



Unit: Strategic Resource Assessment & Advice

Branch/Division: Geological Survey of New South Wales - Division of Resources & Geoscience

Project: Integra Underground Mine - Modification 8
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 Integra Underground Mine Modification 8 (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. 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 New South Wales. Of particular relevance to this resource assessment is:

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.

Integra underground mine is owned and operated by HV Coking Coal Pty Ltd (HVCC). HVCC is 100% owned by Glencore Coal Australia Pty Ltd (Glencore). The mine was purchased by Glencore from Vale in late 2015. The mine restarted operations in 2017 after being placed on suspension by Vale in mid-2014. First mining commenced at Integra underground (then known as Glennies Creek underground) in 1999.

This Modification is sought to recover additional run-of-mine (ROM) coal from longwall blocks at Integra Underground Mine. If the Modification is approved, changes will be made to the lengths and widths of longwalls 15 to 17, and also longwalls 18 and 19 would be available to be extracted. The Division considers these proposed changes to be a logical means to access resources that would otherwise not be recovered from either this mine or any surrounding/adjacent mine.

The following aspects of Integra Underground Mine operations would remain unchanged:

- mining methods
- maximum ROM rate
- methods of coal processing and transportation
- duration of mining operations
- operational workforce

The Integra underground mine is located in the heart of the Hunter Coalfield, around 12 kilometres to the northwest of the town of Singleton. In 2016-17 the Hunter Coalfield provided around 53% of total New South Wales saleable production. If approved, the Integra mine would not become a larger mine than it is currently, as the advantage of the Modification relates to resource recovery.

Size and quality of the resource

The Division has verified that the Project will provide approximately 9.9 million tonnes (Mt) of additional Run-of-Mine (ROM) coal and approximately 7.7 Mt of product coal over the life of mine (LOM). 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 minerals exploration results, mineral resources and ore reserves.

The Project will be a continuation of underground coal mining at Integra underground mine and will use surface operations and mine infrastructure currently available with further infrastructure, such as goaf dewatering site, surface auxiliary fans, gas drainage boreholes and other associated infrastructure, to be constructed. There is no proposed change to the approved maximum production rate of up to 4.5 Mtpa of ROM coal.

There is a long history of both underground and open cut mining of the seam sequence at the former Integra Complex using longwall and open cut extraction techniques. The seam sequence is characterised by bituminous, high-volatile coal and has typically low to medium ash content, low to medium energy value, and low sulphur content. HVCC expects 100% of the Integra Underground semi-hard product to be sold into export coking coal markets.

A review of available coal quality information suggests the proposed product quality, market split and yield is achievable. ROM coal will be processed by the Rix’s Creek North Mine CHPP to improve product characteristics for export markets. The Division considers that a total of around 7.7 Mt of product (saleable) coal from the Project is feasible.

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, surface infrastructure location and equipment constraints (cost of upgrade). The Proponent considered continuing mining of the Middle Liddell seam as approved, however this would potentially sterilise 11.9 Mt of ROM coal.

The Late Permian Middle Liddell seam is the main target seam to be mined in the Project area, hosted within the Foybrook Formation of the Whittingham Coal Measures, being bounded by the Hunter and Hebden Thrusts. HVCC also has approval to extract coal from the Hebden and Barrett seams.

The Division notes that a geotechnical assessment was undertaken as part of the EA. This assessment was intended to assess any potential impacts of subsidence on the Mount Owen Mine North Pit highwall. It was identified that longwall mining directly below the highwall has a potential to induce rock falls and tensile cracking, leading to slope instability with impacts to be managed by an Extraction Plan in consultation with Mount Owen Mine.

The Division supports in principle the recommendations in the document '*High Level Geotechnical Assessment of Mount Owen Highwall for Proposed Mining of Integra Underground Mine Longwall Panels*' (INT4738_Rev2) dated

9 November 2017 (noting an assessment should be undertaken by the Resources Regulator – Subsidence Engineering Unit for subsidence engineering and impact advice):

- Further detailed geotechnical assessments to be conducted as part of the Extraction Plan for each longwall at a time when the mine plans for both the surface and underground operations are more fully developed.
- Further investigation of the Hebden Thrust and overburden stratigraphy to be undertaken to confirm the geometries and material properties of these features.
- Appropriate stand-off distances to be developed as part of a risk assessment process conducted in consultation with Mount Owen Mine.
- A Management and Monitoring Plan is to be developed in consultation with Mount Owen Mine as part of the Extraction Plan for each longwall.

Given the constraints outlined in the proponent's EA, the Strategic Resource Assessment & Advice unit within the Division considers the Project mine plan for underground 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 Modification, assuming production is sold on the export coking market, the value of the coal produced would be nearly \$900 million in current dollars. The net present value of this revenue stream has been estimated by the Division at approximately \$680 million.

Export income is vital for the health of both the New South Wales and the Australian economies, contributing to the Nation's balance of trade which provides benefits to both the New South Wales 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 New South Wales, representing around 40% of total New South Wales exports (both goods and services combined).

The modification, if approved, would not provide any additional employment at Integra Underground Mine. Capital investment for this modification would be of the order of \$50 million.

Coal royalty calculation

The Project is a proposed underground mine and as such 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. 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.

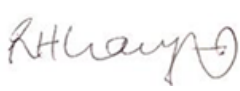
As all ROM coal from Integra underground mine is subjected to a full washing cycle, a deduction of \$3.50 per tonne from the value of coal produced applies. A deduction for levies also applies which would amount to no more than \$1.00 per tonne. Hence allowable deductions for royalty for the Project would be \$4.50 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 is expected to be sold into the export coking 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 Modification has only a six-year life these variations would not be as great as with longer-term projects. Average prices of between A\$115 and A\$120 per tonne for the coking 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 Modification is approved, around 7.7 Mt of additional product coal could be economically mined from the Modification.

Using the above parameters the Division has calculated that in a typical full production year, the State will receive around \$18 million per annum of additional royalty and \$62 million over the life of the Modification. The net present value of this royalty stream would be \$47 million using a 7% real discount rate.

Position	Signature	Date
Drafting Officer: Bryan Whitlock Senior Analyst & Advisory Officer (02) 9842 8575	Approved in CM9	20/12/2017
Approving Officer: Matt Gagan Manager Royalties & Advisory Services (02) 4931 6435		20/12/2017
Approving Officer: Robert Larkings Manager Coal Resource Assessment (02) 4931 6526		20/12/17