



Office of Water

16 December 2010

Major Development Assessments
Department of Planning
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Our ref : ER20981
Your ref:

Attention: Kane Winwood

Dear Kane

DARGUES REEF GOLD PROJECT – EXHIBITION OF ENVIRONMENTAL ASSESSMENT

I refer to your letter dated 27 September 2010 requesting a submission on the publicly exhibited environmental assessment (EA) for the Dargues Reef Gold Project near Braidwood. The NSW Office of Water (the Office) has reviewed the documentation and is unable to support the proposal submitted due to inadequate information and a lack of certainty of impacts. The key issues of concern include the following:

- The model applied to assess the groundwater impacts and baseflow impacts to surface water systems is predominantly theoretical with an inadequate level of supporting measured data.
- The impact assessment is highly dependent on the groundwater model and its predicted outcomes. Due to identified inadequacies in the modelling there is a lack of certainty in the impacts.
- The model applied to assess the availability of surface water in the harvestable right dams has included 100 years of rainfall data however it has not included data from the last 8 years. This data is considered critical due to the extreme drought conditions.
- The proposed management of the harvestable right dams will result in a significant increase in the volume of runoff removed within the site. The Office requires an impact assessment of this management on the downstream water users and the environment.
- The complete loss of baseflow from Spring Creek during the mine operations and for an undefined period post mine completion represents a significant and unmitigated impact. The proposal to address the reduction in baseflows via the purchase of groundwater entitlement and the use of a compensatory flow at Majors Ck requires further consideration by the Office. The Office does not have a policy in regard to return flows and there is concern over the appropriateness of a groundwater entitlement to mitigate impacts to Spring Ck which will not result in additional flows to the area of impact.
- Inadequate assessment of the water quality impacts to downstream surface waters from the proposed compensatory flow which is to be sourced from surface water and groundwater.

- To support the required water licence application to intercept water within the mine workings and to extract water from the historic workings the proponent will need to address the Office's "*Test Pumping Groundwater Assessment Guidelines*". These guidelines are included as an attachment and require a 70 day pump test and up to 70 day recovery monitoring period for applications over 100ML/yr.

Due to the significance of the issues identified in this submission the Office recommends a meeting with the groundwater consultants to confirm the assessment requirements. Detailed comments in regards to the groundwater assessment are provided in Attachment 1. Once the additional information requests have been addressed the Office will be able to provide specific advice to the proponent regarding licence requirements under the *Water Act 1912*.

For specific enquiries relating to the groundwater assessment and associated requirements please contact Bob Britten on (02) 6491 8209. For general enquires in relation to this submission please do not hesitate to contact Tim Baker on (02) 6841 7403.

Yours sincerely



Mark Mignanelli
Manager Major Projects and Assessment

NOW DETAILED ASSESSMENT COMMENTS DARGUES REEF GOLD PROJECT – EXHIBITION OF ENVIRONMENTAL ASSESSMENT

GROUNDWATER ASSESSMENT

The groundwater modelling has been undertaken with a minimum of measured/observed information and hydraulic parameters. The lack of monitoring data (water level logging, baseflow measurements in Majors Ck etc) or extended pumping tests appropriate to the proposed extraction is of concern. Negligible investigation of the nature of the fracture zones and a minimal discussion of the how the model fits into the broader hydrogeologic context of recharge, throughflow and discharge. Overall, the reliability of the model and the prediction of impacts are not adequately supported with a detailed understanding/investigation of the existing surface and groundwater system.

It is recommended that additional investigation of the surface and groundwater systems include:

- Monitoring of water level variations (loggers are recommended). Within the various groundwater zones identified. Monitoring/Investigation drilling should be representative of the proposed extent of the development. This is in reference to the depth of development and all relevant hydrogeologic units.
- Monitoring of baseflows to provide a measure of groundwater input/discharge to the system. The hydrology of Majors Creek needs to be more thoroughly investigated and understood.
- Pumping tests. Groundwater licenses will be required for extraction/interception and should be supported with pump test information consistent with the NOW guideline:
“Coastal groundwater - Test pumping groundwater assessment guidelines for bore licence applications
- The model and its' predicted impacts should be placed in a broader regional context by assessing expected rates of recharge/ through flow and discharge. And compared to baseflow, water level fluctuations and climatic data.
- Modelling calibrated against an enhanced understanding of surface and groundwater hydrology.

The protection of other groundwater users, basic landholder rights, baseflows and groundwater dependent ecosystems (GDE) is a basic premise of groundwater policy and guidelines. The EA has addressed some of these issues in a relatively simple manner. The potential modification of sections of Majors Creek and the connected alluvials from a gaining stream to a losing channel is a significant impact requiring further investigation including an improved understanding of baseflows though monitoring/measurement.

The project and its' associated dewatering will clearly have a significant impact on the surface and groundwater hydrology surrounding the project area. Investigation, monitoring and modelling is required to anticipate these impacts and develop measures to address impacts. The level of investigation and monitoring in the EA is minimal as identified in the Groundwater Assessment, Section 14 - Model Uncertainty and Limitations; however the Office does not agree that it is sufficient to adequately understand the potential impacts of the development.

An additional consideration in addressing environmental impacts is the identification of thresholds within which the development will operate. (For example levels and extent of

water table drawdown, minimum environmental flows etc). Beyond these thresholds contingency plans should be prepared identifying measures which will be implemented should the impacts exceed the accepted levels.

End Attachment A

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