McArthur River Mining

The Honourable Kon Vatskalis MLA
Minister for Department of Resources
GPO Box 3146
Darwin NT 0801
Parliament House
State Square

7 October 2010

Dear Minister

Independent Monitor Audit Report for the McArthur River Mine – 2009 Operational Period

Thankyou for the above report sent to McArthur River Mine on 17 September 2010. As per clause 8.5 of the Independent Monitor Assessment Conditions (IMACS), I submit our comments on this Final Report.

As part of the defined process, MRM provided comment on the draft report provided by the Independent Monitor. These comments acknowledged the Independent Monitor's recognition that:

- MRM has acted to eliminate previously identified extreme risks
- The Water Management Plan prepared in November 2009, contingency planning and mitigation measures have significantly improved MRM's water monitoring and management
- Dust mitigation has improved
- A range of monitoring programs are considered "generally appropriate" including the monitoring of dust, soil, fluvial sediment, riparian bird and macro invertebrates, vegetation monitoring at Bing Bong Dredge Spoil Pond, and marine environments
- Procedural improvements have been made (and were commended) including the scientific approach to the marine monitoring program for seawater quality and updated procedures for classifying waste rock destined for the Overburden Emplacement Facility
- Salt discharge to land adjoining the Bing Bong dredge spoil pond has been brought under control through rectification works and is no longer considered an urgent issue.

It is particularly significant for MRM that the Independent Monitor has identified no issues requiring urgent investigation which is testimony to the investment of resources and capital made to continuously improve our environmental performance.

xstrata zinc

McArthur River Mining Pty Ltd
PO Box 36821, Winnellie NT 0821, Australia
Tel +61 88975 8179
Fax +61 88975 8170
www.xstrata.com

ABN 90 008 167 815

In our response to the draft report, we also provided clarification on matters where assumptions or errors of fact had been made by the audit team without requesting further verification from MRM. Information on additional work completed against the issues raised by the Independent Monitor was also provided.

We note that many of comments by MRM have been taken into consideration within the Final Report. However, an additional comment not previously raised by the Independent Monitor has been included in the Final Report as a non conformant issue. This is in relation to water quality and sediment testing of the Overburden Emplacement Facility Dams and is addressed below.

To a large degree, our comments on the Final Report relate to the timing differences between the scope of the Independent Monitor assignment and when capital and operational work is conducted. The long lead time for this report means significant work during the 2010 calendar year is not taken into consideration. It is important to recognise that work has already begun on all matters raised within this Final Report.

Our comments on the identified issues highlighted by the Independent Monitor and an update on actions undertaken to date or to be implemented by McArthur River Mine are described below.

Four procedural non conformances relating to MRM's commitments

1) *Monitoring of potential sedimentation zone in the McArthur River downstream to the Bukalara Range*

Currently photographic reference points are monitored at every 250 metres from the end of the McArthur River channel to the Glyde River confluence in line with the same methodology used to monitor erosion along the length of the Barney Creek and McArthur River channels.

For future reference and clarification, additional detail will be included in the Environmental Monitoring Manual in regard to the 'Erosion and Sedimentation Monitoring' section to specify the photographic reference points to be monitored mid to late dry season during periods of low flow. This will capture sedimentation particularly in downstream sections to the Glyde River influence.

In 2011 up to 10 additional monitoring locations will be added to this program extending around 10 kilometres downstream of the Glyde River and into the Bukalara Range. Access will be limited to helicopter only and thus restricted by on site availability.

2) *The installation of lysimiters in the Overburden Emplacement Facility at various stages to monitor water infiltration*

The installation of Lysimeters was covered in section 7.2.5 of the 2009/2010 Mining Management Plan and stated that they will be installed at various stages to monitor water infiltration. Whilst the installation of lysimeters has not occurred as of yet this is still programmed to occur as the Overburden Emplacement Facility progresses. This will occur during the first quarter of 2011.

3) *Water quality and sediment monitoring at the Overburden Emplacement Facility dams*

We reject the Independent Monitor's finding that this is a point of non-conformance.

Frequent, comprehensive water quality and sediment quality testing is undertaken in both the Northern OEF sediment dam (SPD - site name in Monitoring database) and the Northern OEF Run off dam (SPRD - site name in Monitoring database). Water testing is undertaken at these

locations as part of the artificial sampling program which is done on a monthly basis and includes all dams on site.

Unfortunately this information was not requested by the Independent Monitor auditor and therefore was not presented as evidence. During the audit the only artificial sample results requested were for the Bing Bong Run-off pond.

After the construction of SPD, one water sample was taken in 2009 on the 16th of March. No other water samples were taken before at this point as it was not complete. Monitoring water in this location commenced again in February 2010 when water was present and has been undertaken on a monthly basis since. Water monitoring in the SPRD commenced on 23 June 2010 and on a monthly basis since. No water was present in this location until this point of time and thus could not be sampled.

Fluvial samples in SPD have been taken twice, once on 10 April 2009 and then again on 10 June 2010. Access to the SPRD has been limited due to the claying lining and this restricted samples being taken. However fluvial samples are taken on a bi-annual basis and the next scheduled sampling event is for this month.

This monitoring schedule is inline with the current Water Management Plan.

4) *Kinetic Leach testing on site and within laboratory columns*

During the 2009/2010 wet season three separate samples were taken after major rainfall events from leach columns on site and the water was sent to ALS laboratories for analysis. In addition, stage 7 of the MRM Kinetic Leach Column Program has been reintroduced with URS in Brisbane for the 2010/2011 wet season period. A report will be prepared by URS which will incorporate and compare against the 2009/2010 wet season samples. Kinetic leach column testing will now form an annual process of monitoring.

Issues considered significant by the IM that require action

5) *Excess water storage within the Tailings Storage Facility, which poses the risk of overtopping and embankment failure due to spillways being under designed for a flood event*

We are equally conscious of the amount of water stored within the TSF and have been taken steps to increase the use of recycled water, for example, in dust suppression spraying. However, the risk of over topping is being well managed both structurally and operationally. We do not agree that the spillways are under designed for a flood event.

The spillway between Cell 2 and the Water Management Dam (WMD) has been designed by Alan Watson and Associates as per the ANCOLD (1999) guidelines. A Dam Safety Audit was conducted by this firm in 2009.

Our internal risk management practices have categorised the TSF as a high hazard given the following characteristics:

- damage to an environmental feature of significant value is probable from the uncontrolled releases or seepage
- Excessive economic loss to mine infrastructure would result from embankment failure.

As a result, the spillways have been sized to accommodate Probable Maximum Flood (PMF) with no additional freeboard requirements.

On the eastern edge of Cell 1, the division embankment between Cell 1 and Cell 2 is at RL46, 3 metres below the external embankment at RL49. The division embankment slowly increases in height towards the centre of the dam; however there is approximately 100 to 150 metres of division embankment below RL49. This means there is essentially a spillway at least 100 to 150 metres wide.

The western edge of Cell 1 is connected to Cell 2 via three, 1 metre diameter interconnecting pipes through the division embankment. In addition there is a rock lined spillway approximately 30 metres wide at RL 48.5 across the western drain.

The WMD has two emergency spillways - one a concrete design constructed as part of the original structure, and the second constructed to allow emergency discharge of water during the 2000/2001 wet season event.

In addition, Allan Watson and Associates are engaged annually to inspect the TSF. During their site visit in October 2010, they will also advise on additional design work for the capping of Cell 1. Their scope includes asse0ssing the designs of these spillways to ensure they comply with ANCOLD guidelines.

6) *Seepage migration from the Tailings Storage facility to Surprise Creek and the hazard classification of tailings in Cell 1 and Cell 2*

It is important to recognise that action committed in 2008 to address the Tailings Storage Facility (TSF) issues has been conducted. This is reflected in the Final Report and includes:

- Installation of a leachate collection sump between Cell 1 and Surprise Creek
- An electromagnetic survey
- Detailed inspection of the sources of seepage and recommended mitigation actions.

As also reported by the Independent Monitor, URS was engaged in February 2010 to identify the root causes of the escape of the TSF liquor to the environment and to recommend a path forward to control these losses.

Options have been investigated for either preventing liquor from reaching the external environment with a cut-off trench or intercepting it once outside of the TSF with recovery bores. In both cases the liquor intercepted is returned to the TSF adding to the total volume of contained by the TSF.

The development of a cut off trench on the north western side of Cell 1 and 2 of the TSF has now been completed. Collection of seepage through recovery bores and progress on rehabilitation of Cell 1 with the addition of a clay layer are ongoing.

The predominant contaminant in the seepage is sulphates – hence the salting present where seepage expresses. There is no difference in the tailings deposited in Cell 1 compared to Cell 2 apart from the time of deposition, and the general trend to lower sulphide content in the latter depositions.

In the fourth quarter of 2010, piezometers will be installed in Cell 1 and tailings will be geochemically analysed to characterise the AMD potential of the solid tailings and groundwater quality. This is as per the recommendations of the Independent Monitor's report from the 2008 operational period.

7) Fugitive dust emissions from the ROM pad and mine site crushing facilities

Dust mitigation at the surface crushing facility has continued with the gradual covering of the key dust generation points such as transfer points between conveyors and at the base and top of the secondary crushers. A permanent water addition point has been added to the head drum of the stockpile feed conveyor to reduce dust at this point. An additional booster pump and spray bar has been ordered for the head drum to improve suppression of dust as crushed material falls to the stockpile surface.

Co-ordination of water cart operations on the ROM pad has also improved with better direct communications between the crushing and mining operating teams. A street sweeper has also been purchased and is in use around the mill facilities on a regular basis.

8) Further reduction of fugitive dust emissions from the Bing Bong concentrate storage shed;

This matter is the subject of continuing investment. In 2010, new strategies include the replacement of sections of the Aburri roof to decrease dust generation during loading operations and corrosion control on the storage shed.

In 2011, capital investments are planned into further dust mitigation strategies such as the potential for a negative pressure shed and electronic doors.

9) Detail and quality of reporting of the dust, soil and sediments monitoring program (inclusion of long term trends and base studies)

Further efforts will be made in the reporting of monitoring data and results within the Mining Management Plan to be submitted in October 2010. Since the audit, Simtars has visited the site and demonstrated the use of hi-flow dust samplers which MRM is investigating.

10) Weed management along the river channels and the mine site

Weed management activities since the Independent Monitor inspected the site have included the burning off of areas around the camp in order to control the spread of Bellyache bush and discussions with the Northern Territory Weeds Branch in relation to ceasing biological control efforts at Bing Bong on Parkinsonia.

MRM is currently in the process of employing a rehabilitation technician whose primary roles will include rehabilitation, weed management and fencing and thus a greater emphasis can be placed on weed control in the future.

11) Structural integrity of the Bing Bong dredge spoil ponds and testing of the Tailings Storage Facility clay cap to ensure it meets design specifications

This work has already been planned within our 2010 program of activity.

The structural integrity of the Bing Bong dredge spoil walls will be increased through earthworks undertaken prior to the next wet season. This will involve the opening of spillways between cells to allow rainfall run-off to travel through the cells at a faster rate and hence minimise the risk of any wall failures. All of this work will be undertaken as part of the rehabilitation works on the dredge spoil for which a scope of works has already been written.

Clay testing will be undertaken during the remainder of the capping of Cell 1 at the TSF. Approximately 50 samples will be taken including some additional ones on the already placed

clay. Testing will be based on both the suitability of material used and the compaction rates achieved. Capping has commenced already on the remainder of Cell 1 and will be finished before the commencement of the 2010/2011 wet season.

Issues considered minor by the Independent Monitor which require action include:

12) Inadequate analysis of the accuracy, reproducibility and precision of routine monitoring results collected by MRM

Discussions on quality assurance and quality control were expanded on within the 2010 Water Management Plan.

13) Rapid fencing (damaged by annual floods), or relocation of fence line to keep cattle away

As explained to the audit team, the facilitation of rapid fence repair is inhibited due to access restrictions. Since the Independent Monitor's inspection, a new location for fencing has been identified. Approval at this location has been gained via traditional owners and only just recently through the Aboriginal Areas Protection Authority. The relocation of a significant section of the perimeter fence line in the lower end of the McArthur River channel is expected to reduce the extent of damage in subsequent wet seasons and allow for rapid repair as access becomes available.

A contractor has been chosen for the construction of the fence and materials have already been purchased for a section of up to nine kilometres long. This fencing is planned for completion by the end of November 2010.

14) Procedure and results for in-place testing of the clay liner of the Overburden Emplacement Facility

Clay samples are taken by the Geotechnical Engineer on a monthly basis as a minimum or as required if the use of a completed area is likely to be necessary outside of the routine testing regime. Sampling is conducted where practical to allow test results to be received prior to proceeding with PAF being placed on top of the clay liner.

In case of a non-compliant test result this enables corrective action to be conducted. This may include adjusting moisture content through ripping, watering and re-compacting clay areas or repeating compacting to ensure the required level of impermeability is achieved. If it is deemed from sample results that the material is not suitable to meet compliance standards, the material will be removed and replaced.

Clay testing requirements are written in Procedure (EOM NOEF Sampling Procedure MIN-TEC-PRO-1000-0015).

The above testing procedure for both NAF/PAF material and clay was provided to the Independent Monitor in preparation for the audit along with some clay testing results. Clay testing has continued at the OEF and will continue to do so as per the procedure.

Other Issues identified by the Independent Monitor include:

15) Improved technical interpretation to evaluate trends in monitoring data (Both spatially and with time)

Greater interpretation was included in the 2010 Sustainable Development Water Management Plan which was submitted on the 30 August to the Department of Resources. Greater

interpretation of results will also include in the Mining Management Plan in regards to dust, soil and tailings geochemistry.

16) Provision of 'As built Reports' for the Tailings Storage Facility Cell one and Overburden Emplacement Facility

A review of the hard copy reports will be conducted to identify what records exist of "as builts" from the original construction through to the latest works at the TSF.

17) Increase the amount of fallen timber within the river diversion for habitat creation

Between July and September 2010, 35 additional locations of large woody debris were added into the McArthur channel in order to create habitat and trap sediment and other material for rehabilitation purposes. All of these locations were photographed and coordinates taken for monitoring purposes after the 2010/2011 wet season. Results from the most recent fish monitoring program have highlighted the success of this work to date.

Undertake immediate and medium term studies and rectification works in relation to:

18) Weed management at Mine Site

Please refer to our previous explanation at point nine.

19) Stability at Bing Bong dredge spoil

Capital works have been programmed for the dredge spoil to be undertaken before the commencement of the 2010/2011 wet season. This additional work will include ground preparation for CDU studies, additional ripping in bare areas in completed cells in close proximity to the road and wall stability. Where possible the perimeter drain will also be reinstated if required.

20) The rate and quality of leachate migration and geochemical testing at the Tailings Storage Facility.

Since the last audit, Golder Associates Pty Ltd has been commissioned to undertake all work in line with recommendations from the previous Independent monitor report. Additional controls for seepage mitigation since the audit has included the construction of a collection trench on the western side of Cell 1and 2 and further capping of Cell 1.

For any further information on the above issues please contact Gary Taylor, Health, Safety and Environment Manager on 89758263.

Yours faithfully

Ettienne Moller
General Manager
emoller@xstratazinc.com.au
Direct Dial: 08 8975 8166