

**Howe, Mark (DMITRE)**

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**From:** Anthony Milnes [REDACTED]  
**Sent:** Wednesday, 6 November 2013 1:49 PM  
**To:** DMITRE:MiningRegRehab  
**Subject:** Comments on Hillside Project MLP&MP  
**Attachments:** 131106\_Submission re Hillside MLP.pdf

Attention: Mark Howe

Dear Mark

I have a number of comments on the Rex Minerals' Hillside Project Mining Lease Proposal and Management Plan, as attached. My principal concerns relate to both operational and post-closure environmental management and rehabilitation which are far from best practice in the mining industry in this day and age, despite assertions to the contrary in the documentation. There are existing models for best practice in these aspects of the project in the industry, and plenty of published guidelines.

The Company's approach to the management of uranium in the IOCG ore, and radiation protection, not mentioned at all in its Referral under the EPBC Act in 2012, is also of concern.

These deficiencies will have contributed in a significant way to community concerns about the consultative behaviour of Rex Minerals in relation to the Hillside Project and the level of outrage evident in the region.

Yours sincerely

Tony

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## Rex Minerals' Hillside Project Mining Lease Proposal & Management Plan

### General comments

#### Overall:

There are components of the MLP dealing operational environmental management, and closure and rehabilitation of the operation, that are far from 'best practice' in the mining industry in this day and age. This is particularly the case with a proposed base metal (including uranium) mining, processing and transport/export operation close to urban infrastructure, existing agricultural landuse and the marine environment.

#### In particular:

1. There is a less than rigorous and transparent approach to describing and managing the uranium content of the targeted ore and its fate in the processing and waste streams. IOCG ores (Olympic Dam, Prominent Hill) always contain uranium. The issue is principally one of radiation protection for the workforce during the operational stage of the operation (especially when mining underground) and the legacy phase following decommissioning and rehabilitation of the contaminated minesite. I'm concerned that there was no mention of mining uranium (even though it is not one of the target metals) in the Referral (EPBC 2012/6434) submitted by Rex in 2012 to the Commonwealth under the Environment Protection and Biodiversity Conservation Act 1999.
2. There is a lack of rigour in the design and management of the TSF, particularly from the viewpoint of adequately engineered and HDPE-lined floor and walls to minimise seepage during operations.
3. The proposal to 'bury' the pipelines carrying slurried concentrate and process water between the mine and the port is far from best practice. No experienced mining or energy company will bury pipelines carrying toxic materials because of the inadequacy of leak detection systems (which ideally detect significant leaks) and the inability to make daily inspections along the pipelines to detect small-scale failures and leaks that may be a prelude to significant failure. Examples of companies paying large fines for contaminating the environment as a result of undetected leaks in buried pipelines in Australia (for example, GEMCO's Groote Eylandt operation – leaking fuel and ERA's Ranger Mine – leaking tailings pipeline) are well documented.
4. Using the open pit as a final contingency for containing excess leachate from mine landforms and contaminated runoff water and sediment during operations is good practice. However, the lack of a water treatment facility allowing treatment and disposal of pit water may restrict access to the pit (and the underground) following periods when this contingency is required. A water treatment facility would also have considerable value in facilitating mine closure.
5. The proposed rehabilitation strategy is minimal, inadequate in terms of the long-term stability of the post-mining landscape, and espouses the outmoded view that '... backfilling the pit and properly rehabilitating the site may sterilise the resource for

future operators ....'. To state that the regulator (DMITRE) 'requires' this approach is of great concern. It is very unlikely that an operator such as Rex would not fully exploit the existing ore resource and any additional brownfield expansions identified during the mining process. The truth is more likely to be found in the bottom-line economics of the project. By implementing a minimal (and least costly) rehabilitation strategy, the legacy of managing a contaminated base-metal hard-rock minesite such as Hillside, including an open pit part-filled with water of dubious quality, can be passed on to subsequent 'owners' and eventually the community and the taxpayer. There are many examples of this dilemma, including former mines at Rum Jungle, Nairne and Mount Todd, where inadequate attention to rehabilitation has left contaminated sites that continue to pollute local and downstream environments.

6. The value of a rehabilitation bond mentioned in the MLP is predicated on approval by the regulator of Rex's minimal and inadequate rehabilitation strategy. Consequently, in the event that the project becomes uneconomic or for some other reason is curtailed prematurely, there will be significantly less money available than needed to appropriately rehabilitate the mine and port facilities, as well as to manage the post-closure landscape in case there is a legacy of surface erosion, failure of revegetation or contamination of surface and groundwater systems.
7. An appropriate and effective rehabilitation strategy<sup>1</sup> would place all contaminated rock and soil wastes (including tailings and unprocessed ore) back in the pit, which is an effective and stable geological containment structure. The pit would then be backfilled with waste rock and the surface landscape returned, as closely as possible, to the pre-mining condition so that it could be managed in the context of the

<sup>1</sup> The Environmental Requirements for ERA/Rio Tinto's Ranger Mine (<http://www.environment.gov.au/resource/environmental-requirements-ranger-uranium-mine>) have relevance here and are considered widely by regulators and communities as best Practice. An extract follows:

#### **Primary Environmental Objectives**

##### **2 Rehabilitation**

2.1 Subject to subclauses 2.2 and 2.3, the company must rehabilitate the Ranger Project Area to establish an environment similar to the adjacent areas of Kakadu National Park such that, in the opinion of the Minister with the advice of the Supervising Scientist, the rehabilitated area could be incorporated into the Kakadu National Park.

2.2 The major objectives of rehabilitation are:

- (a) revegetation of the disturbed sites of the Ranger Project Area using local native plant species similar in density and abundance to those existing in adjacent areas of Kakadu National Park, to form an ecosystem the long term viability of which would not require a maintenance regime significantly different from that appropriate to adjacent areas of the park;
- (b) stable radiological conditions on areas impacted by mining so that, the health risk to members of the public, including traditional owners, is as low as reasonably achievable; members of the public do not receive a radiation dose which exceeds applicable limits recommended by the most recently published and relevant Australian standards, codes of practice, and guidelines; and there is a minimum of restrictions on the use of the area;
- (c) erosion characteristics which, as far as can reasonably be achieved, do not vary significantly from those of comparable landforms in surrounding undisturbed areas.

#### **Secondary Environmental Objectives**

##### **11 Management of Tailings**

11.2 By the end of operations all tailings must be placed in the mined out pits.

surrounding landscape and therefore have some value to the local and regional community. There are good examples of this approach (Normandy Woodcutters Ag-Pb-Zn mine near Batchelor and the well-known and widely publicised strategy being implemented by ERA/Rio Tinto at Ranger Mine in the Northern Territory.

8. Pit backfill can be initiated during operations if there is a clear transition from open cut to underground mining. This can be very cost effective in comparison with a post-mining backfill operation, and would minimise costs associated with managing tailings as well as contaminated waste rock and below economic grade ore on the surface. It would require the portal to the proposed underground operation to be located outside the pit or in the highest levels of the pit. This is the approach currently being undertaken at Ranger Mine.
9. The value of the rehabilitation bond should be calculated, based on an independent audit each year, on the full cost of rehabilitating the site (according to a strategy similar to that described above) from the state of the mining, processing and exporting operation each year. This would ensure that the community and the taxpayer are not left with a legacy issue should the operation become uneconomic or for some other reason close prematurely. This circumstance has occurred at many small mines and one current example is the Angus Mine near Strathalbyn, which has been 'mothballed' and has an uncertain future.
10. The lack of a water treatment facility and thus a stated reliance on upstream ~~interception, evaporation, and re-injection of 'surplus' (waste) water into local~~ groundwater or release into the sea (depending on water quality) is a risky proposition from the perspective of avoidable environmental detriment.

#### In summary

Significant effort has gone into the production of the Hillside Mining Lease Proposal and Management Plan as a component of the Pre-Feasibility Study for the Project. The Project is a short-term, large-cost operation and is representative of several new mining proposals in South Australia that are beginning to impinge on modern agricultural (as distinct from outback pastoral) and urban environments. Consequently, local communities and interest groups are rightly demanding a role in the approval process, guarantees that they will benefit from the project, and assurances that the landscape will neither suffer degradation or environmental damage during operations nor be left in a condition after mine closure which has no community value and may require ongoing maintenance.

Unfortunately, much of the plan for the mine described throughout the MLP assumes that there is minimal rehabilitation. That is:

- a. the infrastructure will be removed unless there is a downstream benefit to the local community or added value to any subsequent land use by leaving in place storage sheds and associated water and power reticulation. On relinquishment of the site by Rex, the 'new owner' will be responsible for any future maintenance and liability;

- b. the haul roads will remain in the pit to divert runoff water to the pit lake and these will link to haul roads from the waste rock dumps to form an internal drainage system to divert runoff;
- c. the pit and underground will remain as voids filled with water (including contaminated site water), taking more than 500 years to fill to an 'equilibrium' level, according to Rex's modelling, and will be the repository for contaminated sediments and soils as required. Earth bunds will be constructed around the pit to prevent access by light vehicles and will remain 'in perpetuity', together with 'appropriate' fences and signage, to 'make it safe';
- d. the waste rock dumps, to be shaped and rehabilitated *in-situ*, will encapsulate the TSF, any potentially acid-forming waste rock, any 'uneconomic' copper ore, and any 'residual high level radioactive materials';
- e. the operational water management (drainage) system will be maintained after closure until surface water quality meets the agreed upon water standards for the naturally occurring drainage.

This approach will leave the minesite in a similar condition to many small-scale, short-term, hard-rock base-metal mines throughout the country – that is, areas of major land disturbance and essentially (geomorphically) unstable waste rock landforms that encapsulate environmentally hazardous waste materials from the mining operation, together with pit 'lakes' containing contaminated waters. Compared with the pre-mining condition, these areas have no value to the community, but remain places to avoid and, commonly, require major sources of funding from the taxpayer to minimise the ongoing degradation and contain the contamination that can seriously affect downstream environments (note for example, Nairne Pyrite mine, Mount Todd gold mine, Rum Jungle uranium-copper mine). This is unacceptable in this day and age.

Mining companies must take the responsibility to rehabilitate their mining operations in such a way that the post-mining landscape is returned to something approaching the pre-mining condition, which means returning all contaminated wastes to geological encapsulation in the mine pit (or underground), backfilling the pit void to match if possible the former topography, and reconstructing ecosystems (vegetation) that are appropriate and self-sustainable. Under these circumstances, the area should have value to the community (and any future owners) and not represent a shameful and costly environmental legacy.

  
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