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Attention: Mr Thomas Watt

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Environmental Impact Assessment Review
Martins Creek Quarry Extension Project (SSD 6612)

I refer to your email to the Environment Protection Authority (EPA), dated 10 October 2016, seeking the EPA's review and comments on the Martins Creek Quarry Extension Project, SSD 6612. The project is detailed in the report titled '*Environmental Impact Statement – Martins Creek Quarry*' (EIS), dated September 2016 and prepared by Monteath and Powys Pty Limited.

The expansion project proposes the following:

- Expansion of the existing extraction area;
- Annual extraction of up to 1.5 million tonnes of hard rock material;
- Increased hours of operation;
- Transportation of processed material to market by truck and train;
- Construction of a new access driveway and bridge; and
- Consolidation of the existing operations and approvals relating to the site.

Based on the information provided in the EIS the EPA is unable to provide recommended conditions of approval for the proposal. These matters are discussed below and in further detail in **Attachments A, B and C**.

Air Quality

The EPA has reviewed the EIS and report at Appendix F titled '*Air Quality Impact Assessment - Martins Creek Quarry Extension*' (AQIA), dated 5 September 2016 and prepared by JM Environments.

The AQIA does not appear to have been carried out in accordance with guidance in '*Approved Methods for the Modelling and Assessment of Air Pollutants in NSW*' (Approved Methods). The AQIA does not adequately assess potential impacts to the air environment from the proposal.

Further information is required regarding the following aspects of the assessment:

- emissions estimation;
- the choice of year used for the modelling;
- validation of meteorological modelling;
- generation of land-use data;

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- terrain data used for the modelling;
- configuration of meteorology for dispersion modelling;
- cumulative impacts assessed against 24-hour impact assessment criteria; and
- assessment of TSP impacts.

Further information is required to allow the EPA to adequately assess the potential impacts from the proposal to the air environment. The EPA's detailed comments on the AQIA are provided at **Attachment A**.

Noise and Blasting Assessment

The EPA reviewed the acoustic and blasting impact assessments provided with the EIS. Based on the information provided the EPA is unable to support the proposal and provide recommended noise conditions.

The EPA's primary area of concern relates to the degree to which noise levels predicted for various activity scenarios in the acoustic assessment exceed the project specific noise levels (PSNL) derived in the assessment. Detailed comments are provided at **Attachment B**.

In addition to the comments at Attachment B the EPA also notes that in the blasting and vibration report provided at Appendix I of the EIS that Appendix 1 of that report provides a summary of monitoring data associated with all blasts at the premises from January 2013 to 17 August 2015.

As the blasting report is dated November 2015, and given the period of time since that report was completed, and the EIS was lodged there have been a substantial number of blasts since 17 August 2015 that should have been included in a revised assessment. This would provide a more thorough review of blasting activities at the site over the previous years.

Hours of Operation

Environment Protection Licence (EPL) No. 1378 currently in force for the Martins Creek Quarry premises includes conditions specifying the allowable hours of operation at the site. This is shown at Condition L6 of EPL 1378 which sets hours of operation as:

L6.1 In accordance with development consent 171/90/79 hours of operations for the western portion of the premises, being Lot 5 and Lot 6 DP 242210, are restricted to 7 am to 5 pm Monday to Saturday with no operations allowed on Sundays and public holidays.
Note: the development consent allows operations outside these hours on a short term emergency basis.

L6.2 Hours of operation for the eastern portion of the premises, being Lot 1 DP 1006375 and Lot 1 DP 204377, are restricted to 6 am to 6 pm Monday to Saturday with no operations allowed on Sundays and public holidays. It is permissible to operate outside these hours for activities like maintenance provided such activities are not audible at the nearest or most affected residential receiver.

L6.3 Operations outside the abovementioned hours are permissible on a short term basis for emergency situations.

The project seeks consent for the hours of operation as:

- Quarrying from 6am – 6pm Monday to Saturday;
- Processing from 6am – 10pm Monday to Saturday;
- Mixing and Binding from 4:30am – 10pm Monday to Friday, and 4:30am – 6pm Saturdays; and
- Stockpiling, loading and dispatch of road transport from 5:30am – 7pm Monday to Saturday.

The proposed amended hours of operations are a substantial variation to the currently allowed hours, with certain operations being proposed into the early morning, evening and night periods. Most notably

the quarrying operations in the western portion of the site would be permitted to commence earlier and go later than the currently allowed hours.

Based on the information provided in the EIS, specifically the issues with the noise assessment discussed above and at Attachment B, the EPA is currently unable to accurately predict the potential impact the proposed varied hours may have on neighbouring receptors. Once the noise impact assessment matters raised in this letter have been addressed or resolved the EPA should be in a position to provide advice on the potential impacts from the extended hours of operation sought in the proposal.

Surface Water Quality

The EPA has reviewed the report '*Water Quality Impact Assessment – Martin Creek Quarry Extension Project*' (WQIA), dated 1 September 2016 and prepared by JM Environments. The WQIA is provided as Appendix G of the EIS.

The EPA's detailed comments on potential surface water impacts and associated matters are provided at **Attachment C**.

The EPA's key issues in relation to surface water are:

- Further detail on the management, operation and dewatering of dams within the site;
- Additional information on the chemical flocculants for use as a water treatment control; and
- Clarification of the maximum pump out rates applicable for the site.

Summary

Based on the issues mentioned above and discussed in Attachments A, B and C, the EPA is unable at this time to provide any recommended conditions of approval for this proposal. Further information is required to allow the EPA to establish any recommended conditions of approval in relation to this project.

If you require any further information regarding this matter please contact me on 4908 6819 or by email to hunter.region@epa.nsw.gov.au

Yours sincerely

28-11-16

MICHAEL HOWAT
A/Head Regional Operations Unit - Hunter
Environment Protection Authority

Encl: **Attachment A** – EPA's Review of Air Quality Impact Assessment
Attachment B – EPA's Review of Noise Impact Assessment
Attachment C – EPA's Review of Surface Water Impacts

ATTACHMENT A

EPA's Review of Air Quality Impact Assessment
Martins Creek Quarry Extension Project (SSD 6612)

The EPA's review of the AQIA has identified that the AQIA has not followed guidance provided in the '*Approved Methods for the Modelling and Assessment of Air Pollutants in New South* Wales' (Approved Methods) as detailed below.

1. Emission estimation

Section 9.1 of the AQIA states a single scenario was modelled representing "maximum material extraction rate and movement of material, maximum geographical extent of emission sources and maximum quantities of materials processing". This implies the dispersion modelling used constant emissions.

The AQIA provides a summary of emissions from the proposal used in the dispersion modelling, at Table 8. Detail is required on the calculations used to generate these tabulated emission rates. The labels in Table 8 do not sufficiently identify emissions sources and it is not clear that all potential sources have been included. There does not appear to be any estimation of emissions from wind erosion of stockpiles and bare areas.

Section 9.3.3 notes diesel emissions associated with the operations, but does not make or include any attempt to estimate them. Diesel engines produce $PM_{2.5}$ and this potential source needs to be considered in assessing potential impacts to the air environment.

Information needed

- Clear identification of all potential sources of emissions to the air associated with the proposal and clearly articulated estimation for those sources deemed significant with justification for any sources excluded from emission estimation.
- Details on the calculations used to estimate emissions from the identified significant sources.

2. Choice of modelling year – representative meteorology

The year 2014 has been chosen for dispersion modelling, however there is no justification or reasoning for this choice of calendar year to show that it suitably represents dispersion conditions. The Approved Methods requires suitability be demonstrated by comparing the chosen dataset to at least five years of meteorology, preferably recent and preferably contiguous (section 4, page 10 of the Approved Methods).

Information needed

- At least one year of meteorology data that has been shown to be suitably representative of weather conditions at the site based on comparison to at least five years of meteorological data. The chosen data must reflect the range of conditions occurring at the site, conditions leading to greatest impacts, and conservatively represent the frequency of poor dispersion conditions.

3. Performance of the Meteorological Modelling

The AQIA does not contain an assessment of the performance of the meteorological model.

Information needed

- The AQIA needs to demonstrate that the chosen meteorology model performed acceptably by comparing model output to corresponding observations that have not been used in the modelling. Comparison should use at least one set of observations as close to the proposal as possible.

4. Land-use data

In Section 8.2.1 the AQIA states that 900 metre resolution land cover data was manually modified to match real land use over the area assigning land to one of three categories. No detail is provided on

the process used to modify the data. A resolution of 900 metres is considered inadequate for modelling with a grid size of 100 metres.

Appendix A to the AQIA notes that the meteorology model uses a scheme containing 14 land-use categories, however there is no information relating the manually generated 3 land-use categories to corresponding categories for the meteorological modelling.

Information needed

- Land-use description with a resolution commensurate to that of the modelling scale (100 metres).
- Clear description of the approach to generating land-use description, including correspondence between any categories independently derived and those used in the model.

5. Terrain data

The AQIA specifies terrain data with a resolution of 900 metres. This is inadequate for modelling with 100 metre resolution and does not provide sufficient terrain data.

Information needed

- Meteorological modelling using terrain data with a resolution commensurate to that of the modelling scale.

6. Configuration of dispersion modelling

Section 8.1 states that the meteorology module CALMET used by the dispersion model CALPUFF was initialised using input from the MM5 meteorological model. Section 8.22 states that TAPM was used as the input to CALMET.

Information needed

- Clarification regarding the source of the meteorology used to initialise the meteorology module (CALMET) of the dispersion model (CALPUFF).

7. Cumulative Impacts – 24-hour

Assessment of cumulative impacts on a 24-hour basis needs to use either the maximum daily concentration or daily varying concentrations to represent background. The AQIA has used annual average concentrations as the background concentration to assess 24-hour cumulative impacts for both $PM_{2.5}$ and PM_{10}. This is not consistent with Section 5.1.1 of the Approved Methods.

Appendix C to the AQIA tabulates maximum increments from the proposed expansion of the quarry. These show the quarry can contribute over 10 $\mu g/m^3$ of PM_{10}. Monitoring data shown in figure 4 implies the potential for additional days exceeding the EPA's impact assessment criterion for cumulative calendar-day PM_{10} concentration of 50 $\mu g/m^3$.

Information needed

- Assessment of cumulative impacts against 24-hour criteria must use 24-hour data for background and follow the guidance set out in Section 5.1.1 of the Approved Methods.

8. TSP Annual Average

The impact assessment criterion for annual TSP concentration is listed in the text of Section 5.1 but appears to be missing from Table 5.

Section 10.5 assesses TSP annual average using the annual average concentration for $PM_{2.5}$ as the background concentration.

Information needed

- Include the impact assessment criteria for TSP in Table 5.
- Amend/vary the incorrect background concentration used in section 10.5 and amend interpretation of results.

ATTACHMENT B

EPA's Review of Noise Impact Assessment
Martins Creek Quarry Extension Project (SSD 6612)

The EPA has reviewed the Acoustic Assessment (AA), dated 26 August 2016 and prepared by RCA Australia, provided at Appendix I of the EIS, and the report '*Martins Creek Quarry Extension Project Blasting and Vibration for Inclusion in EIS Report – November 2015*', dated 9 November 2015 and prepared by Peter Bellairs Consulting Pty Ltd.

The EPA's primary area of concern relates to the degree to which noise levels predicted for various activity scenarios in the AA exceed the project specific noise levels (PSNL) derived in the assessment.

The AA presents the PSNLs for the proposal in Table 8 and Table 10, which are predominantly 35 dBA, with the exception of Noise Assessment Group (NAG) 3 being 38 dBA during the daytime period.

Table 11 of the AA proposes alternative licence noise limits to the PSNL, explaining that these are the best achievable predicted noise levels following the application of all feasible and reasonable noise mitigation and management measures, and noting that they represent a reduction of 10 dB or more at the nearest residential receivers when compared with noise from current operations at the quarry. The proposed LAeq(15minute) criterion for overburden stripping is 45 dBA, which is up to 10 dB above the 35 dBA PSNL, and above the level which EPA would normally licence to.

Section 6.4 of the AA details predicted noise levels from the various activity and staging scenarios at surrounding sensitive receivers. The EPA notes that the AA states these scenarios include all specified noise mitigation measures proposed at each stage of the development. In each case, the proponent has provided a summary table of impacts for each scenario and receiver group, as well as detailed predictions at each receiver within that group in the following table. For example, Table 17 provides a summary for Year 1-2 operations and Table 17A provides detailed predictions of the same scenarios for each receiver within that group.

It is not clear, however, how the results in these pairs of tables relate to each other.

For example, Table 17 states a predicted noise level range of 55-65 dBA for rail loading only operations during the night under an F class temperature inversion with no wind at NAG 1. The accompanying Table 17A shows a range of values for the same operation (V2) between 70.6 dBA at Receiver ID 1 and 18.6 dBA at Receiver ID 27, both in NAG 1. Similarly, stripping Lot 21 operations are shown as N/A in the summary Table 17, whereas Table 17A shows a range of noise levels from 60.1 dBA to 14.7 dBA for these operations at receivers in NAG 1. There are a number of similar discrepancies between values in these table pairs.

Many of the predicted noise levels from the various activity scenarios are significantly higher than both the PSNLs and the proposed alternative licence noise limits. For example, proposed daytime quarry operations plus rail loading activities (V3) are typically 10 to 20 dB above the PSNLs at receivers in NAG 1, in Table 18A.

The above aspects of the report should be reviewed and clarified in the AA. The proponent needs to provide a clear set of tables showing predicted noise levels at each receiver together with the applicable noise criteria, clearly highlighting any exceedances. This information needs to be provided for EPA to develop noise licence limits.

ATTACHMENT C

EPA's Review of Surface Water Impacts
Martins Creek Quarry Extension Project (SSD 6612)

The EPA's review of the WQIA provided with the EIS has identified the following issues that are required to be addressed by the proponent.

1. Dewatering frequency

Section 6.4 of the WQIA states "the required capacity for the sediment dams is based on the assumption that the water within the settling zone will be pumped out within 5 days of a rain event". A more stringent approach is noted at Section 8.4.4 of the report where it notes that "In the water balance it is assumed that runoff collected in Dam 3 and Dam 4 is clean water and is held for a maximum of three days following a rainfall event >1mm. Water in Dam 1 and two is presumed to be dirty water that is treated with a flocculent and is also held for a maximum of three days following a rainfall event of >1mm."

While the report doesn't appear to state the timeframe for the 1mm rainfall event criteria (e.g. >1mm in 24 hours), based on the information provided the report appears to commit the proponent to ensuring Dams 1, 2 and 3 and 4 will be dewatered within 3 days of a rainfall event >1mm. To dewater the volume required to maintain sufficient storage capacity in the dams this will likely result in a high frequency of dewatering events, and potentially off-site discharge events during periods of prolonger rainfall.

2. Chemical Flocculation

The EIS and WQIA notes that chemical flocculants are currently and will continue to be utilised at the site for water treatment. While the WQIA does note that flocculation will occur there are no details on the specific flocculant(s) to be used, dosing rates, method of application, or potential impacts from prolonged use over time.

Section 8.3.1 of the WQIA states "It was assumed that it takes 5 days following a rainfall event for the suspended solids in the sediment basin to settle to below 50mg/L without treatment and can be pumped off site at rate of 5 ML/day. Hence 5 consecutive days without rain were required before controlled discharges".

The reference to 'without treatment' in section 8.3.1 appears to be a reference to chemical flocculation, however this should be clarified in the report. If the treatment method is flocculation then the WQIA should include details of the settlement period required to achieve the target of total suspended solids <50mg/L when flocculation is applied. It's not clear in the WQIA if the settling times and dewatering proposed in the report take into account the application and reaction times of the particular flocculants used at the site.

3. Pump out rate of 5 ML/day

As mentioned above, Section 8.3.1 makes reference to water being able to be pumped off site at a rate of 5 ML/day. The WQIA doesn't appear to detail where the pump out rate of 5 ML/day is derived from.

There are currently no conditions on the licence for this premises relating to maximum discharge volumes per day. Potentially this value may be based on the pump infrastructure at the site however this should be clarified.

As the WQIA concludes that there are predicted to be approximately 22 days of controlled releases per year required the EPA further questions how the predicted annual controlled discharge volumes noted in the WQIA under 'average' and 'wet' years can be achieved with the pump out rate of 5 ML/day.

4. Dam 4 discharge point

Section 6.7.3 of the WQIA notes that a new discharge point is proposes when Dam 4 is excavated. If approval is granted and a discharge point is sought by the licensee this will be applied for and reviewed separately to this EIS submission.