response 8th IMP

Pearson, Garry (Cowal)

From: Pearson, Garry (Cowal)
Sent: Friday, 1 February 2013 7:32 PM
To: David Kitto (David.Kitto@planning.nsw.gov.au); Kane Winwood (Kane.Winwood@planning.nsw.gov.au)
Cc: Prof Clive Bell (clive.bell@bigpond.com); Miller, Craig J.; Margot Robinson
Subject: COW.400.05.2958GP Letter to DP&I - Response to 2012 IMP Report Recommendations
Attachments: COW.400.05.2958GP Ltr-DPI Response to 2012 IMP Report.pdf

COW.400.05.2958GP e-mail

Dear David,

As requested in your letter dated 7 December 2012, please find attached Barrick (Cowal) Limited's response to the recommendations made by the Cowal Gold Mine's Independent Monitoring Panel (IMP) in their Eighth Annual Report for the Cowal Gold Project – October 2012.

Please do not hesitate to contact me should you have any queries.

Best Regards,
Garry

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01 February 2013

Mr David Kitto
Director – Mining and Industry Projects
Department of Planning and Infrastructure
GPO Box 39
SYDNEY NSW 2001

Dear David,

RE: Eighth Annual Report of the Independent Monitoring Panel for the Cowal Gold Project (October 2012) – Recommendations

As requested in your letter dated 7 December 2012, please find below a response to the recommendations made by the Cowal Gold Mine (CGM) Independent Monitoring Panel (IMP) in their *Eighth Annual Report for the Cowal Gold Project – October 2012* (2012 IMP Report). Please also find enclosed within Attachment A, a programme for implementation of the IMP's 2012 Recommendations and the status of implementation of the IMP's 2011 Report Recommendations.

2012 IMP Recommendation 1: *CGM should endeavour to complete the Northern Waste Emplacement Trials as soon as required materials become available.*

Barrick (Cowal) Limited (Barrick), with DnA Environmental, has finalised the design for additional replicate trial plots on the northern outer batters of the Northern Waste Rock Emplacement. The trial aims to further assess the effectiveness of various treatments associated with the rock mulch/topsoil/hay rehabilitation cover system. DnA Environmental's trial design is described in the report '*Revised experimental design and implementation plan – Northern waste emplacement rehabilitation trials for Cowal Gold Mine Barrick (Cowal) Limited November 2011*'. DnA Environmental's report:

- outlines the aims of the additional replicate trial plots;
- describes the landform construction philosophy (including landform preparation procedures);
- summarises the revegetation strategy; and
- details the design of the replicate trial plots, quantities of materials required and discusses the proposed monitoring methodology.

Establishment of the trial plots and landform preparation commenced in early 2012. However, as described in the 2012 IMP Report, implementation of the trial was delayed as native pasture hay was not available. When available, native pasture hay will be spread across the trial plots. Barrick will continue to implement the trial (subject to suitable rainfall conditions) in accordance with the design and implementation plan described in DnA Environmental's *Revised experimental design and implementation plan – Northern waste emplacement rehabilitation trials for Cowal Gold Mine Barrick (Cowal) Limited November 2011*.

A proposed schedule of works for the remaining activities associated with implementation of the Northern Waste Rock Emplacement trial plots is provided in Attachment B.

Monitoring of the trial plots will be undertaken by DnA Environmental and an annual weeds survey of all rehabilitation trials will be undertaken by Carnegie Natives.

2012 IMP Recommendation 2: *CGM should continue to monitor existing rehabilitation trials (and those planned for establishment in 2012) with a view to further refining its approach to achieve sustainable, post-mining landscapes.*

Barrick will continue to engage DnA Environmental to monitor the performance of CGM rehabilitation areas including existing (and planned) rehabilitation trials and to prepare an annual rehabilitation report that evaluates the status of rehabilitation at the CGM. In accordance with the CGM's Rehabilitation and Landscape Management Strategy (Barrick, 2009), Barrick will continue to refine and improve the CGM's rehabilitation programme based on results from trials, investigations and studies undertaken.

2012 IMP Recommendation 3: *CGM should continue to explore reasons for the anomalous metal concentrations on control soil and overburden samples being obtained from one of the laboratories used for analysis of dust samples.*

Due to unresolved anomalous metals results for monthly depositional dust samples provided by the ALS Laboratory Group (ALS), Barrick commenced dispatching all dust gauge samples to the independent laboratory, the National Measurement Institute (NMI) (Sydney) in mid 2012. Barrick has requested ALS to review the laboratory procedures used for metals analysis and provide a justification for the anomalous metal concentrations provided to Barrick during 2012.

In an effort to resolve the anomalous metals analysis results, Barrick sampled material (soil/rock) from nine potential dust source locations around the CGM (e.g. the crusher area, the southern tailings storage facility, northern waste rock emplacement, soil stockpiles, access roads) and sent the material to NMI. NMI crushed the material from each location to a fine power (similar to the consistency of dust). A composite sample of the crushed material from each location was also prepared. NMI undertook metals analysis on each crushed sample and no anomalous results were received.

Barrick then dispatched two 1 gram samples of material from two locations (i.e. 1 g cut of the Cowal Mine bulk dust standard) to both ALS and NMI for metals analysis. Both laboratories returned very similar metals analysis results, and a mid-range copper assay of about 70 mg/kg.

Barrick will continue this procedure, reducing the volume of material of each batch analysed and review/compare the procedures, sensitivities, sample size thresholds and results provided by each laboratory.

Both laboratories have indicated that it is very difficult to analyse metals on the small volume of dust material that is collected in a sample over a one month period. Therefore, Barrick is currently investigating whether the volume of depositional dust accumulated over a three month period would provide a more suitable sample size for laboratory analysis and therefore provide Barrick more confidence in the metals analysis results of depositional dust samples. Barrick will install an additional sample jar at Depositional Dust Gauge during February 2013 as a trial for determining the volume of dust accumulated over a three month period.

Barrick will detail the outcomes from the above in the 2012 AEMR.

2012 IMP Recommendation 4: *In the 2012 AEMR, CGM should not only provide figures showing groundwater contours around the pit, but discuss the implications for the aquifers of the surrounding environment and groundwater movement.*

A description of the regional and local hydrogeological regime surrounding the CGM is provided in the currently approved *Cowal Gold Mine E42 Modification Modified Request Environmental Assessment* (the Modified Request) (Barrick, 2009). The Modified Request also included a hydrogeological assessment of the potential for the hydrogeological regime to change as a result of the Modified Request Project, which concluded that net potential hydrgeological impacts would be less than those described for the E42 Modification Project (Barrick, 2009).

In accordance with Development Consent Conditions 8.2(a)(iv) and 9.2(i)(c) and Section 8.4 of the SWGMBMP, Section 3.4.3.2 of the CGM 2011 AEMR described the Performance Outcomes from the 2011 groundwater monitoring programme. The section included (among other things) a description of the hydrogeological setting, groundwater levels and quality results, groundwater production bore extraction summaries and survey results from the nine Bland Creek Paleochannel monitoring monuments.

Notwithstanding, as requested by the IMP, Barrick will provide in the 2012 AEMR:

- a clear description of the CGM's regional and local hydrological regime (including groundwater contours surrounding the CGM open pit and relevant figures);
- a specific discussion regarding implications for aquifers in the surrounding environment and groundwater movement; and
- an evaluation of the groundwater monitoring results against the modelling conducted for the Modified Request hydrogeological assessment.

Development Consent Conditions 8.2(a)(iv) and 9.2(i)(c) and the relevant portion of Section 8.4 of the SWGMBMP are reproduced below.

> ***8.2 Surface and Ground Water and Cyanide***
>
> *(a) Water monitoring*
>
> *(iv) The results and interpretation of surface and ground water monitoring (including biological monitoring) are to be provided by the Applicant in an approved form to the OoW, DECCW and DII(Fisheries) on a three monthly basis during construction and the first 12 months of ore processing operations and thereafter on an annual basis, unless otherwise agreed by the Director-General. The results are also to be contained and analysed in the Annual Environmental Management Report (Condition 9.2(a)).*
>
> ***9.2 Environmental Reporting***
>
> *Annual Environmental Management Report (AEMR)*
>
> *(i) The Applicant shall, throughout the life of the mine and for a period of at least five years after the completion of ore processing operations, prepare and submit an Annual Environmental Management Report (AEMR) to the Director-General. The AEMR shall review the performance of the mine against the environmental management plans (refer condition 3.2), Mining Operations Plan (refer condition 2.1), the conditions of this consent, and other licences and approvals relating to the mine. To enable ready comparison with EIS predictions, diagrams and tables, the report shall include, but not be limited to, the following matters:*
>
> ...
>
> *(c) results of all environmental monitoring required under this consent or other approvals, which includes interpretation and discussion by a suitably qualified person;*

Relevant portion of Section 8.4 of the SWGMBMP:

> ***c. Data Analysis and Investigation***
>
> *Data from each of the monitoring programmes detailed in the Monitoring Programme will be analysed by suitably qualified and experienced staff or consultants to the satisfaction of OoW and DECCW, and in the case of biological monitoring, DII (Fisheries). Data analysis will include, but not be limited to:*
>
> *i. ...*

ii. ***Groundwater Monitoring**: Groundwater quantity and quality data will be compared to relevant baseline data, data collected since the commencement of operations and assessment presented in the Project EIS. Where the data analysis indicates that an adverse impact is occurring to the efficiency of surrounding bores an investigation will be undertaken to determine the need and type of ameliorative measures. The scope and timeframe of the investigation will be developed in consultation with the relevant authorities. The results of the investigation will be presented to the relevant authorities and the CEMCC within the agreed timeframe.*

The 2012 AEMR is due for submission to the Department of Planning and Infrastructure (DP&I) by the end of May 2013, with a site visit proposed for July 2013.

2012 IMP Recommendation 5: *CGM should ensure that copper is analysed on all surface water bodies, including Lake Cowal, along with the other metals and metalloids listed) and that these data are reported in the next AEMR.*

Barrick's response to the IMP's Recommendation 5 has been separated into the following two components which are discussed below: Surface Water Monitoring Programme – Copper Analysis; and Surface Water Monitoring Locations Subject to Metal Analyses.

Surface Water Monitoring Programme – Copper Analysis

The IMP's 2012 Report provides the following regarding metal analyses on surface waters:

> *In Section 3.3 (Surface Water) of the AEMR, Table 13 lists the analyses undertaken on various water bodies (including Lake Cowal) in the Surface Water Monitoring Programme. There is no reference to analysis for copper in this table. An analysis for copper is given for the water in D6 in Table 14, but no data for copper is shown for Lake Cowal water in Tables 15, 16 or 17. It is essential that copper be measured in the surface water bodies, and that these data are shown in the AEMR.*

As described in Section 7 of the approved SWGMBMP, the monitoring programme was developed to:

a) *focus monitoring so it is relevant to the potential impact pathways from the Project to Lake Cowal biology;*

...

Dust and/or metals in dust from active mine areas is identified in the SWGMBMP as a potential impact pathway from the Project to Lake Cowal. Accordingly, development of the SWGMBMP included (among other things) consideration of significant geochemical testwork and assessments that have been undertaken of CGM waste rock samples (e.g. Environmental Geochemistry International [EGi], 1995; 1996; 1997; 2004, O'Kane Consultants Pty Ltd, 2008; Geo-Environmental Management Pty Ltd [GEM], 2008; 2009). Results of geochemical assessments undertaken to date including for the *Cowal Gold Project Environmental Impact Statement* (North Limited, 1998) and the currently approved Modified Request Project, have not identified copper as being enriched in the waste rock samples (EGi, 1997; GEM, 2008; GEM, 2009 respectively).

Additionally, geochemical testing of CGM waste rock indicates the materials are typically non-acid forming and the solubility of enriched elements is expected to remain low due to the neutral pH conditions resulting in a very low likelihood of acid rock drainage (EGi, 1997; 2004; O'Kane Consultants Pty Ltd, 2008; GEM, 2008; GEM, 2009). As described in Section 3.20.4 of the 2008 to 2011 CGM AEMR's and Section 3.3.4 of the 2005 to 2007 AEMR's, no reportable incidents regarding waste geochemistry (i.e. acid rock drainage) have occurred at the CGM.

Barrick recognises that laboratory analysis results of depositional dust samples provided by the ALS laboratory have returned anomalous (very elevated) results for copper. However, Barrick considers these results to be erroneous based on the results of significant geochemical testwork and assessments to date. Barrick has been addressing this issue with ALS for some time and as described in Barrick's response to the IMP's 2012 Recommendation 3 (above), Barrick has commenced dispatching all depositional dust samples to a separate independent laboratory, NMI (since mid-2012). Preliminary results provided by NMI from the analysis of the dust samples indicate low concentrations of copper.

Measures to resolve anomalous laboratory analysis results of depositional dust (and bulk standard soil and waste samples) have previously been described by Barrick in responses to the IMP's Fourth, Fifth and Seventh Annual Reports and have been detailed in the CGM's 2008, 2009, 2010 and 2011 AEMR's. Measures have included discontinuing the use to copper sulphate to eradicate algae accumulation within dust gauges and changing laboratory analysis procedures to include a more sensitive analysis method more able to detect very small concentrations of metals.

In addition, Barrick commenced analysing Lake Cowal surface waters samples for total and dissolved copper during 2011. Since monitoring of Lake Cowal surface water was triggered in November 2010, Barrick has continued to engage DM McMahon Environmental Consultants Pty Ltd to undertake the monitoring programme and prepare an annual report summarising the monitoring results in accordance with the SWGMBMP. Table 5 of the SWGMBMP shows a summary of the Lake Cowal baseline surface water quality results for several parameters including copper. Table 5 shows an average baseline value of 0.006 milligrams per Litre (mg/L) for total copper across all Lake Cowal monitoring sites during 1991/1992. Section 3.7.2 of the EIS, indicates that the average baseline value for dissolved copper was 0.0026 mg/L across all Lake Cowal monitoring sites (North Limited, 1998). A preliminary review of the monitoring results recorded by DM McMahon Environmental Consultants Pty Ltd for all Lake Cowal monitoring sites between February 2011 and October 2012 provides an average value of 0.0047 mg/L for total copper and an average value of 0.0023 mg/L for dissolved copper.

This comparison of results demonstrates that the average total copper concentration of Lake Cowal surface water during 2011/2012 is lower than the average total copper concentration in 1991/1992 (prior to construction of the CGM) and dissolved copper concentrations have remained relatively unchanged.

Based on the discussions above, Barrick considers the absence of copper as an analyte in the CGM's surface water monitoring programme is valid. Notwithstanding, Barrick will continue to include copper in the Lake Cowal monitoring programme until the anomalous dust analysis results have been resolved with ALS.

Surface Water Monitoring Locations Subject to Metals Analyses

The IMP has recommended that the CGM monitoring programme include metal analyses for "all surface water bodies" (i.e. all process water and surface water runoff collection storages).

In accordance with Development Consent Condition 8.2(a)(i)(a), the NSW Office of Water and the former Department of Environment, Climate Change and Water were consulted regarding the location of the Project surface water monitoring positions and development of the SWGMBMP.

As described in Section 4.2.5 of the Site Water Management Plan (SWMP), surface waters that collect within the Project's Internal Catchment Drainage System (ICDS) are managed by a series of contained water storages, bunds and drains. The contained water storages for Project runoff comprise storages D1, D2, D3, D4, D5 and D8B. D5 collects surface runoff from the process plant area and accidental spills of processing water or other potentially hazardous liquids. The contained water storages for Project process water include storages D6 and D9. All water collected in storages D1, D2, D3, D4, D5 and D8B is pumped to contained water storage D9. The water collected in contained water storage D9 is then pumped to contained water storage D6 for use in the process plant.

As storage D6 contains process water and D5 collects surface runoff from the process plant area, the water of these storages is subject to metal analyses. In addition, the Lake Cowal monitoring sites and the Lake Cowal inflow sites are also subject to metal analyses to monitor potential surface water quality impacts resulting from the Project.

Barrick considers that including metal analyses for all surface water monitoring locations is unnecessary considering all water contained in the runoff collection storages is pumped to D9 which is then pumped to D6 (which is subject to metals analyses). Therefore it is considered that all storages within the ICDS are either indirectly or directly subject to metal analyses. Barrick considers the current surface water monitoring programme adequately provides for the assessment of potential surface water quality impacts resulting from the Project. Furthermore, no metal enrichment or acid rock drainage issues at the CGM have occurred to date (as reported in the CGM's AEMR's since construction commenced in 2005) (refer to discussion above).

Additionally, considering contained water storages D6, D9 and D5 are a component of the ICDS and are situated to the west of the open pit, the storages are isolated from Lake Cowal and therefore are not a potential impact pathway from the Project to Lake Cowal.

Based on the above, it is considered that including metal analyses of water samples for the CGM's runoff collection storages is unnecessary.

2012 IMP Recommendation 6: *CGM should be prepared for operational or advocacy requirements arising from progressive drying and emptying of Lake Cowal.*

Barrick considers that the environmental management controls (i.e. environmental management plans including control strategies, monitoring programmes, mitigation measures and reporting requirements) currently in place at the CGM will adequately prepare the CGM for potential ecological occurrences and operational requirements associated with the Lake Cowal drying cycle.

The *Cowal Gold Project Environmental Impact Statement* (EIS) (North Limited, 1998) and subsequent environmental assessments undertaken for the CGM, considered the Lake Cowal filling and drying cycle (refer to Section 6.5 of the EIS and Section 3.5.2 of the Modified Request). The CGM's SWMP and SWGMBMP were subsequently developed based on these assessments (and other relevant assessments and investigations) to monitor the potential impacts to Lake Cowal from the Project and to develop ameliorative/contingency measures based on the results of the monitoring programmes if necessary.

Notwithstanding, Barrick will consult with relevant agencies (e.g. Department of Primary Industries - Fisheries) and the CEMCC regarding any works proposed to address an ecological occurrence that may arise as a result of the Lake Cowal drying cycle as part of Barrick's ongoing commitment to stakeholder engagement if necessary.

As requested, a copy of the 2012 IMP Report has been placed on Barrick's website.

Please do not hesitate to contact me on 0400 235 735 should have any queries regarding the above.

Yours sincerely
BARRICK (COWAL) LIMITED

GARRY PEARSON
Environmental Manager

Copies:
Kane Winwood (DP&I)
Emer. Prof. L. Clive. Bell (IMP)
Dr. Craig Miller (IMP)

ATTACHMENT A

TABLE 1 - IMPLEMENTATION PROGRAMME FOR 2012 IMP RECOMMENDATIONS

TABLE 2 - STATUS OF IMPLEMENTATION OF 2011 IMP RECOMMENDATIONS

Table 1
Implementation Programme for 2012 IMP Recommendations

2012 IMP Recommendation	Action Plan	Timing
2012 IMP Recommendation 1: *CGM should endeavour to complete the Northern Waste Emplacement Trials as soon as required materials become available.*	• Following placement of native pasture hay across trial plots, continue to implement the trial (subject to suitable rainfall conditions) in accordance with the design and implementation plan described in DnA Environmental's *Revised experimental design and implementation plan – Northern waste emplacement rehabilitation trials for Cowal Gold Mine Barrick (Cowal) Limited November 2011* (refer to Attachment B for remaining schedule of works for Northern Waste Rock Emplacement replicate plot trial).	January – May 2013 (subject to suitable rainfall conditions)
2012 IMP Recommendation 2: *CGM should continue to monitor existing rehabilitation trials (and those planned for establishment in 2012) with a view to further refining its approach to achieve sustainable, post-mining landscapes.*	• DnA Environmental to continue annual rehabilitation monitoring programme at the CGM including rehabilitation areas and existing (and planned) rehabilitation trials.	Ongoing
	• Carnegie Natives Pty Ltd to continue to monitor vegetation growth column/tube trials in accordance with the IMP's 2011 Recommendations (refer to Table 2, IMP 2011 Recommendation).	Ongoing
2012 IMP Recommendation 3: *CGM should continue to explore reasons for the anomalous metal concentrations on control soil and overburden samples being obtained from one of the laboratories used for analysis of dust samples.*	• Request ALS Laboratory Group to provide review of analysis procedures of depositional dust samples and a justification for anomalous metal concentration results.	March 2013
	• Continue to dispatch depositional dust samples to the independent laboratory, the National Measurement Institute (Sydney), and simultaneously, dispatch two duplicate samples to ALS to enable Barrick to review/compare laboratory procedures and results.	Ongoing
	• Report outcome of the review/comparison of laboratory procedures and results from NMI and ALS in the 2012 AEMR.	May 2013
	• Report outcome of 3 month trial involving additional dust sample jar installed at new location in 2013 AEMR.	May 2014
2012 IMP Recommendation 4: *In the 2012 AEMR, CGM should not only provide figures showing groundwater contours around the pit, but discuss the implications for the surrounding environment.*	• Include in the 2012 AEMR: - a clear description of the CGM's regional and local hydrological regime (including groundwater contours surrounding the CGM open pit and relevant figures); - a specific discussion regarding implications for aquifers in the surrounding environment and groundwater movement; and - an evaluation of the groundwater monitoring results against the modelling conducted for the Modified Request hydrogeological assessment.	May 2013

Table 1 (continued)
Implementation Programme for 2012 IMP Recommendations

2012 IMP Recommendation	Action Plan	Timing
2012 IMP Recommendation 5: *CGM should ensure that copper is analysed on all surface water bodies, including Lake Cowal, along with the other metals and metalloids listed) and that these data are reported in the next AEMR.*	• Continue to include copper as an analyte/parameter in the Lake Cowal monitoring programme.	Ongoing
2012 IMP Recommendation 6: *CGM should be prepared for operational or advocacy requirements arising from progressive drying and emptying of Lake Cowal.*	• Continue to implement CGM's environmental management controls (i.e. environmental management plans including control strategies, mitigation measures and monitoring programmes) and address any ecological occurrence associated with the drying of Lake Cowal that may arise.	Ongoing
	• Consult with relevant agencies (e.g. DPI Fisheries) and the CEMCC regarding any works proposed to address an ecological occurrence that may arise as a result of the Lake Cowal drying cycle as part of Barrick's ongoing commitment to CGM stakeholder relations if necessary.	

Table 2
Status of Implementation of 2011 IMP Recommendations

2011 IMP Recommendation	Action Plan	Status/Timing
2011 IMP Recommendation 1 : *CGM should undertake the analysis of the properties of the current soil stockpiles as stated in the CGM letter of 29 January 2011, as soon as is practicable, to further assist in the planning for future rehabilitation.*	• Conduct backhoe sampling of soil stockpiles (weather permitting).	Complete
	• Conduct laboratory analysis of soil stockpile samples.	Complete
	• Dr McKenzie to interpret sampling results and prepare an appropriate soil stripping procedure for stockpiled soils at the CGM.	Complete/ Soil Stockpile Characterisation Report (including soil stripping procedure) due February 2013
	• Confirm the quantities of topsoil and subsoil available for rehabilitation use and update CGM materials inventory with results from soil stockpile sampling.	Soil Stockpile Characterisation Report (including materials inventory) due February 2013
	• Arrange for soil amelioration measures to be conducted (if necessary).	Soil Stockpile Characterisation Report due February 2013
2011 IMP Recommendation 2 : *CGM should continue to evaluate the future needs for cover materials for rehabilitation including the subsoil material previously selected and stored for future use. It is recommended that assessment of this material be included in any future field and column trials and that growth of roots into the subsoil in existing trial plots on the Southern Waste Emplacement be explored and the salinity of this subsoil material be determined. Additionally CGM should attempt to obtain an estimate of the salinity range of materials previously saved for rehabilitation; this data will assist the site in calculating the volumes and planning appropriate layering of satisfactory materials for root zone construction through to mine closure.* *CGM should also finalise and implement the Northern Waste Emplacement Trials over the next year.*	• Evaluate the availability of cover materials likely required for future rehabilitation use based on results of stockpiled soils sampling and updated materials inventory.	Soil Stockpile Characterisation Report due February 2013
	• Dr McKenzie to provide an estimate of the salinity range of all stored materials (including topsoil and subsoil materials).	Soil Stockpile Characterisation Report due February 2013
	• Conduct independent laboratory analysis of subsoil materials prior to use in future field and column trials and document the salinity of the material.	Ongoing
	• DnA Environmental to include sampling and analyses of the subsoil material in the monitoring programme conducted at the existing rehabilitation trial plots on the Southern Waste Rock Emplacement (SWRE). Soil analyses to include measurement of salinity. DnA Environmental to include results of the soil sampling in annual rehabilitation monitoring report.	SWRE subsoil sampling and analysis complete/ DnA Environmental 2012 Annual Rehabilitation Report due February 2013
	• DnA Environmental to also assess plant root growth in the subsoil materials at the existing rehabilitation trial plots on the SWRE and include description of methodology and results in annual rehabilitation monitoring report.	Complete/ DnA Environmental 2012 Annual Rehabilitation Report due February 2013
	• Carnegie Natives Pty Ltd to monitor plant root growth in existing and future column trials conducted using subsoil materials and document results.	Ongoing

Table 2 (continued)
Status of Implementation of 2011 IMP Recommendations

2011 IMP Recommendation	Action Plan	Status/Timing
2011 IMP Recommendation 2 (continued)	• Finalise design for additional replicate trial plots on the outer batters of the Northern Waste Rock Emplacement, adjacent to the D1 contained water storage, as per DnA Environmental's (2011) *'Revised experimental design and implementation plan – Northern waste emplacement rehabilitation trials for Cowal Gold Mine Barrick (Cowal) Limited November 2011'*.	Complete (refer to Table 1, 2012 IMP Recommendation 1 and Attachment B)
	• Establish additional replicate plots on the outer batters of the Northern Waste Rock Emplacement, adjacent to the D1 contained water storage.	Trial plots established (refer to Table 1, 2012 IMP Recommendation 1 and Attachment B)
2011 IMP Recommendation 3: *CGM should continue to monitor the status of rehabilitation on the tailings walls to provide data to confirm that the current preferred rehabilitation approach will lead to a cover which is stable and sustainable.*	• DnA Environmental to continue to monitor performance of CGM rehabilitated areas and rehabilitation trials.	Ongoing
	• DnA Environmental to finalise 2012 annual rehabilitation monitoring report.	February 2013
	• Barrick to prepare and finalise internal report detailing the results of all rehabilitation trials conducted at the CGM to date.	March 2013
2011 IMP Recommendation 4: *CGM should ensure that new bulk standard samples of soil and waste materials are prepared for use as an ongoing check on metal and other analyses conducted at various laboratories.*	• Conduct bulk standard sampling of soil and waste materials to monitor for metals and other relevant parameters.	Ongoing (refer to Table 1, 2012 IMP Recommendation 3)
	• Send samples to an independent laboratory for analysis.	
	• Verify results from bulk standard sampling with dust monitoring programme.	

ATTACHMENT B

REMAINING SCHEDULE OF WORKS FOR IMPLEMENTATION OF NORTHERN WASTE ROCK EMPLACEMENT REPLICATE PLOT TRIALS
(Based on DnA Environmental, 2011)

Remaining Schedule of Works for Implementation of Northern Waste Rock Emplacement Replicate Plot Trials

Project Requirement	Feb 2013	Mar 2013	Apr 2013	May 2013	Nov 2013/ or as required
Spread out native pasture hay at appropriate densities according to the experimental design.					
Sow cover crop at recommended rate (standard across all sites).					
Pre-treat native seed as required (seek expert advice).					
Prepare seed mixes, record weight of each species applied for later reference.					
Allow one month settling period prior to native seed application treatments.					
Apply seed according to the experimental design.					
Plant tubestock according to the experimental design (after suitable rainfall event).					
Consultants/University to undertake baseline monitoring (on completion of trial set up).					
Consultants/University to undertake 6 month (and thereafter annual) monitoring.					
Implement weed control and maintenance (e.g. replace tubestock) as required.					

After: DnA Environmental (2011).