Suite 5B,1 Swann Road,
Taringa Queensland
Australia 4068

P +61 7 3217 8772
F +61 7 3217 8775
www.aarc.net.au

ACN 077 456 074
ABN 96 077 456 074

Affiliates and Offices in Bangkok, Beijing, Brisbane, Geelong, Hanoi, Shanghai and Vientiane

10 June 2015

Neil Dale
Team Leader (Assessment), Coal
Environmental Services & Regulation
Department of Environment and Heritage Protection
99 Hospital Road
Emerald QLD 4720

Attention: Neil Dale

RE: Submissions of Elimatta Project Environmental Management Plan

Dear Mr Dale,

Revisions to the Elimatta Project Environment Management Plan have now been completed following receipt of the EIS Assessment Report in July 2014. These revisions were to address outstanding matters raised in the Assessment Report under the then Environmental Protection Act 1994.

Please find accompanying this letter copies of the following:

- Elimatta Project – Environmental Management Plan (June 2015); and,
- Memo - Elimatta Project EM Plan – Preliminary Review Correspondence.

The memo contains details addressing queries raised during your recent preliminary review of the draft version of the EM Plan. Should we be able to clarify or assist further in any way, please do not hesitate to call.

Kind regards,

Gareth Bramston
Operations Manager
AARC PTY LTD

gbramston@aarc.net.au

AustralAsian Resource Consultants

Suite 5B,1 Swann Road,
Taringa Queensland
Australia 4068

P +61 7 3217 8772
F +61 7 3217 8775
www.aarc.net.au

ACN 077 456 074
ABN 96 077 456 074

Affiliates and Offices in Bangkok, Beijing, Brisbane, Geelong, Hanoi, Shanghai and Vientiane

Memo

TO: Department of Environment and Heritage Protection ATTN: Neil Dale
FROM: AARC
DATE: 10 June 2015
RE: Elimatta Project EM Plan – Preliminary Review Correspondence

Dear Neil,

Thank you for your preliminary review of the draft Elimatta Project EM Plan 2014. In response to the queries and comments received by AARC, please find the following correspondence for reference during the final review of the Elimatta Project EM Plan 2015:

Section 2.9.1.1 Diversion Stages

Query
How will the impacts of cutting off a significant bend (shortening the creek length and increasing gradient) be mitigated during life of temporary diversion?

Response
Section 5 of the *Horse Creek Diversion Functional Design Report* (Parsons Brinckerhoff 2014) (Appendix L of the Elimatta Project EIS April 2014) describes the Diversion Design. The characteristics of the Stage 2 temporary diversion are specifically detailed in Section 5.3.2 where a comparison of the hydraulic characteristics between the natural channel, diversion channel and ACARP guidelines are provided. This section also details the mitigating strategies that may be employed during the stage to improve the hydraulic characteristics of the stage.

Section 2.10.1.3 Dust Suppression Water Usage

Query
Section 2.8.5 of the EISAR highlighted that the EIS identified that it would not be feasible to have a 100% reliable water supply. The EIS stated "mine dust suppression water would be inadequate for between 23-200 days per year." How will this shortage be managed? What dust suppression alternatives have been considered?

Response
The *Water Management Strategy* (JBT Consulting 2014), revised and provided as Appendix B of the Elimatta Project EM Plan 2015, was initially developed to test the adequacy and feasibility of water management within the boundaries of the Project. However, as described in the *Water Management Strategy*, Taroom Coal Pty Ltd will not develop the Elimatta Project without securing an external water supply pipeline (as detailed in Section 2.10.2 of the EM Plan) to satisfy project water demand. The modelled demand for external supply is included in the *Water Management Strategy*.

Section 2.10.2 Water Supply

Query
Please clarify if a conventional WTP is planned? What quantity of wastes are anticipated? Will there be regeneration of wastes?

Response
As noted in Section 2.10.2 of the EM Plan, the requirement for a treatment plant and its specifications will depend on the quality of water sourced by the external pipeline supply provided by SunWater Limited.

Suite 5B,1 Swann Road,
Taringa Queensland
Australia 4068
P +61 7 3217 8772
F +61 7 3217 8775
www.aarc.net.au
ACN 077 456 074
ABN 96 077 456 074
Affiliates and Offices in Bangkok, Beijing, Brisbane, Geelong, Hanoi, Shanghai and Vientiane

Section 2.11 Water Storage

Tailings Dam Pit

Query

It will need to be a Release Point with defined water quality release criteria and receiving water flow criteria.

Response

All tailings dams have been designed as no release structures. An opportunity to "release" has been modelled in the *Water Management Strategy* (JBT Consulting 2014) to test the capacity and integrity of the system from a failure to contain event. The modelling indicated that even if allowed to freely release, the tailings dams would not exceed their capacity under all modelled climate risk scenarios. In operation, none of these structures will be designed to facilitate controlled release events during the life of the Project.

Sediment Dam – SD3

Query

EIS AR 4.12.1 requested a discussion on the potential variability and seasonality of these values. Please demonstrate how the capacity of the sediment dams interacts with the rainfall patterns of the area. How regularly will the dams be flushed/ what level of rainfall is required to flush the dams?

Response

EIS AR 4.12.1 stated: *"The EIS did not adequately account for the potential variability of salinity with flow or seasonality. This information is useful in understanding the variability in the regional salinity levels, which are known to be strongly affected by flow."*

This was not interpreted as relating to the individual water storages but the passing flows in the regional watercourses which are mostly ephemeral. Seasonality of the historic water quality sampling events has been noted in the EM Plan and revised *Water Management Strategy*. In respect to the individual dams, sediment dam capacity, modelled overflows and water quality is described in Section 10.6 of the *Water Management Strategy* (JBT Consulting 2014).

Raw Water Dam - RW4

Query

Has water balance modelling been done to determine if at any time during the mine life, the environmental dams exceed their capacity?

Response

Yes, please refer to Section 10 of the *Water Management Strategy* (JBT Consulting 2014) included as Appendix B to the Elimatta Project EM Plan 2015.

Section 2.13.1.1 Water Management Strategies over the Southern MLA 50254

Query

Referring to figure 5.15, this does not appear to be indicated by the proposed final landform.

Figure 5.15 EM Plan indicates that the majority of water will flow away from the Horse Creek diversion in the revised catchment.

Response

As a preferable outcome from a water management standpoint, where practicable, runoff from rehabilitated landforms will be allowed to freely drain towards the natural Horse Creek catchment. As noted, Figure 5.15 does not indicate this drainage at the scale drawn.

Suite 5B,1 Swann Road,
Taringa Queensland
Australia 4068
P +61 7 3217 8772
F +61 7 3217 8775
www.aarc.net.au
ACN 077 456 074
ABN 96 077 456 074
Affiliates and Offices in Bangkok, Beijing, Brisbane, Geelong, Hanoi, Shanghai and Vientiane

Section 2.19 Sewerage Treatment

Query

Will this be the area used? What is the proposed area? Please clarify what you mean by "most soils." Does the proposed area fall within this soil type?

Response

A minimum area of 133m^2 will be used for irrigation in a proposed irrigation area situated east of the accommodation village access road, as described in Section 2.19 of the EM Plan.

According to *Environmental Guideline: Use of Effluent by Irrigation* (Department of Environment and Conservation (NSW) 2003, pp 51), "past experience has shown that an average loading rate of 1500kg/ha/month can be taken as the maximum organic loading for most soils." This is the loading rate applied when undertaking the preliminary calculations to determine the minimum size of the irrigation area to be used at Elimatta. The findings of the *Soil and Land Use Suitability Assessment* (AARC 2014) do not indicate any obvious limitations in the capacity of the Cheshire Soil Management Unit to handle the described rate of loading. Further information clarifying these points has been included in the EM Plan.

Section 2.22.11.1 Final Voids

Query

How will the stability be demonstrated regarding long term creek lateral movement, especially with regards to unconsolidated spoil material?
Is it proposed that the bund will be maintained in perpetuity?
What allowance has been made for dispersive spoil and potential piping to the pit?

Response

The long term stability and rehabilitation of the diversion is detailed in the *Horse Creek Diversion Functional Design Report* (Parsons Brinckerhoff 2014) (Appendix L of the Elimatta Project EIS April 2014).

The bund will remain in perpetuity in accordance with standard practice to ensure safety.

Dispersive material will be managed as part of both the topsoil management and waste disposal strategies. Dispersive spoil material will be dumped preferentially to avoid surface areas as described in the EIS.

Query

Peaking at 35000mg/L. Is this void intercepted by groundwater flows? Will TDS subsequently leak into groundwater aquifers?
Please provide more information about the water quality in the voids, the water movement through the voids and potential impacts on groundwater.

Response

The *Water Management Strategy* (JBT Consulting 2014) and the *Groundwater Assessment* (AGE 2012) detail the void water levels and quality post mining. Modelling indicates that high TDS in the eastern void is prevalent during the period where the void acts as a groundwater sink, while groundwater levels recover post mining but prior to the modelled leakage from Horse Creek. At the point in time leakage from Horse Creek intercepts the void, void water quality is improved to a TDS level <2000mg/L and the volume of water stored in the void increases dramatically potentially recharging the groundwater system and achieving long term equilibrium. Baseline water quality results from the Walloon Coal Measures, intersected by the Eastern Void, most commonly returned TDS values of between 3000 and 7000 mg/L. Negative impacts to groundwater quality are not expected as a result of the void water behavior.

Query
Is there a long-term management plan in place to maintain the interceptor drains?

Response
Management of the drains will be part of the Mine Closure and Rehabilitation Planning as described in Section 3.6.5.5 of the EM Plan.

Section 2.22.11.4 Waste Disposal

Query
EISAR s4.10.3 DNRM advice is no greater than 1:12. Is there a contingency plan in case 1:6 is found to be unstable? Is there adequate space for a different profile?

Response
The advice of DNRM was noted in the EISAR. Subsequently, Section 3.6.5.1 of the EM Plan was amended to note "Where there is evidence of slope instability, the angle of repose may be further reduced as required to ensure the integrity of post-mine landforms". There is adequate space within the Project area to achieve a different profile as necessary to ensure landform stability.

Query
Final closure options for rock lined drains. Is there a risk that long term management will be required?

Will these be reviewed post rainfall event? Water will naturally find the weakest point in the landscape and scour.

Response
Management of the drains will be part of the Mine Closure and Rehabilitation Planning as described in Section 3.6.5.5 of the EM Plan.

Query
Earlier referred to a topsoil depth of 300mm. Can 300mm be achieved in this circumstance?

Response
Topsoil respreads to a nominal, or minimum, depth of 150mm. Depth to be clarified for different landforms as part of Mine Closure and Rehabilitation Planning.

Section 2.22.11.6 Diversion

Query
Topsoil depth now 100mm. Why? Earlier 150mm and 300mm were stated.

Response
It is proposed that shallower usage of topsoil during temporary diversion rehabilitation to establish suitable cover but not exhaust valuable topsoil resources. Application and restriping of topsoil degrades the resource and reduces availability for permanent rehabilitation efforts.

Section 3.2.5.1 Air Quality

Query
EIS AR section 4.8.5 identified a potential water shortage for dust depression varying between 23-200 days per year, depending upon climatic conditions. What is the contingency plan for this circumstance?

Will contingency water be held for such events?
Will work be stopped during these conditions to reduce dust generation?

Response
Taroom Coal Pty Ltd will not develop the Elimatta Project without securing an external water supply pipeline (as detailed in Section 2.10.2 of the EM Plan) to satisfy project water demand.

Section 3.3.1.1 Surface Water Courses Referable Wetland

Query
Section 4.12.1 EIS AR determined that inadequate evidence was provided in reaching this conclusion. Please offer more detail via survey work.

Response
Reference to the wetland as not having the typical characteristics of a wetland of high ecological significance has been removed. Modelling, and detailed discussion of impacts and mitigation strategies, included in the EM Plan have been proposed to ensure the protection of downstream environmental values. These measures include strict controls on release water quality and quantity.

Section 3.3.3.1 Potential Impacts on Surface Water Sediment Loading

Query
Will this comply with EA conditions Schedule I watercourse diversions?

Response
The watercourse will be developed to comply with the outcome based conditioning referenced in Schedule I. For more information, reference should be made to the *Horse Creek Diversion Functional Design Report* (Parsons Brinckerhoff 2014) (Appendix L of the Elimatta Project EIS April 2014).

Section 3.3.3.2 Surface Water Quality Modelling Horse Creek

Query
At what distance downstream is this measurement taken?

Response
The modelling undertaken as part of the *Water Management Strategy* (JBT Consulting 2014) provides a representation of the water quantity and quality in the Horse Creek receiving waters at the upstream and downstream boundary of the mine area. Please refer to Appendix B to the Elimatta Project EM Plan 2015 for more information.

Referable Wetland

and

Section 3.3.3.3 Surface Water Quantity Modelling Referable Wetland

Query
Please demonstrate how releases of mine affected water affect the level of water and quality held in the wetland over time? What is the capacity of the wetland to capture water after dry periods without overflow / flushing?
Hydrographs and cross-sections would be beneficial.
Furthermore what impacts do seasonality and variability have? If water has ponded in sediment ponds, and is flushed will these water qualities affect wetland's and the receiving environment's water characteristics adversely?

Has this considered the impacts of a changed sediment load?
Will sediment builds in the wetland, overtime?
Consideration needs to be given to the time water is held in the wetland.

Response
The highly ephemeral wetland identified as a wetland of HES in Government databases is situated north-east of MLA50254, and primarily collects overland flow from an isolated catchment under normal conditions. Most commonly, the wetland is dry.

The topography of the wetland is such that water cannot directly enter the "upstream" margins of the wetland from Horse Creek without flowing through the area and re-entering the Horse Creek channel. Modelling presented in the *Horse Creek Base Case (Natural Conditions) and Diversion Flood Study for Elimatta Mine* (Parsons Brinckerhoff 2014) (Appendix K of the Elimatta EIS 2014) indicates that the area mapped as a wetland of HES is linked to the Horse Creek channel during a 5year ARI or greater event (refer to Appendix B3. *Base Case Flood Modelling for Horse Creek – Figure 7* (Parsons Brinckerhoff 2014)). Under lower flow conditions, the wetland is fed by overland flow within a localized catchment area unaffected by mine releases. Any mine affected water released under lower flow conditions will bypass the wetland down the Horse Creek channel. Based on the behaviour of the surface water flows, the risk of accumulation of poor quality mine affected release water within the wetland without adequate flushing is considered low.

The *Water Management Strategy* (JBT Consulting 2014) models the water quantity and quality in the Horse Creek receiving waters at the downstream boundary of the mine area. The modelling reviews the quality and quantity of water under differing climatic condition with the findings presented in the EIS and EM Plan in both the aquatic ecology and water subsections. Mine affected water will only be released in accordance with the Project's final Environmental Authority.

The *Horse Creek Diversion Functional Design Report* (Parsons Brinckerhoff 2014) describes the modelled behavior of the Horse Creek channel to ensure sustainable hydraulic characteristics are maintained.

Table 5.41 Target and Modelled Containment AEP of Dams on the Project Site

Query
Do any Raw Water Dams receive any mine affected water? If so then are not really raw water dams. True Raw Water Dams don't need containment immunity, spillways designed appropriately.

Response
Information noted. Raw Water Dams do not receive mine affected water under the *Water Management Strategy* (JBT Consulting 2014). Table 5.41 details the targeted and modelled containment immunity incorporated in the water system behavior modelling undertaken.

3.3.3.6 Mine Dewatering Impacts

Query
No more than 3 years between reviews.

Response
Consistent with the Elimatta Coal Mining Project – Draft Water Licence Conditions issued by DNRM for groundwater extraction associated with mine dewatering activities, the groundwater modelling be reviewed after 10 years.

3.3.5.1 Surface Water Mitigation Measures Horse Creek Diversion

Query
On advice from DNRM, we would like greater detail on the proposed monitoring regime. Please provide details about proactive mitigation strategies for addressing issues that might occur with the diversion.

Response
Comprehensive detail on the rehabilitation and proactive mitigation strategies proposed for the staged temporary and final Horse Creek diversion are included in the *Horse Creek Diversion Functional Design Report* (Parsons Brinckerhoff 2014) which was submitted as Appendix L of the Elimatta Project EIS April 2014.

3.3.5.2 Release from Regulated Structures

Query
Section 4.12.4 of the EIS AR advises the discussion of site accessibility to effect releases and to take measurements of water quality characteristics during release events.
Could a figure be included that shows where proposed release points from both mine affected and other dams will be located on site?

Further information is required to demonstrate that the flow release triggers proposed, are reasonable and can be accepted.

Response

It is acknowledged as part of the development of the *Water Management strategy* (JBT Consulting 2014) releases of mine-affected water must be controllable. For the Project, such control measures may include the use of valves or gates on pipes or dams used as release points. It is unlikely that spillways will be relied upon to effect releases from regulated structures due to operational constraints associated with the reliance on pumps to control flow.

Mine water infrastructure required to control release events will be sited to ensure the safety of personnel, if manual actions are required. Where there is a foreseeable risk that access to release control mechanism may be restricted due to high rainfall events, release infrastructure will be relocated or automated.

Where manual actions are required to undertake water monitoring in accordance with the Project's Environmental Authority, safe personnel access to the monitoring point will be maintained at all times during release events. In the event that it is identified during the development of the Project that safety cannot be ensured, automated, real-time telemetry stations will be installed to mitigate this risk.

Modelling of the flow release triggers and downstream water quality has been undertaken as part of the revised *Water Management Strategy* which forms Appendix B of the *Elimatta Project EM Plan 2015* to demonstrate the suitability of the proposal.

Table 5.42 Adopted Flow Release Triggers for Horse Creek Receiving Waters

Query
Will depend on how the wetland functions in relation to creek flows or releases. Would not want releases to continuously flow into wetland without outflow to Horse Creek.

Response
As described above, this is not how the wetland interacts with Horse Creek. Please refer to *Horse Creek Base Case (Natural Conditions) and Diversion Flood Study for Elimatta Mine* (Parsons Brinckerhoff 2014) (Appendix K of the Elimatta EIS 2014) to review the surface water interactions in the area. Due to the topography of the area, mine affected releases cannot continuously flow into the wetland area and accumulate without outflow to Horse Creek.

3.3.5.3 Receiving Water Monitoring Program

Query

Insufficient information has been provided in this section. Only referable wetlands were discussed. What is the nature of downstream areas? Are there any permanent or semi-permanent waterholes which might require monitoring?

EIS AR Section 4.12.4 proposed an ecosystem health monitoring program for the wetland, please discuss this concept.

Response

Information included in the Section 4.5 and 4.8 of the Elimatta Project EIS April 2014 has described the downstream water users and identified the values of the downstream environment, both anthropocentric and ecological. This information is then summarized in the appropriate sections of the EM Plan. For more information on the nature of downstream areas, please refer to the EIS and Aquatic Ecology Assessments undertaken as part of the EIS (included as Appendix W and Appendix X of the EIS submission).

Ecosystem health will be monitored as part of the Receiving Environment Monitoring Program described in Section 3.3.5.3 of the EM Plan. References in the EM Plan to a Receiving Water Monitoring Program have been amended to incorporate the concept into the Receiving Environment Monitoring Program for a more concise description of monitoring activities.

Table 5.44 Mine Affected Water Release Limits

Query

Please explain why has sulphate been omitted from the table? Recommended that suspended solids and sulphate be retained.

Response

Suspended Solids and Sulphate release limits have been omitted from Table 5.44 and added to the Trigger Investigation Levels table (Table 5.45) as per the Model Mining Conditions.

Table 5.62 Void Water Quality Limits

Query

Previously identified that a TDS 35,000mg/l will occur.

Response

Table 5.62 presents void water quality limits which, if exceeded, require the implementation of measures to prevent access by all livestock and minimize access by fauna to the void in accordance with proposed Condition H5.