Planning & Environment
Resources & Geoscience

**Attachment A**

**Unit:** **Strategic Resource Assessment & Advice**

**Branch/Division:** **Geological Survey of NSW - Division of Resources & Geoscience**

**Project:** **Moolarben Coal 1 - MOD 14 / Coal 2 - MOD 3**
**Resource & Economic Assessment**

**Introduction**

State significant development is regulated under the *Environmental Planning and Assessment Act 1979,* which requires a proponent to apply to the Department of Planning and Environment for development consent, supported by an Environmental Assessment (EA).

This Resource and Economic Assessment conducted for the Moolarben Coal Open cut Optimisation Modification – Stage 1 Modification 14 and Moolarben Stage 2 Modification 3 (the Modification or Project) by the Division of Resources and Geoscience (the Division) is designed to review the resource/reserve estimates stated in a proponent's Environmental Assessment and whether the Modification will deliver significant social and economic benefits to New South Wales from the efficient development of the resource and that resource recovery is optimised and waste minimised. It is also to ensure an appropriate return to the State from developing the resource. As such the Division has conducted an independent calculation of the royalty and export revenue to be generated over the life of the Modification.

The objects of the *Mining Act 1992* are to encourage and facilitate the discovery and efficient development of coal resources in NSW. Of particular relevance to this resource assessment are:

Section 3A Objects:

(a) to recognise and foster the significant social and economic benefits to New South Wales that result from the efficient development of coal resources, and

(d) to ensure an appropriate return to the State from mineral resources.

The relevant section of the State Environmental Planning Policy (Mining, Petroleum Production and Extractive Industries) 2007 is Part 3, Clause 15: Resource Recovery, requiring that resource recovery is efficient, optimised and minimises waste.

The Project is owned and operated by Moolarben Coal Operations Pty Ltd (MCO). MCO is the operator of the Moolarben Coal Complex on behalf of the Joint Venture (JV). The JV partners are Moolarben Coal Mines Pty Ltd (81 percent), a consortium of Korean companies represented by Kores Australia Moolarben Coal Pty Ltd (nine percent), and Sojitz Moolarben Resources Pty Ltd (10 percent). Moolarben Coal Mines Pty Ltd is 100% owned by Yancoal Australia Ltd which in turn is majority owned by Yanzhou Coal Mining Company Limited a Chinese based entity.

The Moolarben Coal Complex (MCC) consists of three operating open cut pits (open cuts 1, 2 and 4), and a newly installed operating underground longwall operation. The MCC also has coal handling and preparation plant infrastructure plus a rail loop which supports all open cut and underground operations at the mine. MCO was granted its initial approval to produce coal in 2007 with construction beginning in 2009 and first coal produced in 2010. Since the initial 2007 approval, there have been many additional modifications at MCO.

This Modification is sought to recover a small amount of additional run-of-mine (ROM) coal from the yet to be commenced open cut 3 and the currently operating open cut 2 pit. Of greater importance to the MCC, and associated with this modification, are the approvals sought for changes to the Moolarben mine coal handling and processing facilities.

These changes include:

- open cut 3 infrastructure
- open cut 2 and 3 internal road
- bypass conveyor
- water treatment facilities and final land use issues (dealt with in a separate submission to this Resource Assessment)

The changes to the MCC infrastructure would allow significant increases in product coal tonnages over the life of the mine due to synergies with future underground and open cut operations coal handling and preparation plant bypass options. The current approved ROM from the MCC is 21 Mtpa and the product is 18 Mtpa, while this modification is seeking approval for 24 Mtpa ROM and 22 Mtpa product.

If approved, and if these approved tonnages are achieved, it would result in the MCC becoming close to one of the largest producing mines in NSW. The MCC is located in the northern part of the Western Coalfield, around 40 km to the north of the town of Mudgee. The Ulan mine lies adjacent and to the northwest of the MCC and the Wilpinjong mine lies to the southeast. In 2016-17 the Western Coalfield produced around 22% of total NSW saleable production. If approved, the MCC maximum saleable production rate of 22 Mtpa, would be the largest producing mine in the Western Coalfield and close to the largest in NSW.

**Size and Quality of the Resource**

The Division has verified that the Project will provide approximately 2.7 million tonnes (Mt) of additional Run-of-Mine (ROM) coal from Open cuts 2 and 3 with approximately 18 Mt of additional product coal over the life of mine (LOM). By far the majority the additional product coal from the Modification is due to efficiencies introduced as a result of the bypass conveyor. The additional 2.7 Mt of ROM results in around 2 Mt of additional product coal, whereas the bypass conveyor results in around 17 Mt of additional product coal. The Proponent has completed coal resource and reserve estimation in accordance with the Australasian Code for Reporting Exploration Results, Mineral Resources and Ore Reserves "the JORC Code". The JORC Code is an industry-standard professional code of practice that sets minimum standards for public reporting of minerals exploration results, mineral resources and ore reserves.

The Project will be a continuation of open cut coal mining at MCC and will utilise mine infrastructure currently in place with the addition of a bypass conveyor, realigned open cut 2 and 3 haul roads, with minor amendments to pit limits/alignment to be undertaken. The approved maximum production rate would increase from 8 to 10 Mtpa for Stage 1 (open cuts 1, 2 and 3) and from 12 to 16 Mtpa for Stage 2 (open cut 4). There would also be an associated increase in the combined Stage 1 and Stage 2 open cut ROM coal limit from the current 13 Mtpa to 16 Mtpa.

There is a long history of open cut coal mining of the seam sequence at MCC using open cut extraction techniques. MCO expects 100% of the MCC product to be sold into export thermal coal markets.

A review of available coal quality information suggests the proposed product quality and market split achievable. ROM coal will be processed by a CHPP to improve product characteristics for export markets while also utilising a CHPP bypass circuit where coal of suitable quality is uncovered.

**Resource Recovery**

A number of factors constrain the mine plan, extraction methodology and therefore the resource recovery at the Project. These include geological features, mining conditions, equipment constraints, and project approvals.

The late Permian Ulan seam, within the Illawarra Coal Measures, is the only viable seam to mine in the Project area. Other seams, such as the overlying Moolarben seam are too thin and/or too high in ash content to be commercially viable.

Given the constraints outlined in the proponent's EA, the Strategic Resource Assessment & Advice unit within the Division considers the Project mine plan for open cut operations will adequately recover coal resources and provide an appropriate return to the State, within the mine footprint, giving due consideration to the particular constraints of the location.

**Economic Benefits of the Resource**

Over the life of the Project, assuming production is sold on the export thermal market, the value of the coal produced would be worth nearly $1.7 billion in current dollars. Export income is vital for the health of both the NSW and the Australian economy, export income contributes to the Nation's balance of trade which provides positive benefits to both the NSW and Australian credit rating. This additional export income will contribute to the around $18.2 billion (2016-17 total) of coal exports annually. Coal exports are by far the largest value export from NSW, representing around 25% of total NSW exports (both goods and services combined).

The Project, if approved, would not provide any additional employment at Moolarben. Capital investment for this modification would be of the order of $200 million.

**Coal Royalty Calculation**

The Project is a proposed open cut mine and as such a royalty rate of 8.2% applies to all saleable production, this rate is 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 ROM coal from the Moolarben mining complex is processed in differing ways (for example, all underground coal ROM is bypassed and also some of the open cut is also bypassed), a deduction of $2.00 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 $3.00 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 market (100%). A review of coal quality information by the Division suggests this is achievable.

Coal price forecasting is inherently difficult and over the project life, there could be variations in coal prices, as this Project has only a six-year life these variations would not be as great as with longer-term projects. Average prices of between A$80 and A$100 per tonne for the thermal coal from the Project have been used by the Division.

Another important aspect of future royalty calculation for a proposed coal project is an estimation of future annual production. The Division has estimated that if the Project is approved, around 19 million tonnes of additional product coal would be economically recovered.

Using the above parameters the Division has calculated that in a typical full production year the State will receive around $ 10 million per annum in royalty and $ 135 million over the life of the Modification.

Comments:

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