



Office of Water

**Major Development Assessments
Department of Planning
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8 April 2011

Our ref: ER21343R
Your ref: 10/13705

Attention: Naomi Nelson

Dear Naomi

**Proposed Bengalla Coal Mine modification of consent
Your ref. DA 211/93 MOD 4**

The NSW Office of Water (NOW) has reviewed the Response to Submissions to the Environmental Assessment (EA) for the proposed modification of development consent to Bengalla Joint Venture mine operation and has had further discussions with both Bengalla Mining Company representatives and their consultants. This correspondence therefore supersedes NOW's submission to the 75W application dated 4 January 2011.

The modification relates to a change of spoil dumping location such that it is proposed that some spoil will be located on land that overlies the Hunter Regulated Alluvial Water Source, governed under the *Water Sharing Plan for the Hunter Unregulated and Alluvial Water Sources 2009* (WSPHUAWS). Therefore, NOW has assessed whether water access licences will be required under the *Water Management Act 2000* (WMA) to account for any take of water from this water source. Since this modification is being considered under 75W and our current understanding is that WMA approvals are still relevant, NOW has also assessed whether any approvals will be required.

Water licences and approvals under the Water Management Act 2000

Currently under the WMA the activity of dumping spoils on top of an alluvial aquifer will not result in the take of water and as such a water access licence is not required. However, you should be aware that the *Water Management Amendment Act 2010*, includes a new s.60I which seeks to clarify the circumstances in which water is taken in the course of carrying out a mining activity. Whilst the new s.60I defines the relocation of water from one part of an aquifer to another part of an aquifer as a take of water, it is highly unlikely that this will apply to this aspect of mining activity. It should be noted that whilst the new s.60I has not yet taken effect it is expected that it will do so in mid-2011.

Since the dumping of these spoils is not considered a take of water, then this activity does not need either a water supply work approval nor a water use approval. Therefore clauses 39-41 of the WSPHUAWS also do not apply.

The proposed location is not within 40m of the high bank of the Hunter Regulated River and therefore a controlled activity approval is not required.

The proposal only appears to be directly affecting a 2nd order water course and the existing Muswellbrook to Ulan Railway Line has in effect segregated this part of the floodplain from the

distribution or flow of floodwater in times of flood. NOW is therefore of the view that a flood work approval would not be required once this type of approval is switched on under the WMA.

Aquifer interference approvals have also not yet been switched on under the WMA. These approvals will commence once the Aquifer Interference Policy has been completed and approved by Government, hopefully by July this year. Once switched on, it is likely that an aquifer interference approval would need to be held in regard to this proposal. However, as discussed below, NOW is of the view that the overall behaviour and function of the aquifer is unlikely to be more than minimally affected and as such sees no reason why an aquifer interference approval could not be issued.

The proposal does not fit the definition of a drainage work and therefore this approval is not required.

Matters relevant to NOW

Whilst NOW does not require any licences nor approvals at this point in time for the proposal, I believe it is important to summarise our analysis of any potential water-related matters to fully inform the development of appropriate conditions of consent, should the modification be approved.

Whilst the proposed spoil dumping site overlies the Hunter Regulated River Alluvial Water Source, I would like to point out a few important considerations:

- 1) the added weight of the spoils will tend to compact the finer material (silty clays) but not the coarser materials (gravels and coarse sands). I note that the consultant's hydrogeological assessment indicates a reduction in permeability in the localised area, of up to 20%, within the bounds of the natural variations in permeability and not below a permeability of 0.8×10^{-4} m/s, which is still considered highly permeable. Given that water supply bores are not drilled into the finer material but rather the coarser, more highly permeable material, the quoted potential loss of permeability is unlikely to significantly affect the ability to draw water out of the aquifer and correspondingly unlikely to sterilise the alluvial water source to productive use;
- 2) the site is located on the northern side of the Muswellbrook to Ulan Railway Line and the associated raised embankment, which has already segregated this part of the floodplain from flood flow paths for events up to the 1:400 year recurrence interval (which would overtop the rail embankment). This embankment may have also already affected the lateral movement of groundwater relative to the river in the top layers (finer material) of the aquifer;
- 3) the site is approximately 10Ha and represents approximately 0.3% of the alluvial floodplain that is within the proponent's site and an insignificant percentage of the floodplain as a whole. This means that the overall behaviour and function of the floodplain and alluvial aquifer is unlikely to be more than minimally affected;
- 4) there is a risk of increased saline leachates passing from the dumped spoil into the alluvial aquifer. I note that the information provided to-date indicates that the background salinity of the alluvial aquifer is in the vicinity of 800 - 2000 $\mu\text{S/cm}$. It is entirely possible that the quoted range in salinity represents the range in depth of sampling within the alluvial aquifer, as we would expect lower salinity levels at higher water elevations within the aquifer. Whilst I recognise the salinity of the over-burden material that forms the bulk of the spoil could be less than that of the water in the alluvial aquifer, it is quite possible that the overall long-term leachate salinity could be higher than that stated (70 - 132 $\mu\text{S/cm}$), possibly up to an order of magnitude higher. Regardless of this potential anomaly in the salinity of the sample tested to establish the leachate salinity, the combined effect of the salinity levels of the leachates and the relatively small volume

ratio between the potential leachates (5ML/yr) and the aquifer itself (many MLs), any changed salinity level in the aquifer after mixing would likely be minimal;

- 5) there is a risk of a small amount of increased saline surface runoff entering the Hunter Regulated River, primarily during high flow events but from an area as small as this it is unlikely to significantly change the salt loads and concentrations in the river during such high flow events;
- 6) the site is greater than 500m from the high bank of the Hunter Regulated River at its nearest point;

Whilst the issues NOW has raised are only minimal they nevertheless could be addressed through consideration of alternate spoil dumping locations away from the alluvial floodplain - perhaps on the existing spoil dumping location or to the north west of the site. However, NOW is aware that other factors such as aesthetic/local community concerns or loss of already rehabilitated land may be overriding considerations at these alternate sites.

Potential conditions of consent

To ensure any potential impacts remain within minimal bounds, there are a number of important statements of commitment that NOW believes should be included as conditions of consent, should the approval be granted, especially since any NOW approvals are not yet required under the WMA as outlined above. These commitments include:

- Minimising any poor quality water infiltrating into and through the spoils into the alluvial aquifer over the long-term, aided by progressively rehabilitating the spoil through contouring, placing stockpiled topsoil and re-vegetating actions are all important in this regard;
- Ripping and sealing the natural surface of the proposed location, to further mitigate any leachates passing from the spoil to alluvial aquifer over both the long and the short-term;
- Minimising any poor quality surface water from running off the spoils and lateral seepage from discharging from the spoils and into the Hunter Regulated River over the long-term, aided by contouring and re-vegetating actions, adherence to the limit of rejects emplacement are all important in this regard;
- Minimising any poor quality surface water from running off the spoils and lateral seepage from discharging from the spoils and entering the Hunter Regulated River over the short-term by diverting and capturing runoff and lateral seepage water from the spoils area within the mine's closed water management system until all rehabilitation is completed;
- Monitoring and reporting of salinity levels in the alluvial aquifer in the vicinity of the proposed spoil dumping site;
- Appropriate response mechanisms should these salinity levels show more than minimal increase during the life of the operation;

Issues relating to the potential sterilisation of agricultural land through the dumping of spoil on top of this land should be addressed through the submission from the former Industry and Investment representatives. To inform that discussion, NOW advises DoP that there are no surface water licences nor have any water bores been installed on the relevant parcel of land prior to its occupation by the Bengalla Mining Company in 1998, so this land does not appear to have been previously used for irrigated agriculture. Whether it has been used for or has any significant value for other agricultural purposes is a matter for those members of the new Department of Primary Industries that are responsible for administering the *Rural Lands Protection Act 1998*, rather than NOW (which I note has recently become part of the new DPI).

Should you require any clarification of matters raised in this letter, please contact Brian Gardoll on (02) 4904 2528.

Yours sincerely

A handwritten signature in blue ink, appearing to read 'Rob O'Neill', with a stylized, cursive script.

Rob O'Neill
Director, Water Policy and Planning
NSW Office of Water