



Planning &  
Environment

## ASSESSMENT REPORT

### Moolarben Coal Mine

#### UG1 Optimisation Modification - Stage 1 (05\_0117 MOD 12) & Stage 2 (08\_0135 MOD 2)

#### 1 BACKGROUND

The Moolarben Coal Mine is an extensive open cut and underground coal mining operation about 40 kilometres northeast of Mudgee (see **Figure 1**), which forms part of a larger coal mining complex in the region along with the Ulan and Wilpinjong Coal Mines.

Moolarben Coal Operations Pty Ltd (MCO) operates the mine on behalf of the Moolarben Joint Venture (Moolarben Coal Mines Pty Ltd (MCM), Sojitz Moolarben Resources Pty Ltd and a consortium of Korean power companies). Both MCO and MCM are wholly owned subsidiaries of Yancoal Australia Limited.

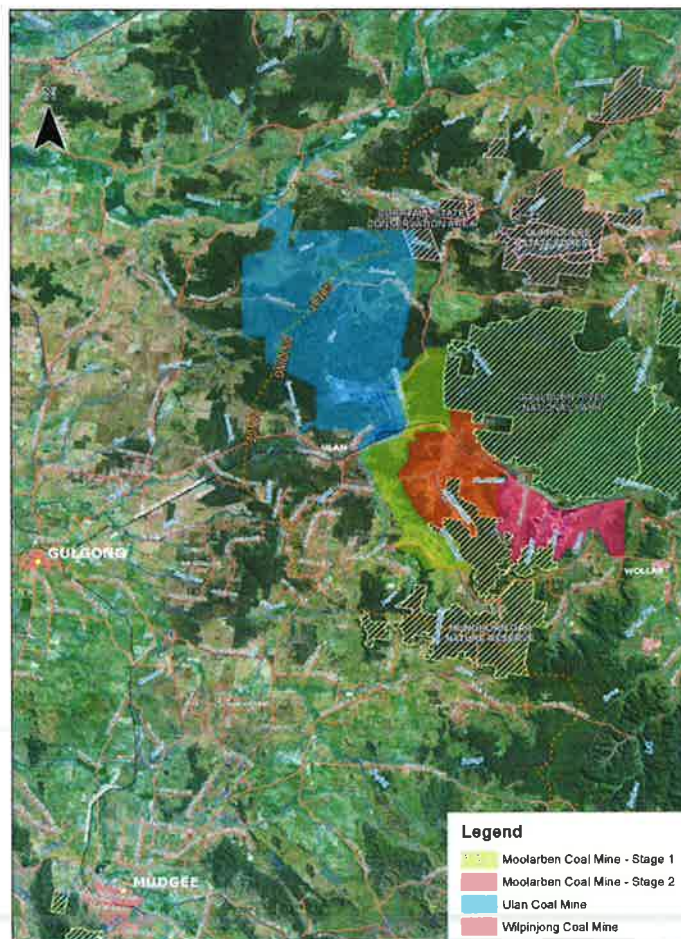


Figure 1: Regional Context

### 1.1. Stage 1 Project

Stage 1 of the mine was approved by the Minister for Planning on 6 September 2007 under the now repealed Part 3A of the *Environmental Planning & Assessment Act 1979* (EP&A Act) following a detailed review by an Independent Hearing and Assessment Panel. This project approval has been modified eleven times (see Table 5).

Stage 1 consists of three open cut pits (OC1, OC2 and OC3) and an underground mining operation (UG4). The general layout of the approved Stage 1 operations is shown in **Figure 2** (see blue outline).

To date, MCO has constructed the mine's surface infrastructure, and is operating in OC1 and OC2. MCO is yet to commence underground mining operations.

### 1.2. Stage 2 Project

Stage 2 of the mine was approved by the Planning Assessment Commission (the Commission) on 30 January 2015, also under the former Part 3A of the EP&A Act. This project approval has been modified once (see Table 5).

Stage 2 involves expanding mining operations to the east of the Stage 1 operations, and includes the development of two new underground mining operations (UG1 and UG2) and another large open cut pit (OC4).

Stage 2 will be operated concurrently with Stage 1, and together the two projects will form a single, integrated mining complex with a range of shared infrastructure, including the existing coal handling and preparation plant and rail facilities.

All ROM coal from the Stage 2 operations will be delivered to the Stage 1 surface infrastructure area for processing and despatch by rail. Construction of the Stage 2 project is yet to commence.

The general layout of the approved Stage 2 operations is shown in **Figure 2** (see yellow outline).

## 2 PROPOSED MODIFICATIONS

MCO is seeking further modifications to its Stage 1 project approval (05\_0117 MOD 12) and Stage 2 project approval (08\_0135 MOD 2) (see **Appendix A** and **B**).

There are three main components to these modifications:

- revisions to the layout of UG1 to extract a further 3.7 million tonnes of coal;
- increases to the maximum extraction rates of the underground mining operations (UG1, UG2 & UG4) from 4 to 8 million tonnes of coal a year, and consequential increases to the total extraction rates of the mine complex from 17 to 21 million tonnes of coal a year and total production rates from 14 to 18 million tonnes of coal a year;
- changes and upgrades to the approved Stage 1 and Stage 2 surface infrastructure to facilitate these changes.

The modifications are described in detail in the environmental assessment (EA) submitted in support of the applications (see **Appendix G**), depicted in Figure 3, and summarised in Table 1 below.

The primary justification for the proposed modifications is to increase the coal recovery of UG 1 and improve the operational efficiency of underground mining operations across the whole mine complex.

The proposed modifications are expected to increase the workforce at the mine complex from 440 to 667.

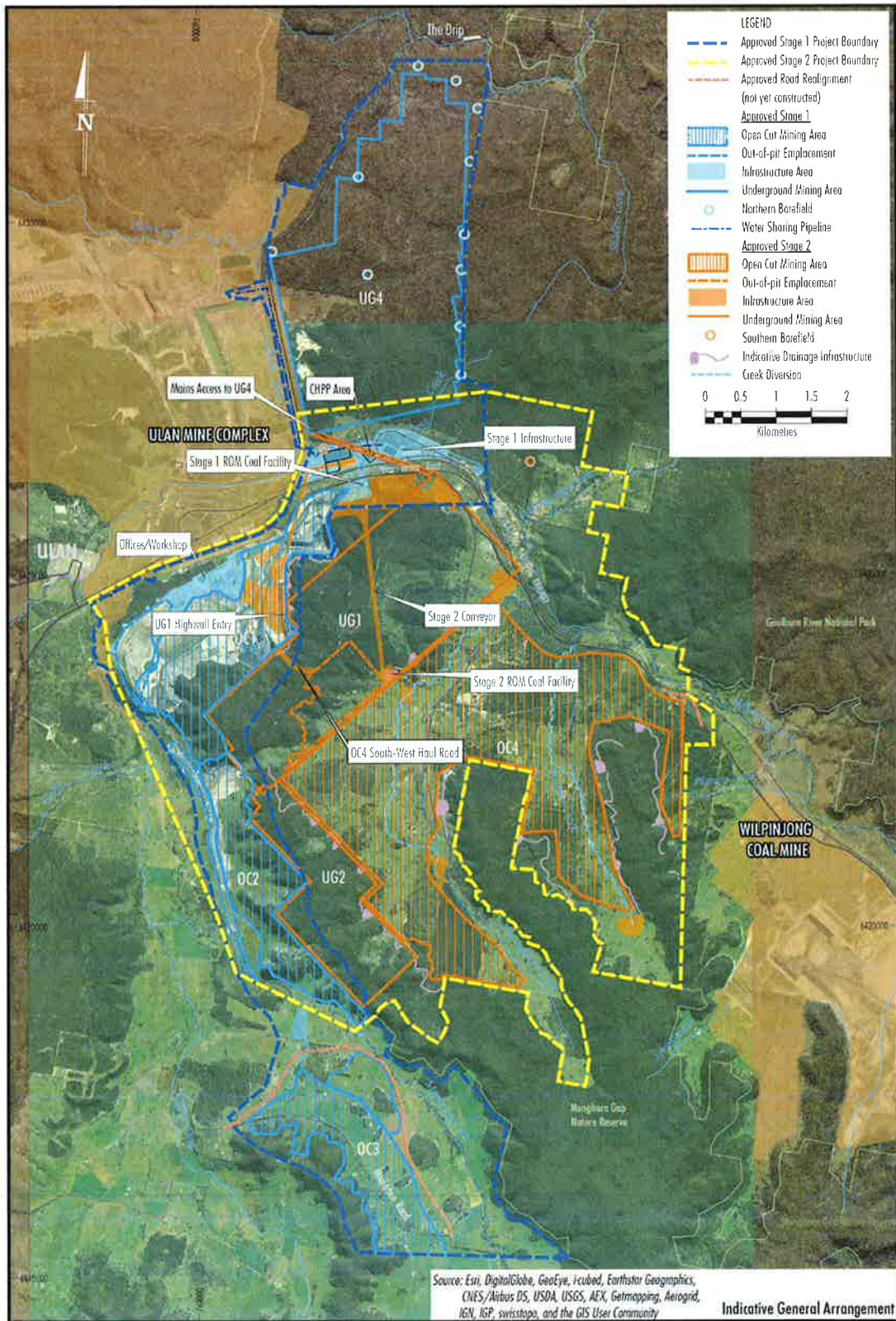


Figure 2: Moolarben Mine Complex

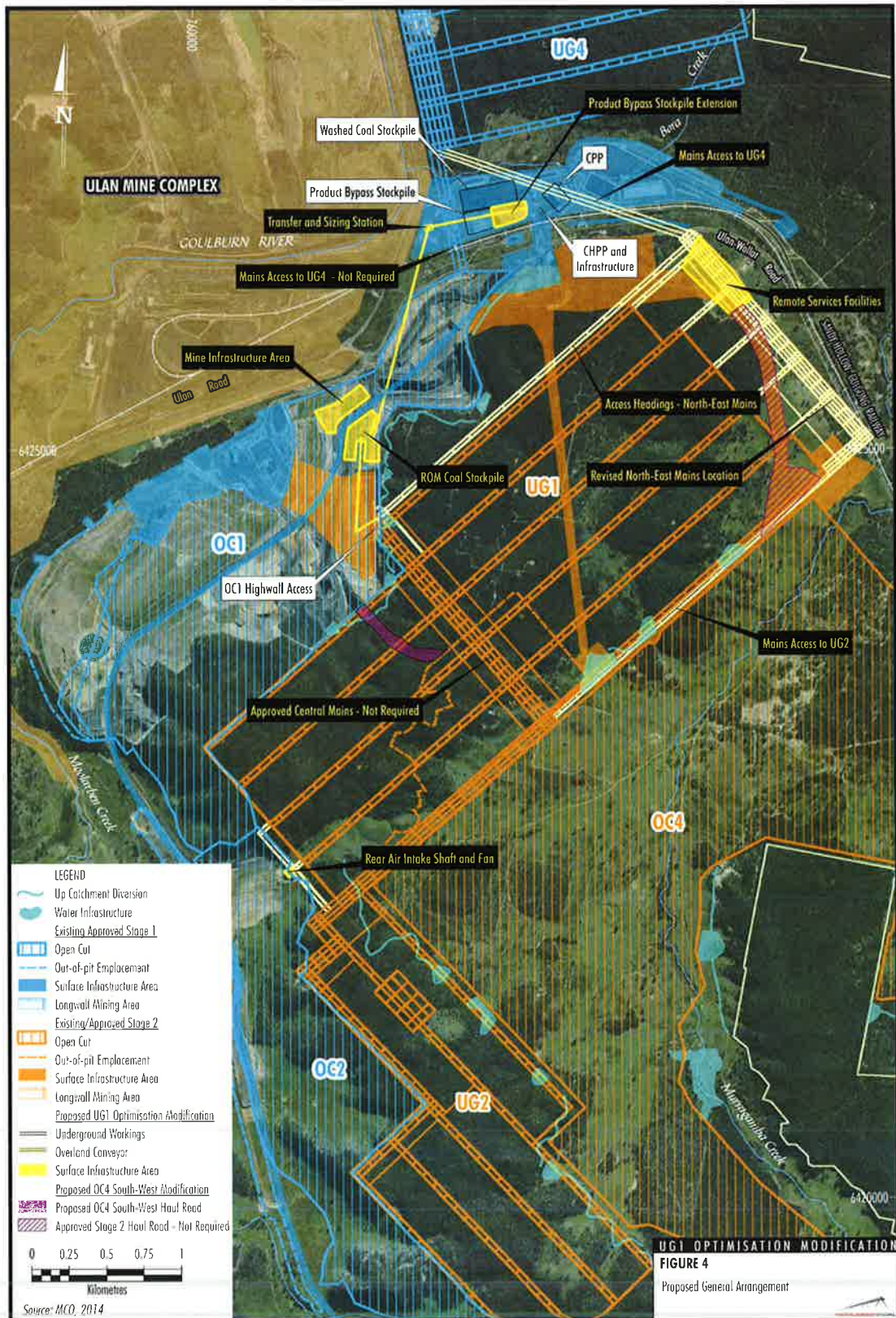


Figure 3: Indicative general arrangement showing the modification

**Table 1: Elements of the modification and relationship to existing project approvals**

<b>Component</b>	<b>Stage 1</b>	<b>Stage 2</b>
<b>Revisions to the Layout of UG1</b>		
Extend the longwall panels to the north-east by 150 to 500 metres		Modification 2
Extend two longwall panels to the south-west by 75 metres		Modification 2
Increase maximum coal extraction heights from 3.2 to 3.5 metres		Modification 2
Increase the maximum longwall panel widths from 305 to 311 metres		Modification 2
Reduce the chain pillars widths from 30 to 19.5 metres		
Relocate the central main headings to the north-east		Modification 2
Extract the central main headings, reducing the number of longwall change overs from 9 to 5 and improving the operational efficiency of the operation		Modification 2
Recover an additional 3.7 million tonnes of coal		Modification 2
<b>Increases in Extraction &amp; Production Rates</b>		
Increase maximum underground coal extraction rates from 4 to 8 million tonnes of coal a year in all three underground mining operations (UG1, UG2 and UG4)	Modification 12	Modification 2
Increase maximum extraction rates at the mine complex (Stage 1 and Stage 2) from 17 to 21 million tonnes of coal a year, with up to 13 million tonnes coming from the open cut mining operations and 8 million tonnes coming from the underground mining operations	Modification 12	Modification 2
Increase maximum coal export rates from 14 to 18 million tonnes of coal a year	Modification 12	
Increase maximum rail departure rates from 5 to 9 a day, with an average of 7 rail departures a day over any calendar year	Modification 12	
<b>Changes &amp; Upgrades to Surface Infrastructure</b>		
Construct a Remote Services Facilities above the north-eastern corner of UG 1		Modification 2
Construct a rear air intake shaft and fan to the south-west of UG1		Modification 2
Access UG1 via the highwall of OC1	Modification 12	Modification 2
Relocate the Stage 2 mine infrastructure area to OC1, including a larger run-of-mine (ROM) coal stockpile to handle the growth in underground extraction rates	Modification 12	Modification 2
Construct coal handling infrastructure between the relocated Stage 2 mine infrastructure area and the Stage 1 coal handling and preparation plant (CHPP), including a conveyor and transfer and sizing station	Modification 12	
Upgrade the coal stockpile capacity of the Stage 1 surface infrastructure area to handle the growth in underground extraction rates	Modification 12	
Relocate the mains access to both UG2 and UG4	Modification 12	Modification 2

### 3 STATUTORY CONTEXT

#### 3.1 Section 75W

Both the Stage 1 and Stage 2 projects were approved under Part 3A of the EP&A Act. Although Part 3A was repealed on 11 October 2011, the projects remain 'transitional Part 3A projects'. Under the current savings provisions, they can only be modified under the former Section 75W of the EP&A Act.

#### 3.2 Approval Authority

The Minister for Planning is the approval authority for the modification applications. However, under the Minister's delegation of 14 September 2011, the Planning Assessment Commission will determine both applications. This is because the Department received more than 25 public submissions objecting to the applications.

### 3.3 Modification

The Department is satisfied that the proposed modifications can be characterised as modifications to the current project approvals (see further discussion in section 5.1).

This is because:

- there would be limited change to the physical extent of the approved mining operations;
- the upgrades to the existing infrastructure would be relatively minor; and
- although maximum underground coal extraction rates would increase, this increase would not significantly increase the environmental impacts of the Stage 1 and Stage 2 projects beyond what is already approved.

Consequently, the Department considers the proposal to be within the scope of Section 75W of the EP&A Act.

## 4 CONSULTATION

The Department publicly exhibited the applications and accompanying EA from 3 July until 31 July 2015, and consulted with key agencies.

During the exhibition period, the Department received 46 submissions including 7 from government agencies, 8 from special interest groups and 31 from the general public (see summary in Table 2).

Most of the public submissions objected to the proposed modifications. It is interesting to note most of these objections were from people living more than 50 kilometres from the mine complex, and that there were only 2 submissions from people living within 5 kilometres of the mine with one supporting and the other objecting to the proposed modifications.

**Table 2: Summary of submissions**

<b>Submitters</b>	<b>Number</b>	<b>Objection / Support</b>
<b>Agency:</b>	<b>7</b>	No objections
<ul style="list-style-type: none"> <li>• Environment Protection Authority</li> <li>• Department of Industry and Investment Division of Resources and Energy</li> <li>• Department of Primary Industries</li> <li>• Office of Environment and Heritage</li> <li>• Roads and Maritime Services</li> <li>• Transport for NSW</li> <li>• Mid-Western Regional Council</li> </ul>		
<b>Special Interest groups:</b>	<b>8</b>	All object
<ul style="list-style-type: none"> <li>• Central West Environment Council</li> <li>• Hunter Communities Network</li> <li>• Hunter Environment Lobby</li> <li>• Mudgee District Environment Group</li> <li>• Nature Conservation Council</li> <li>• Running Stream Water Users Association</li> <li>• Wollar Progress Association</li> </ul>		
<b>Community</b>	<b>31</b>	
Approx. distance from Moolarben mine complex:		
<ul style="list-style-type: none"> <li>• &lt;5 km</li> </ul>	2	1 supports & 1 objects
<ul style="list-style-type: none"> <li>• 5 - 50 km</li> </ul>	2	Both object
<ul style="list-style-type: none"> <li>• &gt;50 km</li> </ul>	27	All object
<b>TOTAL</b>	<b>46</b>	<b>38 object</b>

Full copies of all submissions are included in **Appendix H**. Further consultation received from agencies is provided in **Appendix J**.

#### **4.1 Agency Submissions**

While none of the agencies objected to the proposed modifications, several commented on particular aspects of the proposal and recommended changes to the existing conditions. These comments and recommendations are summarised below, and considered in more detail in **Section 5** of the report.

The **Environment Protection Authority (EPA)** sought several clarifications on the noise assessment methodology. These clarifications were provided during the assessment process, and the EPA is now satisfied that the noise assessment has been carried out in accordance with the requirements in the *Industrial Noise Policy*. The EPA also sought further information on the proposed upgrades to the surface water management system. These were partly provided in the revisions to the Surface Water Management Plan for the mine complex, following the previous modifications to both approvals in July 2015; and MCO has committed to provide further information on these upgrades in subsequent revisions of the plan following the determination of these applications.

The **Roads and Maritime Services (RMS)** was satisfied that the increase in traffic resulting from the proposed modifications could be accommodated within the existing road network.

While **Mid-Western Regional Council** did not object to the proposal, it is concerned about the increased demand for infrastructure and services being generated by the growth of mining in the region. Council asked for the assistance of the Department and other State agencies to ensure this growth occurs in a sustainable way.

The **Department of Primary Industries (DPI Water)** sought clarifications on a range of matters, including:

- the depth, extent and level of saturation in the unconsolidated paleochannel near UG1 and the likely water take from this paleochannel;
- the increased water take of the mine complex as modified, and whether MCO would be able to secure the necessary licences to take this water.

These clarifications were provided during the assessment process, and DPI Water now supports the proposed modifications subject to conditions (see Section 5 for further discussion).

The **Division of Resources and Energy (DRE)** supports the project but asked for the rehabilitation objectives of both projects to be updated to include a water quality objective.

**OEH** noted the proposed modifications would not affect the Drip, a significant natural feature along the Goulburn River to the north of UG4, and agreed that the biodiversity impacts of the proposed modifications would be negligible.

**Transport for NSW** and the **Department of Primary Industries (Agriculture NSW and Crown Lands)** had no specific comments on the proposed modifications.

#### **4.2 Special Interest Groups and Community Submissions**

Of the 39 public submissions, 8 were from special interest groups (including several peak environmental groups) and 31 were from the general community.

These submissions had a strong focus on the cumulative impacts of mining across the wider region (including the Hunter Valley) rather than the specifics of the proposed modifications. They reiterated several concerns that were raised and considered in detail in the original merit assessment process for both projects.

Key issues raised included:

- the dust and rail impacts of trains along the Hunter Valley Coal Chain between this region and the port;
- the combined vegetation clearing of the Ulan, Wilpinjong and Moolarben mines; and

- the combined water take of the three mines, and associated impacts on the Goulburn River.

The Department has summarised the issues raised in these submissions in **Table 3**, and considered these issues further in **Section 5**.

**Table 3: Summary of submissions**

<b>Issue</b>
<ul style="list-style-type: none"> <li>• <b>Modifications:</b> <ul style="list-style-type: none"> <li>- number of modifications for the project</li> <li>- showed that Yancoal was not able to adequately manage the project</li> </ul> </li> </ul>
<ul style="list-style-type: none"> <li>• <b>Level of assessment:</b> <ul style="list-style-type: none"> <li>- assessment of noise, dust, subsidence, flora and fauna is inadequate and should have been more comprehensive</li> </ul> </li> </ul>
<ul style="list-style-type: none"> <li>• <b>Highwall collapse:</b> <ul style="list-style-type: none"> <li>- threatened a public road</li> <li>- impacted public safety</li> <li>- public cost and considered</li> <li>- lack of confidence in Yancoal's management of the mine</li> </ul> </li> </ul>
<ul style="list-style-type: none"> <li>• <b>Subsidence:</b> <ul style="list-style-type: none"> <li>- assessment should have been more comprehensive</li> <li>- detailed consideration of subsidence is deferred to post approval.</li> <li>- cumulative impact on cliffs</li> <li>- impact on sandstone escarpment in Goulburn River and The Drip.</li> <li>- impact on Ulan – Wollar Road and Sandy Hollow - Gulgong Railway</li> <li>- management of post approval impacts</li> </ul> </li> </ul>
<ul style="list-style-type: none"> <li>• <b>Water:</b> <ul style="list-style-type: none"> <li>- groundwater modelling is inadequate</li> <li>- assessment does not address the cumulative impact of the extraction and subsidence</li> <li>- surface water take from Wollar Creek and Upper Goulburn water source and ability to licence the take</li> <li>- impact on water supply of The Drip and base flows to Goulburn River;</li> <li>- impact on surface springs and subsurface groundwater and the groundwater systems in the Munghorn Nature Reserve, Moolarben, Ulan and Wollar areas have not been adequately assessed</li> <li>- no independent regional groundwater study conducted</li> <li>- impact on Goulburn River and groundwater system in headwaters of Goulburn River</li> </ul> </li> </ul>
<ul style="list-style-type: none"> <li>• <b>Noise from trains:</b> <ul style="list-style-type: none"> <li>- impact during temperature inversions was not assessed</li> <li>- receivers to the east of Wollar were not identified</li> <li>- an increase in 0.5 dbA was significant when considered with current noise from Wilpinjong Mine.</li> <li>- no assessment of Low Frequency Noise particularly in relation to increased use of the passing loop at Wollar or along the length of the Sandy Hollow Railway Line.</li> </ul> </li> </ul>
<ul style="list-style-type: none"> <li>• <b>Dust impacts:</b> <ul style="list-style-type: none"> <li>- increase in peak train movements result in a cumulative impact to coal dust along the length of the Hunter coal chain.</li> <li>- NSW government should adopt a policy for all coal wagons to be covered and washed to prevent coal dust pollution.</li> </ul> </li> </ul>
<ul style="list-style-type: none"> <li>• <b>Biodiversity Assessment:</b> <ul style="list-style-type: none"> <li>- survey effort for the proposal was inadequate.</li> <li>- no updated flora and fauna survey for the entire area of the impact of the proposal.</li> <li>- no assessment of the impact on biodiversity of the increase in subsidence.</li> <li>- cumulative impact on cliff lines has not been considered.</li> <li>- assessment has not considered the recent listing of Critically Endangered Ecological Community under the Environment Protection and Biodiversity Conservation Act 1999.</li> </ul> </li> </ul>
<ul style="list-style-type: none"> <li>• <b>Employment:</b> <ul style="list-style-type: none"> <li>- number of jobs was not guaranteed and not a reason for the extension of the mine.</li> </ul> </li> </ul>
<ul style="list-style-type: none"> <li>• <b>Consultation:</b> <ul style="list-style-type: none"> <li>- inadequate community consultation about modification through the CCC</li> </ul> </li> </ul>

#### 4.3 Response to Submissions

MCO has provided a detailed response to the issues raised in submissions (see **Appendix I**), and the Department has considered this response in its assessment of the merits of the proposal.



## 5 ASSESSMENT

In assessing the merits of the proposed modifications, the Department has considered the:

- current conditions of approval for Stage 1 and Stage 2 of the Moolarben Coal Project;
- previous EAs for both projects, and the monitoring results from the mine complex's existing operations;
- EA and supporting assessment for the proposed modifications;
- submissions and response to submissions;
- relevant environmental planning instruments, policies and guidelines; and
- the requirements of the EP&A Act.

### 5.1 Modifications

Several submitters were critical of the fact that the Stage 1 approval has already been modified 11 times; that the Stage 2 approval was modified within months of the approval first being granted; and that further modifications are now being sought to both approvals.

They claimed the "unhindered" use of modifications shows the planning system is not operating with "coherence and rigour", and lacks certainty. They also suggested proponents should be required to take greater care with the original design of their projects to avoid the need for multiple modifications.

There are four points to make in response to these criticisms: two about the planning system in general, and the other two about the specific modifications to the Stage 1 and 2 approvals for the Moolarben mine complex.

First, the EP&A Act has always allowed approvals to be modified – regardless of whether they were obtained under Part 4, Part 5 or the former Part 3A; and in each case, the statutory scheme has never imposed a limit on the number of modifications that can be sought.

As long as each proposal can be characterised as genuine modification, consent authorities are required to follow due process and assess the application on its merits.

Further, while the statutory scheme gives consent authorities some discretion in the specific process that should be followed during this merit assessment, applications are commonly exhibited; people are given the chance to have a say on the merits of the proposal; and the consent authority is required to consider the issues raised in submissions prior to making any decision.

In other words, the Act provides a logical scheme for dealing with changes to projects, which generally mirrors the scheme for assessing the original applications.

Second, major projects – such as State significant mining projects - are usually large and complex; and it is common for these projects to undergo several modifications to their original design over time. Such modifications tend to occur for a wide range of reasons, including changes to the strategic context, and refinements to the design of the project to incorporate better knowledge (on key matters such as geology; or as the accuracy of initial predictions are tested and refined.

The planning system has to be robust enough to accommodate such changes, and it would be inefficient to have to restart the whole assessment process every time there is a minor change to these projects

Third, although there have been several changes to Stage 1 of the Moolarben project and one change to Stage 2 of the project, the scale and nature of these changes has generally been quite minor (see **Table 4**); and for the most part reflect refinements to the design of the projects rather than any fundamental change to the nature of the projects.

Stage 1 remains a large mine with three open cut pits, an underground longwall mining operation, and a range of surface infrastructure for processing, handling and transporting coal. Stage 2 remains a large open cut mine with two underground longwall mining operations that are largely reliant on the Stage 1 surface infrastructure.

**Table 4: Moolarben coal project modifications (chronological)**

<b>Modification</b>	<b>Description</b>	<b>Date</b>	<b>Decider</b>
<b>Stage 1</b>		<b>Sept 2007</b>	<b>Minister</b>
MOD 1	<ul style="list-style-type: none"> <li>Amend layout and configuration of surface infrastructure</li> <li>Modify 3 conditions</li> </ul>	Nov 2008	Department
MOD 2	<ul style="list-style-type: none"> <li>Preliminary construction activities to facilitate delivery and erection of demountable offices</li> </ul>	Dec 2008	Department
MOD 4	<ul style="list-style-type: none"> <li>Modify rail loop design</li> </ul>	June 2009	Department
MOD 5	<ul style="list-style-type: none"> <li>Construct and operate a pipeline to facilitate water sharing with the Ulan Coal Mine.</li> <li>Relocate the run-of-mine coal dump hopper and associated facilities</li> <li>Increase construction hours to 24 hours a day.</li> <li>Regularise mining lease boundary fence line clearing.</li> <li>Other minor site and administrative adjustments.</li> </ul>	Oct 2009	Department
MOD 6	<ul style="list-style-type: none"> <li>Relocate a rejects bin and increasing its holding capacity from 250t to 500t</li> </ul>	Jan 2010	Department
MOD 8	<ul style="list-style-type: none"> <li>Establish and operate a 100,000 tonne run-of-mine (ROM) coal stockpile adjacent to the approved ROM coal dump hopper.</li> </ul>	May 2010	Department
MOD 7	<ul style="list-style-type: none"> <li>Develop a water supply and dewatering borefield</li> </ul>	Jan 2011	Department
MOD 9	<ul style="list-style-type: none"> <li>Extend mining within OC 1 and 2.</li> <li>Construct and operate additional water management infrastructure.</li> <li>Minor changes to the rehabilitation and final landform of the mine.</li> <li>Extend the project life.</li> </ul>	June 2014	Commission
MOD 3	<ul style="list-style-type: none"> <li>Infrastructure to receive, handle, process, store and load coal received from the Stage 2 mining operations.</li> <li>Extend the operational life of the approved Stage 1 infrastructure.</li> </ul>	Jan 2015	Commission
MOD 10	<ul style="list-style-type: none"> <li>Increase ROM production limit from Stage 1 open cut operations for 2015/2016.</li> </ul>	April 2015	Department
MOD 11	<ul style="list-style-type: none"> <li>Construct OC4 south-west haul road between OC4 and OC1</li> <li>Refine associated infrastructure layout at OC4.</li> <li>Backfill the northern OC1 final void to approximately pre-mining elevations.</li> </ul>	Jul 2015	Department
MOD 12	<ul style="list-style-type: none"> <li>Changes to the mine complex production and transport.</li> <li>Changes to infrastructure.</li> <li>Increase extraction rates in UG 4</li> </ul>	Current	Commission
<b>Stage 2</b>		<b>Jan 2015</b>	<b>Commission</b>
MOD 1	<ul style="list-style-type: none"> <li>As for Stage 1 MOD 11</li> <li>Changes to underground mining parameters for UG1.</li> <li>Increase extraction rates in UG 1 &amp; 2</li> </ul>	Jul 2015	Department
MOD 2	<ul style="list-style-type: none"> <li>As for Stage 1 MOD 12</li> </ul>	Current	Commission

Finally, the key question is whether the proposed changes to the Stage 1 and 2 projects can be characterised as modifications. In both cases, the statutory test is relative to the project as currently approved (as opposed to as it was originally approved).

The Department has considered the proposed changes to both projects, and concluded that they are relatively minor compared to the currently approved projects.

For the Stage 1 project, the main change would be increasing the amount of coal passing through the surface infrastructure from 17 to 21 million tonnes of a year. However there would be no change to the amount of coal passing through the CHPP, which would remain fixed at 13 million tonnes a year,

and the consequential impacts associated with the proposed increase (larger coal stockpiles and more trains) would be minor and could be carried out within the limits set by the current approval. Doubling the extraction rates of UG 4 would allow the already approved impacts to occur faster, and would be almost indiscernible on the surface. Finally, there would be very few changes to the approved surface infrastructure of the project.

For the Stage 2 project, there would be some minor increases to the size of UG 1 with slightly wider, longer and deeper longwall panels. These increases would result in negligible changes to the approved impacts of this underground mining operation. As with UG 4, doubling underground extraction rates in UG 1 & 2 would simply allow the already approved impacts to occur faster, and would be indiscernible on the surface. Finally, there would be relatively few changes to the mine's surface infrastructure.

Based on this analysis, the Department is satisfied that the proposed changes can be characterised as genuine modifications to the approved projects, and that it is appropriate to consider these applications under Section 75W of the Act rather than requiring new development applications.

## **5.2 Level of assessment**

Several submitters considered the assessment of the potential water, subsidence, noise, dust, and flora and fauna impacts of the proposed modifications to be inadequate.

They argued these assessments should have been more comprehensive, and that there should have been greater consideration of the potential cumulative impacts of the proposed modifications. They also questioned whether there was sufficient information available to be able to make informed decisions on both applications.

With modification applications, the key principle is proportionality: the level of assessment should match the level of any potential impact. Further, this assessment should build on the work that has been carried out before: there is no need to redo the whole assessment every time an approval is modified. This would be an inefficient and ineffective use of resources.

In this case, it is important to understand that the regional impacts of mining have been considered in detail over the last decade with the approval of extension to both the underground and open cut mining operations at the Ulan mine, the approval of the Wilpinjong open cut mine, and the approval of Stages 1 and 2 of the Moolarben mine.

In each case, there was detailed consideration of the potential cumulative impacts of mining, and there is now an extensive body of knowledge about the environmental attributes of the area and the likely impacts of mining. If anything, this region is one of the most studied areas of NSW. Further, these mining operations are subject to strict requirements for on-going monitoring and review, which will continue to expand the current body of knowledge over time and improve the understanding of mining and its impacts on the region.

Despite the criticism of several submitters, the Department is satisfied that the assessment of both modifications is fit for purpose: they build on the previous assessments that have been carried out; and the level of assessment is proportionate to the level of potential impact, which in both cases is expected to be quite low – incrementally and cumulatively - and generally within the limits established by the existing approvals (see further discussion below).

### 5.3 Subsidence

There would be limited change to the subsidence impacts of the mine.

These changes would be confined to the areas above and adjacent to the revised layout of UG1 (see Figure 3), and there would be no change to the impacts above UG2 & UG4.

The proposed increase in extraction rates (from 4 to 8 million tonnes of coal a year) would have no bearing on subsidence impacts of UG1, UG 2 or UG4: they would remain exactly the same, apart from occurring sooner than originally predicted.

The subsidence impacts of UG1 would be changed by two factors.

First, the mining operations would cover a larger area, extending mostly to the north-east where the length of the longwall panels would be increased by between 150 and 500 metres, but also to the south-west where the length of two longwall panels would be extended by 75 metres.

Areas that would previously have been unaffected by subsidence would now be affected.

There are very few significant natural features above the proposed extension area, apart from a small stand of EEC (see Figure 5) and a few isolated aboriginal heritage sites with low archaeological heritage significance (see Figure 7).

Although there are no significant watercourses in the vicinity of UG 1, the mine would come closer to an unconsolidated paleochannel (see Figure 4), and mine under further reaches of two drainage lines (D6 & D7 – see Figure 5).

There are no cliffs or steep slopes in the extension area (see Figure 6).

Despite the extension, UG1 would still be set well back from any significant public infrastructure in the region, such as the Gulgong-Sandy Hollow Railway or relocated Ulan-Wollar Road (see Figure 8).

The other change to the subsidence impacts of UG1 would be due to the revisions of the approved layout of the mine, principally the increase in extraction heights (from 3.2 to 3.5 metres) but also the increase in longwall panel widths, reduction in chain pillar widths, and removal of the central mains to extract a further 3.7 million tonnes of coal.

These changes would increase the size of the mining void underground and result in proportionate increases to the approved subsidence impacts of this section of the mine.

Previous assessments have concluded that there are very few significant natural features over this area, apart from three minor cliff lines (less than 20 metres long and 15 metres high – see Figure 6), and some stands of EEC vegetation (see Figure 5).

Figure 4: Location of the Unconsolidated Paleochannel

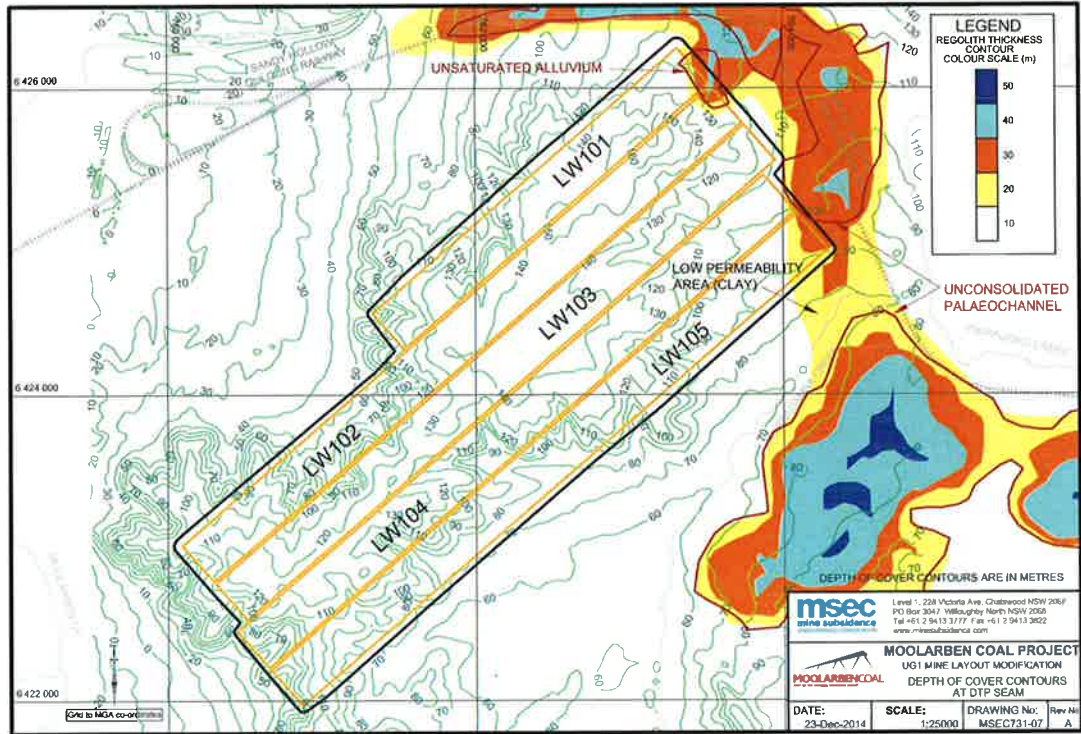


Figure 5: Location of Watercourse & Vegetation

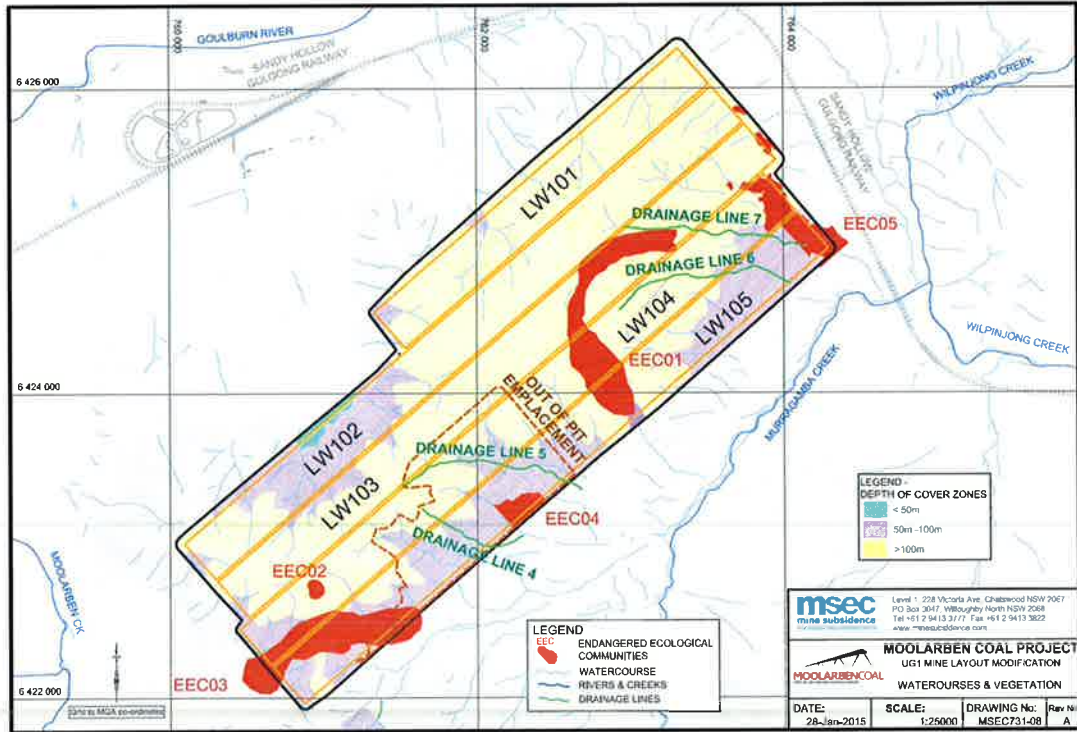


Figure 6: Location of Cliffs & Steep Slopes

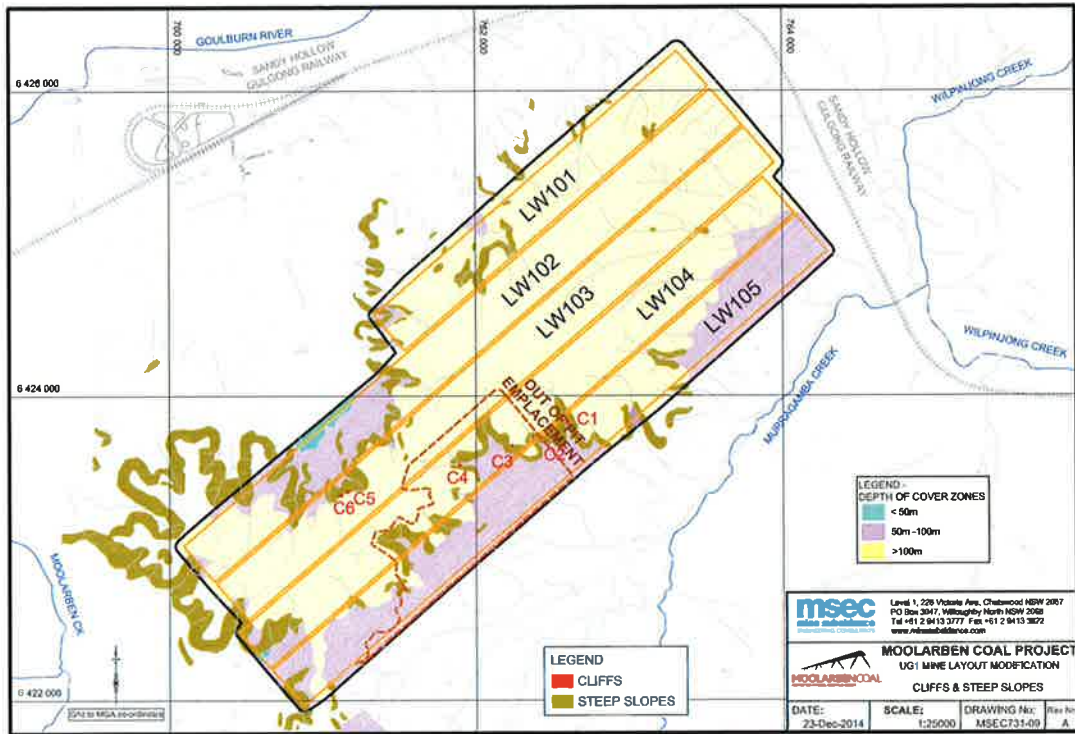
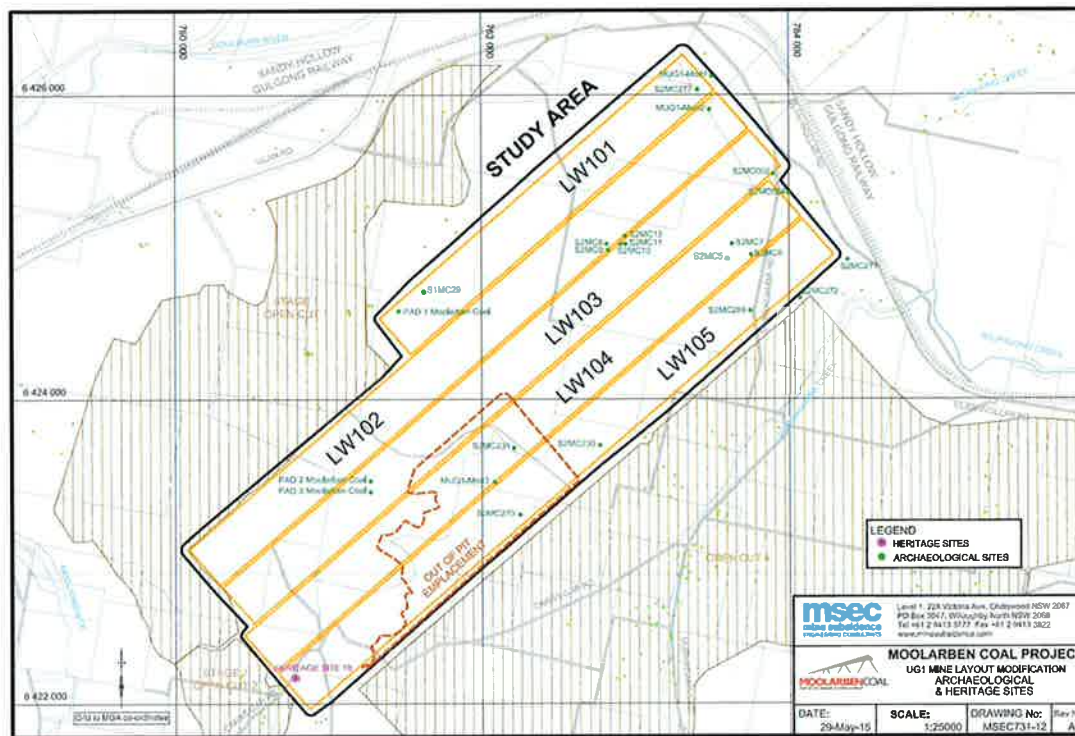
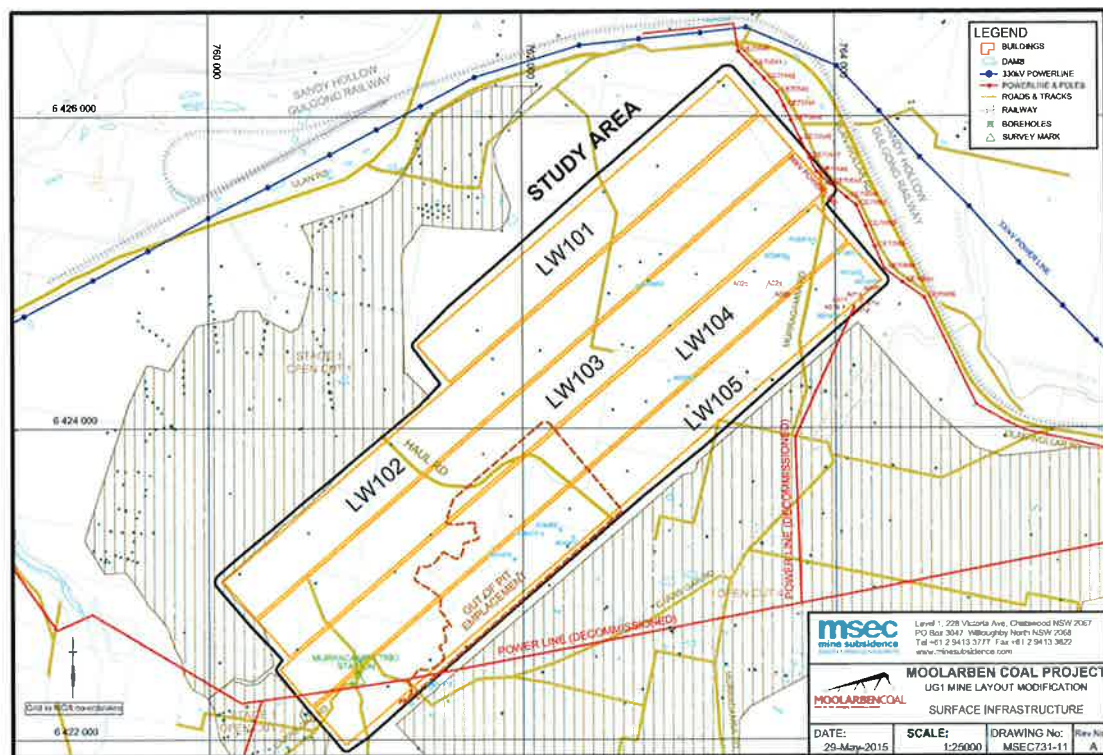


Figure 7: Location of Heritage Sites



**Figure 8: Location of Public Infrastructure**

### Revised Subsidence Impact Assessment

Mine Subsidence Engineering Consultants (MSEC) has updated its previous assessment of the subsidence impacts of the Stage 2 project (SIA) to incorporate the revised layout of UG1 (see Appendix A of the EA).

While several submitters thought the updated assessment should have been more comprehensive, both DRE and the Department consider MSEC's revised assessment to be technically sound and fit for purpose.

This is based on three reasons.

First, the previous assessment was robust. During the original Stage 2 assessment process, the Department commissioned Emeritus Professor Jim Galvin to review the SIA, and provide expert advice on the reasonableness and accuracy of MSEC's subsidence predictions. Dr Galvin concluded that the subsidence predictions were conservative, and that the actual impacts of the project were likely to be lower than predicted. This same methodology has been applied to the updated assessment, and the revised predictions are considered to be suitably conservative.

Second, the updated SIA has been appropriately targeted to the likely impacts of the proposed modifications, which would only occur above and adjacent to the revised layout of UG 1 rather than across the whole mine complex. There would be no change to the subsidence impacts above UG 2 or UG4, and consequently there is no need to reassess these impacts.

Finally, the updated SIA includes detailed predictions of the likely subsidence effects and consequential environmental impacts of UG on all natural and built features (see Appendix A).

MSEC predicts the maximum subsidence over UG 1 would increase from 1.93 to 2.38 metres, and that there would be consequential increases in the maximum predicted total tilt, hogging and sagging curvature, and strains – although these increases are expected to be similar to the original predictions for UG1.

While there is scope for some non-conventional subsidence impacts, MSEC considers the likelihood of any adverse impacts resulting from such subsidence to be low.

The Department has summarised the findings of its assessment of MSEC's updated SIA, and its recommended changes to the Stage 2 project approval in Table 5.

**Table 5: Summary of the Predicted Subsidence Impacts of the Revised Layout of UG1**

<b>Water Resources</b>		
Paleochannel	<ul style="list-style-type: none"> <li>See Section 5.4</li> </ul>	<ul style="list-style-type: none"> <li>No mining allowed under any saturated section of the paleochannel</li> </ul>
Murrumbidgee & Wilpinjong Creeks	<ul style="list-style-type: none"> <li>No impact</li> </ul>	<ul style="list-style-type: none"> <li>No action required</li> </ul>
Drainage Lines D4 & D5	<ul style="list-style-type: none"> <li>To be covered by approved waste dump</li> </ul>	<ul style="list-style-type: none"> <li>No action required</li> </ul>
Drainage Lines D6 & D7	<ul style="list-style-type: none"> <li>Impacts would be extended to lower reaches of the drainage lines, but remain negligible</li> <li>Minor increase in ponding and fracturing of bedrock</li> <li>Impacts insignificant: ephemeral watercourses draining to mine's dirty water system</li> </ul>	<ul style="list-style-type: none"> <li>Comply with existing performance measures</li> <li>No change to management measures</li> <li>Monitor and carry out minor remedial works (fill cracks, regrade and recompact surface)</li> </ul>
<b>Cliffs &amp; Steep Slopes</b>		
Cliffs C2, C3 & C4	<ul style="list-style-type: none"> <li>To be covered by approved waste dump</li> </ul>	<ul style="list-style-type: none"> <li>No action required</li> </ul>
Cliffs C1, C2 & C5	<ul style="list-style-type: none"> <li>Minor increase in risk of isolated rock falls, although risk would remain low and could be managed</li> <li>Consequential impacts would remain minor: cliffs are small, and relatively insignificant in a regional context</li> </ul>	<ul style="list-style-type: none"> <li>Comply with existing performance measures</li> <li>No change to management measures</li> <li>Restrict access to area during mining to protect public safety</li> </ul>
Steep slopes	<ul style="list-style-type: none"> <li>Negligible change to approved impacts which would remain minor</li> </ul>	<ul style="list-style-type: none"> <li>Monitor and carry out minor remedial works if necessary to stabilise cliff faces or slopes</li> </ul>
<b>Threatened EECs, Species or Habitat</b>		
White Box Yellow Box Blakelys Red Gum Woodland and DNG EEC	<ul style="list-style-type: none"> <li>Negligible impact</li> <li>No loss of vegetation cover or community structure, even though individual plants within the EECs could be affected by surface cracking or rock falls</li> </ul>	<ul style="list-style-type: none"> <li>Comply with existing performance measures</li> <li>No change to existing management measures</li> <li>Monitor and carry out minor remedial works if necessary</li> </ul>
Central Hunter Grey Box Ironbark Woodland EEC	<ul style="list-style-type: none"> <li>Negligible impact</li> </ul>	
Threatened flora and fauna species	<ul style="list-style-type: none"> <li>Negligible impact</li> </ul>	
<b>Areas of Archaeological or Heritage Significance</b>		
Archaeological heritage sites	<ul style="list-style-type: none"> <li>All sites above UG1 have low archaeological significance</li> <li>Negligible impact</li> <li>No loss of heritage value to sites, although some sites may be affected by surface cracking or rock falls</li> </ul>	<ul style="list-style-type: none"> <li>Comply with existing performance measures</li> <li>No change to existing management measures</li> <li>Monitor and carry out minor remedial works if necessary</li> </ul>
Cooks Gap Road Stone Wall	<ul style="list-style-type: none"> <li>Impacts on this site would be significant, consistent with the approved impacts</li> <li>These impacts would be repaired as far as practicable, in accordance with agreed management measures in the Heritage Management Plan</li> </ul>	<ul style="list-style-type: none"> <li>Comply with existing performance measures and conditions</li> </ul>



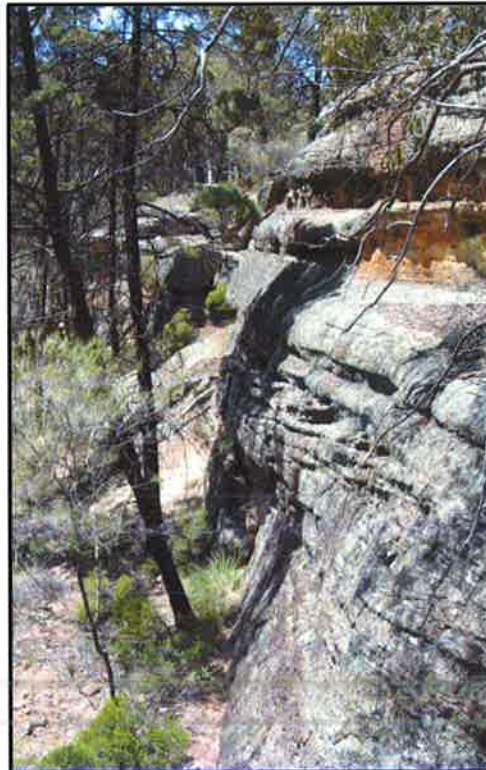
<b>Public Infrastructure</b>		
Gulgong-Sandy Hllow Railway Line	<ul style="list-style-type: none"> <li>• Small, but unlikely, chance of far-field horizontal movements</li> <li>• No impact predicted</li> </ul>	<ul style="list-style-type: none"> <li>• Extend the key public infrastructure performance measures to the Ulan-Wollar Road (see Table 19 of the existing conditions)</li> <li>• Monitor and remediate if necessary</li> </ul>
Ulan-Wollar Road		
Murragama Road & Other Tracks over longwall panels	<ul style="list-style-type: none"> <li>• Murragama Road would not be used by the public once OC 4 commences</li> <li>• Impacts consistent with previous predictions, and would be repaired</li> <li>• No public safety risk, as access to roads would be controlled, and any impacts could easily be repaired</li> </ul>	
Other Infrastructure, including power lines, telecommunication cable & fibre optic cable	<ul style="list-style-type: none"> <li>• Remain serviceable and repairable</li> </ul>	<ul style="list-style-type: none"> <li>• Comply with existing performance measures and conditions</li> </ul>
<b>Public Safety</b>		
Public Safety	<ul style="list-style-type: none"> <li>• Risk would remain very low, and can be easily managed</li> </ul>	<ul style="list-style-type: none"> <li>• Comply with existing performance measures and conditions</li> </ul>

From the table, it is clear that there would be a negligible increase in the subsidence impacts of UG1, and that these impacts would remain low and could be readily managed and remediated if necessary.

Several submitters suggested the proposal would have a significant cumulative impact on cliffs within the region, but this is not the case.

First, the remaining cliffs over UG 1 (C1, C2 & C5) have limited State or regional heritage significance: they are relatively small (less than 20 metres high and 15 metres high with a limited overhang); and they would be difficult to discern from public places in the surrounding area – such as Ulan-Wollar Road – due to surrounding tree cover (see Figure 9). There are much better examples of cliffs in the area, both at the mine complex and in the adjoining National Parks, offset areas and reserves.

**Figure 9: Cliff C5**



Second, there would be negligible change to the impacts on these three cliffs, and these impacts would remain minor. They are likely to be restricted to isolated rock falls which could affect the stability of small parts of the cliff faces, but are unlikely to result in any material impact on the conservation value of the cliffs. The biggest risk is to public safety, however, these risks can be controlled relatively easily by restricting access to the area and stabilising any unstable parts of the cliff face following mining.

Finally, no new cliffs would be undermined.

### *Conclusion*

Based on this assessment, the Department concludes there would be negligible to the subsidence impacts over and adjacent to UG 1; and that the increased impacts of revised layout would remain acceptable and are justified by the increased recovery of coal.

The Department has also concluded the existing conditions remain appropriate for managing the subsidence impacts of the Stage 2 project, and do not require any changes apart from including the Ulan-Wollar Road in Table 19 of the conditions and ensuring it has the same protection as the adjoining Gulgong-Sandy Hollow Railway.

These conditions require MCO to:

- comply with a range of subsidence performance measures, covering both natural and built features;
- prepare and secure approval for detailed Extraction Plans prior to carrying out any second workings;
- validate and update the subsidence impact assessments over time to incorporate information gained from monitoring the impacts of actual mining; and
- manage and (if necessary) remediate any adverse impacts of this mining.

## **5.4 Water**

### *Groundwater*

Aquaterra assessed the groundwater impacts of the Stage 2 project.

The Department commissioned Dr Franz Kalf to peer review this assessment. Dr Kalf concluded that the hydrogeological and computer model analysis for the project was satisfactory, but should be updated and verified over time as mining occurs and additional data becomes available.

Aquaterra's assessment concluded:

- there were no highly productive groundwater resources above the underground mines;
- the project would comply with the minimal harm criteria under the *Aquifer Interference Policy*;
- no private water bores would be affected by the underground mining operations; and
- the surface water and groundwater take of the project could be licenced under the existing water legislation.

Dundon Consulting and Hydrosimulations have updated Aquaterra's original assessment to identify the likely impacts of the proposed modifications (see Appendix B of the EA). This assessment includes a geophysics report prepared by Groundwater Imaging, which seeks to define the depth and extent of the unconsolidated paleochannel in the vicinity of UG1.

Apart from some uncertainty about the definition of the unconsolidated paleochannel (see below), both DPI Water and the Department are satisfied that the updated assessment is robust and fit for purpose.

Several submitters questioned the adequacy of the updated groundwater assessment, reiterating concerns that were raised during the original assessment process and calling for the preparation of a regional groundwater study.

DPI Water, Dr Franz Kalf, the Department and the Planning Assessment Commission considered these concerns in detail prior to the Stage 2 project being approved, and there is little merit in reconsidering these concerns in this report. Instead, the Department has focused on assessing the likely impacts of the proposed modifications.

The updated groundwater impact assessment predicts the proposed modifications would result in increased drawdown within the Ulan Coal Seam or Permian aquifer by up to 6.5 metres. This is considered to be negligible both from a local and regional perspective, as there has been extensive dewatering of this aquifer by mining operations in the region (Ulan, Moolarben and Wilpinjong mines), and the water has little productive value for other water users in the region.

Inflow rates to UG1 are expected to increase by up to 69ML/year, taking the maximum water take of UG1 from 834 to 903 ML/year.

MCO has existing entitlements in place to cater for the take of this additional water.

Drawdown in the alluvial aquifer associated with Wilpinjong Creek is expected to increase by up to 0.3 metres, which is well below the minimal harm criteria in the *Aquifer Interference Policy* (2 metres). This drawdown is predicted to increase the loss of baseflow/leakage from the Upper Goulburn River Water Source by up to 1.1ML/year, taking the total water take from this source to less than 8ML/year.

MCO is in the process of securing the necessary licences for this take.

The alluvial aquifer drawdown predictions are based on the assumption that the revised layout of UG1 would not pass under any water-bearing sediments of the unconsolidated paleochannel.

In submissions, DPI Water questioned this assumption, identifying some inconsistencies in the information provided in the EA about the precise depth and extent of the paleochannel relative to the longwall panels of UG1, and noting there was limited borehole data to confirm the claim that the paleochannel was generally dry in the vicinity of these operations.

After further discussions, MCO agreed to carry out further work to improve the definition of the depth, extent and saturation of the paleochannel prior to carrying out any mining in the vicinity of the paleochannel, and to adjust the length of the longwall panels to ensure they do not underlie any saturated section of the paleochannel.

DPI Water was satisfied with MCO's commitment, and the Department has incorporated this commitment in the recommended conditions for the proposed modification (see condition 7A in Schedule 4 of the approval.)

Finally, there is unlikely to be any changes to the water take from the isolated Triassic aquifers above UG1, as drilling has shown these aquifers are generally dry.

#### *Surface Water*

The surface water impacts of the proposed modifications would be minor, principally because there are no major watercourses above UG1.

The main impacts would be restricted to:

- the loss of baseflow/leakage from the alluvial aquifer in the vicinity of Wilpinjong Creek (see above) as a result of the changes to UG1; and
- a minor reduction in the size of the Wilpinjong Creek catchment (5.2 hectares) in order to expand the mine's dirty water system to include the Remote Services Facilities; this represents a loss of 0.3% to the total catchment and about 0.002ML/day, which is considered to be negligible; and
- some minor surface disturbance for the rear intake shaft and fan to the south-west of UG1.

All the other surface works (mine infrastructure area within OC 1, the coal conveyor from this area to the CHPP, and the upgrades to the surface infrastructure of Stage 1) would occur within the approved disturbance area of the mine complex and within the mine complex's existing dirty water system.

The detailed design and implementation of these works would be controlled through revisions to the Water Management Plan under the existing conditions of approval.

#### *Site Water Balance*

WRM Water & Environment has undertaken a qualitative analysis of the likely site water balance impacts of the proposed modification.

This analysis incorporates the predicted increase in water take of the proposed modifications (see above), which amounts to around 70ML/year, and the increases in water demand resulting from:

- the increase in dust suppression on the larger coal stockpiles due the proposed increase in coal extraction rates to 21 million tonnes a year; and
- greater water usage in the underground mines (about 80ML/year) due to the proposed increase in extraction rates to 8 million tonnes a year.

It is important to note that although total extraction rates at the mine complex would increase to 21 million tonnes, there would be no increase in the amount of coal washed on site. This would remain at 13 million tonnes of coal a year. Consequently, there would not be a significant increase in water use on site.

WRM concludes that these changes would have a negligible impact on the mine complex's site water balance and water management system as:

- there is adequate storage on site for the additional water make, and excess water could be discharged under the existing limits in the environment protection licence;
- MCO would have sufficient water to cater for any increases in water demand, and would import water from other mines in the region if necessary (such as Ulan); and
- MCO is likely to have sufficient water licences for any additional water take at the mine complex.

The Department agrees with this analysis, and notes that under the existing conditions of approval MCO is required to regularly update the detailed Site Water Balance for the mine complex, and that this would be done within three months of the approval of any modification applications.

#### *Conclusion*

Based on its assessment, the Department has concluded that the proposed modifications are unlikely to result in any significant impacts on the region's water resources.

Predicted increases in water take are generally low and can be licenced under the relevant water legislation; the project would continue to comply with the minimal impact criteria under the *Aquifer Interference Policy*, and the minor increase other water-related impacts can be suitably regulated under the existing conditions of approval.

Nevertheless, due to remaining uncertainties about the depth, extent and level of saturation of the unconsolidated paleochannel near UG 1, both DPI Water and the Department have recommended the addition of a new condition (see condition 3.7A of schedule 4 of the Stage 2 approval) prohibiting MCO from carrying out any mining under any saturated segment of any paleochannel. In order to comply with this condition, MCO will need to carry out further work on the paleochannel in consultation with DPI, and submit this work to the Department for review with the detailed Extraction Plans for any underground mining operations.

Further, DRE has asked the Department to update the rehabilitation objectives for Stage 1 and 2 to include a new water quality objective. The Department supports this, and has incorporated this suggestion into the proposed notice of modifications.

## 5.5 Biodiversity

The Stage 2 project was approved to:

- clear around 1,534 hectares of land, comprised of 902 hectares of woodland (including 123 hectares of endangered ecological communities - EECs) and 632 hectares of grassland; and
- remove and disturb the habitat of several threatened flora and fauna species.

Under the existing conditions of approval, MCO is required to offset these biodiversity impacts by:

- conserving and enhancing the conservation value of 4,823 hectares of land, including the protection of at least 1,154 hectares of ECC; and
- restoring at least 1,502 hectares of open woodland (including several EECs) on the rehabilitated mine site.

With the implementation these offsets, the project is expected to make a positive contribution to regional biodiversity values in the medium to long term.

The biodiversity impacts of the proposed modifications would be restricted to:

- indirect subsidence-related impacts of the revised layout of UG1 (607 hectares) on the vegetation communities and flora and fauna habitat above these operations; and
- the direct clearing required (8.4 hectares) for the new Remote Services Facilities and new air shaft and associated fans.

Eco Logical updated the previous biodiversity assessments of the project to consider predict the potential impacts of the proposed modification, and carried out additional surveys of the UG1 extension area in July 2014 (see **Appendix G**).

Community submissions and special interest groups expressed concern that the assessment of biodiversity impacts was inadequate as it relied heavily on survey work done in 2008, the coverage and scope of the additional survey work was limited.

Both OEH and the Department consider Eco Logical's updated assessment to be fit for purpose as:

- it builds on the extensive biodiversity work that has been carried out at the mine complex over the last decade, including the detailed surveys for Stages 1 & 2 of the project and the recent extension of OC1; and
- and it appropriately targets the specific impacts of the proposed modifications, which are considered to be relatively minor.

As summarised in Table 5, the subsidence-related impacts of the revised layout of UG1 are expected to remain negligible: there is unlikely to be any impact on the vegetation cover or structure of the EECs above the longwall operations, even though some individual plants may be affected by surface cracking or rockfalls; and there are unlikely to be any significant impacts on the threatened flora and fauna species or their habitat, including the koala habitat above these longwall panels.

While the direct clearing impacts associated with constructing the Remote Services Facilities and new air shaft would include the clearing of 0.25 hectares of the White Box – Yellow Box grassy woodland on basalt slopes in the Upper Hunter Valley, Brigalow Belt South, both OEH and the Department consider this impact to be negligible – both locally and regionally. The existing offsets contain over 800 hectares of this EEC, even though the Stage 2 project would only clear around 10 hectares of the EEC.

Further, it should be noted that since the approval of the Stage 2 project, MCO has reduced the total clearing of the project by 13.4 hectares by replacing the haul road between OC 4 and the Stage 1 surface infrastructure with a shorter haul road to OC1. This was done without any adjustments to the approved offset strategy.

Given the project as modified would still clear less vegetation than was originally approved, both OEH and the Department have concluded that there is no need to make any changes to the approved offset strategy to accommodate the impacts of the proposed modification.

### *Consideration of the Central Hunter Valley eucalypt forest and woodland community*

Special interest groups argued the updated assessment should have carried out a detailed assessment of the impact of the proposal on the Central Hunter Valley eucalypt forest and woodland community, which was listed as a CEEC under the EPBC Act in May 2015.

Legally, this is incorrect. The Stage 2 project was approved under the EPBC Act before the recent listing of this CEEC, and is protected under Section 158A of the EPBC Act which provides that approvals for projects are not affected by new listings under the Act.

Nevertheless, the proposed modifications must be assessed under the relevant State legislation, and the Commonwealth listing incorporates the NSW listed EEC Central Hunter Grey Box – Ironbark Woodland in the NSW North Coast and Sydney Basin Bioregions.

The updated assessment by Eco Logical identified 5.5 hectares of this EEC above the revised layout of UG1, and concluded that there would be negligible impacts on the EEC (see summary of conclusions in Table 5).

### *Conclusion*

Both OEH and the Department are satisfied that the proposed modifications would have a negligible impact on biodiversity, as they would only result in the direct clearing of 8.4 hectares of vegetation – most of which is derived native grassland (8.15 hectares) – and only 0.25 hectares of EEC.

Consequently, both agencies have concluded that there should be no changes to the existing conditions.

## **5.6 Economic and social impact**

MCO claims the proposed modifications would increase the economic and social benefits of the mine complex by:

- allowing the extraction of another 3.7 million tonnes of coal from UG 1;
- improving the operational efficiency of all the underground mining operations at the mine complex, principally by reducing the number of longwall change overs at UG1 from 9 to 5 and rationalising the access and coal handling arrangements of these operations; and
- increasing the operational workforce from 440 to 667 to enable underground extraction rates to be doubled.

### *Impact of increased workforce*

While Council did not object to the proposed modification, it raised concerns about the cumulative impacts of mining in the region, which is driving increased demand for housing, infrastructure and services.

These concerns have been fuelled by the extensive growth of the industry in recent years, and the current proposals for further growth (such the Bylong Coal Project, which is currently under assessment).

While these projects will inevitably drive growth in the region if they proceed, the Department notes that any cumulative impacts would be alleviated to some extent by the recent cancellation of the Cobbora Coal Project.

In its submission, Council noted that there is sufficient land zoned in the region to accommodate the predicted growth, however it indicated there could be delays in delivery of new housing if the market is slow to respond and this could result in short term housing affordability problems.

The Department will continue to work closely with Council and other key State agencies to ensure the delivery of infrastructure and services matches any growth in the region.

The current approvals require MCO to pay Council \$515 a year for every full time employee at the mine in excess of 320. This funding is intended to help Council with the delivery of local services to support growth in the region. Any increase in the workforce resulting from the proposed modifications would result in an increase in these contributions to Council.

Consequently, there is no need to modify the existing conditions of approval for either project.

#### *Validity of workforce numbers*

Community submissions were critical of MCO's claims that the proposed modifications would result in new jobs, saying these claims often fail to translate into actual jobs; and when they do, these jobs often come at the expense of other jobs in the region.

The Department notes it is common for workforce numbers to fluctuate at mines, and that these fluctuations are often controlled by market conditions.

However, if MCO does proceed with doubling extraction rates at the underground mining operations at the mine complex, then it is hard to see how this would not translate into significant increases in the size of the workforce. The precise size of this workforce is difficult to predict in advance, and will depend on a range of factors. Nevertheless, the Department is satisfied that any increases in the size of the workforce associated with the proposed modifications are unlikely to generate any significant environmental or social impacts in the region.

Finally, the merits of the proposed modifications do not rest on MCO's increased workforce claims: they rest on the increased coal recovery of UG1 and the improved operational efficiencies of mining at the mine complex, which can be achieved without causing any significant impacts.

#### *Impact of increased coal supply*

The community was concerned that the increase in coal supply would lead to a drop in prices and result in loss of jobs in the Hunter region. The Department considers this scenario to be unlikely: the proposed changes are modest, and are unlikely to have any impact on broader regional or global coal markets.

### **5.7 Other issues**

The Department has summarised its assessment of a range of other matters in **Table 6** below. Most of these matters are considered to be minor, and can be regulated under the existing conditions of approval.

**Table 6:** *Assessment of other issues*

<b>Issue</b>	<b>Summary of Assessment</b>	<b>Recommendation</b>
<i>Operational Noise</i>	<ul style="list-style-type: none"> <li>The noise assessment (see Appendix C of the EA) was updated in accordance with the requirements of the <i>Industrial Noise Policy</i> (INP)</li> <li>There would be a slight increase in noise levels, principally due to the increase handling of coal at the surface facilities</li> <li>Notwithstanding this increase, noise from the mine complex would continue to comply with the existing noise limits</li> <li>Low frequency noise is not predicted to be a significant factor at receivers, and this has been confirmed by the results of recent independent reviews of the noise impacts of the mine complex (see Appendix K)</li> <li>Although the noise assessment treats the stone cottages on property 11 as commercial receivers, the Department will treat these cottages as residences under the conditions of the existing approvals and require MCO to meet the relevant noise limits under these approvals (35dBA)</li> </ul>	<ul style="list-style-type: none"> <li>Comply with the existing conditions</li> <li>Clarify that the noise limit for the Goulburn River National Park and Munghorn Gap Nature Reserve only applies at night, consistent with the requirements in the INP</li> <li>Remove condition 1A of Schedule 3, as the transitional arrangements for the provision of mitigation measures to these properties has now been implemented</li> </ul>

<b>Issue</b>	<b>Summary of Assessment</b>	<b>Recommendation</b>
<i>Road Noise</i>	<ul style="list-style-type: none"> <li>• Minor increase in noise levels on Ulan Road due to proposed increase in workforce traffic</li> <li>• Increase would remain well below the relevant criteria in the <i>Road Noise Policy</i> (&lt; 2dBA)</li> <li>• Receivers close to Ulan Road are already entitled to noise mitigation under the Ulan Road Strategy, which is being implemented by the three mines in the region</li> </ul>	<ul style="list-style-type: none"> <li>• Comply with the existing conditions</li> </ul>
<i>Rail Noise</i>	<ul style="list-style-type: none"> <li>• Negligible increase in cumulative noise levels along the Gulgong-Sandy Hollow Railway due to the additional trains</li> <li>• Increases are expected to be indiscernible along railway line, given the volumes of existing and approved traffic</li> <li>• Increases would be more than offset over time by the reduction in approved rail use due to the cancellation of the Cobborra Coal Project</li> <li>• Proposal would comply with the relevant criteria in the <i>Rail Infrastructure Noise Guideline</i> (&lt; 0.5dBA)</li> <li>• Noise impacts on the railway line are regulated by the EPA under ARTC's environment protection licence (3142), and EPA has the power to require to require ARTC to implement further mitigation measures along the railway</li> </ul>	<ul style="list-style-type: none"> <li>• Comply with the existing conditions</li> </ul>
<i>Operational Dust</i>	<ul style="list-style-type: none"> <li>• The air quality assessment (see Appendix D of the EA) was updated in accordance with the requirements of the <i>Approved Methods for the Modelling and Assessment of Air Pollutants in NSW</i></li> <li>• Despite the proposed increase in production rates, annual emissions are predicted to be slightly lower than originally predicted, principally due to the use of the conveyor to move coal between UG1 and the CHPP</li> <li>• Cumulative dust levels are expected to remain below the relevant annual average criteria at all privately-owned residences surrounding the mine</li> <li>• On rare occasions, there may be exceedances of the relevant cumulative short-term PM<sub>10</sub> criteria, but under the existing conditions of approval MCO is required to operate a real-time noise management system at the mine complex and take corrective action along with the other mines in the region to avoid any such exceedances</li> </ul>	<ul style="list-style-type: none"> <li>• Comply with the existing conditions</li> </ul>
<i>Greenhouse Gas Emissions</i>	<ul style="list-style-type: none"> <li>• There would be a minor increase in GHG emissions from the mine complex over time: 1.1% for Scope 1 emissions and 0.7% for Scope 2 emissions</li> <li>• Under the existing conditions of approval, MCO is required to minimise these emissions</li> <li>• The mine complex would continue to make a negligible contribution to global warming/climate change</li> </ul>	<ul style="list-style-type: none"> <li>• Comply with existing conditions</li> </ul>
<i>Rail Dust</i>	<ul style="list-style-type: none"> <li>• Consistent with rail noise, increases in rail dust due the extra trains is expected to be very low and indiscernible along the railway line</li> <li>• The EPA continues to investigate whether further measures are required to reduce the cumulative dust impacts of coal trains on the Hunter rail network, and has the power to require the implementation of additional mitigation measures if necessary</li> </ul>	<ul style="list-style-type: none"> <li>• Comply with existing conditions</li> </ul>
<i>Aboriginal Heritage</i>	<ul style="list-style-type: none"> <li>• Two additional sites would need to be salvaged prior to the construction of the remote Service Facilities: S2MC001 and MUG1-Mod 1 (see Figure 7)</li> <li>• Both sites are isolated artefacts with low archaeological significance</li> <li>• While Site CE-15-IF is located within the surveyed area for the coal conveyor corridor, the final alignment of the conveyor is likely to avoid this site.</li> <li>• All sites would managed under the existing Aboriginal Heritage Management Plan, which would be updated following any approval of the modification applications</li> </ul>	<ul style="list-style-type: none"> <li>• Comply with existing conditions</li> </ul>



<b>Issue</b>	<b>Summary of Assessment</b>	<b>Recommendation</b>
<i>Visual</i>	<ul style="list-style-type: none"> <li>• Most of the new surface infrastructure would be built in the disturbed part of the mine, and blend in with the existing infrastructure</li> <li>• The new vent shat would not be visible from the public domain, and the visual impacts of the new Remote Services Facilities would be low, and consistent with other mine infrastructure in the area</li> <li>• Under existing conditions, MCO is required to minimise the visual impacts of the project</li> </ul>	<ul style="list-style-type: none"> <li>• Comply with the existing conditions</li> </ul>
<i>Traffic</i>	<ul style="list-style-type: none"> <li>• Increases in extraction rates and the size of the workforce would result in minor traffic increases, principally between Mudgee and the mine complex</li> <li>• This traffic would use the major roads in the region, which are being upgraded and maintained under the existing conditions of approval of the three mines in the region</li> <li>• The Department, RMS and Department of Transport are satisfied that the modification would not significantly impact the road network operation</li> <li>• The Department does not support MCO's proposed changes to allow greater flexibility for shift change overs at the mine complex during school bus hours</li> </ul>	<ul style="list-style-type: none"> <li>• Comply with existing conditions</li> </ul>
<i>Highwall Collapse OC1</i>	<ul style="list-style-type: none"> <li>• In June 2015, the highwall of OC1 collapsed adjacent to the Ulan-Wollar Road</li> <li>• The road was subsequently closed and relocated at MCO's cost to ensure public safety, causing extensive disruption in the region</li> <li>• While this incident has nothing to do with the proposed modifications, and is being managed under the existing conditions of the Stage 1 approval and the provisions of the mining legislation, several submitters claimed it showed MCO was incapable of operating the mining properly</li> <li>• The Department notes that the standing of the proponent (in this case MCO) is not relevant to the merit assessment of applications under the EP&amp;A Act: consent authorities are required to assess the merits of the particular application before them, and not the standing of the proponent</li> <li>• In this case, the Department has done this and concluded that the public safety risk of the proposed modifications is quite low and acceptable</li> </ul>	<ul style="list-style-type: none"> <li>• Continue to manage under the existing conditions of approval and mining legislation</li> </ul>

## 6 RECOMMENDED CONDITIONS

The Department has prepared Notices of Modification for the Stage 1 & 2 project approvals (see **Appendix C, D, E and F**).

The proposed changes to the conditions include:

- updating the various figures in the appendices of both approvals to reflect the proposed changes to the layout of both projects;
- revising the extraction limits of both projects;
- allowing more loaded trains to leave the mine complex each day;
- prohibiting mining under any saturated are of the unconsolidated paleochannel;
- correcting a number of drafting errors in the existing approvals; and
- updating a some conditions to reflect changes in the Department's standard conditions and name changes to certain agencies.

MCO does not object to the proposed changes.

## 7 CONCLUSION

The Department has assessed the merits of the proposed modifications in accordance with the relevant requirements of the EP&A Act, including the objects of the Act and the principles of ecologically sustainable development.

These modifications involve:

- revising the layout of the UG1 to recover an additional 3.7 million tonnes of coal;
- increasing underground extraction rates from 4 to 8 million tonnes of coal a year, and total extraction rates at the mine complex from 17 to 21 million tonnes of coal a year;
- improving the operational efficiencies of the underground mining operations at the mine complex by rationalising the mine access and coal handling arrangements for these operations; and
- upgrading the mine complex's surface infrastructure to facilitate these increases and improvements.

Despite objections from several submitters that these changes would result in unacceptable cumulative impacts across the broader region, the Department's detailed assessment has found that the proposed modifications can be carried out with limited impact, and that any increases in impact can be suitably regulated with minor changes to the existing conditions of approval.

Consequently, the Department supports the proposed modifications, and believes they should be approved.

## 8 RECOMMENDATION

It is **RECOMMENDED** that the Planning Assessment Commission:

- consider the findings and recommendations of this report;
- determine that the proposed modification (05\_0117 MOD 12) falls within the scope of Section 75W of the EP&A Act;
- determine that the proposed modification (08\_0135 MOD 2) falls within the scope of Section 75W of the EP&A Act;
- approve the modification applications under Section 75W of the EP&A Act.



11/12/16

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