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Dear Ms Evans

**South Wambo Coal Mine – Mod 12 Project (DA 305-7-2003)
Review of Environmental Assessment**

I refer to your email of 26 April 2016 regarding Wambo Coal Pty Ltd's (the Proponent) application for the South Wambo Underground Coal Mine modification in the Singleton Shire Council local government area.

NSW Department of Industry, Division of Resources & Energy (the Division) has reviewed the *South Wambo Underground Mine Modification Environmental Assessment* (EA) dated April 2016.

The following comments are directed at specific areas of the Division's responsibility for this proposal.

MINING TITLE

Under the *Mining Act 1992*, mining and rehabilitation are regulated by conditions included in the mining lease, including requirements for the submission of a Mining Operations Plan (MOP) prior to the commencement of operations, and subsequent Annual Environmental Management Reports (AEMR).

SUBSIDENCE

DRE's advice is relevant only to health and safety risks to people which may arise from subsidence caused by the extraction of the proposed modification to the approved South Wambo Mine.

The proposed modification comprises the re-orientation of a number of previously approved longwalls in the Arrowfield Seam and Woodlands Hill Seam and a new domain of longwalls in these seams.

Overall there will be an increase in the extent of subsidence due to the proposed modification however; the risk profile of the site will remain largely the same as that of the approved mine.

The aforementioned risks should be manageable during the Extraction Plan stage.

REHABILITATION

It is noted that the rehabilitation commitments within the MOD 12 EA references the Wambo Development Project EIS (2003) prepared in support of DA-305-7-2003, and accordingly are general in nature, and do not include detailed information.

The Division is unable to determine that sustainable rehabilitation outcomes can be achieved as a result of the project. Further information is required from the Proponent and should be addressed in the Response to Submissions. In summary, the additional information will need to include the following:

1. A description of vegetation communities to be achieved by rehabilitation;
2. Further detail in regards to final landform design, including the provision of drawings and cross-sections at an appropriate scale. Key questions to be addressed include:
 - How have similar landscape features and adjacent mining operation rehabilitation been integrated into the post-mining landform design?
 - Are there any significant geotechnical risks associated with the final voids that may compromise the ability to achieve success closure?
 - Will there be any stability issues associated with the final landform in regards to its ability of sustaining the intended final land use (e.g. grazing)?
3. Further detail on the proposed mine layout and scheduling (including open cut operations) with the objective of maximising opportunities for progressive rehabilitation of emplacements and tailings facilities. This should include mapping the proposed rehabilitation schedule against production milestones in order to provide clear means of assessing future compliance with the mining lease / MOD 12 EA in regards to progressive rehabilitation that is undertaken and;
4. Provide further information to justify the proposed final land form design as opposed to other alternatives considered (e.g. void backfilling, concave final slopes etc.).

Rehabilitation Objectives and Domains

Rehabilitation objectives are broad and rehabilitation objectives refer to the Wambo Development Project EIS (2003). The completion criteria are very preliminary in nature and will need to be refined as part of the MOP process under the mining lease to be specific, measurable, achievable, realistic and time bound (SMART). As noted above, further information is required in the criteria in regards to the target vegetation community type to be achieved.

Rehabilitation Methodology

Mine Design

Whilst the layout for the underground operations is provided in Figure 9 of the EA, the timing, other than commencement and completion dates for mining of seams (not for individual longwall panels) is not provided. The open cut operation involves the largest rehabilitation liability for the Wambo Coal activities. However, no detail regarding open cut mine operation or schedule is provided within the MOD 12 EA. Instead, the EIS refers to the MOP for more detail in regards to the rehabilitation scheduling for open cut operations. No detailed information is given regarding the management of tailings and associated rehabilitation schedule for particular tailings disposal facilities against key production schedules for each of the mining areas.

From a compliance point of view in regards to maximising progressive rehabilitation, it would be difficult to establish general compliance against the MOD 12 EA schedule should production/mining be delayed.

- It is noted that the MOD 12 EA refers to the development of a final landform based on the Wambo Development Project EIS (2003). However, the location of final voids has changed from what is shown in the Wambo Development Project EIS (2003) and the MOD 12 EA does not include a figure that identifies where the final void/s are proposed.
- The proposed maximum extraction rates are within the approved extraction limits.

Rehabilitation

- Rehabilitation methodologies for the proposed underground mine activities as described in the MOD 12 EA, whilst conceptual, are sufficiently detailed to demonstrate the case that sustainable rehabilitation can be achieved (with exception of landform design and tailings management as noted below).
- The document does not appropriately describe the functional domains of the project with regard to the open cut activities. Any reference to the Wambo Development Project EIS (2003) is not appropriate as the mining schedule and rehabilitation objectives have changed since the approval of that project.
- In general, other risks such as geochemical constraints, spontaneous combustion hazards, tailings management etc. have not been detailed in the MOD 12 EA other than to refer to the Wambo Development Project EIS (2003). In particular, issues related to the rehabilitation of the North East Tailings Dam have not been discussed, despite the delayed rehabilitation of this facility being an on-going liability to the rehabilitation of the Wambo Mine.

Conceptual Final Landform Design

- The MOD 12 EA refers to the Wambo Development Project EIS (2003) and lacks the level of specific detail to provide an adequate assessment as to whether the landform design presents a potential barrier or limitation to achieving a sustainable rehabilitation outcome.
- No post-mining landform drawing and cross-sections developed since the Wambo Development Project EIS (2003) are provided, so it is not possible to assess whether the final landform will be capable of supporting the intended final land use(s). MOD 12 EA commits to the development of a final land form design toward the end of the Wambo Mine's life. As the cessation of open cut operations is expected by 2020, the lack of final landform design is a key issue for the Division and it is a preference that it should be resolved as part of the modification.
- Whilst it is acknowledged that the final landform design may be significantly altered under a potential future open cut proposal associated with the adjacent United Collieries, the Division considers that a final landform design for the current operations needs to be developed in the event that any future projects do not proceed.

Options Analysis

- No options analysis beyond economic considerations is provided. The MOD 12 EA does compare underground mine surface impacts related to subsidence and portals and it is apparent that there is no analysis in regards to final void configuration/layout and shape (e.g. backfilling of void, partial backfilling of void; battering back slopes; highwall treatments etc.) as well as number of final voids or tailings facilities.

It is proposed to reduce the area of Agricultural Classes 4 and 5 available to grazing as a result of an increase in biodiversity offset areas. No analysis is given regarding the potential to improve the grazing potential of rehabilitated areas to offset the reduction in agricultural potential.

ASSESSMENT OF THE RESOURCE

While amendments to the State Environmental Planning Policy (Mining, Petroleum Production and Extractive Industries) 2007 (Mining SEPP) have removed the provision that made the economic significance of the resource the principle consideration when determining mining projects and require the Department to assess the significance of the resource, the Division considers that an analysis of the resource utilisation and its economics will assist the consent authority in considering the efficiency or otherwise of the development in terms of resource recovery.

This analysis concentrates on geological, mining and economic aspects of the project and the Division makes the following assessment:

Size, quality and availability of the resource

The Project is owned and operated by Wambo Coal Pty Ltd (the Proponent), a 100% owned subsidiary of Peabody Energy Australia Pty Ltd.

A range of open cut and underground mine operations have been conducted at Wambo since 1969. Mining of the South Wambo area (Arrowfield and Bowfield seams) was assessed as part of the Wambo Development Project and approved in 2004 under the Development Consent (DA 305-7-2003). No mining has occurred at South Wambo to date.

Following further mine planning for the approved South Wambo Underground Mine, which considered recent exploration results, the Proponent has identified a modified mine layout that can be mined more economically and efficiently than the approved mine design.

The Project will be an underground longwall coal mine which will operate as a new operation in the existing Wambo mine area. The life of the Project will be 16 years. Approval is being sought to extract coal at a rate of up to 10 million tonnes per annum (Mtpa) of run-of mine (ROM) coal that would produce over 6.5 Mtpa of product coal.

The Division has verified that the Project will provide approximately 108 million tonnes (Mt) of ROM coal and approximately 74 Mt of product coal. The Proponent has completed resource and reserve estimation for the Project in accordance with the Australasian Code for Reporting Exploration Results, Mineral Resources and Ore Reserves 2012 "the JORC Code".

A semi-soft coking coal and three thermal coal products are proposed meet export markets. Approximately 58% of product will meet the export thermal coal markets and the remaining 42% export metallurgical coal markets. Of exported thermal coal 94% will receive a premium to the established 6,322 kcal/kg GAR Newcastle benchmark on the basis of lower ash and/or higher specific energy specifications.

A review of available coal quality information suggests this target is achievable. Raw ash levels necessitate washing all coal to meet export market specifications. The Division considers that a total of 74 Mt of product (saleable) coal from the Project is feasible.

Over the life of the Project, assuming production is sold on the export thermal and metallurgical markets, the value of the coal produced would be worth around \$7.3 billion in current dollars. The net present value of this revenue stream has been estimated by the Division at approximately \$3.8 billion.

Export income is vital for the health of both the NSW and Australian economies contributing export income to the Nation's balance of trade thereby providing positive benefits to both the NSW and Australian credit rating.

The Hunter coalfield had sixteen mines that were producing coal as at December 2015, three are underground mines and thirteen are open cuts. Of the mines that operate in the Hunter coalfield, the Project producing at its maximum production rate of 10 Mtpa ROM would be the ninth largest coal mine and the largest producing underground mine in the region. If approved the Project would be ranked tenth out of the 42 producing NSW coal mines in 2015. The Project producing at its maximum ROM rate would be considered a medium to large sized mine when compared to other operating coal mines in NSW, i.e. the average size of currently operating coal mines in NSW in 2014-15 was around 5 Mtpa of ROM coal.

At full production the Project will generate 230 direct full time jobs, which would generate around 900 jobs in other mine and non-mine related industries throughout the State. During the initial construction stage around 250 jobs would be generated from the Project.

Resource Recovery

The approved South Wambo Mine (approved in 2004) planned underground extraction by longwall mining methods in the Arrowfield and Bowfield seams. The Project proposes the same extraction techniques but with a revised target stratigraphy of the Arrowfield and Woodlands Hill seams and a revised longwall layout. The Woodlands Hill seam is shallower and requires less pre-mining gas drainage than the Bowfield seam.

Longwall equipment from the existing Wambo underground operation will be utilised to extract Woodlands Hill coal and a new longwall will be used to extract Arrowfield seam coal. Proposed working sections for both target seams seek to maximise resource recovery with due consideration for product quality and equipment limitations.

The Project will not materially sterilise coal resources amenable to extraction by underground or open cut mining methods. The Bowfield seam is deeper than the proposed target seams and may be considered in future mining proposals along with other deeper coal seams. Shallower coal seams in the Project area are not considered viable targets for extraction due to previous extraction (Whybrow, Wambo) or insufficient working thicknesses, poor coal product or geotechnical constraints (Redbank Creek, Whynot, Blakefield and Glen Munro seams).

A large number of factors constrain extraction of resources proposed in the Project mine plan and methodology. These include geological constraints, potential subsidence of sensitive features such as Endangered Ecological Communities, Wambo Creek and various heritage listings. Given the constraints outlined in the proponent's EA, the Division considers the Project mine plan for underground operations to adequately recover the resource.

Coal Royalty

The Project is a proposed underground mine and as such a royalty rate of 7.2% applies to production at less than 400m in depth, and 6.2% applies to production above 400m in depth. The royalty rates are applicable to the net disposal value. Net disposal value is the price received per tonne minus any allowable deductions. The main allowable deduction is for coal beneficiation which is either; \$3.50 per tonne for coal subjected to a full washing cycle, or \$2.00 per tonne for coal subjected to a simple washing process, or \$0.50 per tonne for coal that is washed and screened. As all product coal from the Project will be subjected to a full washing cycle, a deduction of \$3.50 per tonne from the value of coal produced applies. A deduction for levies also applies which would amount to no more than \$1.00 per tonne. Hence allowable deductions for royalty for the Project would amount to \$4.50 per tonne.

One of the most important assumptions in the calculation of future royalty for a coal proposal is the estimate of a future coal price over the life of a project. Coal from the Project is expected to be sold into the export thermal and metallurgical markets.

The current NSW average export thermal coal price is currently A\$74 per tonne. It is possible that the export thermal coal price could drop further over the next four years, before rising from 2020 onwards.

Coal price forecasting is inherently difficult and over the long term time frame of the Project there will be many variations in coal prices. However, there is a growing consensus in the coal industry that coal prices will improve in the medium to long term over the current five year lows. For its royalty calculation, the Division uses the current low short term coal prices, and medium to long term export thermal prices (in real terms) in the range of A\$80 to A\$100 per tonne.

Another important aspect of future royalty calculation for a proposed coal project is estimation of future annual production. The Division has estimated that if the Project is approved, around 74 Mtpa of product coal would be able to be economically mined from the Project area from 2017 to 2032.

Using the above parameters the Division has calculated that in a typical full production year the State will receive around \$40 million per annum in royalty and \$490 million over the life of the Project. The net present value of this royalty stream would be \$257 million using a 7% real discount rate.

DRAFT RECOMMENDED CONDITIONS OF APPROVAL

If the Project is granted development approval, the Division recommends that the following conditions be incorporated into the Development Consent, if granted:

Rehabilitation Plan

1. The proponent must prepare and implement a Rehabilitation Plan to the satisfaction of the Secretary of the Department of Industry, Skills and Regional Development.
The Rehabilitation Plan must:
 - a. be prepared in accordance with the Division's guidelines;
 - b. be submitted and approved by the Secretary of the Department of Industry, Skills and Regional Development prior to the commencement of activities;
 - c. address all aspects of rehabilitation and mine closure, including post mining land use assessment, rehabilitation objectives, completion criteria and rehabilitation monitoring.
 - d. include a final landform design that is consistent with the surrounding topography of the area and considers natural drainage design and relief patterns and principles.

Note: The approved Mining Operation Plan (which will become the REMP once the Mining Act Amendments have commenced), required as a condition of the Mining Lease(s) issued in relation to this project, will satisfy the requirements of this condition for a Rehabilitation Plan.

Overall, the Division supports the South Wambo Underground Coal Mine Modification (the Project) as a responsible utilisation of the State's coal resources that will continue to bring economic benefits to the local region and the State as a whole.

Should you have any enquires regarding this matter please contact Bryan Whitlock, Acting Manager Royalties & Advisory Services on (02) 9842 8575.

Yours sincerely



Kylie Hargreaves
Deputy Secretary
Resources & Energy

31 MAY 2016