



Regional
NSW

Mining, Exploration & Geoscience

DOC20/371377

Tarrawonga Coal Mine - Modification 7 (MP11_0047-Mod-7)

Resource & Economic Assessment

June 2020



Published by Regional NSW

nsw.gov.au/RegionalNSW

Title: Tarrawonga Coal Mine - Modification 7 (MP11_0047-Mod-7)

Subtitle: Resource & Economic Assessment

File reference: DOC20/371377

More information

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Executive summary

Determination

Regional NSW – Mining, Exploration and Geoscience (MEG) assessed the Tarrawonga Coal Mine – Modification 7 Project (MP11_0047-Mod-7) (the Tarrawonga Project or the Modification). MEG has determined the Project will:

- improve resource recovery and be an efficient use of resources.
- ensure an appropriate return to the NSW Government including;
 - an additional \$31 million royalties (current dollars)
 - \$3.392 billion total revenue (current dollars), an increase of \$392 million as currently approved.
- maximise the economic extraction of coal and avoid mining the Upper Namoi alluvium, therefore, removing the requirement to construct the low permeability barrier, Goonbri Creek diversion and road and electricity transmission line realignments.
- provide an alternative contingency water supply from surplus water from the proposed Vickery Extension Project (subject to the Vickery Extension Project's approval, commissioning and water extraction/licensing limits).

The project

The proponent Tarrawonga Coal Pty Ltd, a wholly-owned subsidiary of Whitehaven Coal Limited (Whitehaven or the Proponent), seeks a modification to the existing operations at Tarrawonga coal mine that will:

- increase the Run-of-Mine (ROM) coal production rate from 3.0 to 3.5 million tonnes per annum (Mtpa).
- increase the ROM coal transported along the northern Section of the Approved ROM Coal Transport Route from 3 to 3.5 Mtpa.
- reduce the open cut extent to avoid mining:
 - the Upper Namoi alluvium; and
 - Goonbri Creek.
- revision of the post-mining landform and land use.
- relocation of the ROM coal stockpile and associated infrastructure.
- construction and use of a water transfer pipeline between the Tarrawonga Coal Mine and the proposed Vickery Extension Project.

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 modification, supported by a Modification Report (MRT).

This Resource & Economic Assessment (REA) conducted for the Tarrawonga Project 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.

Project overview

Current mine history and ownership

Tarrawonga Coal Mine (Tarrawonga) is an open cut mine located about 16 kilometres north-east of Boggabri in the Gunnedah Basin of NSW.

Tarrawonga commenced production in 2006. The mine produces thermal, PCI/semi-soft coking coal that supplies both the domestic and export markets.

DA 11_0047 (as modified 6 times) currently provides for mining operations at Tarrawonga until the end of 2030, producing 3 Mtpa ROM coal. Based on the current mining schedule and resource, mining operations will cease in the existing mining area by 2030.

The Tarrawonga Coal Mine Modification 7 Life of Mine Proposal

Whitehaven through DA 11_0047 Modification 7 seek to reduce the extent of currently approved open cut operations. The objective of the Modification is to maintain the integrity of the Upper Namoi alluvium, whilst maximising the extraction of commercially viable coal resources within the approved open cut extent. The Modification will avoid mining significant surface features – the Upper Namoi Alluvium and within 200 metres of the Goonbri Creek.

The proposed reduction in area will result in the loss of 5.1 Mt of ROM coal recovery.

The modification also seeks to increase the maximum permissible rate of extraction to 3.5 Mtpa ROM from the existing 3 Mtpa ROM. The increased production will be achieved through efficiencies in fleet and shifts, and will not affect the overall operations. Existing mine workforce, processing equipment and approved management systems will be utilised.

Size and quality of the resource

Tarrawonga will continue to mine the Braymont, Bollol Creek, Jeralong, Merriown, Velyama and Nagero Seams of the Maules Creek Formation. Coals produced from Tarrawonga are typically low ash, low sulphur, low phosphorus, medium to high volatile semi-soft/PCI and export quality thermal coals.

The approved and current mining operations at Tarrawonga progress from west to east. The strata dip easterly throughout the mine area, with the strip ratio increasing easterly. The strip ratio of the area that is proposed to be reduced is up to 12:1, also affecting the commercial viability of extraction.

The Modification plans to mine 30.9 million tonnes of ROM coal until 2030, totalling 28.9 million tonnes of product coal. The proposal will reduce the life of mine ROM tonnage by approximately 5.1 Mt. Based on estimated yields of 94%, the reduction in product will be approximately 4.8 Mt.

Tarrawonga currently sells coal to mainly export markets (95%), with a small percentage (5%) sold domestically. A small portion, around 150,000 tonnes, of coal is sold into the domestic market each year as an ultra-low ash (<6%) product that is used in agriculture and manufacture.

The two main products produced from the mine are:

- Semi-soft / PCI coal (~34% of product)
- Export quality thermal coal (~66% of product)

Whitehaven predict they will continue to supply these products. A review of coal quality and existing production data confirms that the product quality, target market split, and yields of the modification are similar to current, and no significant changes are anticipated.

Resource recovery

Tarrawonga was initially approved to mine a larger extent than the Modification area, but the planning approval PA 11_0047 included conditions requiring a permanent Goonbri Creek alignment and the construction of a permanent flood bund and low permeability barrier prior to mining within 200 metres of the Goonbri Creek and associated Upper Namoi Alluvials.

The total coal within the Upper Namoi Alluvium plus that within the 200 metre Goonbri Creek offset is 8.5 Mt. Based on current market conditions and other costs that would likely be incurred in mining the 8.5 Mt, Whitehaven considers the costs associated with the recovery of this coal to be economically prohibitive. The modification, therefore, seeks to avoid mining within 200 metres of the Goonbri Creek and the associated Upper Namoi Alluvium.

To achieve the objectives of the modification, Whitehaven assessed a base case and the Tarrawonga Project case, and determined that the mine design accepted to form the Tarrawonga Project is the most appropriate, commercially viable and achieved the best resource recovery within the existing approved open cut boundary.

In the base case, Whitehaven would continue operations at Tarrawonga consistent with PA 11_0047, but terminate mining activities 200 metres from the Upper Namoi Alluvium at the point where the construction of the Goonbri Creek diversion and lower permeability barrier and associated processes would be required. The base case would have resulted in a loss of 8.5 Mt coal recovery over the LOM.

The Tarrawonga Project, if approved, optimises the amount of resources that can be recovered whilst meeting the objectives of the Modification, without the need for extensive additional capital works and other costs. The modified open cut would allow mining within 200 metres of the Upper Namoi alluvium, however, would remain at least 200 metres from Goonbri Creek. The associated Goonbri Creek diversion and low permeability barrier would no longer be required.

Approximately 3.4 Mt of additional LOM coal would be extracted under the Modification compared to the base scenario, for example, approximately 3.4 Mt of coal is located within the 200 metre offset from the Upper Namoi alluvium. The Modification is therefore proposed on the basis that it would maximise the recovery of coal within the approved open cut extent, given the constraints imposed by the existence of the Upper Namoi Alluvium and the costs of full compliance with the corresponding approval conditions.

After examination of the proponent's MRT, MEG considers the Modification to be an efficient development of coal resources that provides an appropriate return to the State, within the mine footprint, giving due consideration to the constraints of the approval conditions.

Economic benefits of the resource

Over the life of the Modification, assuming the majority of production would be sold on the export thermal and semi-soft coking coal markets, MEG has estimated that the value of the coal produced would be around \$3.0 billion in current dollars, with the net present value (NPV) of this revenue stream of around \$2 billion at a real discount rate of 7%. The difference between the reference base case (the current approved case) and the Modification case, if it were to be approved, is \$392 million in additional revenue to the Proponent, in current dollars. A small quantity of coal has been and is currently sold to a local speciality agricultural business. It is anticipated that this important regional business relationship will continue for the foreseeable future.

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 Tarrawonga Project would contribute to the coal exports annually from NSW, which totalled around \$23.1 billion in 2018-19. Coal exports are the largest value export from NSW, representing over 40% of the state's merchandised goods exports.

The Tarrawonga Project does not provide any additional jobs at Tarrawonga. The difference between capital investment for the Modification and the reference case is an additional \$13m over the LOM.

MEG also notes from the Economic Assessment prepared by the Proponent's economic consultant (AnalytEcon) that the Tarrawonga Project would deliver a direct net benefit to NSW and its residents in NPV terms of \$37 million, that being the difference between the Modification and reference base case.

The net benefits as calculated by AnalytEcon are broken down into the following:

- Additional royalty of \$17 million NPV to the NSW Government
- Incremental company income tax payments to NSW of \$12 million NPV
- Incremental profits accruing to NSW shareholders of Whitehaven of \$9 million NPV.

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 Tarrawonga 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 Tarrawonga Project is expected to be sold into the export thermal and semi-soft coking coal markets. A review of coal quality information by MEG suggests this is achievable.

Coal price forecasting is inherently difficult and over the Project life variations in coal prices are expected. An average price in the range of A\$80 - A\$100 per tonne for export thermal coal from the Modification has been used by MEG. An average price in the range of A\$115 – A\$125 per tonne for export semi-soft coking from the Modification has been used by MEG. MEG 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 Tarrawonga Project has been assumed to attract the export parity thermal coal price.

Another important aspect of future royalty calculation for a proposed coal project is estimation of future annual production. MEG has estimated that if the Modification is approved, around 3.3 Mt of additional product coal over the project life (the difference between the Modification and reference base cases) would be able to be economically mined from the Tarrawonga Project.

Using the above parameters, MEG has calculated that the State will receive around an additional \$31 million in current dollars (the difference between the Modification and reference cases) and around \$18 million in NPV terms (real discount rate of 7%) in royalty from the Tarrawonga Project. In a typical year at full production the NSW Government would receive around an additional \$6 million each year in royalties from the Tarrawonga Project.

Departmental Assessment

Assessed by	Unit	Branch
Assessing Officer: Erin Holmes A/Manager	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		15/06/2020
Approving Officer: Tamsin Martin Director Resources Planning & Programs	Approved in CM9	15/06/2020
Endorsing Officer: Dr David Blackmore Director Resource Assessments	Endorsed in CM9	12/06/2020