



31 OCT 2013

OUT13/31862

Mr Matthew Sprott  
Mining Projects  
NSW Department of Planning and Infrastructure  
GPO Box 39  
SYDNEY NSW 2001

Matthew.Sprott@planning.nsw.gov.au

Dear Mr Sprott,

**Bengalla Mine Continuation Project (SSD 5170)  
Response to exhibition of Environmental Assessment**

I refer to your email dated 30 August 2013 requesting advice from the Department of Primary Industries (DPI) in respect to the above matter.

Comment by NSW Office of Water

The NSW Office of Water advises the following key issues, and at Attachment A detailed comments on the groundwater assessment, a summary of licences and approvals required under the *Water Management Act 2000* and the *Water Act 1912*, and recommended conditions should the application be approved.

- (i) The diversion of Dry Creek will result in the loss of inflow into the Hunter River and consequently a loss of recharge into the Hunter Alluvial aquifer down gradient from the project site. The loss of catchment area (ie. including Dry Creek) from mining will result in reduced flow which is equivalent to 0.5% flow volume at Denman. In the EIS, 'this is considered negligible'. However, the EIS statement needs to clarify that 'it is negligible' under average rainfall condition but may be a significant loss during drought or extreme drought. Contingent water supply arrangements should be investigated.
- (ii) The EIS indicates that the mining company hold sufficient water access licences to account for water taken from water sources affected by operations. Modification to Dry Creek will result in reduction of its yield by 923 ML/y (page 182, EIS main report). Diversion of the Dry Creek may also result in partial loss of alluvial aquifer and alluvial groundwaters of the Muswellbrook Water Source. These water requirements are not included in the Table 56 of the main report.
- (iii) The loss of surface and groundwater due to mining operation within the Dry Creek Catchment need to be accounted for by holding sufficient shares of unregulated category access licences and aquifer access licences from the

Muswellbrook Water Source of the *Water Sharing Plan for the Hunter Unregulated and Alluvial Water Sources*. The proponent is required to estimate the shares (volumes of water) that need to be held to account for water taken from each water source. The proponent will be required to undertake water access licence dealings under the *Water Management Act 2000* to satisfy these requirements.

- (iv) The proponent should undertake a high-level risk assessment in relation to potential risks to water resources, to satisfy the requirements of section 3.2 (3) of the NSW Aquifer Interference Policy.

For further information please contact Hemantha Desilva, Senior Water Regulation Officer (Newcastle office) on 4904 2525, or at: [hemantha.desilva@water.nsw.gov.au](mailto:hemantha.desilva@water.nsw.gov.au).

Comment by Office of Agricultural Sustainability & Food Security

As per arrangements for mining applications that impact on agricultural land, the Office of Agricultural Sustainability & Food Security will respond direct to your Department.

For further information please contact Rob Williamson, Leader Regional Services (Orange office) on 6391 3166, or at: [robert.williamson@dpi.nsw.gov.au](mailto:robert.williamson@dpi.nsw.gov.au).

Yours sincerely,



Tony Heffernan  
**A/Executive Director Business Services**

## Attachment A

**Bengalla Mine Continuation Project (SSD 5170)**  
**Response to exhibition of EIS**  
**Additional comments by NSW Office of Water (NOW)**

**1. Potential Groundwater Related Environmental Impacts**

1. The additional Overburden Emplacement Area (OEA) to the west of Dry Creek may be utilised for excess spoil material until it is intercepted by mining. The EIS states that there may be scope for co-disposal of coal rejects in some areas that drain towards the pit but only if hydrogeological studies by the groundwater consultant clearly demonstrates a low risk of seepage connectivity to alluvial soils. The geochemical study has sufficiently and satisfactorily addressed this matter raised in previous NOW assessment.
2. Discharge of saline water from the site will be managed through the Hunter River Salinity Trading Scheme (HRSTS). The mine water balance indicates that under median rainfall conditions, there is no need to discharge saline water. Under extremely wet conditions, there is a 10% probability that 350 ML up to a maximum 1000 ML by Year 8 (due to a large increase in catchment area collecting into the mine water management system) would need to be discharged through the HRSTS.
3. The NSW Aquifer Interference Policy (AIP) requires that the proponent state the 'ability to demonstrate that adequate arrangements will be in place to ensure that the minimal impact considerations can be met' (AIP, s3.2, p11). The EIS refers to the (existing) groundwater management plan 'to be updated to account for impacts of the project' and included a brief discussion of the groundwater monitoring program. However, the groundwater management plan is not supplied, as such a technical review of the plan has not been carried out.

An assessment of the proposal against the AIP is provided in the Tables below.

**Table 1: Does the activity require detailed assessment under the AIP?**

| Consideration |                                                                                                             | Response                                                                                                                                                                                                                                                                                    |
|---------------|-------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1             | Is the activity defined as an aquifer interference activity?                                                | If <b>NO</b> , then assessment is complete. No assessment is required under the AIP.<br>If <b>YES</b> , continue to 2.                                                                                                                                                                      |
| 2             | Is the activity a defined minimal impact aquifer interference activity according to section 3.3 of the AIP? | If <b>YES</b> , then no further assessment against this policy is required. Volumetric licensing still required for any water taken, unless exempt. See the implementation manual for a more detailed discussion.<br>If <b>NO</b> , then continue on for a full assessment of the activity. |

**Table 2: Has the proponent:**

| AIP Requirement |                                                                                                                                   | Proponent response                                                                                    | NOW Comment |
|-----------------|-----------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------|-------------|
| 1               | Described the water source (s) the activity will take water from?                                                                 | EIS - Refer to pages xii, 79, 90, 172, 173, 185<br>Groundwater Impact Assessment (GIA) – page 35 - 63 | Addressed   |
| 2               | Predicted the total amount of water that will be taken from each connected groundwater or surface water source on an annual basis | EIS – page 90, 307                                                                                    | Addressed   |

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|    | AIP Requirement                                                                                                                                                                   | Proponent response                         | NOW Comment                                                                         |
|----|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------|-------------------------------------------------------------------------------------|
|    | as a result of the activity?                                                                                                                                                      |                                            |                                                                                     |
| 3  | Predicted the total amount of water that will be taken from each connected groundwater or surface water source after the closure of the activity?                                 | EIS – page 90, 92, 178, 186                | Addressed                                                                           |
| 4  | Made these predictions in accordance with Section 3.2.3 of the AIP? (refer to Table 3, below)                                                                                     | EIS – page 93, 94                          | Addressed                                                                           |
| 5  | Described how and in what proportions this take will be assigned to the affected aquifers and connected surface water sources?                                                    | EIS – page 90                              | Addressed                                                                           |
| 6  | Described how any licence exemptions might apply?                                                                                                                                 | EIS – page 90                              | Addressed                                                                           |
| 7  | Described the characteristics of the water requirements?                                                                                                                          | EIS – page 91                              | Addressed                                                                           |
| 8  | Determined if there are sufficient water entitlements and water allocations that are able to be obtained for the activity?                                                        | EIS – page 91                              | Addressed – Identified sufficient entitlement provided AWD remains greater than 50% |
| 9  | Considered the rules of the relevant water sharing plan and if it can meet these rules?                                                                                           | EIS – page 91                              | Addressed                                                                           |
| 10 | Determined how it will obtain the required water?                                                                                                                                 | EIS – page 91                              | Addressed                                                                           |
| 11 | Considered the effect that activation of existing entitlement may have on future available water determinations?                                                                  | EIS – page 92                              | Addressed                                                                           |
| 12 | Considered actions required both during and post-closure to minimize the risk of inflows to a mine void as a result of flooding?                                                  | EIS – page 92, 183, 281                    | Indicated that all mining activity shall be higher than the 1:100 ARI               |
| 13 | Developed a strategy to account for any water taken beyond the life of the operation of the project?                                                                              | EIS – page 92                              | Addressed                                                                           |
|    | <i>Will uncertainty in the predicted inflows have a significant impact on the environment or other authorized water users?</i><br><br><i>Items 14-16 must be addressed if so.</i> | EIS – page 92<br>GIA – Section 11          | Addressed                                                                           |
| 14 | Considered any potential for causing or enhancing hydraulic connections, and quantified the risk?                                                                                 | EIS – page 92                              | Addressed                                                                           |
| 15 | Quantified any other uncertainties in the groundwater or surface water impact modelling conducted for the activity?                                                               | EIS – page 92, 185-186<br>GIA – Section 12 | Addressed                                                                           |
| 16 | Considered strategies for monitoring actual and reassessing any predicted take of water                                                                                           | EIS – page 92, 94, 192<br>GIA – page 124   | The EIS and GIA refers to an existing Groundwater Management Plan that is to        |

| AIP Requirement                                                                       | Proponent response | NOW Comment                                                                                                                                                              |
|---------------------------------------------------------------------------------------|--------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| throughout the life of the project, and how these requirements will be accounted for? |                    | be updated to account for the impacts of the project. A very brief overview of what the plan involves is provided, however, it is not supplied and available for review. |

**Table 3: Determining water predictions in accordance with Section 3.2.3**

(complete one row only – consider both during and following completion of activity)

| AIP Requirement                                                                                                                                                                                                                                                                                                                                                                                                                                            | Proponent response                      | NOW Comment |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------|-------------|
| 1 For the <i>Gateway</i> process: Is the estimate based on a simple modelling platform, using suitable baseline data, that is fit-for-purpose?                                                                                                                                                                                                                                                                                                             | EIS – page 86                           | N/A         |
| 2 For <i>SSD</i> or <i>mining</i> or <i>CSG production</i> , is the estimate based on a complex modelling platform that is: <ul style="list-style-type: none"> <li>• Calibrated against suitable baseline data, and in the case of a <i>reliable water source</i>, over at least two years?</li> <li>• Consistent with the Australian Modelling Guidelines?</li> <li>• Independently reviewed, robust and reliable, and deemed fit-for-purpose?</li> </ul> | EIS – page 188<br>GIA – numerous places | Addressed   |
| 3 In all other processes, estimated based on a desk-top analysis that is: <ul style="list-style-type: none"> <li>• Developed using the available baseline data that has been collected at an appropriate frequency and scale; and</li> <li>• Fit-for-purpose?</li> </ul>                                                                                                                                                                                   |                                         | N/A         |

**Other requirements to be reported on under Section 3.2.3****Table 4: Has the proponent provided details on:**

| AIP Requirement                                                                                              | Proponent response                | NOW Comment |
|--------------------------------------------------------------------------------------------------------------|-----------------------------------|-------------|
| 1 Establishment of baseline groundwater conditions?                                                          | EIS – page 94<br>GIA - throughout | Addressed   |
| 2 A strategy for complying with any water access rules?                                                      | EIS – page 94<br>GIA throughout   | Addressed   |
| 3 Potential water level, quality or pressure drawdown impacts on nearby basic landholder rights water users? | EIS – page 94<br>GIA page 105     | Addressed   |
| 4 Potential water level, quality or pressure drawdown impacts on nearby licensed water users in              | EIS – page 94<br>GIA page 105     | Addressed   |

|   |                                                                                                              |                               |                                                                                                  |
|---|--------------------------------------------------------------------------------------------------------------|-------------------------------|--------------------------------------------------------------------------------------------------|
|   | connected groundwater and surface water sources?                                                             |                               |                                                                                                  |
| 5 | Potential water level, quality or pressure drawdown impacts on groundwater dependent ecosystems?             | EIS – page 94                 | The proponent states in numerous instances that impact on stygofauna and other GDEs will be low. |
| 6 | Potential for increased saline or contaminated water inflows to aquifers and highly connected river systems? | EIS – page 94<br>GIA page 123 | Addressed                                                                                        |
| 7 | Potential to cause or enhance hydraulic connection between aquifers?                                         |                               | Not explicitly addressed, but is low risk                                                        |
| 8 | Potential for river bank instability, or high wall instability or failure to occur?                          | EIS – page 94                 | Addressed in EIS and GIA                                                                         |
| 9 | Details of the method for disposing of extracted activities (for CSG activities)?                            |                               | Not applicable                                                                                   |

### Addressing the minimal impact considerations

Section 3.2.1 of the AIP describes how aquifer impact assessment should be undertaken.

**Table 5: Minimal impact considerations**

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                          |                                                                                                                                                                                                                                                                                                 |  |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|
| <b>Aquifer</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Alluvial aquifer – Hunter River Alluvium |                                                                                                                                                                                                                                                                                                 |  |
| <b>Category</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Highly Productive                        |                                                                                                                                                                                                                                                                                                 |  |
| <b>Level 1 Minimal Impact Consideration</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                          | <b>Assessment</b>                                                                                                                                                                                                                                                                               |  |
| <u>Water Table</u><br>Less than or equal to a 10% cumulative variation in the water table, allowing for typical climatic “post-water sharing plan” variations, 40 m from any:<br>(a) high priority groundwater dependent ecosystem; or<br>(b) high priority culturally significant site;<br>listed in the schedule of the relevant water sharing plan.<br><b>OR</b><br>A maximum of a 2 m water table decline cumulatively at any water supply work.                                                                                                                                           |                                          | Level 1 - Acceptable<br><br>EIS – page 94, 191, 192<br>GIA – page 105, 107<br>Note: Drawdown contours have not been given for the alluvial aquifer, however the conclusion is supported by the drawdown contours provided in the underlying and adjacent Permian coal measures and interburden. |  |
| <u>Water pressure</u><br>A cumulative pressure head decline of not more than 40% of the “post-water sharing plan” pressure head above the base of the water source to a maximum of a 2m decline, at any water supply work.                                                                                                                                                                                                                                                                                                                                                                     |                                          | Level 1 - Acceptable<br><br>EIS – page 93, 191<br>GIA – page 91-96, 106                                                                                                                                                                                                                         |  |
| <u>Water quality</u><br>Any change in the groundwater quality should not lower the beneficial use category of the groundwater source beyond 40 m from the activity.<br>No increase of more than 1% per activity in long-term average salinity in a highly connected surface water source at the nearest point to the activity.<br>No mining activity to be below the natural ground surface within 200m laterally from the top of high bank or 100m vertically beneath (or the three dimensional extent of the alluvial water source - whichever is the lesser distance) of a highly connected |                                          | Level 1 - Acceptable<br>EIS – page 93, 191, 192<br>GIA – page 112, 113                                                                                                                                                                                                                          |  |

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surface water source that is defined as a "reliable water supply". Not more than 10% cumulatively of the three dimensional extent of the alluvial material in this water source to be excavated by mining activities beyond 200m laterally from the top of high bank and 100m vertically beneath a highly connected surface water source that is defined as a "reliable water supply".

|                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                       |                                                                        |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------|------------------------------------------------------------------------|
| <b>Aquifer</b>                                                                                                                                                                                                                                                                                                                                                                                                                                       | Porous rock or fractured rock – Permian coal measures and interburden |                                                                        |
| <b>Category</b>                                                                                                                                                                                                                                                                                                                                                                                                                                      | Less productive                                                       |                                                                        |
| <b>Level 1 Minimal Impact Consideration</b>                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                       | <b>Assessment</b>                                                      |
| <u>Water Table</u><br>Less than or equal to a 10% cumulative variation in the water table, allowing for typical climatic "post-water sharing plan" variations, 40 m from any:<br>(a) high priority groundwater dependent ecosystem; or<br>(b) high priority culturally significant site;<br>listed in the schedule of the relevant water sharing plan.<br><b>OR</b><br>A maximum of a 2 m water table decline cumulatively at any water supply work. |                                                                       | Level 1 - Acceptable<br>EIS – page 93, 185, 188<br>GIA – page 105, 123 |
| <u>Water pressure</u><br>A cumulative pressure head decline of not more than a 2m decline, at any water supply work.                                                                                                                                                                                                                                                                                                                                 |                                                                       | Level 1 - Acceptable<br>GIA – page 105, 123                            |
| <u>Water quality</u><br>Any change in the groundwater quality should not lower the beneficial use category of the groundwater source beyond 40m from the activity.                                                                                                                                                                                                                                                                                   |                                                                       | Level 1 - Acceptable<br>GIA – page 105, 123                            |

**Table 6: Has the proponent:**

| <b>AIP Requirement</b> |                                                                                                  | <b>Proponent response</b> | <b>NOW Comment</b>                                                                                                                                             |
|------------------------|--------------------------------------------------------------------------------------------------|---------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1                      | Considered types, scale, and likelihood of unforeseen impacts <i>during operation</i> ?          | EIS – page 93             | Document referred to Groundwater Management Plan to be updated to account for the impacts of the project but the plan is not supplied and available for review |
| 2                      | Considered types, scale, and likelihood of unforeseen impacts <i>post closure</i> ?              | EIS – page 93             |                                                                                                                                                                |
| 3                      | Proposed mitigation, prevention or avoidance strategies for each of these potential impacts?     | EIS – page 93             |                                                                                                                                                                |
| 4                      | Proposed remedial actions should the risk minimization strategies fail?                          | EIS – page 93             |                                                                                                                                                                |
| 5                      | Considered what further mitigation, prevention, avoidance or remedial actions might be required? | EIS – page 93             |                                                                                                                                                                |
| 6                      | Considered what conditions might be appropriate?                                                 |                           | Can't make a comment on remedial actions because the groundwater management plan was not supplied.                                                             |

## Other considerations

These considerations are not included in the assessment framework outlined within the AIP, however are discussed elsewhere in the document and are useful considerations when assessing a proposal.

**Table 7: Has the proponent:**

| <b>AIP Requirement</b> |                                                            | <b>Proponent response</b> | <b>NOW Comment</b>                                                                                                                                                                                                                                                                                                                          |
|------------------------|------------------------------------------------------------|---------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1                      | Addressed how it will measure and monitor volumetric take? | EIS – page 92             | Document referred to groundwater monitoring to measure water take, however, it did not include method of measurement of inflows and mine water discharge or other methods of measuring water take such as water accounting, on-going mine water balance calculation or numerical modelling; and any record keeping of actual pumping rates. |
| 2                      | Outlined a reporting framework for volumetric take?        |                           | No                                                                                                                                                                                                                                                                                                                                          |

## **2. Licence requirements**

### ***Water Act 1912***

- All groundwater sources within the hardrock geological formations in the area are currently managed under the *Water Act 1912*.
- No exemptions for licences under the *Water Act 1912* apply as a result of approval under the *Environmental Planning and Assessment Act 1979*.
- Licences required for all bores under Part 5 (S112) of the *Water Act 1912* (definition of a bore is provided under s105).
- Monitoring bores may require licensing under Part 5 of the *Water Act 1912* unless the bores meet the criteria for exempt monitoring bores as defined in the *Water Management (General) Regulation 2011*.
- Flood control works will require licensing under Part 8 of the *Water Act 1912*.

Application forms for licences and approvals are available on the Office of Water website at: [www.water.nsw.gov.au](http://www.water.nsw.gov.au).

### ***Water Management Act 2000 (WMA)***

- Water Access Licences are required to take water from any water source managed under the WMA.
- Exemptions for access licences are provided in Clause 18 and the Schedule 5 of the *Water Management (General) Regulation 2011*.
- Section 54 of the WMA provides details on harvestable rights.
- Requirements for access licence dealings are provided in the following documents:
  - Section 71 of WMA
  - Access Licence Dealing Principles. Refer: [www.legislation.nsw.gov.au/maintop/view/inforce/subordleg+433+2004+cd+0+N](http://www.legislation.nsw.gov.au/maintop/view/inforce/subordleg+433+2004+cd+0+N)
  - Part 12 of the Water Sharing Plan [www.legislation.nsw.gov.au/maintop/view/inforce/subordleg+347+2009+cd+0+N](http://www.legislation.nsw.gov.au/maintop/view/inforce/subordleg+347+2009+cd+0+N)



Application forms for access licence and access licence dealings are available on the Office of Water website at: [www.water.nsw.gov.au](http://www.water.nsw.gov.au).

**3. Recommended Conditions of Approval**

1. The proponent is required to estimate the shares (volumes of water) need to be held to account for water taken from each water source. (Values of shares of water access licences will change due to changes in available water determination for the water source.)
2. The proponent must develop a contingency plan for drought conditions to address reduced flow into the Hunter River as a result of mining. This could be include scheduled mine water discharge (of reasonable quality) or redirecting runoff discharge directly into the Hunter River to provide recharge and maintain a healthy river environment. If mine water discharge is an option to be taken by the mine, then the mine water salinity levels will need to be reviewed and approved by OEH in consultation with NOW.
3. The proponent must consider alternate option for saline water management including an the transfer of water to other mines requiring additional water. Water transfer between mines will need to be accounted for in the mine water balance and reported in the annual environmental management report (AEMR).
4. The proponent must revise the groundwater management plan to include arrangements to give consideration to the minimal impacts criteria of the AIP, and to ensure they are being met as forecast in the EIS. This is to include a validation of the groundwater model using the latest monitoring results as part of AEMR. The groundwater management plan should include trigger levels, contingency measures and reporting of incidents when adverse impacts are detected. This should be supplied to NOW for review against the requirements of the AIP.

**End Attachment A**