NSW GOVERNMENT

Ulan Coal Mine MOD 4

S75W Modification Assessment

(08_0184 MOD 4)

May 2019

Cover photo

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Glossary

Abbreviation	Definition
AGE	Australasian Groundwater and Environmental Consultants Pty Ltd
BC Act	*Biodiversity Conservation Act 2016*
Council	Mid-Western Regional Council
Department	Department of Planning and Environment
DoI – L&W	Department of Industry – Lands and Water
DRG	Division of Resources and Geoscience within the Department
EA	Environmental Assessment
ELA	Eco Logical Australia
EPA	Environment Protection Authority
EP&A Act	*Environmental Planning and Assessment Act 1979*
EP&A Regulation	*Environmental Planning and Assessment Regulation 2000*
EPBC Act	*Environment Protection and Biodiversity Conservation Act 1999*
EPI	Environmental Planning Instrument
EPL	Environment Protection Licence
ESD	Ecologically Sustainable Development
FBA	*Framework for Biodiversity Assessment*
LEP	Local Environmental Plan
LW	Longwall
Minister	Minister for Planning
NPWS	National Parks and Wildlife Service
OEH	Office of Environment and Heritage
RMS	Roads and Maritime Services
ROM	Run-of-mine
RTS	Response to Submissions
SCA	State Conservation Area
SCT	SCT Operations Pty Ltd
Secretary	Planning Secretary of the Department of Planning and Environment
SEPP	State Environmental Planning Policy
TfNSW	Transport for New South Wales
TSC Act	Threatened Species Conservation Act 1995
UCML	Ulan Coal Mines Limited
UUG	Ulan Underground
UWO	Ulan West Operations
WSP	Water Sharing Plan

Executive Summary

The Ulan Coal Mine is located near the village of Ulan, approximately 38 kilometres (km) north of Mudgee in the Mid-Western Regional Council local government area. The mine forms part of a large coal mining precinct in the region, along with the operating Moolarben and Wilpinjong Mines. The mine is operated by Ulan Coal Mines Limited (UCML) which is jointly owned by Glencore Coal Assets Australia Pty Limited and Mitsubishi Development.

The Ulan Coal Mine straddles the Great Dividing Range with the mine located in the upper reaches of the Goulburn River catchment, which drains east to the Hunter River and the Talbragar River catchment, part of the Murray Darling River system draining to the west.

Apart from the adjoining mining operations, the surrounding land is mainly used for primary industries such as agriculture and forestry along with biodiversity conservation areas, including national parks and mining related biodiversity offset areas, and rural residential dwellings.

UCML owns most of the land above the underground mine, however ancillary mining activities (bore dewatering wells and associated infrastructure corridors) are already approved within the Durridgere State Conservation Area (SCA) and there are several private landholdings located above the mine where subsidence impacts are predicted to occur.

The approval as currently modified allows UCML to extract up to 24 Mt per annum of run-of-mine coal by underground and open cut methods until 2033, upgrade and use supporting surface facilities, including coal processing, coal handling and transportation systems, transport product coal to export markets from the site by rail and progressively rehabilitate the site.

The open cut mining operation has now been completed and the mine is operating solely as an underground mine across 2 mining domains, Ulan West and Ulan No. 3.

Proposed modification

Following further exploration work, UCML is seeking further refinements to the underground mine plan and associated surface infrastructure to recover an additional 6.4 Mt of coal. It is seeking approval for these refinements as a modification to the existing approval under the former section 75W of the EP&A Act.

The proposed modification involves changes to the layout of the longwall (LW) panels in both the Ulan No. 3 and the Ulan West mining domains to recover the additional coal.

This could be achieved without the need to change the approved operating functions of the mine, including the production rate, processing and transportation systems. The longwall extensions would require associated surface infrastructure, predominantly in the form of dewatering and power systems.

The key aspects of the proposed modification are depicted in **Figure E1** and include:

- extending LWs 30-33 and widening LW 33 at Ulan No. 3;
- extending LWs W7 and W8 at Ulan No. 3;
- extending LWs 7 and LW 8 at Ulan West; and
- constructing surface infrastructure corridors including: dewatering boreholes, powerlines, electrical transformers, pipelines and access tracks.

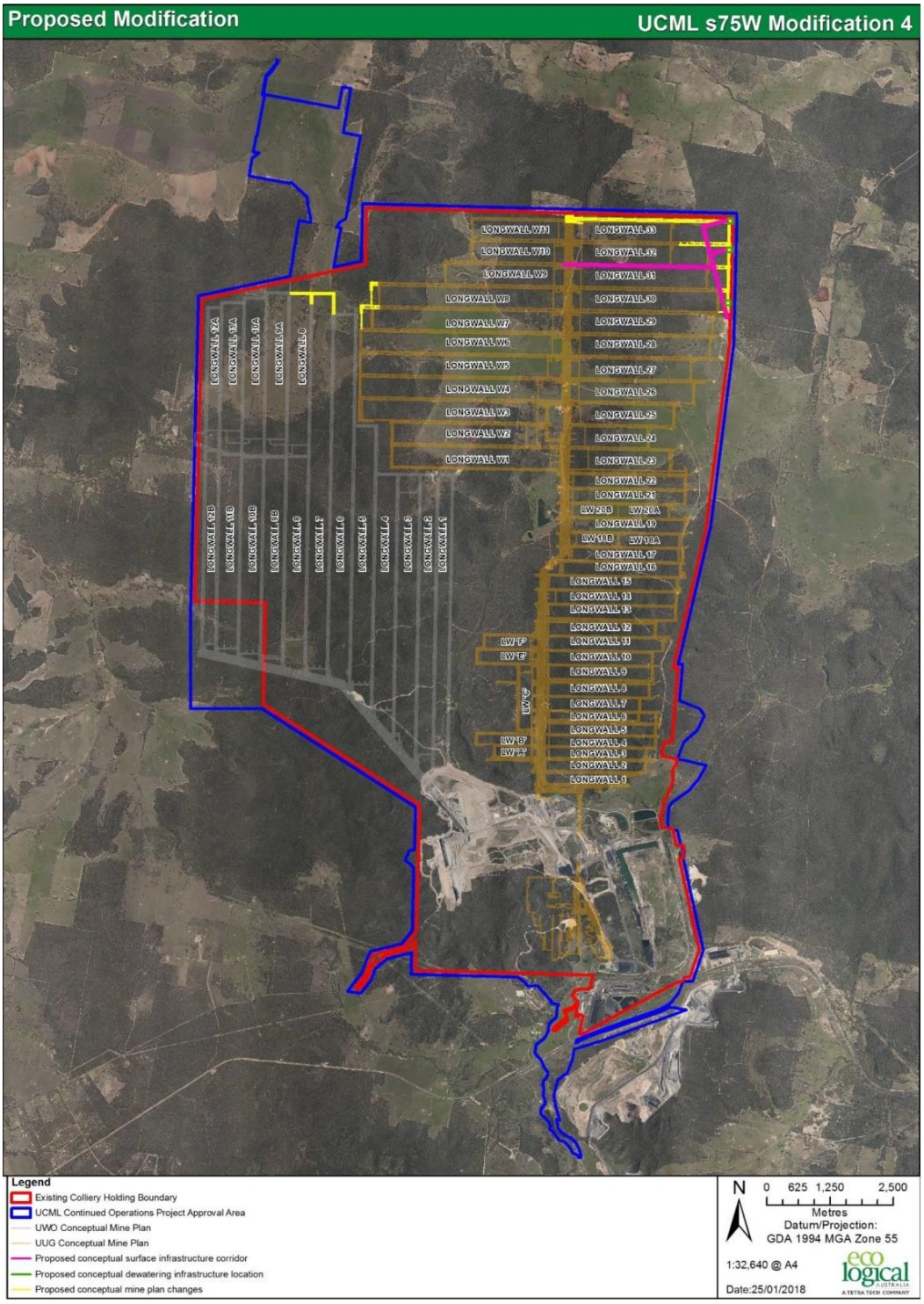

Figure E1 | Proposed modification

To accommodate the construction of the additional dewatering boreholes at the end of the LW panel extensions, new surface infrastructure corridors, including access tracks would be required. This would allow heavy vehicles to access the dewatering locations during construction activities and light vehicles to access these locations during operations.

The disturbance created by this development would be offset by a reduction in the approved disturbance in other parts of the mine where additional surface infrastructure is no longer required, such that there would be a net increase in clearing of 1.42 ha of native vegetation.

The primary justification for the proposal is to increase coal recovery and improve the operational efficiency of underground mining operations.

This application is being considered under the now repealed Part 3A of the *Environmental Planning and Assessment Act 1979*. The savings provisions of the Act allow the applications to be dealt with as a section 75W modification under the former Part 3A. Under the Minister's delegation of 14 September 2011, the Independent Planning Commission will determine the modification application as more than 25 public submissions by way of objection were received and UCML has made reportable political donations.

Engagement

The Department publicly exhibited the application and accompanying Environmental Assessment from 10 April until 2 May 2018 and received 87 submissions, including 6 from government agencies, 65 objections and two comments from the community, and 14 objections from special interest groups.

In May 2018, Department officers inspected the site with other NSW Government agency representatives and Mid-Western Regional Council. None of the government agencies objected to the proposal but some agencies provided advice regarding existing licences and titles and/or provided recommended conditions. In June 2018, Department officers also met with the owners of the property *Woodbury*, the only privately-owned property located above the proposed longwall extensions.

Community and special interest group submissions had a strong focus on the cumulative impacts of mining across the wider region and reiterated concerns considered in detail in the assessment of the original development application and subsequent modifications. These concerns related to potential impacts on water resources, undermining and surface disturbance within the Durridgere SCA and potential impacts on Aboriginal heritage sites.

Assessment

Subsidence

The proposed longwall extensions would cover an additional area of around 161 hectares (ha), an approximate 2 per cent increase in the approved mining area. Estimates of subsidence effects from the proposed longwall extension areas are similar to the range of values previously predicted for these longwalls, with a maximum predicted vertical subsidence of 1.7m along the shallower longwall panel extensions.

Subsidence effects have the potential to impact on both natural features, such as cliff lines and water resources, as well as built features such as farm structures and roads. No significant natural, heritage or built features have been identified in the extension area, including within Durridgere SCA, and subsidence effects would be similar to the effects over existing mining areas, which includes some surface cracking and rock falls from the steeper sandstone outcrops.

There is one private property (*Woodbury*) located above the longwall extension areas. UCML has engaged extensively with this landowner as longwall mining is already approved to occur beneath most of this property. The key concerns for this landowner relate to impacts on cliff lines, Aboriginal heritage along Mona Creek and impacts on shallower perched alluvial aquifers. Protected Aboriginal rockshelter sites along the Mona Creek cliffline would not be impacted by subsidence, however there is an increased likelihood of subsidence impacts, such as cracking and rockfalls, on two lower significance rock shelters located above the LW extension area. The impacts would be managed in accordance with protocols developed in Extraction Plans for the approved mine.

The Department has carefully assessed potential impacts of subsidence on natural and built features and considers that these impacts are consistent with and/or not significantly greater than those already approved. The Department considers that the existing performance measures remain appropriate and provide adequate

protection to all significant surface features in the modification area and that the existing Extraction Plan condition remains effective to manage and monitor subsidence impacts in the extension area.

Groundwater

When compared to the approved operations, the predicted impacts on groundwater aquifers would be minor.

The predicted additional baseflow reduction for the modified mine plan is 0.001 ML/day for the Goulburn River and 0.003 ML/day for the Talbragar River, a further decrease of only 1-3% compared to the approved baseflow reduction associated with existing mining operations.

There is a small predicted increase in the extent of depressurisation in groundwater aquifers in the overlying Triassic and Jurassic sandstones above the target coal seam. These impacts are confined to 14 private bores already predicted to exceed a 2m drawdown above the minimal impact consideration of the *Aquifer Interference Policy*, with an additional drawdown of up to 0.64m predicted. The impacts on these bores would continue to be managed in accordance with the existing project approval conditions including requirements for groundwater monitoring to monitor impacts and compensatory water when supply is impacted.

Importantly, the predicted incremental reductions in baseflow and increased drawdown would not impact the Drip, a locally important groundwater dependent ecosystem feature located approximately 7.7 km from the longwall panel extension areas. No impact on the Drip is predicted or has been observed because of the approved operation, which includes approved longwall panels in closer proximity than the extension area.

UCML has acquired sufficient groundwater licences to account for the predicted peak take from these groundwater sources.

Surface Water

UCML operates under an Environment Protection Authority (EPA) Environment Protection Licence (EPL) which permits discharges from the mine to surface waters of up to 30 ML/day to the Goulburn River and sets strict water quality discharge limits.

Based on updated water balance modelling, the proposed modification would result in a maximum water surplus of 27.9 ML/day, which is approximately 0.2 ML/day higher that predicted for the existing operations. Both UCML and the EPA advised that the predicted water surplus could be managed within the currently approved EPL discharge capacity. The minor (<1%) increase in predicted peak discharge volume would be an imperceptible change to salt load discharged to the Goulburn River.

Biodiversity

Both the proposed surface infrastructure and longwall extensions have the potential to impact biodiversity, either directly through vegetation clearance or indirectly via subsidence.

Following concerns raised by the Department, National Parks & Wildlife Service (NPWS) and the OEH to ensure it takes all reasonable and feasible steps to avoid direct clearing of native vegetation, UCML has reduced the area of clearing proposed in its Environmental Assessment by reducing the clearing required for the powerlines and drilling pads.

While the modification would clear around 23.47 ha of native vegetation (predominantly woodland), UCML has committed to relinquishing 22.05 hectares of land containing native vegetation that had previously been approved for removal. This results in an increase in overall net clearing of 1.42 hectares which would be appropriately offset and secured in accordance with the requirements of the *Biodiversity Conservation Act 2016*. None of the vegetation communities proposed to be cleared are listed as endangered ecological communities (EECs). UCML has committed to offsetting the impacts of the additional clearing and the Department has recommended conditions to ensure the biodiversity impacts are offset.

Aboriginal heritage

No known Aboriginal heritage sites are located within the areas to be directly disturbed. However, there are potential subsidence impacts on heritage sites. Previously surveyed areas identified three known sites within the modification subsidence investigation area. Surveys undertaken for this modification identified a further 14 sites.

Two of the sites are rock shelters which have a higher potential to be impacted from subsidence, while the remaining sites are isolated finds or artefact scatters that are considered to have a low likelihood of being significantly disturbed by subsidence effects. The two rock shelter sites, classified by UCML's heritage consultant to have low overall significance, have a higher likelihood of being impacted due to rock fall and cracking from subsidence effects. These new sites would be managed under the requirements of a revised Extraction Plan, including archival recording of the sites.

The Department notes the concerns raised by the community regarding potential impacts to Mona Creek rock shelter sites as the longwall extensions would be closer to these sites. Importantly, under the existing approval, UCML is required to meet a performance measure of 'nil impact' for Aboriginal sites in the Brokenback Conservation Area, Grinding Groove Conservation Areas, and on Mona Creek Rock Shelter sites. The longwall extension is not predicted to impact on these sites and this requirement is retained in the project approval.

Summary

The Department has carefully assessed potential impacts of subsidence on natural, heritage and built features and considers that these impacts are not significantly greater than those already approved.

The Department has considered all advice and recommendations provided by government agencies and has recommended conditions where appropriate. The Department has also closely considered all issues raised in community submissions, including cumulative impacts to water resources due to combined mining operations in the local area.

The proposed modification would allow for the recovery of a 6.4 Mt ROM coal resource that was previously considered sterilised that can be extracted using the existing mining fleet and workforce. The Department considers that this can be achieved with minimal incremental environmental impacts to water resources, biodiversity and heritage compared to the approved project.

The Department considers that its recommended revised conditions provide a comprehensive, strict and precautionary approach to ensuring the project would continue to comply with performance measures and standards, and that the predicted residual impacts would be effectively avoided, minimised, mitigated and/or compensated.

Importantly, the proposed modification would allow additional benefits of the project to be realised. In this regard, the project would improve the efficiency of resource recovery, which would result in an increase in Government royalties of approximately $39.5 million. Increased resource recovery would improve the productivity of the mine and contribute to the security and continued employment of the existing workforce and ongoing expenditure in the State and local economies.

Given these benefits can be achieved without resulting in any significant additional adverse impacts on the environment or the local community, the Department considers that the proposed modification is approvable, subject to the imposition of the recommended revised conditions of approval.

Contents

1. Introduction

The Ulan Coal Mine is located near the village of Ulan, approximately 38 kilometres (km) north of Mudgee and 19 km northeast of Gulgong in the Mid-Western Regional Council local government area (see **Figure 1**). The mine is operated by Ulan Coal Mines Limited (UCML) which is jointly owned by Glencore Coal Assets Australia Pty Limited (Glencore) and Mitsubishi Development.

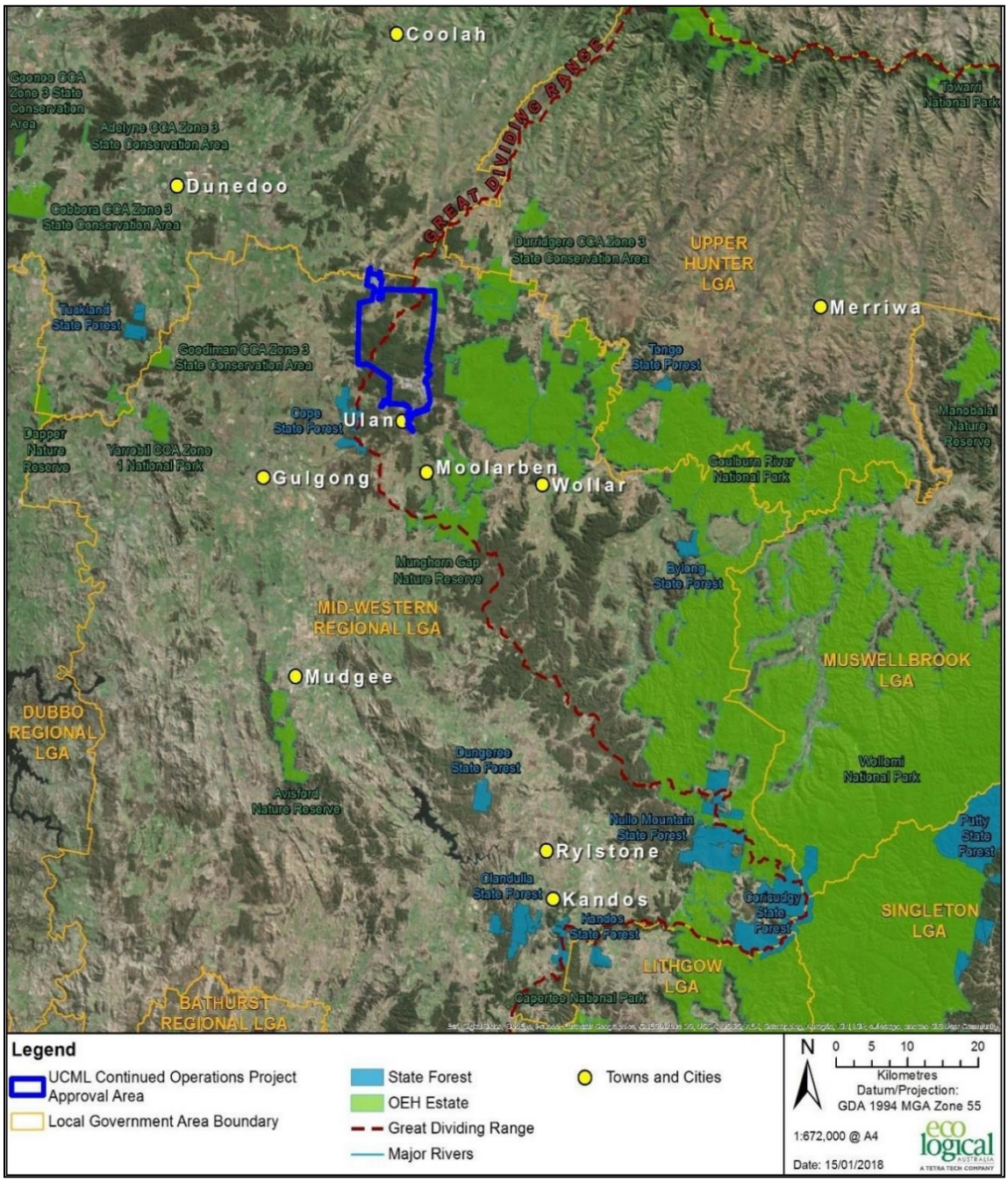

Figure 1 | Site location

1.1 Mining Complex

The Ulan Coal Mine and the neighbouring Moolarben Coal Mine and Wilpinjong Coal Mine form a large coal mining complex in the Mudgee region. Combined, the three mines have approval to extract up to 58 million tonnes of ROM coal a year, process it at their coal handling and preparation plants, and transport it to domestic and export markets via the Gulgong to Sandy Hollow Railway. This represents around 20% of NSW's coal production.

Mining first commenced in the region in the 1920's and intensified following the commencement of the Wilpinjong Coal Mine in 2006 and the Moolarben Coal Mine in 2009.

1.2 Local Context

The Ulan Coal Mine straddles the Great Dividing Range with the mine located in the upper reaches of the Goulburn River catchment, which drains east to the Hunter River and the Talbragar River catchment, which drains to the Murray Darling River system.

Apart from the adjoining mining operations, the surrounding land is mainly used for primary industries such as agriculture and forestry along with biodiversity conservation areas, including national parks and mining related biodiversity offset areas, and rural residential dwellings.

The closest settlement is Ulan Village, which is located about 1.5 kilometres to the south of the mine. It contains 14 houses, a public school and two churches. However, mining companies now own most of the properties in the Village.

UCML owns most of the land above the underground mine, however ancillary mining activities (bore dewatering wells and associated infrastructure corridors) are already approved within the Durridgere State Conservation Area (SCA) (see **Figure 5** below) and there are several private landholdings located above the mine where subsidence impacts are predicted to occur.

1.3 Approval History

Current operations were approved by the former Minister for Planning under Part 3A of the *Environmental Planning and Assessment Act 1979* (EP&A Act) in November 2010. This approval was upheld by the Land and Environment Court in November 2011, following a merit appeal. The Court's Final Orders were delivered in 2012, which had the effect of updating and replacing the Minister's 2010 approval.

The approval has been modified 3 times, principally to revise the layout of the underground mining operations and allows UCML to:

- extract up to 24 Mt per annum (Mtpa) of ROM coal by underground and open cut methods, until 2033;
- upgrade and use supporting surface facilities, including coal processing, coal handling and transportation systems;
- transport product coal to export markets from the site by rail; and
- progressively rehabilitate the site.

The open cut mining operations have ceased, and the mine is now operating only as an underground mine using longwall mining in two large mining domains: Ulan West and Ulan No.3. (see **Figure 2**).

The mine currently operates 24 hours per day, 7 days per week, and has a peak workforce of over 900 people.

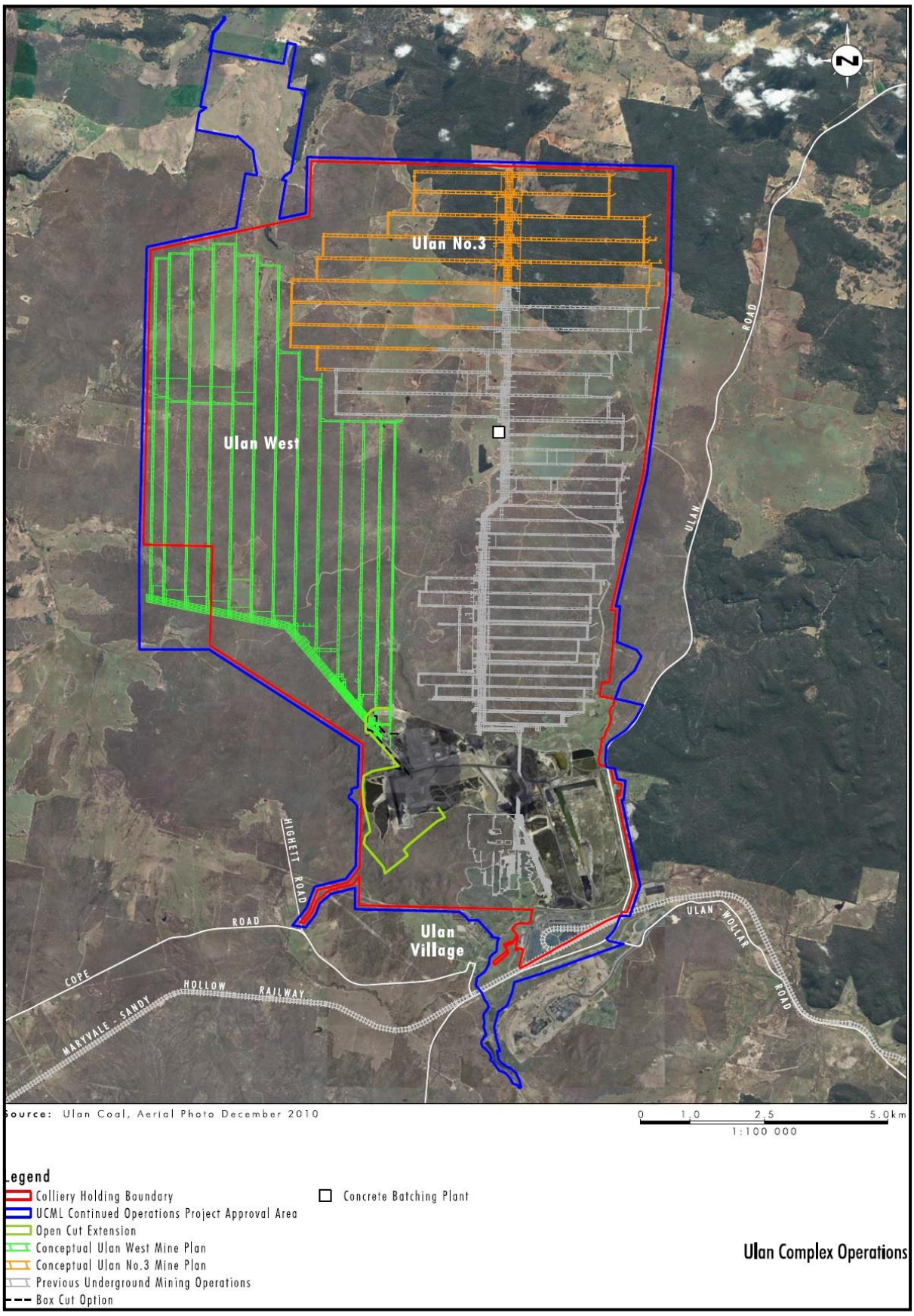

Figure 2 | Approved Ulan Coal Mine complex operation

2. Proposed Modification

Following further exploration work, UCML is seeking further refinements to the underground mine plan and associated surface infrastructure to recover an additional 6.4 Mt of coal.

It is seeking approval for these refinements as a modification to the existing approval under the former section 75W of the EP&A Act.

The proposed modification involves changes to the layout of the longwall (LW) panels in both the Ulan No. 3 and the Ulan West mining domains to recover the additional coal.

Ulan No. 3

At Ulan No. 3, LW panels 30-33 would be lengthened by between 195 and 1,140 metres (m) in an area that was initially thought to be constrained by a north-south trending fault. LW 33 is also proposed to be slightly widened by 31 m, to maintain a consistent LW panel width to minimise the need for equipment changes. The extension of these panels would involve mining at depths of around 310-340 m under a small area of the Durridgere SCA (see **Figures 3** and **4**).

LW panels W7 and W8 would also be extended by 220 m and 155 m respectively, with depths around 165-170m. This extension involves further mining under the *Woodbury* property, which is privately owned (see **Figure 4**), with most of this property already located above approved LW mining from the Ulan West and Ulan No 3. mine domains.

Ulan West

At Ulan West, LW panels 7 and 8 would be extended by approximately 420 and 225 m respectively, with depths of around 160-165 m. These extensions have been made possible by improving the mine ventilation system.

Surface Infrastructure

The changes to the LW panels require changes to the associated surface infrastructure, including dewatering boreholes, extensions of power lines and pipelines, electrical transformers and access roads.

To accommodate the construction of the additional dewatering boreholes at the end of the LW panel extensions, new surface infrastructure corridors, including access tracks would be required. This would allow heavy vehicles to access the dewatering locations during construction activities and light vehicles to access these locations during operations.

However, the disturbance created by this development would be offset by a reduction in the approved disturbance in other parts of the mine where additional surface infrastructure is no longer required. These areas are proposed to be removed from the approved plan. **Figure 5** shows the approved (relinquished) area (22.05 ha) compared to the proposed new clearing (25.68 ha) required for the extension of LW panels 30-33.

During the assessment period, UCML reduced the width of the surface infrastructure corridors required from 40 to 20 m to reduce the amount of clearing required and slightly reduced the area of the dewatering pads. This has reduced the total new amount of clearing associated with the modification to 23.47 ha, with a net clearing required of only 1.42 ha, once the relinquished areas are taken into account.

The primary justification for the modification application is that it would provide access to an additional 6.4 Mt ROM coal within the project approval boundary and approved mining leases without the need to change any of

the approved operating functions of the mine, including the production rate, processing functions and transportation systems.

The approved mine plan, including open cut and mining operations, covers approximately 7,670 hectares (ha). The proposed modification would increase the total mining footprint by approximately 161 ha, a 2% increase.

The proposal is described in detail in UCML's Environmental Assessment (EA) (see **Appendix B**).

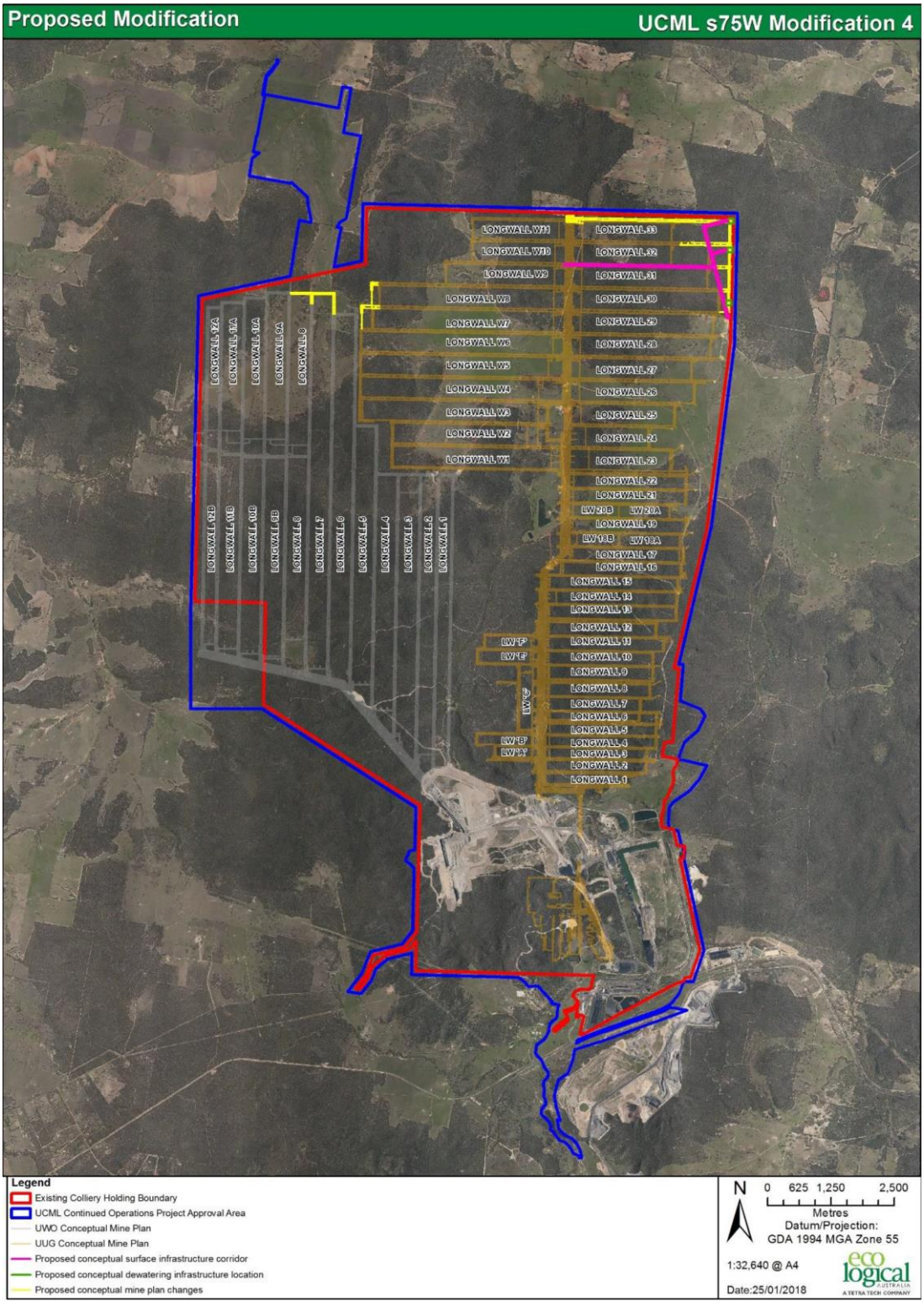

Figure 3 | Proposed Modification Extent

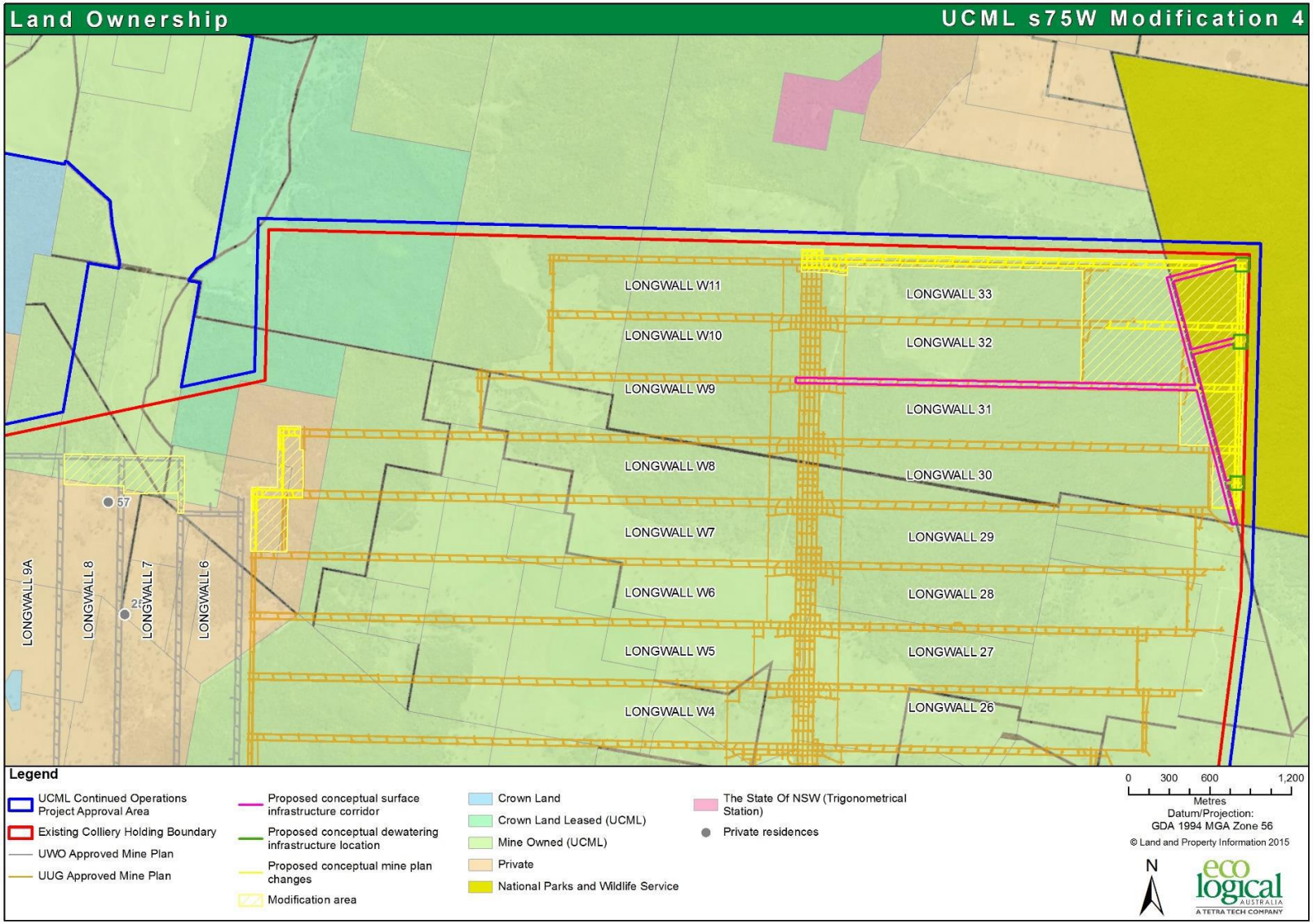

Figure 4 | Proposed modification in detail and land ownership (note UCML has now acquired property ID 57)

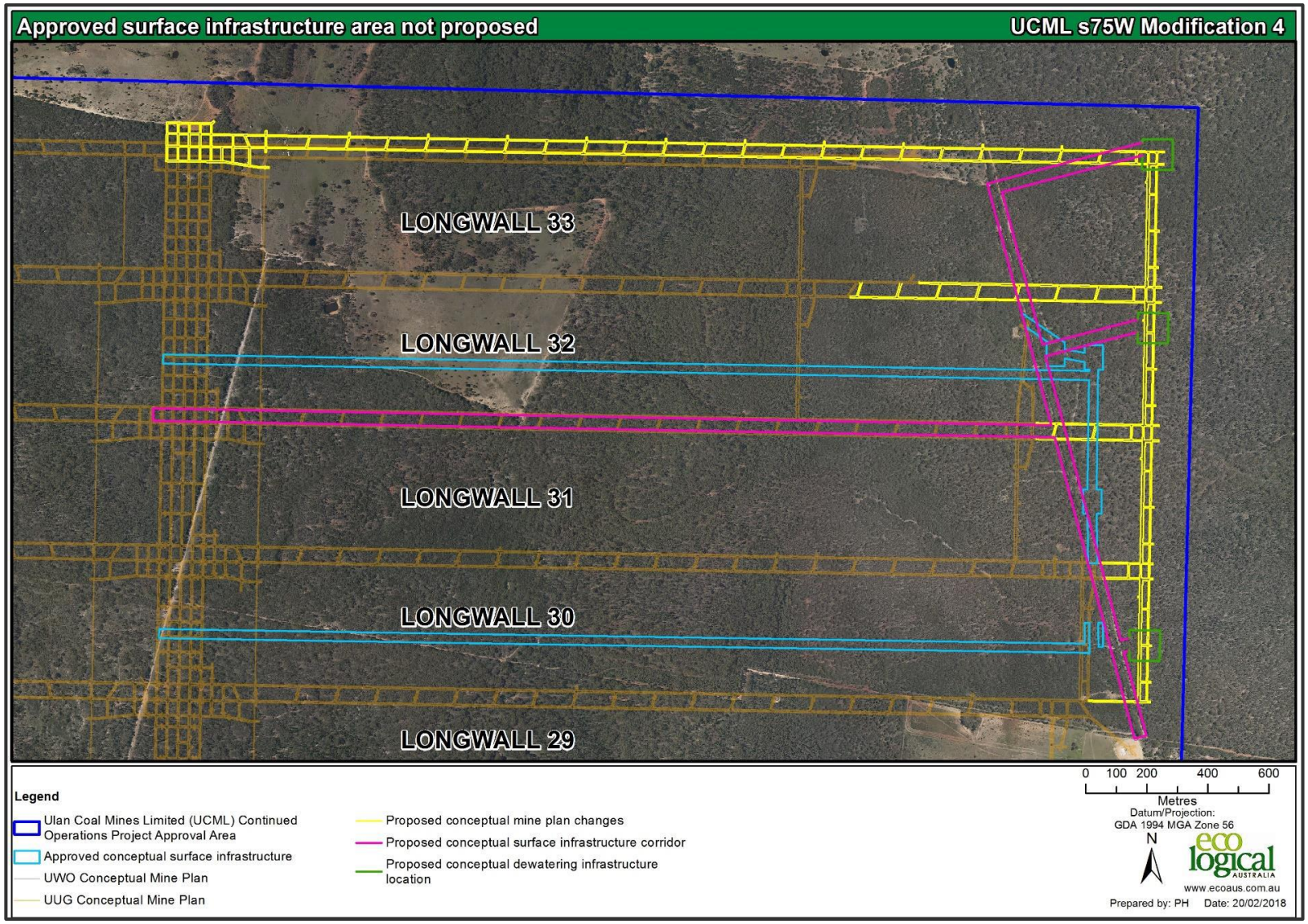

Figure 5 | Approved (relinquished) vs proposed infrastructure corridor

3. Statutory Context

3.1 Section 75W Modification

The project was approved under the former Part 3A of the EP&A Act. Although Part 3A was repealed on 11 October 2011, the project remains a 'transitional Part 3A project'. Under the current savings provisions, the project can be modified under the former Section 75W of the EP&A Act.

The Department considers that the proposed modification is within the scope of Section 75W and may be determined accordingly as:

- it does not seek to change the approved mining methods, mining rate, processing and transportation systems;
- the changes to the existing surface infrastructure would be relatively minor;
- the changes to the underground mine plan are relatively minor and would only result in an extra 4 months of coal production; and
- the environmental impacts of the modification would not substantially increase the impacts of the approved mine plan.

3.2 Approval Authority

The Minister for Planning is the approval authority for the application. However, under the Minister's delegation of 14 September 2011, the Independent Planning Commission (IPC) is required to determine the application, as there were more than 25 public objections received during public exhibition of the EA, and UCML has made reportable political donations.

3.3 Landowner's consent – Minister for the Environment

As the proposed longwall extensions would extend underneath Durridgere SCA and there would be additional surface disturbance within the SCA, landowner's consent from the Minister for Environment is required. This consent was granted on 14 November 2018 (see Appendix E).

3.4 Environmental Planning Instruments

Several environmental planning instruments (EPIs) are relevant to the modification, including:

- *State Environmental Planning Policy (Mining, Petroleum Production and Extractive Industries) 2007;*
- *SEPP 33 (Hazardous and Offensive Development);*
- *SEPP 44 (Koala Habitat and Protection); and*
- *Mid-Western Regional Local Environmental Plan 2012.*

The Department considered the assessment of these EPIs by UCML in the EA and assessed the proposed modification against the relevant provisions of these instruments. Based on this assessment, the Department considers that the proposed modification can be carried out in a manner that is consistent with the aims, objectives and provisions of these instruments.

3.5 Objects of the EP&A Act

For Part 3A projects, the approval authority should consider the objects of the EP&A Act when making decisions. The objects of the EP&A Act changed on 1 March 2018. The Department has assessed the proposed modification

against the objects of the EP&A Act (see section 1.3 of the Act). The objects of most relevance to the decision on whether or not to approve the proposed modification are:

- Object 1.3(a): *to promote the social and economic welfare of the community and a better environment by the proper management, development and conservation of the State's natural and other resources*;
- Object 1.3(b): *to facilitate ecologically sustainable development by integrating relevant economic, environmental and social considerations in decision-making about environmental planning and assessment*;
- Object 1.3(c): *to promote the orderly and economic use and development of land*;
- Object 1.3(e): *to protect the environment, including the conservation of threatened and other species of native animals and plants, ecological communities and their habitats*;
- Object 1.3(f): *to promote the sustainable management of built and cultural heritage (including Aboriginal cultural heritage)*; and
- Object 1.3(j): *to provide increased opportunity for community participation in environmental planning and assessment.*

The Department considers that the proposal would permit the continued proper management and development of a regionally significant coal resource (Object 1.3(a)). The Department also considers that the proposal represents an orderly and economic use of land (Object 1.3(c)).

The Department has considered the principles of ecologically sustainable development (ESD, Object 1.3(b)) in its assessment of the proposed modification, including UCML's analysis in section 6.3.1 of its EA, and given that there are only minor incremental impacts compared to the approved project, considers that the proposed modification is able to be carried out in a manner that is consistent with the principles of ESD and consistent with the determination of the approved project. The Department's assessment has sought to integrate all significant environmental, social and economic considerations.

Consideration of the protection of the environment and heritage (Objects 1.3(e) and(f)) is provided in **Section 5** of this report. The proposed modification does not involve any material changes to environment and heritage matters.

The Department exhibited the modification application and accompanying EA and made them publicly available (Object 1.3(j)). The IPC is likely to hold a public meeting prior to determining the application.

3.5 Commonwealth Approval

On 21 November 2018, UCML referred the proposed modification to the Department of Environment and Energy (DoEE). On 31 January 2019, the DoEE advised that the proposed modification is not a controlled action under the *Environment Protection and Biodiversity Conservation Act 1999*.

4. Engagement

4.1 Department's Engagement

The Department publicly exhibited the EA from 10 April 2018 until 2 May 2018 and consulted with key agencies. Department officers inspected the site on 31 May 2018 with representatives from the Environment Protection Authority (EPA), Office of Environment and Heritage (OEH), National Parks and Wildlife Service (NPWS), Mid-Western Regional Council (Council) and Division of Resources and Geoscience (DRG).

The Department inspected mined and unmined areas above UWO LWs 5 and 6 and the surface infrastructure corridor above LW 6. The area above the proposed extensions of UWO LWs 7 and 8, along with areas within the Durridgere SCA, where proposed clearing and subsidence from the extension to UUG LWs 30-33 were also inspected.

On 1 June 2018, the Department met with the owners of the *Woodbury* property (see **Section 5.1**) and discussed their concerns about the proposal.

4.2 Submissions

During the exhibition of the EA, the Department received 87 submissions on the proposal including 6 from government agencies, 14 from special interest groups and 67 from the general public (see **Table 1**). A copy of all these submissions is attached in **Appendix C**.

None of the government agencies object to the modification, however almost all (79) of the public submissions object to the proposal. Five submissions, including a submission by way of comment from the owners of the *Woodbury* property, were received from members of the public living with 5 kilometres of the mine with 4 of these submissions objecting to the proposal. More than half the public submissions were from people living over 50 kilometres from the mine.

UCML provided a response to all matters raised in submissions (see **Appendix D**).

Table 1 | Summary of submissions

Submitters	Number	Category
Agency	6	No objections
• Environment Protection Authority • Department of Industry –Lands and Water Division • Division of Resources and Geoscience • Office of Environment and Heritage • Mid-Western Regional Council • Transport for NSW		
Special Interest groups	14	All object
• Central West Environment Council • Environmentally Concerned Citizens of Orange • Hunter Communities Network • Hunter Environment Lobby Inc. • Inland Rivers Network • Lock the Gate • Mudgee District Environment Group • National Parks Association of NSW • Orange Field Naturalist & Conservation Society • Running Stream* • Ryde – Hunter's Hill Flora and Fauna Preservation Society • Rylstone District Environment Society Inc • Upper Goulburn Water Users Association		

Submitters	Number	Category
• Wollar Progress Association		
Community	67	(65 object, 2 comment)
• <5 km	5	4 object, 1 comment
• 5 – 50 km	16	16 object
• > 50 km	46	45 object, 1 comment

* submission received after exhibition period

4.3 Key Issues – Government Agencies

Department of Industry – Lands and Water (DoI L&W)

DoI L&W requested an independent review of the groundwater model and advised that the proponent would need to acquire additional licences under the *Water Management Act 2000* for the maximum water take of the approved mine. These matters were addressed in the Response to Submissions (RTS, see **Appendix D**) and are discussed in **Section 5.2** of the report.

Environment Protection Authority

The EPA considered that the predicted additional 0.2 ML/day of mine water generated by the modification could be managed within the currently approved discharge volume limits set in the mine's Environment Protection Licence (EPL). The EPA recommended a slight increase in the daytime noise limits for two dwellings to accommodate the noise that would be generated during the construction of surface infrastructure. This is further discussed in **Section 5.5**.

Office of Environment and Heritage

OEH advised that the proposed residual clearing needs to be assessed and offset in accordance with the *NSW Biodiversity Offsets Policy for Major Projects*. OEH also recommended that surface impact be contained to already disturbed areas and areas of lesser biodiversity value where possible, particularly within Durridgere SCA and that UCML must finalise the footprint and offset obligation in consultation with NPWS. In the RTS, UCML committed to halving the width of the surface infrastructure corridor located within Durridgere SCA by burying the power lines and offsetting residual impacts. Biodiversity impacts are further considered in **Section 5.3**.

Division of Resources and Geoscience

DRG advised that the modification would not require an ancillary mining activities authorisation or a new mining lease and that sustainable rehabilitation outcomes could be achieved. DRG also considered that the modification was an efficient development of the coal resource and that based on its independent review, the additional extraction would provide a further $40 million royalty to NSW.

Mid-Western Regional Council

Council acknowledged the commitment by UCML to continue to communicate with the surrounding community and other stakeholders and requested that the proponent work closely with sensitive receptors predicted to experience an increase in noise levels during construction of the surface dewatering infrastructure.

Transport for NSW (TfNSW)/ Roads and Maritime Services (RMS)

TfNSW provided a joint response with RMS, indicating that both agencies had no concerns with the proposed modification.

4.4 Key Issues – Community and Special Interest Groups

Of the 81 public submissions, 14 were from special interest groups (including several peak environmental groups) and 67 were from the general public.

These submissions had a strong focus on the cumulative impacts of mining across the wider region and reiterated several concerns that were raised and considered in detail in the merit assessment of previous applications for all three mines.

The Department has summarised the key issues raised in these submissions in **Table 2**, and addressed these issues in **Section 5**.

Table 2 | Summary of matters raised in submissions by special interest groups and the general public

Issue
• Groundwater – Cumulative groundwater drawdown from the operation of Ulan, Moolarben and Wilpinjong mines – Impacts to The Drip, located around 8 km from the proposed modification area
• Surface water – Impacts on base flows of the Goulburn River and Talbragar River – Goulburn River is highly dependent on mine water discharges, and discharges should be based on environmental flow rules to mimic natural flows – Mine water discharge electrical conductivity limit of 900 µS/cm is too high and should not exceed 500 µS/cm – Elevated salinity in the Goulburn River caused by mine water discharge – Impacts on landowners with basic water access rights to Goulburn River – UCML does not hold sufficient water licences for its predicted take of water
• Biodiversity – Undermining of Durridgere SCA – Assessment of biodiversity needs stronger focus on habitat features including hollows, rock outcrops and drainage lines
• Aboriginal Heritage – Subsidence impacts to Mona Creek rock shelters
• Greenhouse Gas Emissions – Extraction of an additional 6.4 Mt of coal would contribute to climate change

5. Assessment

The Department has undertaken a comprehensive assessment of the merits of the project in accordance with the requirements of the EP&A Act. This report provides a detailed discussion of the key issues, including subsidence, water resources, biodiversity and Aboriginal heritage.

The Department has also considered other impacts associated with the project and has included a summary of this assessment in **Section 5.5**.

5.1 Subsidence

Introduction

As highlighted above, the site has a long history of mining in the Ulan coal seam, using both open cut and underground methods. Most of the mining has been underground with more than 30 longwall panels already mined at the Ulan Coal Complex, comprising LW panels in both the Ulan West and Ulan No. 3 mining domains, and prior longwall development since the 1980s. UCML is currently mining LW W5 at Ulan No. 3 and LW 5 at Ulan West. Longwall panels have varied in dimensions but are typically up to 400 m wide, with depths of cover between 60 m and 340 m. The proposal would increase the approved mining area at Ulan by around 161 ha, to around 7,831 ha, an increase of around 2%.

Subsidence Predictions and Effects

The EA included a Subsidence Assessment undertaken by SCT Operations Pty Ltd (SCT).

SCT's subsidence assessment predicts the subsidence effects would vary across the longwall areas due to variations in controlling factors such as the depth of cover and local geology. The proposed coal seam extraction height varies across the modification area, from 2.6 m in LW 33 to 3.3 m in LW 31, but is typically in the range of 2.8 m to 3.2 m. The predicted key subsidence parameters are outlined in **Table 3**.

The predicted maximum vertical subsidence of 1.7 m is expected to occur where there is a shallower depth of cover associated with the LW panel extensions to the west around Mona Creek. Lower vertical subsidence of generally less than 1.6 m is predicted within the Durridgere SCA. The predicted maximum tilt and strain levels are generally consistent with the approved tilts and strains.

Table 3 | Predicted subsidence

Parameter	Longwalls 30-33	Longwalls 7 - 8 & W7 - W8
Vertical Subsidence (m)	1.6	1.7
Tilt (mm/m)	30	55
Tensile Strain (mm/m)	10	20
Compressive Strain (mm/m)	15	25

The Department considers that a robust subsidence prediction model has been used and that, given the extensive underground mining and monitoring completed to date, the model is calibrated to local conditions with observed subsidence impacts and effects to date consistent with previous modelled subsidence predictions. The terrain and depth of cover of the LW panel extensions is similar to that already mined.

Subsidence effects have the potential to impact on both natural features, such as cliff lines and water resources, as well as built features such as farm structures and roads. SCT has not identified any significant natural, heritage or built features in the extension area, including within Durridgere SCA, and estimates that the subsidence effects would be similar to the effects over existing mining areas, which includes some surface cracking and rock falls from the steeper sandstone outcrops around Mona Creek.

Subsidence impacts on water resources, biodiversity and Aboriginal heritage are discussed in more detail in **Sections 5.2, 5.3** and **5.4** respectively.

Natural and Aboriginal Heritage Features

The terrain around the Ulan No.3 LW 30-33 extension area is gently sloping with overburden depths ranging from 310–340 m. The terrain near the proposed LWs W7 and W8 and LWs 7 and 8 extraction areas forms part of an outcrop of Triassic Sandstone and is characterised by sandstone formations and steep slopes on either side of the broad valley associated with Mona Creek. The overburden depth here is shallower and ranges from 160 – 180 m.

Figure 6 below shows the steeper areas to the west around Mona Creek, including an additional length of cliff line located above the extension area on LW W8. Extensive cultural heritage surveys in area show that the cliff line rock shelters are often associated with Aboriginal heritage values.

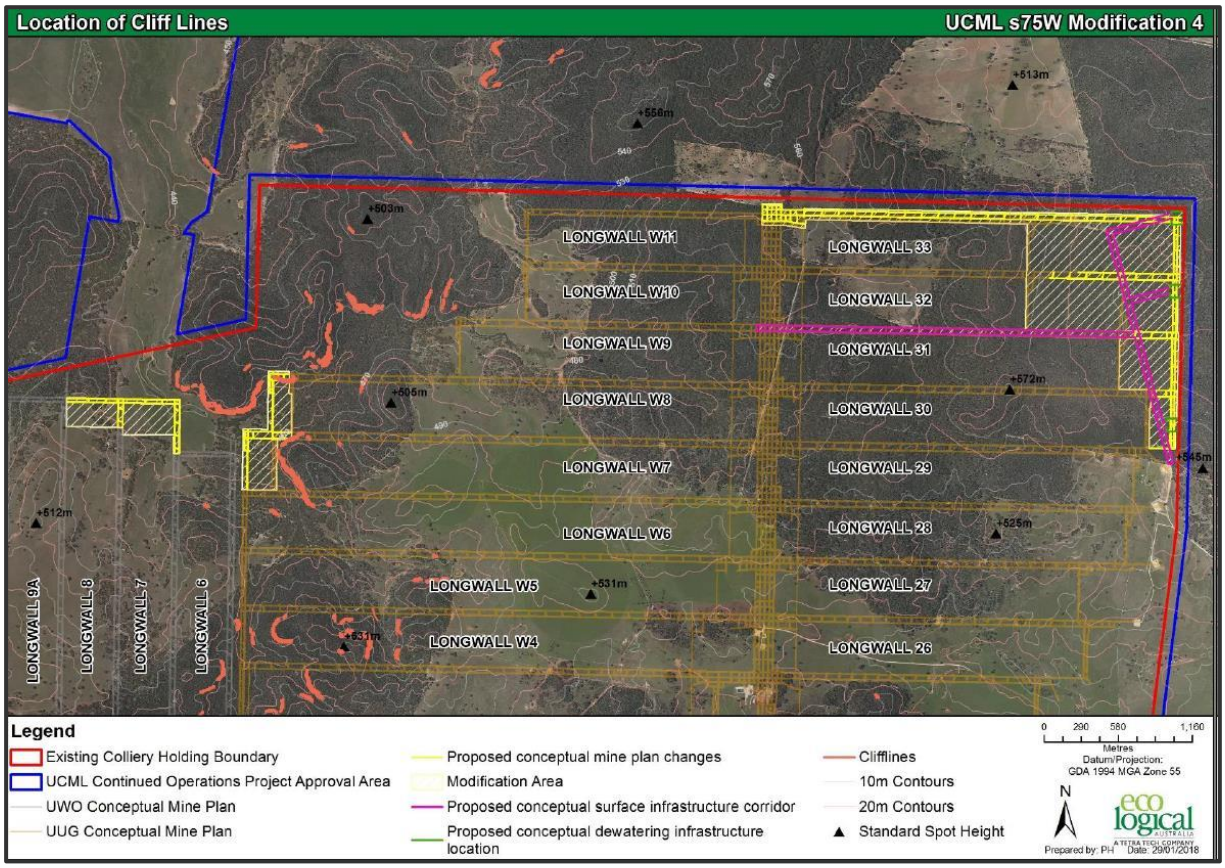

Figure 6 | Cliff lines and terrain

At the time the EA was lodged there were two privately-owned residences located within the LW panel extension area that would experience additional subsidence due to the proposed modification. The *Billir* property would be subject to an additional 2 ha of subsidence, whilst the *Woodbury* property would be subject to an additional 30 ha of subsidence. The Department notes that UCML has now acquired the *Billir* property.

Figure 7 below shows the location of the *Woodbury* property, Mona Creek and Aboriginal rock shelters associated with the cliff lines. These include the Mona Creek sites (MC23-MC30) which are protected under the project approval, which sets a performance measure of nil impact on these rock shelter sites. **Figure 7** also shows two rock shelters (MC 236 and MC 22) predicted to be impacted by the modification. The impacts on these two sites are discussed further in section 5.4.

UCML and the Department have consulted closely with the owners of *Woodbury* regarding concerns about stability of cliff lines and shallow aquifers in the Mona Creek alluvium.

Impacts on Cliffs and Aboriginal heritage

While most of the extended mining area is located within land owned by UCML (i.e. where public access is restricted) there is approximately 180 m of cliff line on *Woodbury* above the proposed extension of LW W8 (see also **Figure 6**). This compares to approximately 57 km of cliff line already located above approved LW mining areas. The remaining longwall panel extension areas on the Woodbury property are mainly on flatter terrain in the Mona Creek valley.

Rockfalls are predicted to occur over 20% of the length of sandstone cliff lines immediately above the longwall extension areas. That is, it is predicted that rock fall may occur over an approximate 40 m extent of the cliff line above LW W8. Perceptible cracking is also predicted to occur on up to 50-70% of the length of sandstone formations located directly above extracted longwall panels.

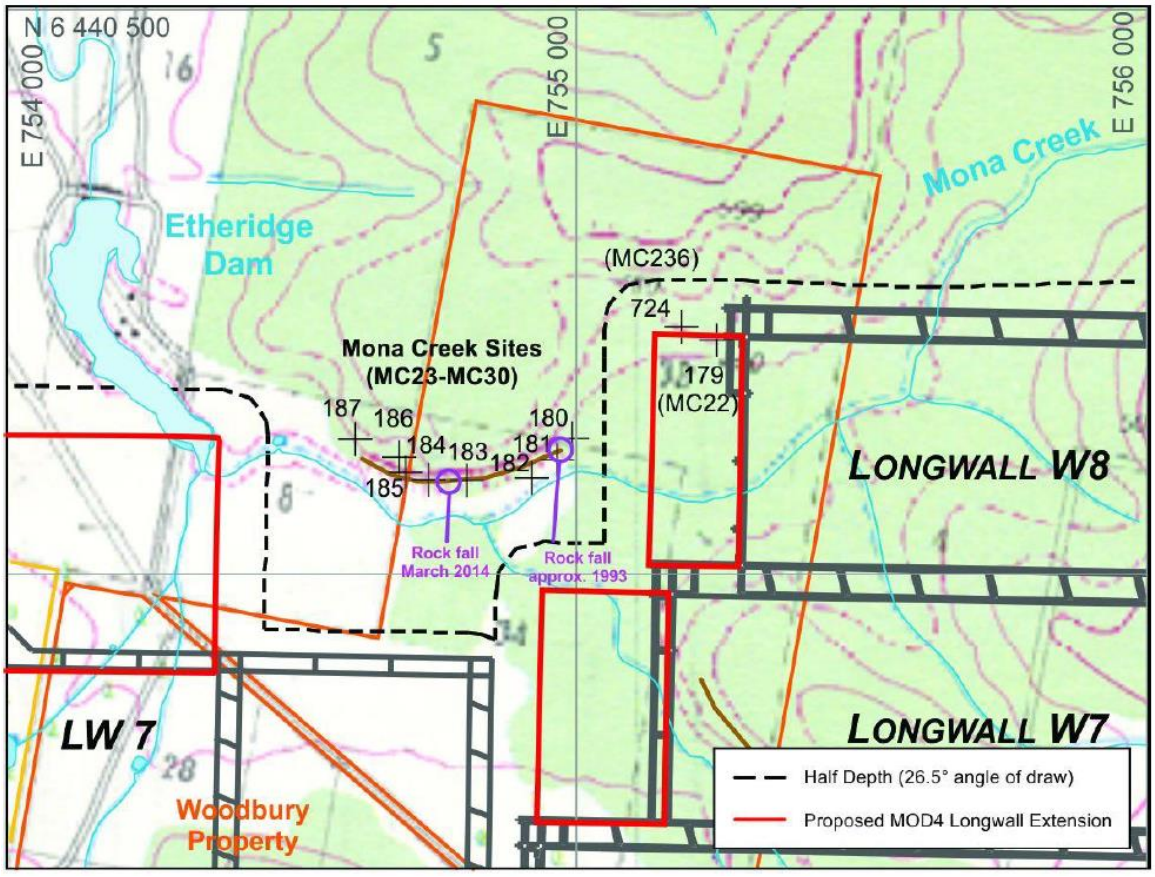

Figure 7 | Proposed longwall extensions, *Woodbury*, Mona Creek and Aboriginal rock shelters

The project approval includes a subsidence performance measure for cliffs that the project does not cause any more than minor environmental consequences to the cliff lines. This in effect means that there can be no more than the predicted impact of rock fall and perceptible cracking on the cliff line, consistent with the current level of protection of cliffs above the approved underground mining areas.

Quantitative surveys of cliff line rock falls completed over the last few years for the Ulan Coal Mine Annual Review reports have shown that there has been around 8% rock falls over the total length of cliff lines over individual LW panels, well below predictions of up to 20%. The monitoring has also confirmed that the amount of perceptible cracking is less than the predicted impacts, confirming that the performance target of minor environmental consequence to cliff lines.

The potential for rock falls can also cause safety risks, based on possible access to the private property and to the cliff lines being undermined. UCML has committed to undertaking a detailed risk assessment in consultation with the owners of Woodbury, and develop agreed options to restrict access to areas where there is risk of rock fall.

The project approval requires a Public Safety Management Plan to be prepared to ensure public safety in mining areas, and the subsidence performance measures require that there is no additional risk to public safety due to mining.

UCML has also developed and is committed to continue to prepare and implement a Private Property Subsidence Management Plan (PPSMP) as a part of Extraction Plans developed for the LW panels, in consultation with private landowners. UCML has developed PPSMPs in consultation with the owners of Woodbury for existing LW panels on the property.

The Department notes concerns raised by the owners of *Woodbury* regarding a rockfall that occurred in the cliff line associated with the protected Mona Creek rock shelters (MC23-MC30) in March 2014 (see **Figure 7**), which are located outside the predicted subsidence impact area.

UCML commissioned SCT to undertake an assessment of this rockfall (see **Appendix E**). SCT concluded that the rockfall was caused by a natural event from tree root invasion into a natural joint, with the event itself most likely triggered by high intensity rainfall and that there was no potential for the rockfall to be associated with mining subsidence or operations. Further, the rockfall did not impact on any of the Mona Creek cultural heritage sites.

The Department accepts these findings and notes that this cliff line is located well away from previous and existing mining operations.

UCML also commissioned South East Archaeology to investigate whether the rockfall changed the significance of the Mona Creek Heritage sites (see **Appendix E**). The key findings were that eight of rock shelter sites were assessed as having low research potential and two as having moderate to high research potential. South East Archaeology also confirmed that the rock fall that occurred in 2014 did not impact on these sites.

The Department accepts the conclusions of these expert reports and considers that it is unlikely that the proposal would cause subsidence impacts along the section of the cliff line where the Mona Creek sites MC 23-30 are located and that therefore the performance measure of nil impact to these sites would continue to be met.

Nonetheless, the Department agrees with the owners of Woodbury that it is important that cliff line stability be monitored, including the cliff line along the protected Mona Creek area to demonstrate the performance measures are met, including consideration as to whether any falls in protected areas are due to natural causes, such as the assessment completed for 2014 rock fall.

Woodbury Property and Mona Creek Alluvium

The Department has considered the concerns raised by the owners of *Woodbury* regarding potential subsidence impacts on shallow aquifers associated with Mona Creek alluvium. UCML's groundwater consultant undertook a site inspection with the owners of *Woodbury* during January 2019.

The Department has considered the information provided by UMCL in the EA and RTS on shallower perched aquifers in the area. In summary, the groundwater model considered the presence of alluvial aquifers and other

shallow perched aquifers and concluded that the "perched aquifers" are not in hydraulic connection with the regional water table that mine dewatering is predicted to affect, and it is therefore unlikely that any perched aquifers associated with Mona Creek would be directly impacted.

These findings are supported by an investigation undertaken by Mackie Environmental Research (MER 2008) into the Mona Creek alluvium and review of data from groundwater monitoring bores. The 2008 alluvium investigation comprised excavation at several locations and the installation of two monitoring bores in the Mona Creek alluvium which were found to be either dry or only damp and were found to have minimal saturated thicknesses.

To provide further evidence to support these findings, UCML is proposing to install at least three monitoring bores in the Mona Creek alluvium in the area north of UWO LWs 6-8. This monitoring would aim to further assess hydraulic connectivity and impacts on the Mona Creek alluvium. The Department notes that there is an existing requirement for a Groundwater Monitoring Program and considers that the proposed monitoring bores could be incorporated into this program. UCML would be required to update the program within three months of any determination of this modification.

The Department notes that current water uses on '*Woodbury*' are described in the agreed *Subsidence Remediation and Alternative Water Supply Agreement* for LW W5. There are seven farm dams used for stockwater located on the property, with two of these spring fed. There is one private bore located on the property (bore PB08) with current and potential future uses including domestic and agricultural. A significant drawdown impact is already predicted on bore PB08 from the approved project, and this is not expected to increase due to the modification.

Neither the spring dams nor the private bore are sourcing alluvial water. The water supplying the springs is draining from sandstone features that occur through the middle section of the property and the private bore water is extracting from the Triassic sandstone formation. The project approval conditions also require UCML to provide compensatory water for impacts on bore water supply, noting that these predicted impacts would be a result of the approved operations, not the modification.

Built Features

Farm infrastructure (i.e. dams, fences, access roads and services) is the predominant type of built feature located above the proposed modification area. Other infrastructure includes public utilities (i.e. powerlines and state survey markers).

Two historic heritage items are located near the extension areas on land owned by UMCL.

A house with associated outbuildings, collectively known as Culbunya (heritage site C133), is located 50 m from the northern edge of LW 33. SCT predicts that while there may be some impacts, such as cracking of hard surfaces and minor tilting, these would be minor and generally imperceptible.

There is also a disused house and farm buildings known as Apple Tree Flat (identified as PK243) located around 200 m to the south of the proposed LW 30 extension area. This site is not predicted to be significantly impacted because of the LW extensions, noting that it is in much closer proximity (within 40 m) to the approved LW 29.

Surface cracking of the ground is expected over all longwall panels and would be more prominent on hard surfaces such as roads and exposed rock near the start of panels and/or in shallower areas of mining. SCT predicts cracks would be less than 50-100 mm wide but may increase in more locally susceptible areas (i.e. shallower areas).

State survey markers are designed to be stable reference points, and therefore subsidence induced ground movements have the potential to impact these markers. There are four survey markers above or immediately adjacent to the current and proposed mining area with one permanent marker being positioned directly above

LW 31. Approved Built Features Plans for existing LW panels, prepared for the Extraction Plans, provides a process for temporarily decommissioning and re-establishing survey markers once subsidence impacts have stabilised.

Impacts on built features have been effectively managed under the Extraction Plan process required under the project approval. The Department notes that this process would continue should the proposed longwall extensions be approved (see below), including preparation of a Built Features Management Plan in consultation with the owners of *Woodbury*.

Under the existing approval, UCML is required to meet a performance measure of 'no greater impact than predicted in the EA' for all heritage sites. UCML is also required to prepare and implement a Heritage Management Plan in consultation with OEH, the Heritage Council of NSW and any local historical organisations and relevant landowners.

This plan must include procedures for photographic and archival recording, protection and monitoring, baseline dilapidation surveys of all heritage items potentially affected by subsidence, and monitoring, notifying and managing the effects of subsidence on potentially affected heritage items.

The Department considers that the conditions remain appropriate and provide adequate protection.

Mitigation and Management Measures

In accordance with the Department's standard practice for managing mine subsidence, the mine is subject to existing approval conditions which:

- set out subsidence performance measures for key natural and built features, for example cliff lines; and
- require the development of detailed Extraction Plans covering each longwall panel, or groups of panels as they are progressively mined.

Each Extraction Plan is required to be approved by the Secretary before commencing mining of the specified longwall panel(s). The Extraction Plan, including the performance measures and monitoring requirements provide a framework to avoid, minimise and mitigate subsidence impacts within a robust adaptive management framework.

The preparation of an Extraction Plan for each group of longwall panels allows an iterative assessment of impacts to all built and natural features to be focussed at the local level, ensuring that impacts are regularly monitored and impact management regimes further refined during the life of the project in response to the results of subsidence monitoring and recorded impacts.

Conclusion

The Department considers that UCML's subsidence assessment has used conservative assumptions and that its subsidence predictions provide a sound basis to assess the proposal's potential subsidence impacts and associated environmental consequences.

The Department has carefully assessed potential impacts of subsidence on natural and built features and considers that these impacts are consistent with and/or not significantly greater than those already approved. The Department considers that the existing performance measures remain appropriate and provide adequate protection to all significant surface features in the modification area and that the existing Extraction Plan condition remains effective to manage and monitor subsidence impacts in the extension area.

5.2 Water Resources

Groundwater

Introduction

Australasian Groundwater and Environmental Consultants Pty Ltd (AGE) reviewed the calibration and conclusions drawn from the groundwater model prepared for MOD 3 and updated the groundwater model to include the most recent mine plan and schedule in its groundwater assessment for this modification.

A peer review of the groundwater model was undertaken by Dr Frans Kalf (Kalf and Associates Pty Ltd). Dr Kalf concluded that the model and its predictions were plausible and fit for purpose and that the predicted changes for MOD 4 represent only a slight increase over the already approved impacts from the approved project.

Local groundwater resources are characterised by the following primary groundwater sources:

- unconsolidated alluvial aquifers associated with tributaries of the Talbragar and Goulburn Rivers;
- shallow regolith and weather rock profile which potentially host perched unconfined groundwater during extended wet periods; and
- deeper hard rock aquifers of the Permian coal measures and overlying Triassic and Jurassic units.

Several community and special interest group submissions raised concerns about cumulative groundwater impacts and potential impacts to 'The Drip', a locally recognised important cliff seepage feature located on the Goulburn River about 7.7 km from the closest MOD 4 longwall extension area.

These submissions had a strong focus on the cumulative impacts of mining across the wider region and reiterated several concerns that were raised and considered in detail in previous assessments. Further consideration has been provided below in the context of the proposed modification.

Assessment of Impacts

Drawdown and Baseflow

Predicted depressurisation impacts are similar to those already approved and experienced to date at Ulan Coal Mine. The proposed modification would not significantly increase these approved impacts; however, it would expand the area over which it occurs with the additional incremental drawdown localised to the proposed extension areas. **Figure 8** below, compares the approved drawdown to the increased extent of drawdown in the Triassic sandstone formation overlying the Permian coal measures.

The Triassic formation contains most of the surrounding private bores where the approved project already exceeds the minimal impact consideration (as required by the *NSW Aquifer Interference Policy*) of greater than 2m depressurisation in the bore. The approved project exceeded the 2m threshold on 14 privately owned bores with no additional bores impacted by the modification, and one bore (PB02 the most impacted bore) located on the property *Billir,* now acquired by UMCL. There is some minor additional drawdown of up to 0.64m predicted in some of the bores screened in the Triassic sandstone due to the incremental depressurisation.

The impacts on these bores would continue to be managed in accordance with the existing project approval conditions including requirements for groundwater monitoring to monitor impacts and provision for compensatory water supply where required. For example, an agreement to investigate and provide compensatory water has been entered between UCML and the owners of *Woodbury*.

Dr Kalf in his peer review recommended that the potential for drawdown impacts on perched aquifers in the overlying Jurassic sandstone formation continue to be assessed and the groundwater model updated based on the observed data and improved understanding of changes to hydraulic connectivity due to subsidence impacts, such as fracturing extending into the Jurassic sequence. The Department notes that the conditions require UCML to continue to validate and calibrate the groundwater model.

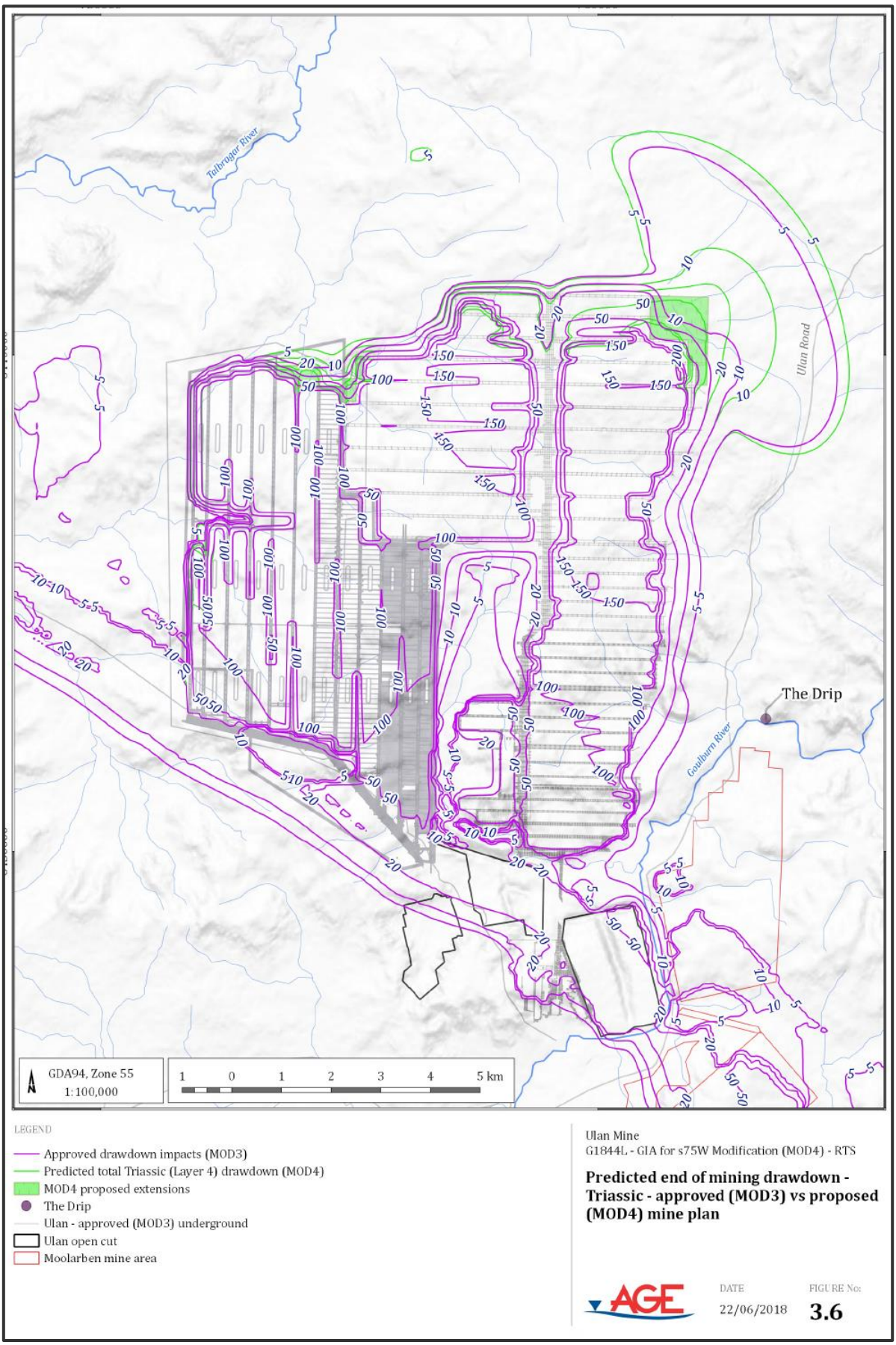

Figure 8 | Predicted Drawdown Comparison – Approved Project vs. MOD 4 – Triassic Formation

No impact on the Drip is predicted from the approved operation and this remains the case for the longwall extensions which are located further away from the Drip than historic and current workings. The Drip is fed by a perched aquifer above the cliff which is disconnected from the regional groundwater system. Detailed monitoring undertaken by the mines has not identified any adverse impacts in the vicinity of the Drip.

Due to the additional area of depressurisation there is a predicted incremental baseflow reduction under the proposed modified mine plan of 0.001 ML/day for the Goulburn River and 0.003 ML/day for the Talbragar River. This is an increase of only 1-3% compared to the baseflow reduction associated with existing mining operations.

Groundwater Quality

Long-term monitoring at the site has shown that groundwater quality has not experienced any significant changes to date due to mining. No incremental impacts on groundwater quality are expected as a result of the proposed modification.

Groundwater Licensing and Water Take

UCML currently holds licences to extract groundwater, including allocation to extract from the:

- Goulburn River Extraction Management Unit as part of the *North Coast Fractured and Porous Rock Groundwater Sources Water Sharing Plan (WSP) 2016*; and
- *NSW Murray-Darling Porous Rock Groundwater Source WSP 2011*.

The Department recognises that while the proposed modification would result in an increase of 2% of the total mine footprint, there is no predicted increase in the peak take of water from groundwater sources from the proposed longwall extensions over the life of the mine.

Peak water take 6,055 ML/year from the Goulburn River Extraction Management Unit is expected to remain unchanged.

There is a predicted reduction in peak water take from the *NSW Murray Darling Porous Rock Groundwater Source* from 6,846 ML/year to 6,629 ML/year. This is due to the changes in the mine plan, where the proposed extension of longwall panels delays dewatering in other areas of the mine and therefore spreads the take and reduces peak volumes. It is also likely due to changes in the groundwater model such as moving from an annual to a quarterly stress period.

UCML has a licence to take 3,654 ML/year from the *NSW Murray-Darling Porous Rock Groundwater Source*, and on 7 January 2019 was advised by DoI L&W that it had successfully secured water allocations required for the life of the project, including the proposed modification (see **Appendix E**). The Department has been advised that on 24 January UCML completed the purchase of the allocation.

That is, UCML has acquired sufficient groundwater licences to account for the predicted peak take from these groundwater sources.

Monitoring, Mitigation and Management

Groundwater monitoring at Ulan Coal Mine has continued to expand over time. Private landowner bores are also monitored where access is granted. AGE considers that the existing monitoring network is adequate to manage any potential impacts from the proposed modification. Nevertheless, UCML has committed to the installation of additional bores in the Mona Creek alluvium as discussed in Section 5.1 above.

Ulan Coal Mine currently operates under a Water Management Plan, as required by existing approval conditions. This plan provides measures for mitigating potential groundwater impacts. The conditions require UCML to review and if necessary update its existing Water Management Plan, should the modification be approved.

The existing Water Management Plan has been prepared in consultation with DoI L&W and approved by the Department. It contains requirements for groundwater monitoring, groundwater assessment criteria (including trigger levels), a groundwater response plan and provisions to offset the loss of baseflow to watercourses. The Department notes that these management measures would be applied to the proposed modification in an updated Water Management Plan.

Conclusion

The Department considers that UCML's groundwater assessment has used conservative assumptions and that its predictions provide a sound basis to assess the proposal's potential groundwater impacts. The Department notes that the predicted impacts are consistent with the impacts already approved under existing mining operations.

The Department has carefully assessed potential impacts to groundwater and considers that these impacts are not significantly greater than those already approved. Furthermore, it is accepted that the existing monitoring network is adequate to monitor potential impacts from the proposed modification. Nevertheless, the Department notes that UCML has committed to expanding this network to more closely monitor the Mona Creek alluvium on the *Woodbury* property.

The Department considers that the existing performance measures and conditions including the requirements for trigger action response plans remain appropriate and provide adequate protection to groundwater resources in the modification area.

Surface Water

Introduction

The EA included a Surface Water Impact Assessment undertaken by Engeny Water Management. The Ulan Coal Mine is located within the headwaters of both the Goulburn River and Talbragar River System which are separated by the Great Dividing Range. The modification area lies within the Curra Creek catchment which is part of the Goulburn River system and the Mona Creek catchment which is part of the Talbragar River system. All the tributaries in the approved and proposed mining area are ephemeral.

UCML operates under the EPA's EPL which permits discharges from the mine to surface waters of up to 30 ML/day to the Goulburn River and sets strict water quality discharge limits. The modification proposal does not require any changes to the existing EPL with the predicted discharge volumes similar to that previously approved. The project approval allows discharge of an additional 17.5 ML/day to the Talbragar River subject to additional research studies outlined in UCML's Statement of Commitments that form part of the project approval.

Assessment of Impacts

Curra Creek

Curra Creek is a third order watercourse typically flowing in a southerly direction. One first order watercourse of Curra Creek (approximately 500 m) would be undermined by the proposed extension of LW 32.

Modelling indicates that predicted subsidence would have minimal impact on surface water characteristics within Curra Creek. The predicted maximum velocity changes are decreases up to 0.2 m/s, combined with maximum increases in flood depths for all events of 100 mm in the upstream reaches. The Department considers that these changes are minimal, are consistent with those already approved and would not result in significant adverse environmental impacts.

Mona Creek

Mona Creek is a fourth order watercourse typically flowing in a north-westerly direction to the Talbragar River. The proposed modification area would undermine several sections of Mona Creek.

Predicted changes to peak flows, velocities and stresses are expected to be consistent with those already approved. Peak flows within one tributary are predicted to decrease, whilst another tributary is predicted to experience increases in flow velocities of approximately 1.55 m/s in the 20-year event compared to 1.54 m/s under approved conditions. The Department considers that these changes are minimal and would not result in significant adverse environmental impacts.

Overall, the proposed modification is not expected to cause changes to creek erosion or scouring. UCML proposes to continue to monitor second order and above watercourses as per its existing Surface Water Monitoring Program (see below).

Two additional channel areas of Mona Creek have been identified for potential ponding of around 1 ha within the existing watercourse channels. The Department considers that this is a very minor increase compared to the already approved potential ponding area of around 47 ha. The Department also notes that experience to date has demonstrated that water does not tend to pond for any significant period at the site as the soils are sandy and relatively free draining.

The UCML-owned Etheridge farm dam is located within the main channel of Mona Creek (4^{th} order stream) and is predicted to increase in capacity by approximately 300 mm due to its edges being subsided. This Department considers that this predicted increase is minor and would not result in any significant adverse environmental impacts.

Goulburn River

Members of the community and several special interest groups raised concern about potential impacts to Goulburn River, in particular impacts to base flows, discharges and impacts on landowners with basic access rights to the river.

There are three coal mines currently operating in the Goulburn River catchment area, these being the Ulan Coal, Moolarben Coal and Wilpinjong Coal mines. The catchment covers an area of approximately 8,160 km^2. All three mines have licences to discharge via EPLs. Ulan Coal Mine discharges into Ulan Creek which is a tributary of Goulburn River.

The RTS contained a detailed analysis of historical trends and patterns observed within Goulburn River for both pre- and post-mining periods. It was noted that discharge volumes from Ulan Coal Mine may result in very minor changes in streamflow conditions within the Goulburn River system. However, the current observed below average annual streamflow conditions are not dissimilar to other periods within the recorded data range (1913 to date) and can be considered representative of annual and climatic variations.

The Department notes that community and special interest group submissions had a strong focus on the cumulative impacts of mining across the wider region. The Department is required to assess the modification application on its merits and in this case, considers that the proposed modification would have a very minor impact on the Goulburn River system from both an incremental and a cumulative perspective.

Licensed Discharges to the Goulburn River

Based on updated water balance modelling, the proposed modification would result in a maximum water surplus of 27.9 ML/day, which is approximately 0.2 ML/day higher that predicted for the existing operations. Both UCML and the EPA advised that the predicted water surplus could be managed within the currently approved EPL discharge capacity.

UCML undertakes monthly water quality monitoring for key indicator parameters on both Curra Creek and Mona Creek (i.e. pH, EC, total suspended solids (TSS) and total dissolved solids (TDS)).

Several special interest group and community submissions raised concern with elevated EC levels during discharge events at Ulan Coal Mine. The RTS noted that Goulburn River water quality EC fluctuates between 500 to 2000 µS/cm at SW02 which is immediately downstream of the Ulan Coal Mine. As reported in the RTS, the measured EC from discharges at SW02 is lower than the EC recorded at gauges further downstream.

Discharges from the mine would also be required to meet the discharge water quality limits set in the EPL, including a 100%ile limit of 900 µS/cm for electrical conductivity (EC). The minor (<1%) increase in predicted peak discharge volume would be an imperceptible change to salt load discharged to the Goulburn River. However, the EPA may change these limits over time under the provisions of the *Protection of the Environment Operations Act 1997*.

Water Users

The proposed modification area is predominantly owned by UCML but includes one remaining privately owned property within the predicted subsidence zone. No private landowners have been identified as using the surface waters of either Curra Creek or Mona Creek within or downstream of the proposed modification area. Regardless, existing conditions require UCML to provide compensatory water supply to any landowner whose supply entitlements, including surface waters, are adversely affected by the project.

Monitoring, Mitigation and Management

The predicted subsidence impacts would not result in any substantial changes to watercourse stability relative to current approved operations. UCML propose to continue to monitor all second order and above watercourses for potential impacts. If any remediation works are identified as being required as a result of this monitoring, they would be undertaken in a manner that would maintain channel grades and take into consideration channel stabilities and characteristics.

The changes to proposed surface infrastructure are not expected to significantly change the quantity or quality of surface water. Construction of infrastructure would be carried out in accordance with the *Managing Urban Stormwater: Soils and Construction Manual* (Landcom 2004, or its latest version) as required under the site's existing Water Management Plan.

The existing Water Management Plan contains requirements for surface water monitoring, surface water assessment criteria including trigger levels and a surface water response plan. The Department considers that these management measures remain appropriate and could continue to be applied to the proposed modification in an updated Water Management Plan.

Conclusion

Overall, the proposed modification is unlikely to result in significant surface water impacts as:

- there is adequate storage on site for any approved and proposed water make;
- any excess water would continue to be treated and discharged in accordance with the EPL;
- appropriate erosion and sediment control measures would continue to be implemented for all proposed surface works; and
- UCML holds sufficient surface water entitlements to carry out its activities.

The Department considers that UCML's surface water assessment has used conservative assumptions and that its predictions provide a sound basis to assess the proposal's potential surface water impacts. The Department has carefully considered potential impacts to surface water resources and considers that these impacts are not significantly greater than those already approved. Furthermore, it is accepted that the existing monitoring network is adequate to manage any potential impacts from the proposed modification. The Department considers that the conditions, including requirements for trigger action response plans remain appropriate and provide adequate protection.

5.3 Biodiversity

Introduction

The EA included an Ecological Impact Assessment undertaken by Eco Logical Australia (ELA) and the RTS included a Supplementary Ecology Impact Assessment. The proposed modification has the potential to impact biodiversity directly through clearing of native vegetation for construction purposes or indirectly through subsidence. The proposed layout changes for LWs 30-33 would also result in the longwalls extending beneath Durridgere SCA.

Assessment of Impacts

Threatened Flora and Fauna

Five threatened flora species were identified as having the potential to occur in the proposed modification area. However, none of these species were identified during field surveys, nor have they been identified during previous assessments and surveys. Therefore, it is unlikely these species would be adversely impacted.

A total of 12 vegetation communities were identified in the proposed modification area, with two of these meeting the criteria for endangered ecological communities (EECs) and/or critically endangered ecological communities (CEECs) under the *Biodiversity Conservation Act 2016* (BC Act) and/or *Environmental Protection and Biodiversity Act 1999* (EPBC Act). These include:

- 0.32 ha of White Box Yellow Box Blakely's Red Gum Woodland (listed under the BC Act); and
- 16.87 ha of White Box Yellow Box Blakely's Red Gum Grassy Woodland and Derived Native Grassland (listed under the EPBC Act).

No direct clearing of these threatened communities is proposed but there would be indirect impact from subsidence (see below). As discussed above, DoEE determined that these indirect impacts would not be significant enough to trigger the modification as a controlled action under the EPBC Act.

No threatened fauna species were identified during field surveys or in previous historical assessments of the proposed modification area, except for one threatened microbat species. The Department notes that 34 threatened fauna species were identified as 'known', 'likely' or with the 'potential to occur'. Fauna habitat within the proposed modification area consists of stands of *Allocasurarina* spp, cliff lines, habitat trees, dams and a small wetland area.

Koala feed trees (as listed under SEPP 44) are present in the proposed modification area, although not in sufficient numbers to warrant assessment as potential Koala habitat. The Department notes that the proposed modification area is not considered core Koala habitat due to the absence of breeding females. No Koalas or direct evidence of Koalas were observed during field surveys.

Assessments of significance have been completed for threatened species and ecological communities with the potential to be present in the modification area. ELA concluded that the proposed modification would not result in a significant impact to any threatened species, population or community listed under the BC Act and/or EPBC Act.

Indirect Impacts from subsidence

In 2015, UCML commissioned surveys to examine the impact of subsidence on the condition of vegetation communities. The Department notes that for most of the woodland parameters assessed (such as canopy species abundance, length of fallen logs, number of hollow-bearing trees projected foliage cover and exotic species), there was no significant difference between subsided ground and control areas. Subsidence due to the proposed modification is expected to be similar to that previously approved (see **Section 5.1**) and therefore indirect impacts to vegetation communities as a result of subsidence are not expected to be significant.

This is due to the large depth of mining and therefore low levels of ground strain and tilt predicted. However, cracking has been seen to destabilise the root systems of some trees contributing to them falling over. This impact is more commonly observed in areas with shallow depths and is unlikely to occur within the urridgere SCA.

UCML undertakes regular surveys and monitoring of cliff lines within the project area and has done so since 1994. During this time, five threatened microbat species have been recorded within the Ulan Coal Mine site. The Department notes that this monitoring indicates that populations of these threatened species appear to be stable. Cliff line surveys over the proposed modification area found that the cliffs do not contain caves that are likely to contain suitable habitat for roosting.

The Department notes that suitable habitat exists in areas to the east within Durridgere SCA, and also within Goulburn River National Park and Munghorn Gap Nature Reserve to the south-east. The Department considers that significant impacts on microbats are unlikely.

Noise, air quality, traffic and light all have the potential to indirectly impact on biodiversity during construction phases. The Department notes that these impacts would be temporary in nature and could be appropriately managed under existing requirements for management plans.

Direct Impacts

Clearing of 23.47 ha of native vegetation would be required for the proposed construction of surface infrastructure, with 4.11 ha clearing required within Durridgere SCA. The current approval allows clearing of 3.61 ha within Durridgere SCA.

UCML has sought to avoid direct impacts on native vegetation and Durridgere SCA through design of the infrastructure corridor including:

- Installing the main corridor on private land adjoining the SCA, along an existing fire trail;
- reducing the infrastructure corridor width within Durridgere SCA from 40 m to 20m;
- reducing the area of the dewatering bore pad areas from 100x100m to 90x90 m;

As discussed above (see **Figure 5**) , UCML has also committed to relinquishing 22.05 ha of land containing native vegetation that had previously been approved to be cleared resulting in an overall net increase in clearing of 1.42 ha for the proposed modification. **Table 4** below details the clearing by plant community type (PCT).

Table 4 | Net Vegetation Clearing

PCT Code	PCT Name	Modification disturbance area (ha)	Relinquished disturbance area (ha)	Residual disturbance area (ha)
401	Rough-barked apple – Blakely's Red Gum – Black Cypress Pine woodland on sandy flats, mainly in the Pilliga Scrub region	2.88	2.17	+0.71
472	Thyme Honey-myrtle – red gum – Mugga Ironbark shrubland / woodland in impeded drainage flats or depressions in the southern Brigalow Belt South Bioregion	1.12	2.44	-1.32
477	Inland Scribbly Gum – Red Stringybark – Black Cypress Pine – Red Ironbark open forest on	2.29	3.02	-0.73

PCT Code	PCT Name	Modification disturbance area (ha)	Relinquished disturbance area (ha)	Residual disturbance area (ha)
	sandstone hills in the southern Brigalow Belt South Bioregion and northern NSW South Western Slopes Bioregion			
478	Red Ironbark – Black Cypress Pine – stringybark +/- Narrow-leaved Wattle shrubby open forest on sandstone in the Gulgong-Mendooran region, southern Brigalow Belt South Bioregion	6.17	2.98	+3.19
479	Narrow-leaved Ironbark – Black Cypress Pine – stringybark +/- Grey Gum +/- Narrow-leaved Wattle shrubby open forest on the sandstone hills in the southern Brigalow Belt South Bioregion and Sydney Basin Bioregion	9.88	9.09	+0.79
624	Large-fruited Grey Gum – Narrow-leaved Stringybark open forest on sheltered sandstone hillslopes in the Scone region of the upper Hunter Valley	1.13	2.35	-1.22
	Total	23.47	22.05	1.42

Mitigation and Management

Direct Impacts

UCML has committed to further minimise vegetation disturbance and impacts on key habitat features during detailed design and construction of the surface infrastructure. This is consistent with the project approval conditions which require UCML to minimise impacts on flora and fauna. UCML has also committed to rehabilitating disturbance areas following the completion of mining with the aim of re-establishing the pre-mining condition.

Indirect Impacts from subsidence

Furthermore, under its existing approval, UCML must comply with a performance measure of 'negligible impact' for threatened species, populations, habitat or ecological communities. The existing Biodiversity Management Plan contains requirements for management measures, completion criteria, monitoring and contingency measures to ensure biodiversity is appropriately managed on site and in the existing offset areas. This plan would be reviewed, and if necessary, updated following any approval of the proposed modification.

Biodiversity Offsets

UCML proposed a compensatory planting program for the removal of mature trees associated with the development of the surface infrastructure corridor.

However, in response to concerns raised in submissions and OEH advice, UCML proposed a biodiversity offset strategy to offset the residual 1.42 ha proposed to be cleared. UCML calculated the offset requirement using the *Framework for Biodiversity Assessment* (FBA), in consultation with OEH. This assessment determined that 61 ecosystem credits would be required.

The Department notes that the calculation of credits required is complicated as both PCT 401 and PCT 479 are not available for selection within the Biobanking Credit Calculator (BCC) as the calculator only allows PCTs to be selected from those that occur within the Hunter Rivers Catchment Management Area (CMA) because most of the project location is within this CMA. As such surrogates were required.

OEH reviewed the data entered into the calculator and advised the Department that the data was acceptable and appropriate and that PCT 478 was a suitable surrogate, and therefore an offset of 61 ecosystem credits is an appropriate offset credit liability (see **Appendix E**).

Nevertheless, OEH in its advice on the RTS noted that no species credit species are generated for the Koala, Regent Honeyeater or Squirrel Glider in PCT 478 and that species credits should be calculated and retired for these species, based on the residual clearing of PCTs 401 and 479.

The Department notes that the incremental clearing in these PCTs is low and that the credits generated would be small. However, the Department accepts OEH's recommendation and has included a requirement to calculate species credits for the residual clearing in PCT's 401 and 479 and retire these species credits.

UCML proposes to retire the required ecosystem credits in accordance with the requirements of the BC Act, including retiring credits in a land-based offset, funding biodiversity conservation actions or making a payment into the Biodiversity Conservation Fund.

Conclusion

Both the Department and OEH support the commitment to offset the net overall clearing of 1.42 ha. The Department has recommended that UCML retire its ecosystem credit liability of 61 credits within 12 months of the date of approval of the modification request (if approved) and also calculate and retire relevant species credit species related to PCTs 401 and 479.

The Department considers that impacts to threatened species would not be significant given that:

- threatened flora or fauna species were not identified within the proposed modification area;
- the overall net clearing of 1.42 ha is relatively small; and
- there is existing habitat for threatened flora and fauna close by, including in National Park estate.

The Department has carefully considered potential impacts to biodiversity and considers that these impacts are not significantly greater than those already approved. Further, the existing management and monitoring network is adequate to manage any potential impacts from the proposed modification. The Department considers that, with the additional requirement to offset the incremental 1.42 ha of direct clearing, the conditions remain appropriate and provide adequate protection.

5.4 Aboriginal Heritage

Introduction

South East Archaeology updated its previous assessment of the Aboriginal heritage values of the area and potential impacts of the proposal, focusing on the area above and adjoining the proposed extension of the LW panels and the new surface disturbance areas.

There have been extensive studies of Aboriginal cultural heritage values over many years with the development of mining in the area.

The broader mine project area contains 1,537 identified Aboriginal sites and Potential Archaeological Deposits (PADs). Typical Aboriginal sites found at Ulan Coal Mine include rock shelter sites in steeper areas along the Great Dividing Range, grinding grooves and artefact scatters and isolated finds, mainly associated with valley floors.

Under the existing approval, UCML is required to meet a performance measure of 'nil impact' for Aboriginal sites in the Brokenback Conservation Area (a 58 ha site containing 27 rock shelters, 6 of high significance), Grinding Groove Conservation Areas, and on Mona Creek Rock Shelter sites. The Department notes the concerns raised by the community regarding potential impacts to Mona Creek rock shelter sites as the longwall extensions would move closer to these sites (see **Section 5.1** also regarding the Mona Creek site).

Assessment of Impacts

Previously surveyed areas identified three known sites within the modification area. Surveys undertaken for this modification identified a further 14 sites, comprising nine artefact scatters and 5 isolated finds. It is noted that approximately 21.6 ha of privately-owned land (mostly on *Woodbury*, and a small portion of *Billir*) was not surveyed.

The Department notes that no surface disturbance is proposed in these areas and further surveys would be completed in preparing detailed Extraction Plans for each longwall panel. At the time of the survey UCML were in the process of acquiring *Billir* and now that it is mine owned, the survey can be undertaken as part of finalising an Extraction Plan for the relevant long wall panel.

Of the 17 sites identified in the proposed modification investigation area:

- over half were classified by South East Archaeology as having an overall low significance;
- 25% were classified as having low-moderate or moderate significance;
- 19% were classified as having a moderate to high significance; and
- none were classified as having an overall high significance.

While the sites were classified with an overall significance level based on archaeological/ scientific, aesthetic, educational, cultural and historic significance, the Department notes that several Registered Aboriginal Parties (RAPs) consulted for the modification considered that the cultural significance of all the identified sites is high significance to Aboriginal people.

The Department notes that no sites were identified within the proposed surface disturbance area, therefore no direct impacts are predicted. Any potential impacts would arise indirectly from subsidence. Negligible impacts are predicted for artefact scatter and isolated find heritage sites located away from cliff areas, due to the low potential for perceptible surface impacts from surface subsidence effects, such as from surface cracking and ponding. This is consistent with subsidence impacts on these types of sites for the approved project.

However, two Aboriginal rock shelter sites on steeper areas could potentially be impacted due to subsidence impacts from the westward extension on LW W8 at UUG (see **Figure 7** above), including:

- Site 179 (MC 22), a rock shelter with artefacts and subject to an estimated 20% probability of rock fall and 70% probability of perceptible impacts; and
- Site 724 (MC 236) is a rock shelter with PAD and is subject to an estimated <1% probability of rock fall and 10% probability of perceptible impacts.

The Department notes that both sites are assessed by South East Archaeology as having low heritage significance, concluding that these sites have limited potential to yield deposits of research value or contribute to a greater understanding of Aboriginal occupation in the area. The predicted impacts are consistent with similar sites in the approved footprint, and the sites would be managed in accordance with an approved Heritage Management Plan (see below).

Given that there is only a low likelihood of a rockfall associated with site MC236 and that both MC236 and MC22 are classified as low significance, and the fact that rock shelters with higher significance at Mona Creek and Brokenback Conservation Area are protected, the Department considers that these impacts are acceptable.

Mitigation and Management

Based on its subsidence assessment, SCT concluded that there is negligible risk that subsidence associated with the proposed modification would impact on the protected Mona Creek rock shelter. The Department considers that the proposed modification would not impact on this site and that the existing conditions provide adequate protection.

The existing Heritage Management Plan contains requirements for:

- programs and procedures for recording, salvaging, excavating and/or managing Aboriginal sites;
- conserving, managing and monitoring Aboriginal sites outside the project disturbance area;
- managing the discovery of any new Aboriginal objects or skeletal remains during the project;
- maintaining and managing access to archaeological sites by the Aboriginal community; and
- ongoing consultation and involvement of the Aboriginal communities in the conservation and management of Aboriginal cultural heritage on the site.

This plan would be reviewed and updated if the proposed modification were approved.

Conclusion

The Department has carefully considered potential impacts to Aboriginal Heritage and considers that these impacts are not significantly greater than those already approved. Furthermore, it is accepted that the existing management and monitoring network is adequate to manage any potential impacts from the proposed modification. The Department considers that the conditions remain appropriate and provide adequate protection.

5.5 Other Issues

The Department has considered other potential impacts of the proposed modification. These considerations are summarised in **Table 5**.

Table 5 | Summary of other issues raised

Issue	Findings	Recommended Condition
Noise	• The EA included a Noise Impact Assessment undertaken by Umwelt (Australia) Pty Ltd in accordance with the *Noise Policy for Industry* (EPA, 2017). • The surface infrastructure component of the proposed modification would take up to 8 months and would occur over four phases; site establishment, drilling, casing installation and grouting of casing. • Exceedances of the daytime noise level of 40 dB(A) LA_{eq} by 1 dB(A) are predicted to occur for a period of approximately one month during site establishment works at two dwellings (R39 and R40). This increase is classified as negligible under the NPfI and would be imperceptible to these receivers. • Exceedances of the evening and night time noise level of 35 dB(A) LA_{eq} by 3 dB(A) are predicted to occur during drilling at the same two residences for an approximate 6-month period under adverse weather conditions (inversion or light wind towards these receptor). This increase is classified as marginal under the NPfI. • There would be no exceedances of the sleep disturbance screening level of 40 dB(A) during the night time period.	• The Department and EPA recommends specific noise criteria for residences R39 and R40 during the construction of surface infrastructure works associated with MOD4 and all other receivers do not exceed the daytime project noise trigger level of 40 dB(A) LA_{eq} and night time project noise trigger level of 35 dB(A) LA_{eq}
Air quality	• The likely causes of air quality impacts associated with the proposed modification would be limited to the short-term dust generation from the clearing of vegetation and the use of access tracks during operation.	• UCML is required to comply with existing air quality criteria and management conditions.

Issue	Findings	Recommended Condition
	• The closest residence (R39) is 1.6 km from the proposed surface facilities. • Short-term air quality impacts during the construction of the surface corridor and dewatering boreholes would be managed through application of standard dust management practices, such as watering access tracks, dust suppression on drill rigs and rehabilitation of disturbed areas. • The Department considers that the proposed modification would not significantly increase the air quality impacts of the mine or require any change to the existing approved air quality management regime.	• The Department considers that the conditions remain appropriate and provide adequate protection.
Greenhouse Gas	• Submissions from special interest groups and the public were concerned about the greenhouse gas emissions of the proposal and its contribution to climate change. • The Department acknowledges community concerns about climate change and the actions being taken globally to address these concerns. • While the proposal would not result in any increases in the annual greenhouse gas emissions of the approved mine because the maximum annual extraction rate of the mine would stay the same at 24 Mt of ROM coal, it would result in a very small (around 2.4%) increase in the total greenhouse gas emissions of the approved mine. • These emissions would be comprised of Scope 1 emissions (generated by UCML during operations on site), Scope 2 emissions (generated by other parties offsite such as power stations, principally to provide key inputs to the mining operation such as electricity), and Scope 3 emissions (generated by other parties in Australia and overseas, principally associated with transporting and burning the coal). • The Scope 1 & 2 emissions of the mine are estimated to increase by 27,535 and 65,763 tonnes CO2-e respectively, which represents a very small (0.016%) fraction of Australia's annual greenhouse gas emissions. • Under the existing conditions of consent, UCML is required to implement all reasonable and feasible measures to minimise these greenhouse gas emissions of the mine and has committed to continue to do this if the proposal is approved. • The Department supports this and notes that UCML's commitment is consistent with the policy to minimise the greenhouse gas emissions of development under the Mining SEPP, the conditions of the existing consent and the obligations that apply to other mining operations across NSW. • Scope 3 emissions, which are not under the control of UCML, are estimated to increase by approximately 16 Mt CO2-e. • These emissions represent an extremely small fraction of annual global greenhouse gas emissions and would have no discernible impact on climate change. • Further, these emissions would occur regardless of whether the proposal is approved as the demand for coal would continue to remain high during the approved timeframe of the mine and would be filled by coal from other suppliers if it does not come from UCML. • Finally, the Scope 3 emissions of the proposal are the Scope 1 emissions of other parties. Consistent with current international policy and practice, they should be properly accounted for in the jurisdiction in which they are generated, and any actions taken to mitigate these emissions or to drive the transition of these jurisdictions to a lower emissions-	• Under existing conditions, UCML is required to implement all reasonable and feasible measures to minimise greenhouse gas emissions from the site. • UCML is also required to prepare and implement an Air Quality and Greenhouse Gas Management Plan in consultation with EPA. • The Department considers that the conditions remain appropriate and provide adequate protection.

Issue	Findings	Recommended Condition
	based future should be handled under the relevant national and international agreements for mitigating the impacts of climate change, principally the Paris Agreement.	
Visual	• Potential impacts to visual amenity would be limited to the construction and operation of surface infrastructure. • The closest residence (R39) is located about 1.6 km from these surface works and is unlikely to experience any significant visual impacts due to the distance from these works, the intervening vegetation screen and the modest nature of the surface infrastructure. • UCML would continue to utilise natural colours for infrastructure, progressively decommission infrastructure and rehabilitate the site as soon as practical.	• Under the existing conditions, UCML must landscape and manage the site in a manner that minimises visual impacts. • The Department considers that the conditions remain appropriate and provide adequate protection.
Socio-economic	• A socio-economic assessment undertaken for the proposed modification did not identify any significant social or economic impacts. • Current employee numbers at the mine would remain unchanged and would therefore not increase the current demand on public services in the local area. • The extraction of an additional 6.4 Mt ROM coal would provide approximately $39.5 million in royalties over the life of the mine.	• No additional conditions are considered necessary.

6. Evaluation

The Department has assessed the modification application and supporting information in accordance with the relevant requirements of the EP&A Act.

The proposed modification would allow for the recovery of a 6.4 Mt ROM coal resource that was previously considered sterilised that can be extracted using the existing mining fleet and workforce. The additional extraction would provide a further $40 million royalty to NSW, improve the productivity of the mine and contribute to the security and continued employment of the existing workforce and ongoing expenditure in the State and local economies.

The Department considers that this can be achieved with minimal incremental environmental impacts to water resources, biodiversity and heritage compared to the approved project.

Subsidence impacts and effects on natural and built features would be similar to that of the approved project with a small (2%) increase in the mining footprint. The existing performance measures would continue to be met and the impacts monitored and managed under the existing Extraction Plan process, including subsidence impacts on the Woodbury private property. Importantly, there would be no impacts on the protected Mona Creek rock shelter site located on the Woodbury property, however there is an increased likelihood of impact on 2 rock shelters located outside of the protected Mona Creek site, classified as having low significance.

Impacts on water resources would not change to any great extent to that of the approved mining operation, with similar predicted groundwater inflow to the underground workings, drawdown impacts on private bores, baseflow changes and surface water discharges to the Goulburn River. UCML can continue to operate in accordance with

discharge limits set in the EPA's EPL and has sufficient water allocated for the predicted take of water over the mine life.

Residual impacts to biodiversity would be limited to a net increase of clearing of 1.42 ha of non-threatened native vegetation, which would be appropriately offset. The impacts from the proposed surface infrastructure works would continue to be managed within the existing strict conditions of approval.

The Department considers that its recommended revised conditions provide a comprehensive, strict and precautionary approach to ensuring the project would continue to comply with performance measures and standards, and that the predicted residual impacts would be effectively avoided, minimised, mitigated and/or compensated.

Based on its assessment, the Department of Planning and Environment considers that the proposed modification has merit, and is in the public interest and should be approved, subject to the stringent conditions of approval outlined in the recommended Notice of Modification in **Appendix F** and the consolidated project approval in **Appendix G**.

The Department's assessment report is hereby presented to the Independent Planning Commission to determine the application.

Recommended by:

J Evans 8/5/19

Jessie Evans
Team Leader
Resource Assessments

Recommended by:

8/5/19

Stephen O'Donoghue
A/Director
Resource and Energy Assessments

8/5/19

David Kitto
Executive Director
Resource Assessments and Business Systems

Appendices

Appendix A – List of Documents

- *Ulan Continued Operations Project – Modification 4 Longwall Optimisation Project Environmental Assessment*, dated January 2018;
- *Ulan Continued Operations Project – Modification 4 Longwall Optimisation Project Response to Submissions*, dated August 2018;
- Letter from UMCL dated 25 January 2019 (**Appendix E1**) including:
  - Attachment A: *Assessment of Rock Falls in Mona Creek Cliff Protection Area report prepared by SCT Operations Pty Ltd and dated 11 January 2019*, SCT Operations Pty Ltd;
  - Attachment B: *Mona Creek Cultural Heritage Assessment*;
  - Attachment C: Table of Required Water Allocations
- Biobanking Credit Calculator Report and advice from OEH dated 31 January 2019 (**Appendix E2**)
- Letter of landowner consent from NPWS (**Appendix E3**)
- Project approval 08_0184

Appendix B – Environmental Assessment

Appendix C – Submissions

Appendix D – Response to Submissions

Appendix E – Additional Information

Appendix F – Notice of Modification

Appendix G – Consolidated Approval

Appendices B-G- See the Department's Major Projects Website at:

http://majorprojects.planning.nsw.gov.au/ or

https://www.planningportal.nsw.gov.au/major-projects