The Hon Katrina Hodgkinson MP
Minister for Primary Industries
Minister for Small Business

BN14/619

Mr Terry Short
Chair
NSW Mining and Petroleum Gateway Panel
GPO Box 39
SYDNEY NSW 2001

Dear Mr Short

I refer to the Gateway Application for the Spur Hill Underground Coking Coal Project near Denman.

In accordance with Clause 17G of the *State Environmental Planning Policy (Mining, Petroleum Production and Extractive Industries) 2007* I provide the Mining and Petroleum Gateway Panel with advice regarding the impact of this proposal on water resources (see attached).

This advice has been prepared by the NSW Office of Water, and has regard to:

(a) the minimal impact considerations set out in the Aquifer Interference Policy;
(b) the other provisions of the Aquifer Interference Policy; and
(c) the advice provided by the Commonwealth's Independent Expert Scientific Committee on the 11 February 2014.

I have asked that Mr Mitchell Isaacs, Manager Strategic Stakeholder Liaison in the NSW Office of Water, be available to discuss this matter further with you. Mr Isaacs may be contacted on 02 8838 7529 or by email Mitchell.Isaacs@water.nsw.gov.au.

Yours sincerely

Katrina Hodgkinson MP
Minister for Primary Industries

cc Hon Brad Hazzard MP, Minister for Planning and Infrastructure

Encl 27.2.14

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Advice prepared by the NSW Office of Water for the Minister for Primary Industries

Spur Hill Underground Coking Coal Project – Application for Gateway Certificate

1. Purpose

To provide a review of the Spur Hill Underground Coal Project "Preliminary Groundwater Assessment" against the elements of the NSW Aquifer Interference Policy (AIP) and to outline any limitations in the data that supports the assessment.

2. Background as provided by Hydro Simulations - consultant to Spur Hill Management (SHM)

The Spur Hill Underground Coking Coal Project (the Project) is a coal development in the Upper Hunter Valley, near Muswellbrook. The NSW State Government recently introduced the 'Gateway process'. The process applies to State Significant Development located on Strategic Agricultural Land (SAL). This proposal contains SAL within the area impacted by the proposal.

Expected coal output is 154 Mt over a mine life of approximately 25 years.

3. Review and Comment

An assessment of the activity against the AIP has been undertaken. In summary, SHM have identified that the impacts of the Project would fall into level two of the AIP 'minimal impact considerations' for water table impacts on the porous rock aquifer and acknowledge the need for make good provisions if users are adversely affected. Other considerations are predicted to be level 1, which is defined as acceptable by the AIP.

SHM have also identified their likely groundwater licensing requirements and have obtained alluvial and regulated river access licences to offset the predicted take. SHM will apply for the hard rock allocation associated with the porous rock aquifer under the *Water Act 1912* as no water sharing plan has commenced for this water source yet. The preliminary modelling indicates that groundwater impacts associated with the Project are minimal and can be managed.

In general, the Project is positioned outside of the alluvial aquifer systems (Highly Productive) of the Hunter Valley. Consequently the predicted take of water from the Hunter River and connected alluvial aquifer systems as modelled is minimal and it could be anticipated that the impacts would also be minimal. However, as part of this review two issues of concern were noted, being (i) the presence of a significant fault structure running through the mine lease and in close proximity to longwalls; and (ii) the large take of porous rock groundwater that has potentially much broader implications than identified via the environmental assessment and how 'make good' provisions of the AIP are applied.

(i) Significance of Mt Ogilvie Fault Structure

SHM describe the north trending Mount Ogilvie Fault as separating the Newcastle Coal Measures to the west from the older Wittingham Coal Measures. It is also reported that the strata to the west of the fault is reported to be downthrown by more than 100m. In addition to SHM's work, there is also historical geochemical work by Kellet et al (1989) which indicates higher groundwater discharges from the Permian aquifers occurring around the fault zone such that it 'over prints' the geochemical signature in the alluvial groundwater. Kellet's work implies there are higher hydraulic conductivities around the fault zone.

In contrast to this information the coal seams have been interpreted by SHM to roll over the fault structure rather than having been displaced and thus considered to not act as a major hydraulic barrier or a conduit for groundwater flow. The Project conceptual model does not include a high permeability fault zone. If a large fault was included this may result in the predicted take from the Hunter River and connected alluvial aquifer systems being substantially greater than currently modelled. SHM appear to have only small bore monitoring network and limited to vibrating wire installations. A review of the SHM data shows that presently only 3 sites were packer tested to determine aquifer hydraulic conductivities within the lease area; one of which was in proximity to the fault zone, however the actual results were not provided. It would be beneficial if SHM were to expand their monitoring network and provide a more detailed assessment of the Mt Ogilvie Fault to identify the capacity of this significant regional structure to act as a hydraulic conduit before finalising their conceptual model when preparing the EIS.

(ii) Large Take of Porous Rock Groundwater and impacts on adjacent users.

SHM indicate that the Project will result in the take of porous groundwater of up to 1750ML/yr and that 12 registered users could incur depressurisation impacts by 2m or more. SHM outline as required by the AIP a commitment to make good on losses resulting as a consequence of the Project. What's not investigated as part of the assessment is how the modelled take of up to 1750 ML/yr porous rock groundwater associated with this Project reduces groundwater inflows into the adjoining mines as the depressurisation impacts within the Porous Rock aquifers extend several kilometers.

Groundwater within the Porous Rock aquifers is categorised as 'Less Productive', as it is typically brackish - saline in quality and low yielding – however is being utilised as part of other coal mining operations. A consequence of approving a completely new mine development within a highly developed mining location is that it reduces groundwater inflows to the adjoining mines. If the production rate of coal output is to be sustained, particularly during dry periods when there is a lack of surface water run-off, any reduction in groundwater inflow volumes in the adjoining mines will generate a need for a supply to be obtained from an alternative water source. The most probable supply for coal mines in this locality is to draw upon their general security Hunter River WALs and alluvial aquifer WALs. This may lead to increased utilisation of the existing regulated river general security WALs and alluvial aquifer WALs to compensate for losses in groundwater inflow. To better understand the implications of this issue and address the AIP requirement for 'make good' provisions where a license holder is impacted, it is recommended that SHM model the predicted volumetric losses of the Porous Rock groundwater to adjoining mines and discuss options how such 'make good' provisons might apply during dry periods, particularly when their own water supply is limited.

5. Advice from Independent Expert Scientific Committee (IESC)

The NSW Office of Water has considered the report by the IESC in preparing its response. The NSW Office of Water concurs with their findings and has the following recommendations.

6. Recommendations

- Before finalising the conceptual model for the EIS, the proponent should invest in broader spatial data collection as well as undertaking a more detailed assessment on whether the Mt Ogilvie Fault has the potential to be a conduit for groundwater flow from the highly productive Hunter River alluvium into the mine workings. Further, additional modelling should be undertaken to investigate the sensitivities of

the take of water with such a higher permeability geological feature incorporated in the conceptual model.

- SHM investigate potential losses in groundwater inflow to the adjoining coal mines as a consequence of their predicted take and discuss opportunities on how make good provisions might apply, particularly during dry years when water availability is limited.

Reference

Kellet J R, , Williams B.G Ward J.K 1989. Hydrogeochemistry of the Upper Hunter valley New South Wales. Department of Primary Industries and Energy. Bureau of Mineral Resources, Geology and Geophysics, Bulletin 221. Australian Government Publishing Service Canberra.