Planning & Environment
Resources & Geoscience

Attachment A

Unit: **Strategic Resource Assessment & Advice**

Branch/Division: **Geological Survey of NEW SOUTH WALES - Division of Resources & Geoscience**

Subject: **Ulan Coal – Modification 4**
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 Assessment conducted for the Ulan Coal Modification 4 project (the Project) by the Division of Resources and Geoscience (the Division) is designed to review the resource/reserve estimates stated in the proponent's EA and whether the Project 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. As such the Division has conducted an independent calculation of the royalty to be generated over the life of the Project.

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 requires that resource recovery is efficient, optimised and minimises waste.

The mining operations at Ulan Coal Mines Ltd (the Proponent) consist of two longwall underground operations, Ulan Underground and Ulan West Underground and an open cut (not operating since the end of 2014). The Proponent is owned by the Ulan Coal Mines Joint Venture (90% Glencore Coal Australia P/L and 10% Mitsubishi Developments P/L). Longwall operations commenced at Ulan in 1986 at the Ulan Underground mine. The Ulan West Underground longwall operation commenced in 2012. This Project impacts both the Ulan Underground and Ulan West Underground operations.

The Project is sought to allow changes to the mine plans for both the Ulan Underground and Ulan West Underground operations to recover an additional

6.4 million tonnes of run-of-mine (ROM) coal. If approved the Project will enable longwall panels to be lengthened and widened for both operations. There will be no change to the maximum approved production rate within the operations that is approved until 2033.

At the Ulan Underground operation, the Project intends to extend longwalls 30-33, and longwalls W7 and W8, along with a widening of longwall 33. Additional geological data and subsidence monitoring data not available at the time of the initial approval have resulted in these proposed changes.

The Project, if approved, will also extend longwalls 7 and 8 at Ulan West operations. The change is due to the revision of conservative estimates of ventilation capacity in the initial approval.

The Division considers these proposed changes to be a logical means to access resources that would otherwise not be recovered from either of these operations.

The following aspects of the Proponent's operations would remain unchanged:

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

The Ulan Underground and Ulan West Underground operations are located in the northern part of the Western coalfield, around 40 kilometres to the northeast of the town of Mudgee. These underground longwall operations have a history of being the highest capacity longwall operations in New South Wales. In 2016-17 Ulan West Underground was the highest producing longwall operation in New South Wales, producing 7.6 million tonnes of product coal. In this same year, Ulan Underground was the third highest producing longwall mine in New South Wales, producing 5.5 million tonnes of product coal, only Ulan West Underground and the Narrabri Underground operation produced more coal in this year.

Size and Quality of the Resource

The Division has verified that the Project will provide approximately 6.4 million tonnes (Mt) of additional ROM coal and approximately 6.1Mt of additional product coal. 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.

There is a long history of open cut coal mining and underground mining of the Ulan Seam in the Ulan region. The seam sequence extracted typically comprises medium to high ash content and moderate sulphur content coal saleable as a domestic or export thermal coal. Underground extraction of the Ulan Seam targets the economic basal working section which is lower in ash content than the overlying plies and is suitable for export as a mid-ash content export thermal coal.

100% of product is sold into export thermal coal markets and produced coal from the Project is expected to be sold into the same markets. Glencore may blend coal products from Ulan operations with products from their other operations across New South Wales at the port as required.

A review of available coal quality information suggests the proposed product quality, market split and yield is achievable. Approximately 10% of the ROM coal will be processed by the

existing Coal Handling & Preparation Plant (CHPP) to improve product characteristics for export markets. This coal is then blended back into the remaining product coal for export. The Division considers that a total of around 6.1Mt 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 and equipment constraints.

The geological thickness of the Ulan Seam within the mine area is approximately 7m. The Ulan Seam is divided into a number of plies interspersed with claystone bands. Current longwall extraction involves mining of the basal economic section of the seam which is lower in ash content than the overlying plies. The thickness of this working section varies across the operation with an average of ~3 metres. This basal economic section is mined at both of the Ulan underground operations and the nearby Moolarben Coal Mine. The Proponent considered using Longwall Top Coal Caving (LTCC) extraction methods to extract coal from overlying plies but determined that conventional longwall extraction would be a more appropriate method in the area.

The Middle River, Goulburn, Turill and Moolarben coal seams that overlie the Ulan Seam are either too high in ash content, discontinuous or too thin to be considered of economic interest. The Proponent has estimated resources for the overlying Glen Davis and Irondale seams, however, they are only considered long-term prospects with limited potential for economic extraction.

Given the constraints outlined in the Proponent's EA, the Division's Strategic Resource Assessment & Advice unit considers the Project an efficient development of coal resources that provides 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 Project, assuming production is sold on the export thermal coal market, the value of the additional coal produced would be around $550 million in current dollars.

Export income is vital for the health of both the New South Wales and Australian economy. Export income contributes 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 45% of New South Wales merchandised goods exports.

The modification if approved would not provide any additional employment at UCML. Capital investment for this modification would be of the order of $20 million.

Coal Royalty Calculation

The Project is a proposed underground mine attracting a royalty rate of 7.2% on 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, or $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 the majority of the ROM coal from the underground operations is not subjected to a full washing cycle, 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 would amount to $1.50 per tonne.

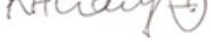
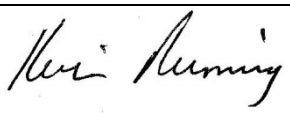
One of the most important assumptions in the calculation of future royalty for a coal proposal is the estimate of a future coal price over the life of a project. The additional coal from the Project is expected to be sold into the export thermal market. A review of coal quality information by the Division suggests this is achievable.

Coal price forecasting is inherently difficult and over the project life there could be variations in coal prices. An average price of A$90 per tonne for the export thermal coal from the Project has 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 Project is approved, around 6.1 million tonnes of additional 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 $40 million of additional royalty as a result of the Project.

Approvals:

Position	Signature	Date
Approving Officer: Matt Gagan Manager Royalties & Advisory Services		2 May 2018
Approving Officer: Rob Larkings Manager Coal Resource Assessment		3 May 2018
Endorsing Officer: Dr Kevin Ruming Director Strategic Resource Assessment & Advice (02) 4931 6701		3 May 2018