Regional NSW

Mining, Exploration & Geoscience

SF21/96419

Narrabri Coal Operations – Modification 7

Resource & Economic Assessment

August 2021

Published by Regional NSW

nsw.gov.au/RegionalNSW

Title: Narrabri Coal Operations – Modification 7

Subtitle: Resource & Economic Assessment

File reference: SF21/96419

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Determination

The Department of Regional NSW – Mining, Exploration and Geoscience (MEG) has reviewed the Narrabri Coal Operations – Modification 7 (the Modification or MOD) and considers that the Modification will provide an appropriate return to the NSW Government including around $18 million in total royalties (current dollars).

Parameter	$m (2021 dollars)
Total royalties received	18
Net Present Value (NPV) royalties (7% discount rate, real)	14
Annual estimated royalties (average)	4 (approximate)

The Modification will:

- generate an additional 60 full-time equivalent (FTE) jobs resulting in an additional 60 personnel (two shifts of 30 FTE employees) over a five-year period. MEG estimates that an additional 240 FTE indirect jobs would also be created
- produce coal with a value of around $250 million in current 2021 dollars, with the net present value of this revenue stream at around $200 million
- increase capital investment by approximately $4 million.

If approved, the additional export income from the Modification would contribute to the around A$18 billion (2019-2020 financial year total) of coal exports annually from NSW, which represents around 45 % of the state's merchandise goods exports.

The Modification

Narrabri Coal Operations Pty Ltd (the Proponent), has applied to modify the mining method for two approved longwall panels. The Modification seeks approval to switch from longwall to cut and flit mining for two of the longwall panels. The move to cut and flit mining will allow the Proponent to overcome geological constraints that may otherwise cause production interruptions and resource sterilisation. Utilising the cut and flit method will allow Narrabri Mine to assess this method for its suitability in other areas where longwall mining is unsuitable.

The Modification would bring forward the extraction of two longwall panels while concurrent longwall mining occurs on other panels. There would be no changes to the approved production rate or mine life. The Modification is considered to be an efficient use of resources.

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 a modification report (MRT).

This Resource & Economic Assessment (REA) conducted for the Narrabri Coal Operations – Modification 7 Modification by MEG assessed:

- the social and economic benefits to NSW including royalties, capital investment, revenues and jobs
- the resource/reserve estimates stated in the Proponent's MRT
- 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.

Modification overview

Current mine history and ownership

The Narrabri Mine is an existing underground coal mining operation situated in the Gunnedah Coalfield. The Narrabri Mine is located approximately 25 kilometres southeast of Narrabri and approximately 60 kilometres northwest of Gunnedah, within the Narrabri Shire Council Local Government Area, in the North West Slopes and Plains region of New South Wales.

Stage 1 of the Narrabri Mine was approved in 2007 under Part 3A of the *Environmental Planning and Assessment Act 1979* and involved initial site establishment activities and continuous miner underground mining operations.

Modification approval 08_0144 for Stage 2 of the Narrabri Mine was issued in 2010 under Part 3A of the *Environmental Planning and Assessment Act 1979* and allowed the Narrabri Mine to convert to a longwall underground mining operation.

The Narrabri Mine, incorporating Stages 1 and 2, extracts coal from the Hoskissons Coal Seam. Modification Approval 08_0144 allows for the production and processing of up to 11 million tonnes per annum (Mtpa) of Run-of-Mine (ROM) coal until July 2031. The approved Narrabri Mine comprises 20 longwall panels.

The proposed Modification

The Modification involves the extraction of two approved longwall panels, LW201 and LW202, by cut and flit methods. The Modification will also change the planned timing of extraction of these panels, with production brought forward to 2022 from 2042.

The Modification does not propose any changes to the approved footprint, infrastructure, water management and supply, hours of operation, rehabilitation strategy, production rate or mine life under Modification approval 08_0144.

The Proponent indicates that the Modification will result in the loss of approximately 3.2 Mt ROM coal recovery and is necessary to avoid geological constraints (faulting) of the mining area that make longwall extraction unsuitable. The Modification will enable the recovery of resources that may have otherwise been sterilised.

If approved, the Modification will enable the Proponent to evaluate the cut and flit method at the Narrabri Mine which, if successful, may be used to recover additional coal resources in other parts of the mine that are unsuitable for longwall mining.

The cut and flit mining would occur concurrently with longwall mining in other areas of the Narrabri Mine.

The Modification, if approved, would support the continued employment of the existing Narrabri Mine workforce of about 520 FTE operational workers. In addition, the Modification is estimated to employ an additional 60 FTE operational workers for the five years of extraction of LW201 and LW202.

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

The Modification, if approved, would support the following activities and development:

- recovery of two longwall panels, LW201 and LW202, by cut and flit extraction methods
- additional employment of 60 FTE operational workers for 5 years

Size and quality of the resource

The Modification proposes to continue mining the Hoskissons Coal Seam of the Black Jack Formation. This seam contains six distinct plies, HSK1 to HSK6. The Proponent plans to continue mining the second bottom ply (HSK2) which is the thickest and only economic ply. The cutting height of the operations will be up to 4.5 metres (first pass 3.2 to 3.5 metres, second pass 1 metre height).

MEG has verified that the Modification proposes to extract about 2.6 Mt of ROM coal, which will produce around 2.57 Mt of product coal (yield of 99%). Extraction will be undertaken at a rate of approximately 600,000 tonnes per annum between the years 2022 and 2026.

The Proponent has completed coal resource and reserve estimation for the Narrabri Mine 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.

The Narrabri Mine produces two products.

- Thermal low ash 6300 kcal export coal
- Pulverised Coal Injection (PCI) export coal

Coal qualities in the Modification area are comparable with coal currently produced from the current operation. Coal produced at Narrabri Mine is generally bypassed and sized where possible or washed to produce a PCI product. The quantity of PCI product varies by demand, but averages 600,000 to 700,000 tonnes per annum. The remaining coal is sold as a low ash export thermal coal product.

The coal within the Modification area is anticipated to be low ash (9 %) thermal coal, which will be blended with products from other parts of the operation. MEG is satisfied that the proposed product is achievable.

Resource recovery

The Proponent assessed options for the extraction of LW201 and LW202, and determined the Modification is the most appropriate extraction of these coal resources. Many factors constrain a mine plan and extraction methodology and therefore the resource recovery. These include geological features, environmental constraints, and commercial viability.

Continuing to mine the coal resources in the Modification area via cut and flit methods will reduce planned recovery of coal in LW201 and LW202, however is necessary to avoid geological constraints (faulting) of the mining area that make longwall extraction unsuitable.

The resources that would have been extracted in LW201 and LW202, if recovered by longwall methods, total 5.93 Mt. The resources recoverable as a result of cut and flit operations total 2.59 Mt. The Modification, therefore, reduces proposed recovery in the area by 56 %. Losses are associated with remnant coal in the pillar and barriers between lifting panels.

The Modification will enable the negotiation of faults in the LW201 and LW202 areas that would cause production interruptions if extracted via longwall.

After examining the Proponent's MRT, MEG considers the Modification an efficient development of coal resources that provides an appropriate return to the State, within the mine footprint, giving due consideration to the geological constraints of the location.

Economic benefits of the resource

Over the life of the Modification, it is anticipated that all production would be sold on the export thermal market. MEG has estimated that the value of the coal produced would be around $250 million in current 2021 dollars, with the net present value of this revenue stream at around $200 million at a real discount rate of 7%. If approved, the additional export income from the Modification would contribute to the around A$18 billion (2019-2020 financial year total) of coal exports annually from NSW, which represents around 45 % of the state's merchandise goods exports.

As discussed in the Resource Recovery section of this assessment, adverse geological conditions (mainly faulting) encountered in LWs 201 and 202 have precluded the economic recovery of coal resources by the previously approved longwall mining methods. The major economic benefit of the Modification would ensure economic extraction of coal resources within LWs 201 and 202 and also would bring forward the extraction date from around 2040 to 2022 through to 2026.
Due to the uncertainty associated with any future longwall mining with the previously approved LWs 201 and 202, MEG has not completed any calculations of revenue associated with longwall mining of these panels. Another major potential economic benefit of the Modification would be to test the viability of the cut and flit method and possibly open up other areas within the Narrabri Mine for extraction by the cut and flit method outside of the previously approved longwall panels.

The Modification, if approved, would provide on average around 60 FTE operational jobs (two shifts of 30 FTE employees) from 2022 to 2026. MEG estimates that these direct mine jobs would result in an additional 240 FTE indirect jobs in both mine and non-mine related services. Capital investment for the Modification is indicated to be of the order of A$4 million.

Royalty calculation

Assumptions

The Modification is associated with an underground mine less than 400 metres in depth; therefore, a royalty rate of 7.2% 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. As the majority of ROM coal from the operation would be bypassed and subject to crushing and screening, a deduction of A$0.50 per tonne from the value of coal produced applies. A deduction for levies also applies which would amount to no more than A$1.00 per tonne. Hence allowable deductions for royalty for the Modification of A$1.50 per tonne are applicable.

All coal from the Modification is expected to be sold into the export thermal market. A review of coal quality information by MEG suggests this is achievable. It is anticipated that the majority of the coal to be produced in the Modification typically would be in the 6,300 kcal/kg range.

Coal price forecasting is inherently difficult and over the Modification life-of-mine, variations in coal prices are expected. Average export thermal coal prices for the Modification within the range A$95-A$100 per tonne have been used for this assessment. MEG considers these prices to be conservative.

MEG has estimated that if the Modification is approved, around 2.5 Mt of product coal would be able to be economically mined from the period 2022 to 2026. This is equivalent to about 0.6 Mtpa.

Total royalties estimate

Using the above assumptions and parameters, MEG has calculated that the State will receive:

Parameter	$m (2021 dollars)
Total royalties received	18
Net Present Value (NPV) royalties (7% discount rate, real)	14
Annual estimated royalties (average)	4 (Approximate)

Departmental Assessment

Assessed by	Unit	Branch
Assessing Officer: Erin Holmes Senior Geologist	Coal Resource Assessment Geoscience Assessment & Advice (GAA)	Geological Survey of NSW
Assessing Officer: Bryan Whitlock Senior Resources Analyst	Resource Economics	Strategy, Performance and Industry Development
Assessing Officer: Adam W. Banister Senior Advisor	Industry Development	Strategy, Performance and Industry Development

Approvals

Approved by	Signature	Date
Approving Officer: Dr Kevin Ruming Director Strategic Geoscience Assessment & Advice	Approved in CM9	06/08/2021
Approving Officer: Kristina Erzikov Director Resources Policy	Approved in CM9	05/08/21
Approving Officer: Chris Celovic Director Industry Development	Approved via email	12/08/2021
Endorsing Officer: Anthony Keon Executive Director Strategy, Performance & Industry Development	Approved in CM9	13/08/2021