



OUT20/8441

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NSW Department of Planning, Industry and Environment

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Dear Ms Evans

**Marulan South Limestone Mine Continued Operations Project
Supplementary RTS**

I refer to your email of 8 July 2020 to DPIE - Water of Planning, Industry and Environment (DPIE) Water and the Natural Resources Access Regulator (NRAR) about the above matter.

DPIE Water's outstanding pre-approval requirements raised in our advice dated 13 March 2020 (OUT20/2013) have been addressed by the proponent in their report prepared by Advisian consultants, dated 6 July 2020. Accordingly, the additional flow modelling, description of the structure and relevant geomorphic processes in the two watercourses is adequate for decision making purposes.

Attachment A provides further detail describing how our concerns and pre-approval recommendations have been addressed and **Attachment B** lists our post-approval recommendations.

Any further referrals to DPIE – NRAR & Water can be sent by email to:
landuse.enquiries@dpi.nsw.gov.au.

Yours sincerely

Liz Rogers
Manager, Assessments
Water – Strategic Relations
30 July 2020

Attachment A

DPIE – Water’s Outstanding Recommendation from EIS Submission	Proponent’s RTS response	Further DPIE - Water comment
<p>The proponent should clarify in more detail the loss of flows into Barbers Creek due to dam construction, including discrepancies around volume to be intercepted.</p>	<p>Advisian has refined its model outputs to quantify downstream flow reductions following construction of the proposed Marulan Creek dam. This indicates a maximum 160 ML per annum flow reduction will occur, due to maximum 120 ML pa water harvesting for the mining operation and 47 ML pa evaporative loss. Mitigation measures should be framed around the harvesting of water from the proposed dam. This includes licensing of harvesting water under the rules of the water sharing plan under the <i>Water Management Act 2000</i>.</p>	<p>The additional modelling to separate evaporative loss to water harvesting and use is acceptable. The modelled (predicted) reduction in flow downstream of the proposed dam will be taken into account in licensing and mitigation requirements. Note our post approval recommendations. The Natural Resource Access Regulator (NRAR) holds responsibility for licensing requirements for mining and extractive industries.</p>
<p>The proponent should identify and quantify where possible the impacts of those reduced flows, in terms of changes to pool retention, connectivity, sediment dynamics and maintenance of water quality.</p>	<p>Analysis and modelling of Marulan Creek indicates that low flow spills will occur at approximately 0.1 ML/day. Water balance modelling by Advisian indicates that flows greater than 0.1 ML/day occur 70 days per year (20%). Water balance modelling has accounted for translucent flows (dam release = inflow) up to 1 ML/day, where releases reflect the upstream conditions such that the frequency and duration of low flows and cease-to-flow conditions are maintained.</p> <p>Modelling shows only minor changes in stream power during flood events pre and post dam construction. Given the small quantum differential of stream power pre and post dam construction, erosion and scour potential is unlikely to change from the current condition downstream of the dam. Flushing flows are represented by flows of 1 – 10 ML/day. Modelling indicates flow depth sufficient to connect pools downstream of the dam. Water balance modelling has</p>	<p>The reduction of pool filling will be mitigated by a pass through flow at above 1 ML/day. The maintenance of pool levels in 1.6 km of Marulan Creek to the junction with Barbers Creek requires monitoring of pool level and flow persistence following high flow events and calculation of inflow/outflows from the proposed dam into lower Marulan Creek. Flow management through the proposed dam must include a form of low flow pipe or bypass structure, while flow bypass around the full storage level is required to prevent the dam wall overtopping. Sediment transfer into Barbers Creek from Marulan Creek is not expected to be interrupted by alteration of flows along the watercourse as stream power will not be reduced to below mobilisation thresholds for minor gravels to fines seen in downstream pools. The modelling of flow velocity and stream power rates is acceptable. Post approval dam design and monitoring is required to verify</p>



DPIE – Water’s Outstanding Recommendation from EIS Submission	Proponent’s RTS response	Further DPIE - Water comment
	incorporated releases of medium flows, such that the frequency and duration of these flushing flows are maintained.	modelling predictions are adequate.
The proponent should present any proposed water quality mitigation measures to protect ecological values and maintain water quality values.	<p>The small size of the dam relative to flood flows mean that water quality during dam spills is not expected to affect water quality downstream, with flows essentially bypassing the dam in most flood events (i.e. floods greater than the 2 year Average Recurrence Interval).</p> <p>Mitigation options include the development of appropriate release patterns and riparian restoration of Marulan Creek upstream of the dam.</p>	The measures are expected to mitigate the risk. Post approval monitoring and response plans are required.

End Attachment A

Attachment B - Post-approval Recommendations

Water Supply, Licencing and Site Balance

The proponent should:

4. Ensure the project has adequate water supply for all stages of the operation, and in the event of a shortage of water supply, must reduce the scale of its operations to match its available water supply.
5. Obtain the required Water Access Licenses (WAL) prior to commencement of works.

Note: water take is to occur from the unregulated river category and not domestic and stock category. The proponent should provide evidence of purchase and transfer of WAL entitlements from within the Barbers Creek Management Zone of the Shoalhaven Water Source to account for retention and extraction of water from the proposed Marulan Creek Dam.

6. Review the site water balance upon the commencement of operations and update every three years. This must include a review of all forms of take of water as set out in section 60I of the *Water Management Act 2000*.

Management of Surface Water Impacts

The proponent should:

7. Devise measures to pass flows through the proposed Marulan Creek Dam downstream to provide both adequate water volume and maintain geomorphic processes and ecological requirements in the lower Marulan Creek and Barbers Creek, in consultation with DPIE - Water of Planning, Industry and Environment – Water Division (DPIE - Water) as part of detailed design plans for the proposed dam.
8. Develop a remediation and rehabilitation strategy for Marulan Creek above and below the proposed dam to the entry to the Marulan gorge, developed by a fluvial geomorphologist, in consultation with DPIE – Water.

Note: Prioritisation and development of rehabilitation options should follow the procedure set out in 'A Rehabilitation Manual for Australian Streams' (Cooperative Centre for Catchment Hydrology, Land and Water Resources Research and Development Corporation, 2000).

9. Develop a monitoring and reporting strategy for Marulan Creek and Barbers Creek to detect changes in geomorphic processes, sediment transmission, ecological function and water quality. This includes justification for monitoring and reporting design, frequency and parameters and must be developed in consultation with DPIE - Water prior to the approval of the water management plan.
10. Develop detailed design plans for the Marulan Creek Dam including options for bypass and flow through measures in consultation with DPIE – Water. The approved design plans should be related / tagged to the necessary Water Access Licence(s) purchased from within the Barbers Creek Management Zone of the Shoalhaven Water Source.
11. Develop a Trigger Action Response Plan (TARP) to address water quality risks in Marulan Creek and Barbers Creek. This must incorporate risks relating to engineering works constructed on Marulan Creek including the proposed Marulan Creek Dam and reduced or loss of mitigation flows along Marulan Creek. The TARP must form part of the water management plan for the project and be developed in consultation with DPIE – Water.



12. Works on waterfront land are to be carried out in accordance with the Guidelines for Controlled Activities (2012) <https://www.industry.nsw.gov.au/water/licensing-trade/approvals/controlled-activities>.

Management of Groundwater Impacts

The proponent should:

13. Prepare a groundwater monitoring and management plan in the first year that includes:
- Continuation of data gathering from the existing monitoring network throughout the project lifetime.
 - Establishment of a groundwater level and quality monitoring network in and around Mt Frome Middle Limestone within one year from the granting of the approval. Formations hydraulic parameters are required to be characterised during that program.
 - Monitoring of seepage from the overburden emplacements and mine inflows.
 - Model validation by verification and update of the groundwater model within three years of approval and every three years ongoing throughout the project lifetime.

The model is to be informed by the data collected on formation characterisation and groundwater levels.

- Definition of a trigger threshold identifying if the capture of water and impact prediction remain within predictions specified in the environmental assessment. A response plan must be prepared to define the management and mitigation actions to be implemented if site observations or model update predictions are above that trigger.

End Attachment B