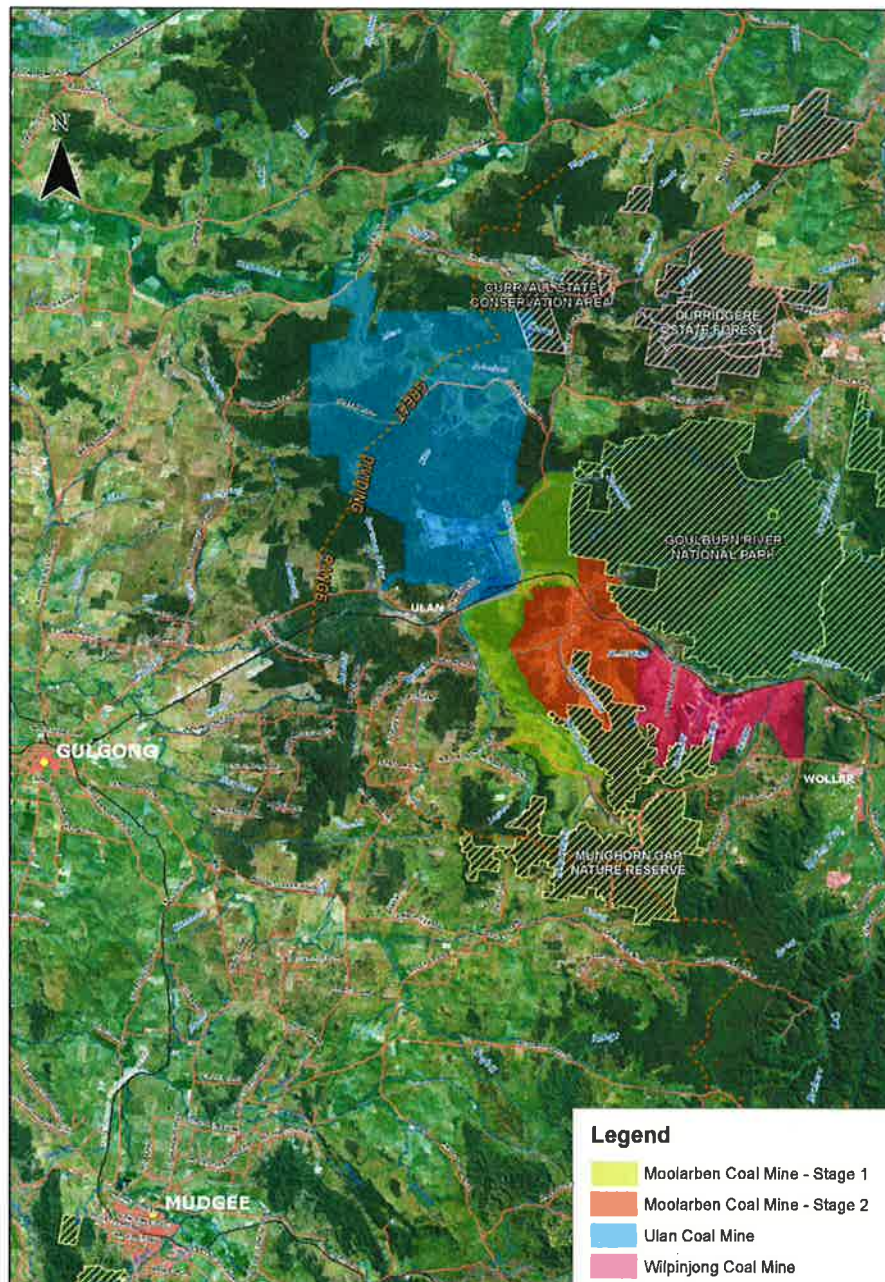


## ASSESSMENT REPORT

### ULAN COAL MINE Section 75W Modification MP 08\_0184 MOD 2

#### 1 BACKGROUND

The Ulan Coal Mine (Ulan) is located 40 kilometres (km) north of Mudgee, and forms part of a large mining complex in the Western Coalfield of New South Wales, along with Moolarben and Wilpinjong Coal Mines (see **Figure 1**). Ulan is owned and operated by Ulan Coal Mines Limited (UCML), which is a joint venture between Xstrata Coal and Mitsubishi Development.



**Figure 1: Regional Context**



There has been a long history of both open cut and underground mining at Ulan, dating back to the 1920s.

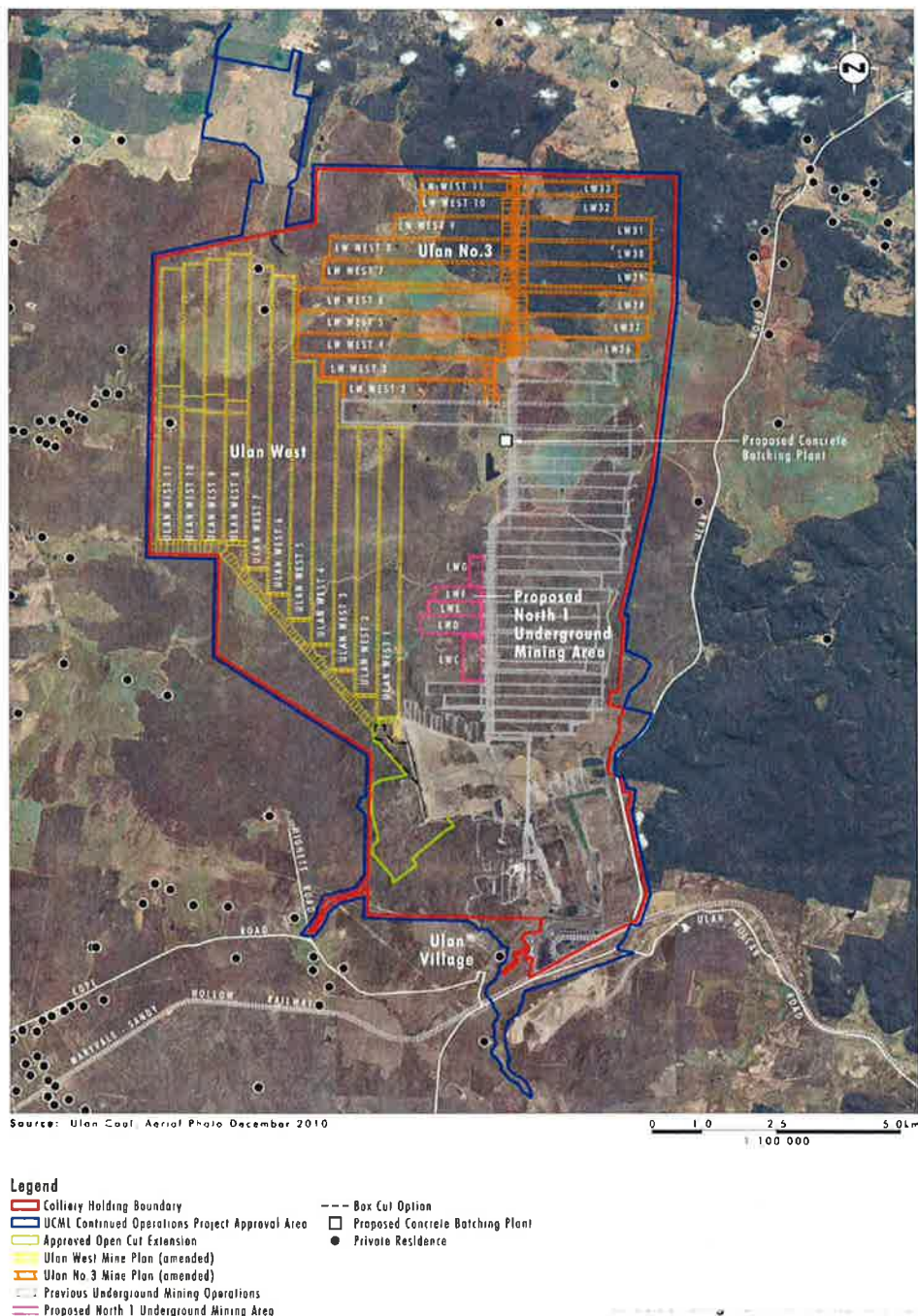
On 15 November 2010, the former Minister for Planning approved a major expansion of the mine. This expansion allowed UCML to:

- extract a total coal resource of 240 million tonnes (Mt) over a period of 21 years at a rate of up to 24 Mt per annum (Mtpa) from two longwall mining operations and a small open cut; and
- upgrade the surface facilities of the mine.

The merits of the Minister's decision were subsequently appealed in the Land and Environment Court (Court). During the case, the Director-General approved an application to modify the project approval to allow:

- longwall extraction the North 1 mine area;
- modification of the approved Ulan No. 3 and Ulan West mine plans; and
- construction and operation of a concrete batching plant.

The Court delivered final orders on the modified project on 10 April 2012. The orders granted approval of the project, and issued a revised project approval. The approved project is shown in **Figure 2**.



**Figure 2: Approved Ulan Continued Operations Project - General Arrangement**

## 2 PROPOSED MODIFICATION

On 8 May 2012, UCML requested a further modification to the project approval for Ulan. The proposed modification is described in detail in the Environmental Assessment (EA) submitted in support of the application (see **Appendix A**). The modification has three components:

- **Remove Restrictions on “Construction Blasts”**

The project approval restricts UCML to undertaking one blast a day on-site between 9am and 5pm Monday to Saturday inclusive, with no blasts allowed on Sundays, public holidays, or at any other time without the written approval of the Director General.

UCML is now seeking approval to undertake an unlimited number of “construction blasts” on site between 7am and 7pm daily. Construction blasts are defined as those associated with small scale construction projects (e.g. the construction of ventilation shafts) which are predicted prior to the blasting to generate vibration levels that are less than 1 mm/sec at all private buildings and heritage sites and overpressure levels that are less than 95dBL at all private buildings.

These construction blasts would be in addition to the blasts which are restricted to one per day, which are typically considered operational blasts associated with overburden and coal removal activities within the open cut pit.

- **Modify the Ulan West Longwall Panels 1-5 Mine Plan**

UCML is seeking approval to modify the panel geometry of the first 5 longwall panels (i.e. LW 1-5) within the Ulan West underground mining domain (see **Figure 3**). Specifically, the modification involves:

- increasing the number of longwall panels within the approved Ulan West Longwall 1-3 from three to four by reducing the panel width from the approved 400 metres to 250 metres (LW1) and 300 -305 metres (LW 2-4); and
- reducing the length of longwalls 1-5 by moving the northern end of the panels to the south.

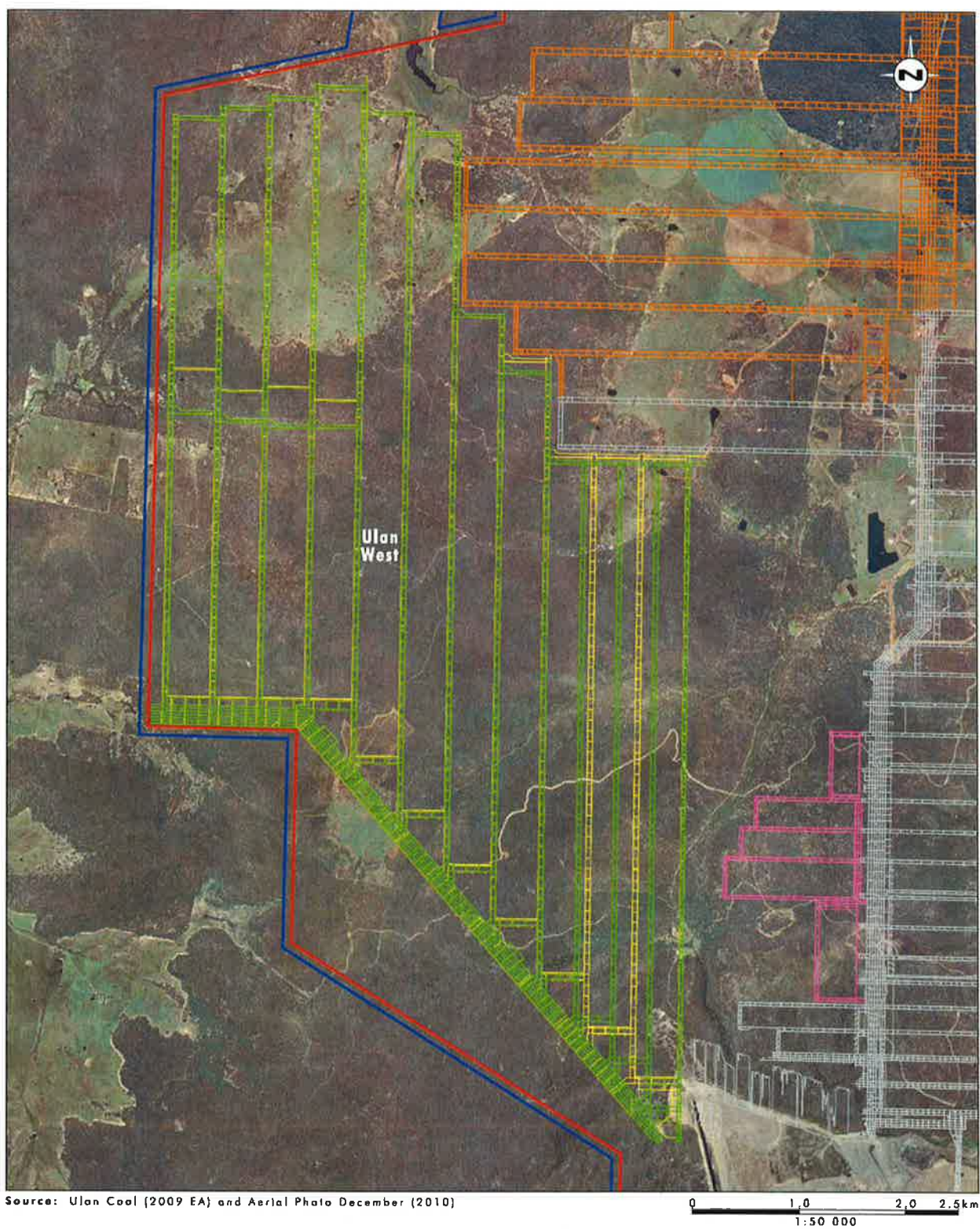
This modified mine plan would reduce geotechnical issues associated with extracting longwalls in a ‘virgin’ area where there has been no stress relief either side of the first longwall. The remaining longwalls are proposed to be adjusted to fit within the approved Ulan West mining area. The length of the original Longwalls 1-4 has also been reduced to increase the size of the barrier between the old workings of Ulan No. 3 underground mine to the north.

- **Minor Amendments to the Approval Conditions**

Ulan is seeking the following amendment to the existing project approval:

- Appendix 7 - remove the European and natural heritage sites that have been assessed as having no historical significance (19 sites in total) from the figure at Appendix 7. The amendment would result in the existing blasting performance measures being applied to only the heritage sites which are susceptible to blast impacts and have a local or greater significance.





#### Legend

- ▬ Colliery Holding Boundary
- ▬ Project Boundary
- ▬ Approved Ulan West Mine Plan
- ▬ Revised Ulan West Mine Plan
- ▬ Ulan No.3 Underground Mine Plan
- ▬ Previous Underground Mining Operations
- ▬ North 1 First Workings

**Figure 3: Proposed Modification to the Ulan West LW 1-5**

### **3 STATUTORY CONTEXT**

#### **3.1 Approval Authority**

Part 3A of the EP&A Act, as in force immediately before its repeal on 1 October 2011 and as modified by Schedule 6A to the Act, continues to apply to transitional Part 3A projects. Director-General's environmental assessment requirements were issued in respect of the Ulan Coal Mine project (i.e. MP 08\_0184) prior to 1 October 2011, and the project is therefore a transitional Part 3A project.

Consequently, this report has been prepared in accordance with the requirements of Part 3A and associated regulations, and the Minister may approve or disapprove of the carrying out of the modified project under Section 75W of the Act.

However, under the Minister's delegation of 1 October 2011, the Director, Mining and Industry may determine the modification application on behalf of the Minister as:

- there were less than 10 submissions in the nature of objections;
- UCML has made no reportable political donations; and
- Mid-Western Regional Council has not objected to the proposed modification.

#### **3.2 Modification**

The Department is satisfied that the proposed modification is indeed a modification to the original approval rather than a new project in its own right, as:

- no additional ground disturbance would be required;
- no adverse vibration impacts are predicted to occur on built or archaeological features;
- the predicted over pressure levels would be significantly below guideline levels;
- the proposed activity is located on land listed in the scheduled lands (referred to in Appendix 1 of the project approval);
- the blasting activities would be consistent with that described in the EA (Umwelt 2009); and
- it would involve relatively minor changes to the approved Ulan West underground mining operations and associated surface infrastructure.

Consequently, the Department is satisfied that the modification may be determined under Section 75W.

#### **3.3 Consultation**

After receiving UCML's request and the associated EA for the proposed modification, the Department:

- made the EA publicly available on the Department's website; and
- referred the EA to the Office of Environment and Heritage for comment.

The Office of Environment & Heritage (OEH) indicated its support for the proposed modification and requested that the modified approval clearly defines what constitutes a "construction blast".

### **4 ASSESSMENT**

The Department has assessed the application and EA documentation. The following provides a summary of the key issues.

#### **4.1 Blasting**

The proposed "construction blasting" activities have the potential to cause ground vibration and overpressure (i.e. blast noise) impacts on private buildings and/or heritage sites.

UCML engaged Enviro Strata Consulting Pty Ltd (ESC) to model the potential vibration and overpressure levels and impacts associated with a typical "construction blast" (i.e. during the construction of the Ulan West ventilation shaft). ESC incorporated actual monitoring results from previous construction blasts undertaken at Ulan into the predictive model. ESC also compared the modelling results to the blast monitoring results from previous operational blasts (i.e. blasts undertaken during open cut pit overburden and coal removal activities). The modelling results are presented in Attachment 1 of the EA.

The Department is satisfied that the model is based on actual blast monitoring results and that its use to predict future construction blast vibration and overpressure impacts is acceptable.

ESC indicates that shaft sinking activities (including drilling, blasting and extraction of muckpile) required for the construction of ventilation shafts are extremely small operations in comparison to standard open cut blasting operations. The blast area for a typical vent shaft blast is limited to 16 m<sup>2</sup>, with a charge mass of explosives of around 6.9 kg. By comparison, the blast area for an open cut mine overburden blast is 27,500 m<sup>2</sup>, with a charge mass of explosives in the order of 2,950 kg.

Nonetheless, ESC assessed two different construction blast scenarios at the Ulan West ventilation shaft, the first involving a single hole initiation (representing 2.8 kg of explosive per hole) and the second involving a worst case scenario of all 25 holes being fired simultaneously (representing 70 kg of explosives). **Table 1** provides a summary of the results of this assessment, compared to the existing operational blast criteria within the project approval and the construction blast design limits proposed by UCML.

**Table 1: Predicted Vibration and Overpressure Levels**

Monitoring Site	Distance from Ulan West Ventilation Shaft (m)	Vibration (mm/s)				Overpressure (dBL)			
		2.8 kg MIC	70 kg MIC	Existing Operation Blast Criteria*	Proposed Construction Design Blast Limit	2.8 kg MIC	70 kg MIC	Existing Operation Blast Criteria*	Proposed Construction Design Blast Limit
Ulan school – BM 1	5265	0.001	0.02	5	≤1	78	91	115	≤95
Receiver 6 – BM 3	4095	0.002	0.03	5	≤1	81	94	115	≤95
Cultural heritage site Old Ulan Village – BM 9	1657	0.008	0.13	10	≤1	92	106	133	NA
Cultural heritage site 74 – BM 5	1196	<0.1	<0.3	10	≤1	<100	<110	133	NA
Cultural heritage site 431 – BM 6	1068	<0.1	<0.1	10	≤1	<105	<120	133	NA
Cultural heritage site 445 – BM 7	825	<0.1	<0.4	10	≤1	<100	<115	133	NA

\* Criteria from Schedule 3 Condition 10 of the Project Approval (08\_0184)

The results in **Table 1** indicate that even the worst case construction blast scenario (i.e. 70 kg of explosives) would generate vibration and overpressure levels which are well below both the applicable project approval criteria for operational blasts and the construction blast design limit proposed by UCML. ESC indicates that the predicted vibration and overpressure levels are also well below human perception levels and generally below the trigger levels of monitoring instruments.

ESC therefore concluded that the ground vibration and overpressure impacts as a result of blasting during construction activities would be minimal and should be considered inconsequential.

The Department agrees with this conclusion, and has therefore recommended minor modifications to the project approval to allow an unlimited number of construction blasts to be undertaken between 7am and 7pm daily.

Notwithstanding, the Department notes that under the existing conditions of approval UCML would be required to update the existing Blast Management Plan to include procedures to undertake design and predictive modelling prior to construction blasts to ensure that the overpressure and vibration levels will be less than the construction blast design limits.

## 4.2 Subsidence

The proposed modification to the Ulan West Longwall Panels 1-5 mine plan has the potential to cause changes to the approved subsidence impacts, which could affect a range of built and natural features.

UCML engaged Strata Control Technology (SCT) to assess the potential subsidence impacts associated with the revised Ulan West mine plan (refer to Appendix 1 of the EA). UCML also engaged Mackie Environmental Research Pty Ltd (Mackie) to assess the groundwater impacts and Umwelt Environmental consultants (Umwelt) to assess surface water impacts (refer to Appendices 2 and 3 of the EA, respectively) associated with the predicted changes in subsidence. Each of these consultants prepared the relevant specialist reports for the *Ulan Continued Operations Environmental Assessment* (Umwelt, 2009), and are therefore familiar with the Ulan site.

SCT indicates that the proposed mine plan amendments will result in minor localised changes to subsidence predictions made as part of the Ulan continued Operations EA. However, these changes are not predicted to significantly change the subsidence impacts originally assessed and approved.

A summary of the predicted impacts of the proposed mine plant modifications on each of the subsidence performance measures in Schedule 3 condition 24 of the project approval is provided in **Table 2**.

**Table 2: Subsidence Impacts of Modified Mine Plan Against Subsidence Performance Measures**

Issue	Performance Measure	Impacts of Modified Ulan West Mine Plan	Outcome
<b>Water</b>			
Ulan, Mona and Cockabutta Creek	No greater environmental consequence than in EA	Umwelt indicates that four tributaries of Ulan Creek would be subject to altered subsidence impacts associated with the revised mine plan, including localised changes in gradient, water velocity and tractive stress. However, Umwelt indicates that these minor changes are unlikely to exacerbate any instability within Ulan Creek, beyond the existing or approved impacts. Umwelt concludes that as a holistic system, the impact of the modification would be minimal and no adverse impacts on surface water resources are predicted to occur.	No additional environmental consequence
<b>Biodiversity</b>			
Threatened species, populations, habitat or ecological communities	Negligible impacts	The Bobadeen Vegetation Offset Area is located below the northern end of Longwalls 1 – 3, which are proposed to be relocated slightly to the south. Umwelt indicates that this would not cause any impact on the extent or integrity of the Bobadeen Vegetation Offset Area, or cause any change to the level or extent of biodiversity impacts generally.	No change
<b>Land</b>			
Cliffs in the Brokenback Conservation Area	Nil environmental consequences	The revised Ulan West mine plan is not located in the vicinity of the Brokenback Conservation Area. The proposed modifications to the Ulan West mine plan would therefore not cause any impacts on this conservation area.	No change
Other cliffs	Minor environmental consequences	The revised mine plan would result in approximately 200 metres of cliffline no longer being located within the Ulan West mining footprint, due to the reduced length of the longwalls. Umwelt indicate that this would result in a minor positive outcome, as this short length of cliffline would no longer be impacted by subsidence.	Slightly less impact
<b>Heritage</b>			
Aboriginal sites	Nil impact in the Brokenback Conservation Area, Grinding Groove Conservation Areas; and on Mona Creek/Cockabutta Creek Rock Shelter Sites	The revised Ulan West mine plan is not located in the vicinity of the Brokenback Conservation Area, the Grinding Groove Conservation Areas or the Mona Creek/Cockabutta Creek Rock Shelter Sites. Umwelt indicates that the proposed modifications to the Ulan West mine plan would therefore not cause any additional impacts on Aboriginal sites within these conservation areas, beyond those already approved.	No additional impacts
Talbragar Fish Fossil Reserve	Negligible impact	The revised Ulan West mine plan is not located in the vicinity of the Talbragar Fish Fossil Reserve. The proposed modifications to the Ulan West mine plan would therefore not cause any impacts on this heritage site.	No additional impact
Other Heritage sites	No greater impact than predicted in the EA	<p>The revised mine plan would result in one Aboriginal heritage site (i.e. artefact scatter site 444) being within the subsidence affectation zone and two sites (i.e. rockshelters sites 464 and 465 with potential archaeological deposit) being removed from within the subsidence affectation zone. Umwelt indicates that the artefact scatter site 444 is unlikely to be adversely impacted by subsidence movements, and that the proposed modified plan would therefore not result in adverse impacts on Aboriginal heritage sites beyond those predicted in the EA.</p> <p>Three European and/or natural heritage sites are located within the revised subsidence affectation zone (i.e. RV 3 – homestead complex, CI198/G – rockshelter with associated rough stone built low wall and PK422 – remnant chimney bases). Umwelt indicates that the revised mine plan would result in impacts on these sites that are either less than or identical to those predicted in the EA.</p>	No greater impact
<b>Built Features</b>			
All built features	Safe, serviceable and repairable unless the owner agrees otherwise in writing	Umwelt indicates that there are no utilities or other manmade structures located within the revised mine plan footprint that would be impacted.	No additional impact
<b>Public safety</b>			
Public Safety	No additional risk due to mining	Umwelt indicates that the revised mine plan would not result in any additional public safety impacts to those previously approved.	No additional impact



In addition to the above, MER predicts that the minor reduction in the underground mine footprint associated with the revised Ulan West mine plan would result in slight changes to the groundwater influx, but the groundwater impact (i.e. extent of depressurisation) of the overall mining operations would not change.

The Department is satisfied that the subsidence impacts associated with the proposed modifications to the Ulan West mine plan would meet all existing subsidence performance measures and would not cause any additional impacts beyond those already approved.

#### 4.3 Other Proposed Amendments to the Project Approval

UCML has requested a minor amendment to the existing project approval to remove unnecessary blasting restrictions on heritage sites. The Department has also recommended minor amendments in relation to blasting restrictions and correcting an administrative anomaly. The Department's discussion and consideration of these amendments is provided in **Table 3**.

**Table 3: Assessment of Proposed Minor Amendments to the Project Approval**

Schedule / Condition	Requested / Required Modification	Assessment and Recommendation
Schedule 3, condition 10 (Table 7)	Remove the airblast overpressure criteria for heritage sites.	<ul style="list-style-type: none"> <li>The Department considers the ultimate objective is to protect heritage sites, regardless of overpressure criteria. The Department therefore agrees that the overpressure (i.e. blasting noise) criteria could be removed. Notwithstanding, the Department has recommended a replacement condition that clearly states the proponent's obligation to protect the nominated heritage sites.</li> </ul>
Schedule 3, Condition 41 (Table 15)	Move the reference to 3 kilometres of cliffline from the 'Bobadeen Vegetation Offset Area' column to the 'Brokenback Conservation Area' column	<ul style="list-style-type: none"> <li>The inclusion on the 3 kilometres of cliffline in the Bobadeen Vegetation Offset Area was a typographical error made during the recent Court case.</li> <li>The Department recommends that the reference to the 3 kilometres of cliffline be moved to the Brokenback Conservation Area column, and deleted from the Bobadeen Vegetation Offset area column.</li> </ul>
Appendix 7	Remove the European and natural heritage sites that have been assessed as having no historical significance (19 sites in total) from the figure at Appendix 7.	<ul style="list-style-type: none"> <li>The existing project approval requires that UCML comply with blast impact criteria at all the heritage sites identified in the figure at Appendix 7 of the Project Approval (refer to Schedule 3, Condition 10). The figure at Appendix 7 includes all of the heritage and natural heritage sites identified within the Ulan Continued Operations project area.</li> <li>UCML indicate that the majority of the sites identified on the figure have been assessed as having no historical significance and no research potential. UCML indicate that these sites therefore do not need to be protected from blasting impacts.</li> <li>UCML request the at the current figure be replaced with a figure which shows only those sites which have been assessed as having some level heritage significance (i.e. to include only heritage sites PK243, Bobadeen Homestead C107, PK3, PK5, PK422, Old Ulan Village and the Talbragar Fish Fossil Reserve).</li> <li>The Department agrees that it is unnecessary to impose blasting criteria on sites which have no heritage significance and has recommended that the existing figure at Appendix 7 be replaced with a figure to identify only the sites which have been assessed as having heritage significance and/or research potential.</li> </ul>

## 5 RECOMMENDED CONDITIONS

The Department has drafted recommended conditions for the modification. This has included removing restrictions on construction blasts, new figures in the appendices depicting the revised Ulan West mine plan and minor administrative amendments.

UCML has reviewed and accepted the Department's proposed conditions.

## 6 CONCLUSION

The Department has assessed the modification application and associated EA in accordance with the relevant requirements of the EP&A Act, including the objects of the Act and the principles of ecologically sustainable development.



The Department is satisfied that blasting activities associated with the construction of ancillary infrastructure (primarily ventilation shafts) could be undertaken without impacting on private buildings and/or heritage sites and that removing restrictions on construction blasts would allow UCML increased operational flexibility in the future.

Similarly, the Department is satisfied that the proposed minor amendments to Ulan West mine plan could be undertaken with minimal impact on the environment and would result in reduced geotechnical issues associated with extracting longwalls in a new mining area.

The Department is also satisfied that the minor amendments to the project approval are necessary.

Consequently, the Department is satisfied that the proposed modification is in the public interest and should be approved, subject to conditions.

## **7 RECOMMENDATION**

It is RECOMMENDED that the Director, Mining & Industry, as a delegate to the Minister for Planning and Infrastructure:

- **consider** the findings and recommendations of this report;
- **determine** that the proposed modification is within the scope of section 75W of the EP&A Act;
- **approve** the application to modify the project approval, subject to conditions, under section 75W of the EP&A Act; and
- **sign** the attached notice of modification (**Appendix B**).

*Felicity Greenway*  
29/5/12

Felicity Greenway  
Team Leader  
Mining & Industry

*DKitto* 29/5/12

David Kitto  
Director  
Mining & Industry

**APPENDIX A**  
**ENVIRONMENTAL ASSESSMENT**

*See attached CD ROM.*

**APPENDIX B**  
**NOTICE OF MODIFICATION**