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Bulga Optimisation Project Modification 3 (SSD4960) and Bulga Underground Modification 7 (DA376-8-2003)

Resource & Economic Assessment

Division of Resources & Geoscience

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Executive summary

Determination

The Division of Resources and Geoscience (the Division) has assessed the Bulga Optimisation Project (the Project or Proposal) and determined the Project will:

- support continued operations at Bulga Open Cut Coal Mine (Bulga mine) until 2039 (an additional 4 years mine life).
- improve resource recovery and be an efficient use of resources.
- ensure an appropriate return to the NSW Government including;
 - \$370 million royalties (current dollars)
 - \$4.7 billion total revenue (current dollars)
- provide continued employment for the 700-strong workforce at the existing Bulga mine until 2039, plus provide additional employment of around 20-50 positions during the life of the Project.

The project

Bulga Coal Management Pty Ltd through modification of SSD 4960 and DA 376-8-2003 is proposing an extension to the southeast of the current operation that will:

- extend life of mine from 2035 to 2039.
- add an additional 62.4 million tonnes (Mt) of Run-of-Mine (ROM) coal recovery.

The Project will use the existing mine workforce, equipment and approved management systems.

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, Industry and Environment for development consent supported by, in this case, an Statement of Environmental Effects (SEE).

This Resource & Economic Assessment (REA) conducted for the Project by the Division assessed:

- the social and economic benefits to NSW including royalties, capital investment, revenues and jobs.
- the resource/reserve estimates stated in the Proponent's SEE.
- if the Proposal is an efficient development of the resource, that resource recovery is optimised and waste minimised.
- if the Proposal will provide an appropriate return to NSW.

The objects of the *Mining Act 1992* are to encourage and facilitate the discovery and efficient development of mineral resources in NSW.

Of particular relevance to this REA are Section 3A Objects:

- to recognise and foster the significant social and economic benefits to NSW that result from the efficient development of mineral resources.
- 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 requires that resource recovery is efficient, optimised and minimises waste.

Project overview

Current mine history and ownership

The Bulga Coal Complex contains an open cut and underground mine and is located about 12 kilometres southwest of Singleton in the Hunter Valley of NSW. The complex is operated by Bulga Coal. Glencore PLC (Glencore or the Proponent), via subsidiaries Oakbridge Pty Ltd and Saxonvale Pty Ltd, is the parent company of Bulga Coal. Glencore is the largest producer of coal in NSW.

Open cut mining at Bulga mine commenced in 1982, with further consents granted in 1990 and 1999. The mine's current open cut approval, allowing extraction of mining to the end of 2035, was granted by the Planning and Assessment Commission in 2014 and has been modified twice.

Underground mining commenced in 1994, with the current consent granted in 2004. The underground operations at Bulga ceased in May 2018, the current mining titles and approvals are being retained and future operation of the underground mine is a possibility.

The mine produces both thermal and metallurgical coal, primarily for export with some thermal coal supplying the domestic power supply market. The current approved open cut extraction rate is 12.2 million tonnes per annum (Mtpa) ROM coal.

The proposed Bulga Project

Glencore seek a south eastern extension to the existing open cut mine that will provide an additional four years of mining, and an additional 62.4 Mt of ROM coal recovery. The Project will continue to use the existing mine facilities, equipment and approved management systems. No change to mining methods or production rate are proposed. The Project seeks to make changes to the infrastructure associated with the underground mine to allow for the extension to the open cut component of the Bulga Coal Complex.

The Division notes that this REA has been undertaken in accordance with commercial-in-confidence resource and mine schedule data supplied by the Proponent.

Size and quality of the resource

The Division has verified that the Project will provide 62.4 Mt of additional ROM coal. This will produce about 41.2 Mt of product coal (a yield of 65%).

The Proponent has completed coal resource and reserve estimation for the Project 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 mineral exploration results, mineral resources and ore reserves.

Bulga mostly supplies thermal and metallurgical coal to export markets but also provides some thermal coal to the domestic power supply market. Glencore will continue to sell coal products to established markets. Additional coal from the Project targets three coal products:

- a semi-soft coking coal about 9% ash content (~ 16% of production¹).
- an export thermal coal about 16% ash content (~ 61% of production).
- an export thermal coal or domestic thermal coal about 23% ash content (~ 23% of production).

Glencore can adjust product qualities to meet market demand. This could occur on-site at Bulga using alternate beneficiation and blending procedures or through blending with coal products from other Glencore operations at the Port of Newcastle.

Coal product qualities of the Project are comparable with coal currently produced from the Bulga mine. Raw ash contents necessitate all ROM coal is washed to meet market specifications and maximise product value. All coal will be processed in accordance with current operational procedures at the Bulga Coal Handling and Preparation Plant (CHPP). The product coal is then railed to Newcastle for export. A review of coal quality data confirms the proposed product quality, target export market split, and yield are achievable.

¹ Rounded to the nearest whole number

Resource recovery

Bulga assessed several mine designs and determined the mine design in the Project is the most appropriate. Many factors constrain the mine plan and extraction methodology and therefore the resource recovery at the Project. These include geological features, environmental constraints, and commercial viability (predominantly defined by strip ratio).

With approval, Bulga will continue to mine coal seams from the Wittingham Coal Measures. The revised mine design allows greater resource recovery with only minor expansion to the mine footprint. Additional coal resources come from extracting deeper coal seams and improved mine design.

Coal resources within the mine design will be extracted via open cut truck and excavator methods, assisted in some areas with a dragline. Coal plies too thin to be recovered with the open cut mining equipment have been excluded from the mine design.

The Bulga mine overlies the Mount Thorley Monocline. West of the monocline resources are flat lying, dipping at about 2 degrees. Towards the axis of the monocline dips increase to about 40 degrees to the west and require a different mining method (terrace mining and through-seam blasting). The proposed mining methods maximise resource recovery and mining efficiency.

The Project seeks to extract coal resources beneath a tailings dam. Sediment in the dam will be relocated to facilitate mining.

Underground mining operations at Bulga mine ceased in May 2018. The Project will not sterilise any underground resources. Mine design includes access to facilitate future potential underground mining.

After examination of the Proponent's EIS, the Division considers the Project an efficient development of coal resources that provides an appropriate return to the State.

Final Landform

The final landform for the Project outlined by the Proponent provides for a final void. The areal extent of this void is expected to be very similar to that which is currently approved, with an increase in depth.

It is recommended that if time permits an independent expert examination of the proposed final landform be undertaken, focusing on whether the project case selected by the Proponent is the best option.

The assessment of measures to mitigate environmental impacts associated with the Project is a matter for the NSW Resources Regulator.

Economic benefits of the resource

Over the life of the Project, assuming the majority of production would be sold on the export thermal and semi-soft markets, the Division has estimated that the value of the coal produced would be around \$4.7 billion in current dollars, with the net present value of this revenue stream of around \$1.3 billion at a real discount rate of 7%.

Export income is vital for the health of both the NSW and Australian economies. Export income also contributes to the Nation's balance of trade, which provides benefits to both the state and Australian credit ratings, plus it generally has a positive impact on the value of the Australian dollar exchange rate. If approved, the additional export income from the Project would contribute to the around \$23 billion (2018-19 total) of coal exports annually from NSW. Coal exports are the largest value export from NSW, representing around 40% of the state's merchandised goods exports.

The Project, if approved, would provide additional full-time operational jobs from 2022 to 2039. The number of these jobs varies over the life of the Project (typically 20 to 50). However, as the Project extends the life of the existing Bulga mine by four years from 2036 to 2039 it provides around an additional 700 jobs in the last years of the mine's life. Without the Project the existing Bulga mine would close at the end of 2035. The Division estimates that these direct mine jobs would result in around an additional around 200 indirect jobs (not including the last four years of mine life) in both mine and non-mine related services.

The Project is important to the region in that without this Project the existing Bulga operation closes in 2035. Capital expenditure for the Project is around \$200 million.

The Division also notes from the Economic Assessment prepared by the Proponent's economic consultant (Cadence Economics) that the Project would deliver a net benefit to NSW in NPV terms of \$410.6 million.

Royalty calculation

The Project is a proposed open cut mine therefore 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, \$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 a majority of ROM coal from the operation is subject to the 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 are \$4.50 per tonne.

One of the most important assumptions in the calculation of future royalty is the estimate of a future coal price over the life of a project. Coal from the Project is expected to be sold into mainly the export thermal coal market and a smaller proportion into semi-soft coking coal market. A review of coal quality information by the Division suggests this is achievable. Currently some of the coal from the existing operating mine is also sold into the domestic thermal coal market, the continuation of these sales in the medium and long term is dependent on competition from other NSW thermal coal producers and the ongoing fuel requirements of NSW coal-fired generators.

Coal price forecasting is inherently difficult and over the project life variations in coal prices are expected. An average price of around A\$100 per tonne for export thermal coal (adjusted slightly for the domestic coal proportion) from the Project has been used by the Division. An average price of around A\$130 per tonne for the export semi-soft coking coal from the Project has been used by the Division. The Division considers these prices to be conservative and at the bottom end of potential coal price scenarios. The small amount of coal to be sold into the domestic coal-fired generation market from the Project has been assumed to attract the export parity price.

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 41 Mt of product coal would be able to be economically mined from the Project.

Using the above parameters, the Division has calculated that the State will receive around \$370 million in current dollars, and around \$100 million in NPV terms (real discount rate of 7%) in royalty from the Project. The maximum amount the NSW Government would receive in any one year is around \$75 million in royalties from the Project.

Departmental Assessment

Assessed by	Unit	Branch
Assessing Officer: Tully Matthews Senior Geologist	Coal Resource Assessment – Strategic Resource Assessment & Advice	Geological Survey of NSW
Assessing Officer: Bryan Whitlock Senior Resources Analyst	Resource Economics	Resources Policy, Planning & Programs
Assessing Officer: Adam W. Banister Senior Advisor	Assessment Coordination Unit – Resource Assessments	Resource Operations

Approvals

Approved by	Signature	Date
Approving Officer: Dr Kevin Ruming Director Strategic Resource Assessment & Advice		31/10/2019
Approving Officer: Tamsin Martin Director Resources Planning & Programs		1/2/2019
Endorsing Officer: Stephen Wills Executive Director Resource Operations		04/11/19