BHP Billiton Mitsubishi Alliance

23 March 2016

Kate Bennink
Assessment Delegate
Department of Environment and Heritage Protection
99 Hospital Road
Emerald QLD 4720

Attention: Ms Juliana McCosker

Dear Ms Bennink,

Goonyella Riverside and Broadmeadow Mines EPML00853413
Amendment Application Information Response

I refer to the Information Request for the Environmental Authority (EA) amendment application for Goonyella Riverside and Broadmeadow Mines received by BHP Billiton Mitsubishi Alliance (BMA) on 22 January 2016.

In accordance with s146 of the *Environmental Protection Act 1994*, BMA is able to address all of the information requested.

BMA requests that the Department of Environment and Heritage Protection (the Department) proceed with the assessment of the amendment application based on the supporting information provided in the amendment application, in addition to the information provided herein.

Please consider the following, as per the information request notice. This should be considered in parallel with the attached memo prepared by a third party consultant for BMA, Alluvium Consulting, in addressing some of the information request.

Request 1 – As the Department of Natural Resources and Mines (DNRM) has previously assessed the Isaac River diversion to be in poor condition, the administering authority requires more information regarding the proactive management strategies that will be adopted and implemented to ensure the structural integrity of the diversion is not compromised as a result of the proposed activities.

Firstly, it should be noted that BMA has not been engaged or consulted by the Department of Natural Resources and Mines regarding the assessment of the Isaac River as being in 'poor' condition in relation to the proposed EA amendment for watercourse subsidence.

The claim that the Isaac River diversion is in 'poor' condition is unsubstantiated. Since the commencement of annual diversion monitoring in 2007, the diverted reach of the Isaac River has consistently been described as being in 'moderate' condition with Index of Diversion Condition (IDC) scores greater than 8. Although not documented, the industry standard classification for 'poor' is an IDC score of between 4 and 8 while a moderate condition score is between 8 and 12. Since the commencement of monitoring in 2007, IDC scores for the diversion have been trending towards equilibrium with observed decreases coinciding with large bank full flow events. Generally in these events, however, recovery has been observed the following year.

The average IDC score for the diversion reach since the commencement of monitoring is approximately 10 out of 20, which is higher than the Bowen Basin average for diversions constructed prior adoption of the ACARP standard. The average IDC score of the diversion reach is approximately 75% of the upstream reference reach with an average IDC score of 14. This is consistently higher than the majority of Bowen Basin diversions when the diversion reach IDC score is compared to the upstream control reach IDC score.

Please see the attached supporting document, section 1, which summarises the risk posed to the Isaac River diversion by subsidence and the management strategies in place.

A key point to note is the subsidence of the Isaac River diversion promotes a positive response in terms of the enhanced creation of pools and riffles along the diverted reach. These pools and riffles support a complex aquatic habitat in the Isaac River. BMA continues a comprehensive aquatic ecosystem health research program which continues to monitor this occurrence, in addition to receiving environment monitoring conducted under current conditions of the EA.

BMA has and will continue to implement proactive mitigation measures well ahead of longwall mining to manage subsidence impacts. River piling is completed in a campaign style to maximise efficiencies of mobilising specialist piling plant, equipment and expertise from out of state. Pile fields are constructed to certified engineered designs for each site taking into account the flow dynamics of the Isaac River and complementing the bank protection provided by existing vegetation.

The most recent piling campaign was completed in 2015 for longwall panels 109, 110, 111 and 112, well in advance of longwall mining. The next campaign is scheduled for completion by BMA in 2017 and will include longwall panels 113, 114, 115 and 116.

Furthermore, BMA has developed and implemented a Trigger Action Response Plan (TARP) which lays out the proactive management response options to be employed by BMA, informed by the results of annual subsidence monitoring and risk assessment. This TARP forms part of the adaptive management strategy underpinning the Subsidence Management Plan, and will continue to be implemented by BMA for the life of the mine. The current version of the TARP is enclosed for convenience.

Request 2 – Further information must be provided regarding the current and potential cumulative impacts on the Isaac River diversion. In particular, any releases or impacts from the Red Hill Project directly upstream must be considered.

BMA notes there is no prescribed obligation under sections 223 or 226 of the *Environmental Protection Act 1994* to address cumulative impacts as part of an EA amendment application. However, cumulative impacts were considered by BMA in the revised Subsidence Management Plan as submitted in the application.

Please see the attached supporting document, section 2, which summarises how BMA has considered the risk of cumulative impacts of subsidence on the Isaac River diversion.

In addition, as part of proactive management of subsidence impacts at Broadmeadow Mine and in the wider regional area, BMA undertook the jointly funded Isaac River Cumulative Impact Assessment (IRCIA) which included in its scope mining operations with the potential to subside the Isaac River. This information was presented as part of pre-lodgement with the Department and outcomes of the IRCIA were included in the revised Subsidence Management Plan as submitted with the application.

BMA wishes to confirm that the Red Hill Project is out of scope in terms of management of subsidence impacts under the Broadmeadow Subsidence Management Plan. The Red Hill Project EA independently authorises watercourse subsidence, should this project proceed.

In relation to the Red Hill Project, cumulative impacts were assessed to the satisfaction of the administering authorities and Coordinator General as part of the Environmental Impact Statement (EIS) completed for the Red Hill Mining Lease Project. Key outcomes of the EIS, relevant to BMA's understanding of cumulative impacts are provided below for further context.

As indicated in Appendix I6 of the Red Hill Mining Lease Project EIS, the impacts of longwall mining on alluvial stream systems such as the Isaac River were categorised by industry stakeholders in consultation with DERM (Department of Environment and Resource Management, now the Department of Environment and Heritage Protection) in 2007 as part of the IRCIA.

The IRCIA, as described above, identified that while there is potential for impacts on the Isaac River as a result of mine related subsidence, none were determined to be significant in terms of instigating long term large scale geomorphological change. Based on the then current mine plans and considered on a reach scale, subsidence voids in the river channel were predicted to have approximately 50 per cent or greater probability of infilling during the period of mining. Overall, subsidence voids were predicted to be infilled within 20 years after the cessation of mining unless there is a substantial reduction of sediment inputs from the Isaac River catchment (Section 7.3.5.1 of the EIS).

Sand extraction in the Isaac River, if not carefully managed, may exacerbate impacts at the local scale. However, given that the remaining sand allocations in the catchment will expire

by 2018, the minor quantity proposed for extraction through the Moranbah North reach (7,000 m3) and its distance downstream of the project site (approximately 10 km), the cumulative impact of sand extraction in the short to medium term is considered negligible. Therefore, this will not have an impact on the Isaac River's ability to infill subsidence voids.

Due to the increased time and spatial lag between subsidence of panels at Broadmeadow Mine and the Red Hill Project (compared to what was projected in the EIS) there is an increased probability of infilling and re-establishment of bedload sediment transport continuity.

Request 3 – Clarification must be provided in relation to the direction of longwall panel mining when comparing Figure 2.1 Broadmeadow Mine Existing Operations location within the Subsidence Management Plan and Figure 2.2 Project Components located in the letter titled, Goonyella Riverside and Broadmeadow Mines Environmental Authority Amendment Application dated 27 November 2015.

Figure 2.1 from the Broadmeadow Subsidence Management Plan is relevant to the mine plan and related subsidence for **Broadmeadow Mine only**. The scope of the Broadmeadow Subsidence Management Plan does not include proposed subsidence activities associated with the Red Hill Project. From the legend in Figure 2.1 the current and confirmed longwall panel layout is shaded in yellow. The future long wall panel layout, shaded light green/blue, is yet to be confirmed in BMA mine planning processes.

It is important to note that the amendment application addressed watercourse subsidence for Broadmeadow Mine, but also included minor amendments required to allow the integration between the adjacent Red Hill Mine Project area and Goonyella Riverside and Broadmeadow Mines. Figure 2.2 was included in the amendment application in reference to the amendments required to the Goonyella Riverside and Broadmeadow EA for alignment with the Red Hill Mine Project EA only. Figure 2.2 was taken directly from the Coordinator General's Evaluation Report for the Red Hill Mine Project Environmental Impact Statement to give the proposed amendments context in terms of these minor administrative amendments only. The long wall panel layout in Figure 2.2 for Broadmeadow Mine is outdated and should not be referred to for the proposed amendments for Broadmeadow Mine watercourse subsidence (as stated above).

Request 4 – Further to the point above, the potential impacts of the direction of the longwall panels must be considered including avulsion.

BMA has assumed for the purposes of the information request response, the administering authority requires clarification regarding the potential to re-orient some of the later panels in the Broadmeadow Mine plan. These could potentially be altered from an orientation perpendicular to the Isaac River to parallel it, which could alter the potential for an avulsion of the Isaac River.

Please see the attached supporting document, section 3, which summarises how BMA has considered these risks including avulsion and the approach to be taken if the Broadmeadow Mine plan changes.

BMA confirms the scope of the Subsidence Management Plan, assessment of subsidence impacts, modelling and mitigation strategies are based on the current mine plan for Broadmeadow Mine as presented in Figure 2.1. Any changes to mine plan or panel orientation will trigger BMA to revise the modelling and risk assessment and update the Plan accordingly. This re-assessment would include the assessment of risk, including avulsion, which potentially may require amendments to proactive and mitigation strategies.

We look forward to your prompt consideration of this information and the progression of the amendment application.

Please do not hesitate to contact me on (07) 33292969 or 0427176239 if you have any questions in relation to any of the above.

Yours faithfully

Ryan Kinnealy
Principal Environment Analysis and Improvement
BHP Billiton, Coal