels above 1500µS/cm. More than 80% of their samples were less than 280µS/cm, and 17% were between 280-800µS/cm. For the sub-basins, median values ranged from 170µS/cm (Comet) to 292µS/cm (Isaac).
> and for pH (acidity, in the case of the Dee which can be as acid as pH 3)
> **3.2.3 pH**
> This parameter measures the acidity and alkalinity of water. Values less than seven are considered acidic and those above seven alkaline (Noble et al. 1996). The acidity or alkalinity of water can increase the bioavailability and concentration of contaminants such as metals and therefore the relative toxicity of certain contaminants as well as increasing the accumulative effect and potential impact on environmental values.
> Most Fitzroy soils are alkaline and this is reflected in water quality. Noble et al. (1996) records the lowest median pH for water quality in the Connors catchment (7.15) and highest (7.97) for the water quality in the Nogoa catchment.
> Some sites monitored on the Dee River as part of this study did not meet ANZECC/ARMCANZ (2000) and QWQG (EPA, 2007) guideline trigger values (pH 6.5 – 8).

During 2012 the Mount Morgan open cut pit required a controlled release due to high rainfall, and during 2013 there were both controlled and uncontrolled releases during rainfall. The downstream community (via the Wowan Dululu Landcare group) have called for rehabilitation of the open cut pit to remove this ongoing threat of discharges of AMD to the Dee River. See link to ABC radio national[9]

Mount Morgan abandoned mine's uncontrolled and controlled pit discharges of acid mine drainage during 2013 are estimated at;

[8] http://www.fitzroyriver.qld.gov.au/pdf/cumulativeimpactassessment.pdf
[9] http://www.abc.net.au/radionational/programs/breakfast/queensland-floods-mines-discharging-waste/4520542

1306 ML discharged (aggregated from daily announcements to stakeholders), comprising 730.1 ML from controlled releases (26 Feb 2013 - 4 Mar 2013, 2 releases) and 575.5 ML of uncontrolled release (26 jan 2013 - 25 Feb 2013)

SUMMARY

With reference to two key sources; the QLD floods commission of Inquiry (2012) and the a study of cumulative impacts in the Fitzroy Basin (2009) it is clear that there is no environmental regulation for abandoned mines in QLD. There is potential for ambiguity and black holes to exist in other jurisdictions as well. Further research is needed to explore this. Amendments are required to existing state and Commonwealth legislation in order to redress this regulatory black hole.

As this Senate Committee review of the amendments to the EPBC Act is undertaken, the committee is advised to consider inclusion of "existing and new abandoned/legacy mines" under the water trigger so that national biodiversity, land and water use values impacted, or with potential to be impacted, from abandoned/legacy sites are protected.

APPENDIX A

Figure 1 and Table 1 were prepared by the Centre for Mined Land Rehabilitation, The University of Queensland (Unger et al, 2012). Refer to the paper for further information.

Note that the size/risk of each site has not been indicated as datasets are not comparable across jurisdictional boundaries. With future improvements in inventories and convergence in data collection (as is the intent of the Strategic Framework for Managing Abandoned Mines in the Minerals Industry, 2010[10]) the potential exists for jurisdictions to collaborate and share spatial data for prediction and modelling of impacts of national significance, based on an understanding of national biodiversity values as well as geological regions where abandoned mines are located and other relevant data from mine records and monitoring.

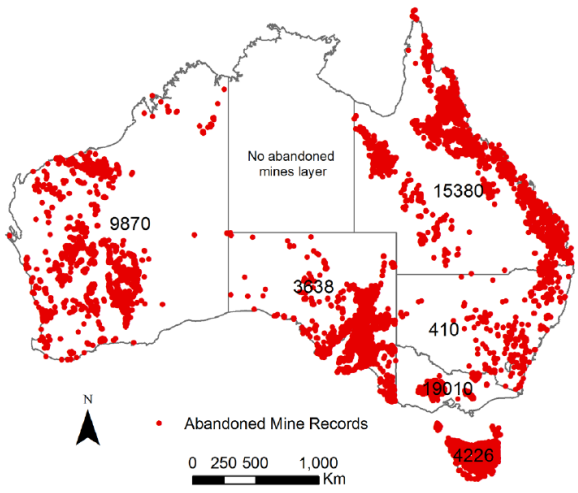

FIG 1 - Abandoned mines records for each state, as of July 2011 (for some states/territories, the records are incomplete).

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http://www.ret.gov.au/resources/Documents/mcmpr/MCMPR%20Strategic%20Framework%20for%20Managing%20Abandoned%20Mines%20vWeb%20Jan25.pdf

TABLE 1

Summary of abandoned mine mapping in Australia by state and the information present within each database.

State	Location	Commodity	Mine type	Size – commodity	Size – physical	Start date	Close data	Processing method	Lease boundary
Qld	Present	Present	Absent	Present	Absent	Absent	Absent	Absent	Absent
SA	Present	Present	Present	Absent	Absent	Absent	Absent	Absent	Present
NSW	Incomplete	Incomplete	Incomplete	Absent	Absent	Absent	Absent	Absent	Absent
Tas	Present	Present	Present	Absent	Absent	Absent	Absent	Absent	Absent
WA	Present	Incomplete[a]	Absent[a]	Absent	Absent[a]	Incomplete	Incomplete	Absent	Absent
Vic	incomplete	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent
NT	n/a	n/a	n/a	n/a	n/a	n/a		n/a	n/a
Example or further info	Longitude, latitude	Gold, zinc	Under-ground, open pit	100 t	4 km × 5 km footprint	When mine opened	When mine closed	Cyanide leach	Spatial data describe lease boundary

a. The information was present in the Western Australian abandoned mine data set (WABMINE).