NSW GOVERNMENT | Planning, Industry & Environment

Chain Valley Colliery - Modification 3

and

Mannering Colliery - Modification 5

Division of Resources & Geoscience

Resource & Economic Assessment

July 2019

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Executive summary

Determination

The Division of Resources and Geoscience (the Division) assessed the Chain Valley Colliery Modification 3 and the Mannering Colliery Modification 5 together (the Project or Modifications). The Division determined the modifications will:

- Ensure continued operations at Chain Valley Colliery until 2027.
- Improve resource recovery and be an efficient use of resources.
- Ensure an appropriate return to the NSW Government including:
    - $74 million royalties (current dollars)
    - $1,048 million total revenue (current dollars)
- Sustain 249 jobs.
- Require capital expenditure of around $65 million.
- Ensure energy security though 50% of the ongoing coal supply to the Vales Point Power Station until 2027.

The proposed modifications

Ownership and operation of the Chain Valley Colliery and Mannering Colliery's were transferred to a wholly owned subsidiary of Delta Electrcity, Delta Coal, in April 2019. The owners of Delta Electricity also own the nearby Vales Point coal fired power station. Delta Electricity considers the collieries as one combined operation and have and proposed:

- Modification 3 - Chain Valley Colliery (CVC)
    - Change of mining methods to include bord and pillar and pillar extraction methods
- Modification 5 - Mannering Colliery
    - Extension of project life (from June 2022 to December 2027)
    - Increasing handling and transport of Run of Mine (ROM) coal up to the approved extraction limit at CVC (from 1.3 Mtpa to 2.1 Mtpa)

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, in this case a Statement of Environmental Effects (SEE).

This Resource & Economic Assessment conducted for Chain Valley Colliery Modification 3 and the Mannering Colliery Modification 5 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 Modifications are an efficient development of the resource, that resource recovery is optimised and waste minimised.
- If the Modifications provide an appropriate return to NSW.

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 & Economic Assessment are Section 3A Objects:

> (a) to recognise and foster the significant social and economic benefits to NSW 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 requires that resource recovery is efficient, optimised and minimises waste.

Project overview

Mine history and ownership

Chain Valley Colliery is an underground coal mine 100% owned and operated by Delta Coal (100% owned subsidiary of Delta Electricity). The Colliery will be the largest supplier of coal to the nearby Vales Point Power Station if the Project is approved. Chain Valley Colliery is located about 60 kilometres south of Newcastle. Operations at Chain Valley Colliery commenced in 1962.

Mannering Colliery is adjacent to the Chain Valley Colliery. Mannering Colliery operated from 1960 until it was placed on care and maintenance in November 2012. In late 2013, Mannering Colliery entered into an agreement enabling coal from Chain Valley Colliery to be conveyed underground to the Mannering Colliery, processed and sent to the to Vales Point Power Station on a dedicated overland conveyor.

The proposed Modifications

The Mannering Colliery and Chain Valley Colliery are considered one operation by Delta Coal. The Chain Valley Colliery is essentially the mining portion of operations and the Mannering Colliery the processing portion of operations. The Division recognises this relationship and has assessed Modification 3 at Chain Valley Colliery and Modification 5 at Mannering Colliery as a combined project. The proposed changes affecting resource recovery and utilisation are:

- Modification 3 at Chain Valley Colliery
    - Change of mining methods to include the bord and pillar and pillar extraction mining methods.
- Modification 5 at Mannering Colliery
    - Extension of project life (from June 2022 to December 2027).
    - Increasing handling and transport of ROM coal up to the approved maximum production rate at Chain Valley Colliery from 1.3 million tonnes per annum (Mtpa) to 2.1 Mtpa.

Chain Valley Colliery Modification 3 will allow increased operational flexibility and improve resource recovery. No change to the maximum production rate of 2.1 Mtpa is proposed.

Mannering Colliery Modification 5 will enable all coal produced at Chain Valley Colliery to be processed at Mannering Colliery. The run-of-mine (ROM) coal can then be supplied on designated private conveyors to the VPPS.

Modification 5 ensures the consent expiry at Mannering Colliery is consistent with the current consent expiry at Chain Valley Colliery (December 2027).

Size and quality of the resource

The Division has verified that the Project will provide approximately 12.1 million tonnes (Mt) of ROM coal. Production will average about 1.5 Mtpa from 2020 until 2027. ROM coal does not require beneficiation to be sold into the domestic thermal coal market, through to Vales Point Power Station.

The Proponent has completed coal resource 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 minerals exploration results, mineral resources and ore reserves.

The Project is located in the Newcastle Coalfield of the Sydney-Gunnedah Basin. Coal resources are contained within the Moon Island Beach Subgroup at the top of the Late Permian Newcastle Coal Measures. The Newcastle Coal Measures are characterised by complex splitting and coalescence of its various coal seams. The Modifications propose to continue mining the Fassifern Seam at Chain Valley Colliery.

The Project will enable Chain Valley Colliery to increase supply of ROM coal to Vales Point Power Station up to 2.1 Mtpa. All coal produced at Chain Valley Colliery will be processed at Mannering Colliery then sent to the Vales Point Power Station.

A review of coal quality data and operational history suggests the proposed product quality is suitable for use in the Vales Point Power Station without beneficiation. Raw ash content of the Fassifern Seam within the Chain Valley Colliery modification area is less than 25%.

Resource recovery

Approved mining methods

The bord and pillar mining method has been used previously at Chain Valley Colliery. Since 2011 the main mining method has been the miniwall method. This is reflected in the current development consent which limits use of first workings to development.

A revised mining method (Modification 3)

Delta Group have assessed a range of mine designs and mining methods at Chain Valley Colliery. Delta Group determined that coal resources are best recovered using the bord and pillar method which necessitated Modification 3. Bord and pillar first workings extraction would use continuous miners.

First workings extraction ensures flexibility in mine operations, is designed to have negligible subsidence and be stable in the long term.

If the Modifications were granted, Delta Group would continue to pursue secondary extraction options such as miniwall or partial pillar extraction. These options would only be considered where permitted in the current development consent and if acceptable subsidence, safety and environmental outcomes could be achieved.

Improved resource recovery

Delta Group has proposed to use the bord and pillar extraction method in a herringbone style design. This design achieves negligible surface subsidence effects and has been used at the Myuna Colliery in the Newcastle Coalfield. The revised mine design has been proposed to address geological, geotechnical and subsidence associated environmental impacts at Chain Valley Colliery.

Typically, a miniwall operation would recover more coal from a resource than a bord and pillar operation. Geological and geotechnical constraints (faulting, insufficient rock head) and surface features at Chain Valley Colliery restrict the use of miniwall mining in approved secondary extraction mining areas. The bord and pillar mining method proposed in the Modifications enables greater operational flexibility to manage geological and geotechnical constraints and subsidence-sensitive surface features.

The Modifications would enable bord and pillar mining in areas not suitable for miniwall mining and therefore would maximise resource recovery.

No change to the current consent allowing use of the miniwall secondary extraction method is proposed.

The Great Northern and Wallarah seams overlie the Fassifern Seam at the Project. Both the overlying seams are too thin to be considered commercially viable targets in the current mining domains. Delta Group have commenced studies to assess commercial viability of the Great Northern and Wallarah seams beyond the current mine plan in other mining domains.

The Fassifern Seam is the target seam at Chain Valley Colliery. The full geological section of the seam ranges up to about 5.0m thick. A target working section is mined within the geological section recovering the lowest ash content coal plies. Current Miniwall extraction height is 3.5m, with mains and gateroad development at 3.2m height. Bord and pillar roadways proposed in the Modifications are 2.8m height and 5.4m width. The reduced cut height is designed to reduce rib support requirements on advance. Unsupported cuts will range up to 3.5m height.

Resource recovery is adequate considering the project constraints

Many factors constrain the mine plan, extraction methodology and therefore the resource recovery at the Project. These include geological features, subsidence-sensitive surface assets, environmental constraints and commercial viability.

Given the constraints outlined in Delta Group's SEE, the Division considers the Modifications adequately recover coal resources and provide an appropriate return to the State.

Economic benefits of the resource

Over the life of the Project, assuming all production is sold on the domestic thermal market to Vales Point Power Station, the Division has estimated that the value of the coal produced would be around $1,048 million in current dollars, with the net present value (NPV) of this revenue stream of around $768 million at a real discount rate of 7 percent.

As all coal will be sold into the domestic thermal market, the main benefit of the Project would be to continue to provide a reliable coal supply for electricity generation in NSW. Currently around 80% of NSW's electricity needs are supplied from coal-fired generation.

Over the past 10 years the Vales Point Power Station has consumed an average of around 3 Mtpa of coal. This Project, if approved, would guarantee around 50% of this supply out to 2027. Other coal supplies to Vales Point Power Station would come from existing suppliers which mainly include mines owned by Centennial Coal, who have traditionally been supplying domestically to coal-fired power stations in NSW for many decades. The Chain Valley mine has been recently supplying all its output to Vales Point Power Station. The obvious synergy of the owner of Vales Point Power Station and the Chain Valley mine being the same entity (the Delta Group) is a positive for the Project particularly in terms of energy security for the state of NSW. Chain Valley mine is the only coal mine in NSW that is owned by a coal-fired generator and therefore is unique to NSW in that the owner of the power station has a dedicted coal supplier. Other jurisdictions (both Queensland and Victoria) in the National Electricity Market have for many years had this arrangement for the past decade or more.

The Project, if approved, would provide 249 full time operational jobs. The Division estimates that these direct mine jobs would result in around an additional 1000 indirect jobs in both mine and non-mine related services. Capital investment for the Project would be of the order of $65 million.

Coal royalty calculation

The Project is a proposed underground mine. A royalty rate of 7.2 percent therefore 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 all ROM coal from the operation would be washed and screened, a deduction of $0.50 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 $1.50 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 will be sold only into the domestic thermal market. A review of coal quality information by the Division suggests this is achievable.

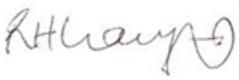
Coal prices prices for the life of the Project have been supplied to the Division by Delta Coal.The Division considers these prices to be reasonable.

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 12 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 $74 million in current dollars, and around $54 million in NPV terms (real discount rate of 7 percent) in royalty from the Project. In a typical year at full production the NSW Government would receive around $10 million in royalty from the Project.

Assessment approvals

Table 1 – Divisional Approvals

Position	Signature or CM9 approval	Date
Approving Officer: Rob Larkings Manager Coal Resource Assessment (02) 4063 6744		2 July 2019
Approving Officer: Dr Minh Ho Manager Resource Economics (02) 8275 1985		2 July 2019