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Mining & Industry Projects
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Mr Garry Pearson
Environmental Manager
Barrick Australia Limited
PO Box 210
WEST WYALONG, NSW 2671

Dear Mr Pearson,

**Cowal Gold Mine
Independent Monitoring Panel 2010 Report**

The Independent Monitoring Panel has completed its 6th report (see attached).

I would appreciate it if you would review the report, and provide a formal response to the 3 recommendations by the end of November 2010. This response should include a detailed action plan for any actions the company proposes to take to address the recommendations.

Yours sincerely

Kitto 15/10/10

David Kitto
Director
Mining & Industry Projects
as Delegate for the Director-General



SIXTH ANNUAL REPORT OF THE INDEPENDENT MONITORING PANEL FOR THE COWAL GOLD PROJECT – OCTOBER 2010

INTRODUCTION

The Independent Monitoring Panel (IMP) was established in accordance with condition 8.8(b) of the Development Consent for the Cowal Gold Project. The members of the IMP are:

- Emeritus Professor Clive Bell, University of Queensland; former Executive Director, Australian Centre for Minerals Extension and Research (ACMER)
- Dr Craig Miller, Senior Research Scientist, CSIRO Sustainable Ecosystems
- a NSW Department of Planning representative

The IMP was established under the Development Consent to:

- provide an overview of the independent audits required under condition 8.8(a) of the Development Consent;
- regularly review all environmental monitoring procedures undertaken by the Applicant and monitoring results; and
- provide an Annual Statement of the Environment Report for Lake Cowal with particular reference to the ongoing interaction between the mine and the lake and any requirements of the Director-General.

Construction activities commenced at the mine site in January 2004. Site visits were made to the mine site by members of the IMP before construction (Allen Kearns, 16-17 September 2003 and 22 November 2004) and after the commencement of construction (Clive Bell, 14-15 December 2004; Allen Kearns, 9 February 2006; Clive Bell and Allen Kearns, 3-4 July 2007; Clive Bell and Craig Miller, 29-30 July 2008; Clive Bell and Craig Miller, 4-5 August 2009; Clive Bell and Craig Miller, 12-14 July 2010).

The Director-General has not specified any requirements under condition 8.8(b)(ii) for the preparation of this report. This report covers site activities and environmental monitoring information provided to the IMP in the 2008 Annual Environmental Management Report (AEMR). The 2010 IMP Report includes the review of the Independent Environmental Audit Report (June 2010) for the period April 2007 to April 2010. The IMP also assessed additional material provided by Barrick Australia Ltd in the reports listed in Appendix 1.

OVERVIEW OF THE INDEPENDENT ENVIRONMENTAL AUDIT (IEA)

Under the Minister's Condition of Approval (MCoA) (26 February 1999), an Independent Environmental Audit was to be completed:

- six-monthly during construction;

- 12 months after commencement of ore processing;
- then every three years thereafter until decommissioning of the mine and ore processing operations, respectively, or as otherwise directed by the Director-General.

In its report of August 2007, the IMP recognised that the template-based approach, that had been used by Trevor Brown and Associates applied environmental management consultants (aemc) in the four six-monthly reports leading up to the 2007 IMP reporting period, was well-structured for addressing complex environmental compliance requirements, and was a good example of best practice for easily accessible and updated environmental compliance information. Thus the IMP made the recommendation that "Barrick consider continuing use of the template-based approach established by aemc for environmental auditing of operations in order to regularly and systematically update progress on each of the environmental management and monitoring components. This approach would greatly assist the IMP in its annual review."

A report was prepared by aemc and provided to the IMP for the period April 2007 to April 2010, which was the fourth 12 months of operation (In April 2009, aemc also provided to the CGM and the IMP an audit report for the period June 2008 to April 2009). The audit was undertaken over the period from 19-23 April 2010.

The independent environmental auditors reviewed the available documentation covering licenses and approvals granted by Government for the project as well as the environmental monitoring documentation held by Barrick at the mine site office in order to verify compliance with the conditions of approval.

As mentioned in previous IMP reports, the independent environmental auditors established a logical framework for verifying compliance by setting out the entire list of requirements, in the separate management plans that have been prepared by Barrick, that cover environmental management under the Minister's Conditions of Approval. These separate plans include:

- Indigenous Archaeology and Cultural Heritage Management Plan
- Flora and Fauna Management Plan
- Erosion and Sediment Control Management Plan
- Soil Stripping Management Plan
- Landscape Management Plan
- Bushfire Management Plan
- Land Management Plan
- Compensatory Wetland Management Plan
- Site Water Management Plan
- Hazardous Waste and Chemical Management Plan
- Operations Emergency Response Plan
- Dust Management Plan
- Blast Management Plan
- Noise Management Plan
- Traffic Noise Management Plan
- Cyanide Management Plan (amended 30 October 2008)

The compliance by Barrick against the requirements of the above-listed plans was assessed by the Independent Environmental Auditors, and comments were made against those approval conditions that had been activated. The scope of the Independent Environmental Audit dated June 2010 included the following components:

- review of the implementation of the requirements of the development consent conditions, licences and approvals for the project for the operation of the mine and process plant;
- conduct of site inspections and review of on-site documentation and monitoring data relevant to the compliance audit;
- discussions held with project staff in relation to the development consent conditions;
- assessment of compliance of the project with the development consent conditions; and
- preparation of an Independent Environmental Audit Report providing assessment of compliance against each consent condition.

The Independent Environmental Auditors (aemc) drew the following conclusion in their June 2010 report:

The audit findings confirmed general compliance with the Minister's Conditions of Approval, Environmental Protection Licence conditions and requirements of the conditions attached to the Mining Lease.

The IMP has reviewed the reporting process used in the Independent Environmental Audit Report of June 2010. The IMP was easily able to independently assess and verify the status of environmental management information at the site and the general compliance with development consent conditions, licences and approvals granted to Barrick, as reported by the independent environmental auditors.

During assessment of the Independent Environmental Auditors (aemc) report, the IMP noted the statement (Executive Summary) that ongoing management of erosion and sediment control and decisions on the rehabilitation procedures for disturbed areas of the site are the main long term management challenges for the mine lease area. The IMP independently assessed erosion and sediment control during its visit to the mine, and further comments on this issue are provided later in the report.

REVIEW OF ENVIRONMENTAL MONITORING PROCEDURES AND MONITORING RESULTS

The 2009 Annual Environmental Management Report (AEMR) was sent to the IMP on 12 June 2010. The 2009 AEMR covers the period 23 December 2008 to 22 December 2009. Overall, it is a well-structured and informative report prepared in accordance with the NSW Department of Industry and Investment (Minerals) guidelines for AEMRs and in consultation with relevant stakeholders. The IMP made four recommendations in the 2009 IMP Report concerning environmental monitoring procedures, and these recommendations are

assessed below in terms of adequacy of response by Barrick since the 2009 IMP Report.

IMP Assessment of Response to 2009 IMP Recommendations

The IMP made four recommendations relevant to environmental monitoring procedures and the AEMR in the 2009 IMP Report as outlined below. Barrick responded to the Department of Planning (DoP) by letter on 23 December 2009 setting out its course of action for addressing all IMP recommendations.

2009 IMP Recommendation 1: *CGM should clarify the guideline regarding the date of sampling in Table 19 on Data Management in the Surface Water, Groundwater, Meteorological and Biological Monitoring Programme – Mine Operations document.*

2010 IMP Assessment 1: The IMP is satisfied with the response of CGM to Recommendation 1 in its letter of 23 December 2009 noting that the standard for numeric date of sampling has now been specified as dd/mm/yy in the Surface Water, Groundwater, Meteorological and Biological Monitoring Programme – Mine Operations (SWGMBMP), and that a note to Table 19 in the document now states that "Contractors and staff will be informed of the numeric date of sampling standard (i.e. dd/mm/yy) to minimise potential data management error".

2009 IMP Recommendation 2: *CGM should (1) proceed to prepare bulk samples of soil and waste materials, in conjunction with the University of Sydney, for use as standards in the elemental analysis of dust samples and (2) resolve the source of contamination of copper and zinc in the 2008 dust sample analyses.*

2010 IMP Assessment 2: The IMP is satisfied with the response of CGM to the two issues raised in this recommendation.

Firstly, CGM has indicated it is preparing bulk soil samples to be used as Quality Assurance/ Quality Control (QAQC) standards for future dust sample analyses. Because of the previous extensive geochemical work on the waste rock from the mine (seven consultants' reports), CGM does not see the need to prepare bulk waste rock samples as standards at this time.

With respect to the resolution of the source of the anomalous copper and zinc values in the 2008 dust sample analyses, CGM stated that it had engaged Dr Stephen Cattle of the University of Sydney to investigate the problem. Dr Cattle has pointed to the different analytical systems being used by the mine and the university, and CGM has decided to use ICP – MS methodology for analysis of all dust samples as is the case with the university.

Dr Cattle further stated that "the extremely large copper and zinc concentrations estimated at different times appear to be the result of some sampling contamination issue, rather than an analytical malfunction".

The IMP notes that, in the 2009 AEMR (Appendix A), anomalously high copper concentrations in dust samples were still recorded from 23 October to 16 November 2009. During the IMP visit to the mine in July 2010, staff advised that the addition of copper sulphate to the dust collectors to kill algae was the probable source of contamination, and this practice has now been discontinued. Additionally, the use of a galvanised wire brush (containing zinc) to clean collectors had also been discontinued. These measures should reduce the likelihood of anomalous copper and zinc analytical values for dust in the future.

2009 IMP Recommendation 3: *The current effort and priority with trials on erosion control and rehabilitation should be continued with a view to narrowing down the best treatments to produce sustainable rehabilitation, as soon as possible.*

2010 IMP Assessment 3: The IMP noted the update on the trials given in the reply of 23 December 2009 and specifically the following comments –

"The results of the trials will be used to inform the progressive rehabilitation/stabilisation of mine landforms at CGM. Any proposed changes to the approved CGM rehabilitation programme (i.e. as described in the EIS) that are not considered to be "generally in accordance with the EIS" would be subject to environmental assessment and approval processes (e.g. a modification for the introduction of rock armour to provide stability and preliminary establishment would be sought under the *Environmental Planning and Assessment Act, 1979*).

The timing of the rehabilitation review programme studies and trials (and results thereof) will be dependent on water availability and rainfall necessary for the operation of studies and trials."

During its visit to the mine in July 2010, the IMP was able to assess (1) the trials at first hand and (2) a report on the rehabilitation trials by DnA Environmental Consultants (March 2010). The trials have been yielding results with better rainfall at the mine over the past year than has been experienced in the previous drought years, which should point to the best options for sustainable rehabilitation.

The IMP believes that, with the recent good rainfall, the conditions for plant establishment and growth in the remainder of 2010 look promising. It further believes it may be timely to revisit the recommendations arising out of the July 2008 rehabilitation to ensure that the current trials are providing all the necessary data for future successful rehabilitation.

The IMP believes that there are three (3) areas that require more attention, viz.

1. Materials Balance

It is essential that the mine has an accurate estimate of the volumes (and quality) of topsoil, subsoil and waste rock to ensure that sufficient material is available to ensure sustainable rehabilitation through to mine closure and beyond. Any changes in the size of the pit could influence the ratio of these

materials. Of particular importance is the amount of benign, competent rock which, from the results of trials to date, would appear to be an essential component in producing stable, vegetated slopes.

2010 IMP Recommendation 1: CGM should continue to evaluate its inventory of topsoil, subsoil and waste materials and the future needs for rehabilitation, paying particular attention to the total requirement for benign, competent rock through to mine closure.

2. Application of Seed of Native Species

In the earliest trials on rehabilitation, native grass seed was applied to treatments. Unfortunately, drought conditions resulted in very poor establishment. In recent years, new trials, that have been established, do not seem to have involved the application of native plant seed, there being an expectation that the seed of grasses and shrubs in the topsoil (soil seed bank) would provide sufficient vegetative establishment. Whilst recent rain has resulted in some establishment of native grasses, these species have been outnumbered by the germination and growth of a variety of broad-leafed weeds. Application of native seed mixes should be considered on (1) existing areas and (2) any new trial areas. Given that it is often difficult to obtain a supply of native seed (of local provenance) at short notice, it is suggested that consideration be given to procuring and appropriately storing such a supply for the coming growing season.

2010 IMP Recommendation 2: CGM should continue to monitor existing rehabilitation trials with a focus on those treatments showing the most promise. Consideration should be given to the establishment of limited additional replicated trials of the most promising combinations of topsoil, subsoil and benign rock mulch and involving various direct-seeded native species combinations.

3. Tree/Shrub Pot Trials

The success of site rehabilitation will depend in part on the capacity of trees and shrubs to establish their roots into the subsurface soil and derive essential water and nutrients. A number of different subsurface materials are available on site. There is a need to determine experimentally how well the roots of selected trees and shrubs will penetrate these materials and how well the plants grow. It is suggested that a rigorous experiment be set up in nursery conditions, with long tubes filled with representative subsurface and topsoil materials, and a selection of appropriate tree and shrub species randomly allocated to each treatment within replicates. Treatments should also trial the application of fertilisers and the inoculation of the roots of some species with mycorrhizae.

2010 IMP Recommendation 3: CGM should conduct a trial to determine the success of root establishment and growth by appropriate tree and shrub species into a variety of potential rehabilitation site subsurface materials. Treatments should include 1) no fertiliser, 2) fertiliser, 3) no fertiliser + mycorrhizae.

2009 IMP Recommendation 4: *The current effort and resources expended in recording and submitting for necropsy all road-killed or found-dead wildlife should be rationalised.*

2010 IMP Assessment 4: The IMP noted the CGM response to this recommendation which pointed to the need to continue to report in accordance with the revised (12 March 2008) Condition 3.4(a)(ii) of the Development Consent (DA 14/98) and the revised Cyanide Management Plan and the Flora and Fauna Management Plan.

ISSUES IDENTIFIED BY THE IMP FROM THE 2010 AEMR, INDEPENDENT ENVIRONMENTAL AUDIT (APRIL 2009) AND MINE VISIT (12-14 July 2010)

During the mine visit, the IMP took the opportunity to explore more fully the activities of CGM in community relations, particularly as they pertain to the mine's environmental performance. A teleconference, held on the 13 July 2010 with Margaret McDonald, Independent Chair of the Community Environmental Monitoring and Consultative Community, confirmed the IMP's assessment that CGM had good relations with all levels of the local community and that the latter had a positive view of the environmental performance of the mine.

The IMP also visited the Lake Cowal Conservation Centre run through the Lake Cowal Foundation Limited. The IMP was pleased to note that the Foundation, which is supported financially and in-kind by CGM, has now been involved in 33 conservation projects in the Cowal region and has developed a relationship with 32 project partners.

ANNUAL STATE OF THE ENVIRONMENT REPORT FOR LAKE COWAL

The IMP is required to provide an Annual State of the Environment Report for Lake Cowal with particular reference to the on-going interaction between the mine and Lake Cowal.

Lake Cowal remained mostly dry during 2009 with no need for surface water monitoring to be conducted in the lake or inflow sites in that year. The long-term bird breeding monitoring continued throughout 2009. We note that, subsequent to our visit, the monitoring trigger has been activated due to heavy rain and lake filling, and this will be considered in the next review.

Finally, Condition 8.8(b)(ii)(c) requires the IMP to respond to "any requirements of the Director General". To date, the IMP has not been provided with any information or requests on other "requirements of the Director General".

SUMMARY LIST OF IMP RECOMMENDATIONS FOR 2010

2010 IMP Recommendation 1: *CGM should continue to evaluate its inventory of topsoil, subsoil and waste materials and the future needs for rehabilitation, paying particular attention to the total requirement for benign, competent rock through to mine closure.*

2010 IMP Recommendation 2: *CGM should continue to monitor existing rehabilitation trials with a focus on those treatments showing the most promise. Consideration should be given to the establishment of limited additional replicated trials of the most promising combinations of topsoil, subsoil and benign rock mulch and involving various direct-seeded native species combinations.*

2010 IMP Recommendation 3: *CGM should conduct a trial to determine the success of root establishment and growth by appropriate tree and shrub species into a variety of potential rehabilitation site subsurface materials. Treatments should include 1) no fertiliser, 2) fertiliser, 3) no fertiliser + mycorrhizae.*

INDEPENDENT MONITORING PANEL

Emeritus Professor L. Clive Bell

University of Queensland

Former Executive Director, Australian Centre for Minerals Extension and Research (ACMER)

Dr Craig Miller

CSIRO Ecosystem Sciences

APPENDIX 1 – LIST OF REPORTS ASSESSED BY INDEPENDENT MONITORING PANEL

Cowal Gold Project – 2009 Annual Environmental Management Report (11 June 2010). Barrick Australia Limited.

Cowal Gold Project – Independent Environmental Audit (June 2010). Trevor Brown and Associates (aemc).

Cowal Gold Project Mine Operation Noise Monitoring. January 2010. Heggies Pty Ltd (5 July 2010).

Cowal Gold Mine Groundwater Monitoring Review 2009. Coffey Geotechnics Pty Ltd (19 May 2010).

Soil Stockpile Characterisation. Jessica Drake, Ph D Student, ANU (2009).

Key Applications for Nutrient Cycling Rehabilitation: Soil Biota, Vegetation and Organic Matter. Case Study: Cowal Gold Mine, West Wyalong, NSW. Jessica Drake, Ph D Candidate, ANU (September 2008).

Cowal Gold Mine Rehabilitation Trials: Preliminary Assessment. DnA Environmental (March 2010).

Environmental Awareness Handbook. Cowal Gold Mine (July 2010).

Lake Cowal Conservation Centre. Annual Report and Activities 2009 (February 2010).

Lake Cowal Foundation Ltd 2009 Annual Report.

Planning ,Implementation and Monitoring for Land Rehabilitation: A Case Study on Restoring and Measuring Soil Functionality at Barrick (Cowal) Gold Mine. Annual PhD Report by Jessica Drake, PhD Student, ANU (30 August 2010).

