

ASSESSMENT REPORT

MOOLARBEN COAL MINE Northern Borefield Modification (MP 05_0117 MOD 7)

1 BACKGROUND

Moolarben Coal Mines Pty Limited (MCM), a wholly owned subsidiary of Yanzhou Coal Mining Limited, operates the Moolarben Coal Mine in the Western Coalfield of New South Wales. Moolarben Coal Mine is located between the Ulan and Wilpinjong Coal Mines, about 40 kilometres (km) northeast of Mudgee (see Figure 1).

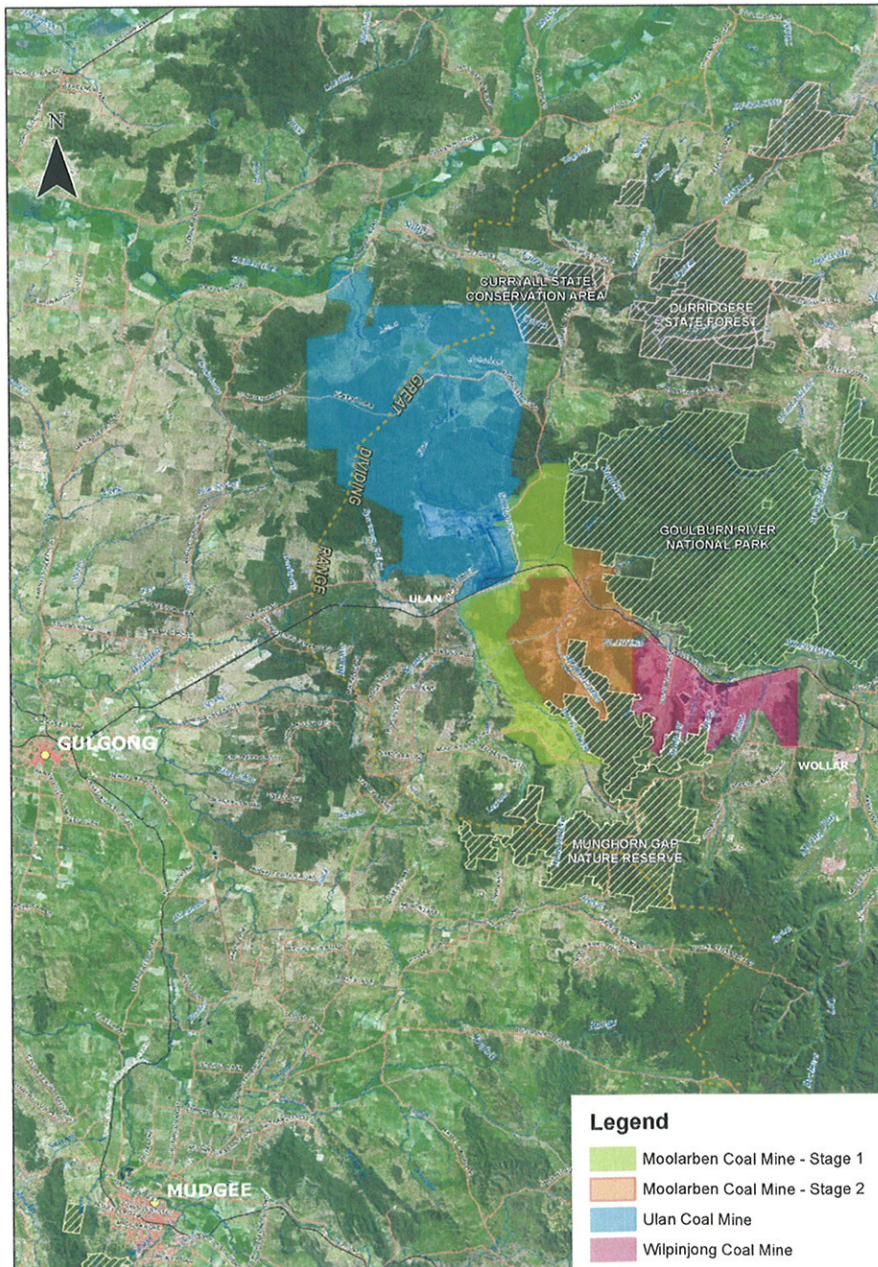


Figure 1: Regional Context

Stage 1 of the Moolarben Coal Mine (MP 05_0117) was approved by the Minister for Planning on 6 September 2007. The Stage 1 approval allows:

- extraction of a coal resource of 127 million tonnes over a period of 21 years at a combined rate of up to 12 million tonnes per annum (Mtpa) run-of-mine (ROM) coal from:
 - 3 open cut pits, at a combined rate of up to 8 Mtpa; and
 - 1 longwall mining domain, at up to 4 Mtpa;
- construction of a range of associated infrastructure, including a coal handling and preparation plant (CHPP), which has the capacity to process all ROM coal extracted from Stages 1 and 2 of the project; and
- developing a coal loader and rail loop to allow all coal produced from the project to be railed to export and domestic markets.

The layout of Stage 1 is shown in **Figure 2**. Construction of Stage 1 began in December 2008 and mining operations commenced in May 2010. The approval has been modified on six previous occasions (Mods 1, 2, 4, 5, 6 and 8).

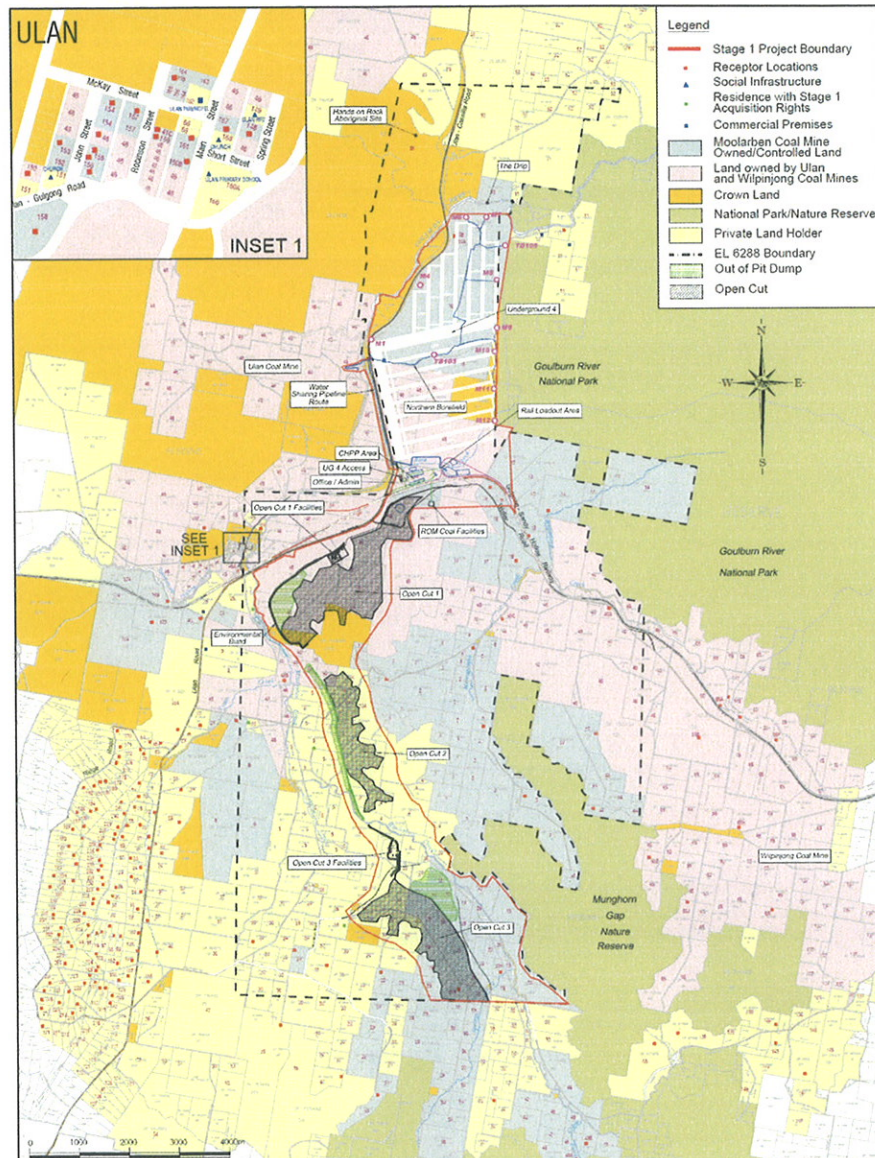


Figure 2: Stage 1 General Arrangement

MCM has also sought separate project approval from the Minister under Part 3A of the *Environmental Planning and Assessment Act 1979* (EP&A Act) for Stage 2 of the Moolarben Coal Mine. This application (MP 08_0135) proposes an additional open cut coal mine and two new underground coal mines on land to the east of, and adjacent to the Stage 1 operations.

2 PROPOSED MODIFICATION

MCM's proposed modification seeks approval to construct the surface infrastructure associated with the development of a water supply and dewatering borefield located in the area above the approved Underground No 4 Mine (UG4) (see **Figure 2**). The impacts associated with the extraction of water from this "Northern Borefield" have already been assessed and approved as part of the Stage 1 assessment. The modification was described in detail in the Environmental Assessment (EA) submitted in support of the application (see **Appendix A**), and amended in MCM's Response to Submissions (RTS) report (also see **Appendix A**). The modification (as amended) includes the following proposed surface works:

- construction, installation and operation of 10 groundwater bores, bore pads and submersible bore pumps (2 existing bores, 8 new bores);
- construction of 12 km of access tracks, up to 10 metres (m) in width;
- installation and operation of 10.4 km of inter-connecting pipelines and powerlines within common 1 m wide trenches located within a 10 m wide infrastructure/access road easement; and
- installation and operation of power supply switching gear at pipeline junctions and a single power supply generator.

The proposed layout of the borefield and associated infrastructure is shown in **Figure 3**. All works would be conducted within the approved mine footprint and would not affect the extent or timing of approved mining activities. The proposed modification would not alter the size of the mine, the methods of mining or the rate of coal extraction or production.

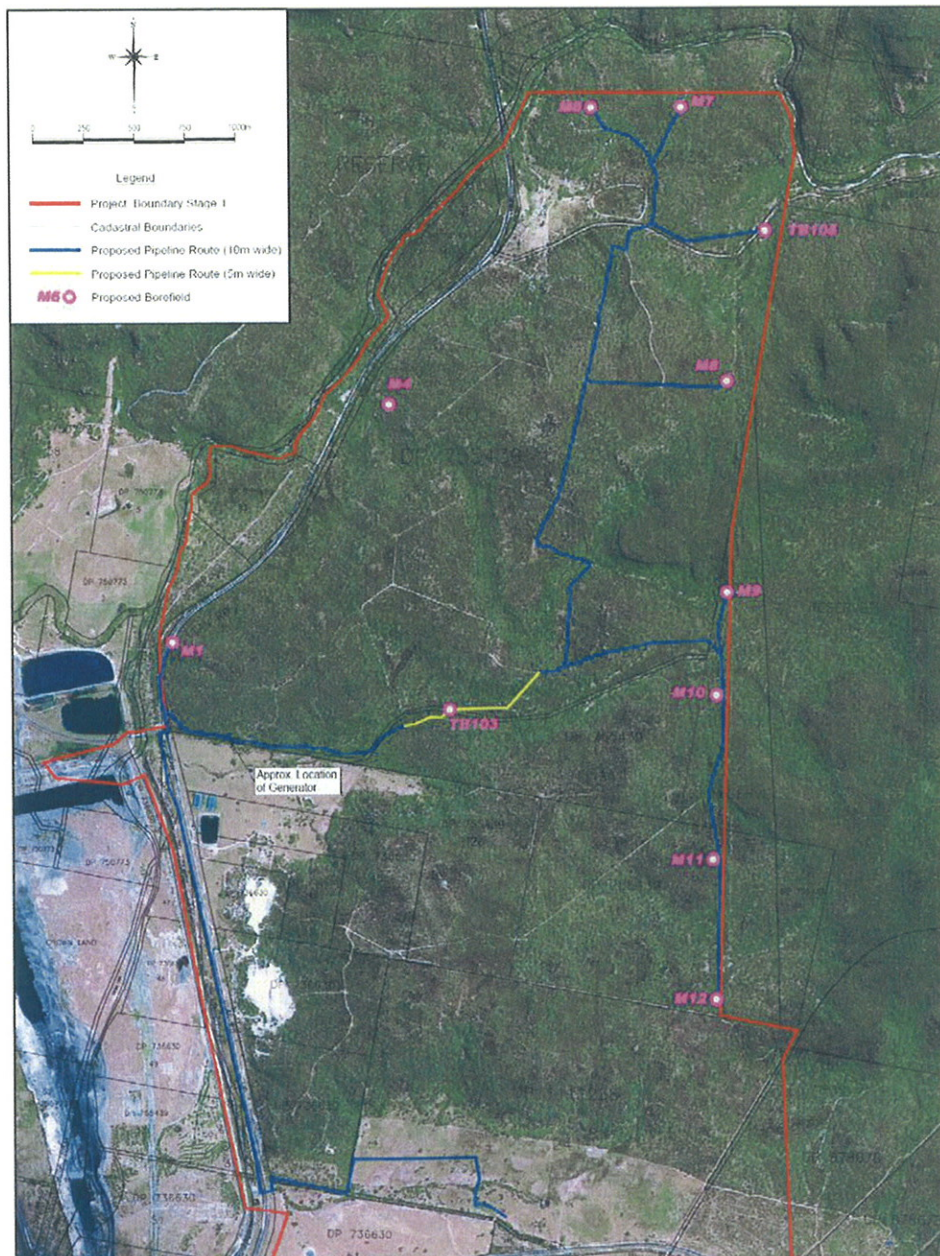


Figure 3: Proposed Borefield Layout

3 STATUTORY CONTEXT

3.1 Approval Authority

The Minister was the approval authority for the original project application, and is consequently the approval authority for the modification application. The application may not be determined under delegation, due to the number of submissions received which objected to the project.

3.2 Modification

The Department is satisfied that the proposed modification falls within the scope of a "modification" as envisaged under Section 75W of the EP&A Act, and may therefore be determined as a modification, rather than being considered as a project in its own right.

3.3 Consultation

Under Section 75W of the EP&A Act, the Department is not required to notify or exhibit an application seeking to modify the original project approval. However, after accepting the modification application and the accompanying EA, the Department:

- referred the EA to the Department of Environment Climate Change and Water, the NSW Office of Water and the Mid-Western Regional Council for comment; and
- placed the EA on the Department's website for viewing.

The Department received a total of 29 submissions on the project, including:

- 3 from public authorities;
- 1 from a special interest group (Mudgee District Environment Group); and
- 25 from the general public (including 3 petition letters).

All submissions are included in full in **Appendix A**. A summary of the issues raised in submissions is provided below.

Government Agencies

All of the government authorities consulted either supported or else did not object to the proposed modification. However, all expressed some residual concerns with certain aspects of the proposal and provided recommendations to minimise environmental impacts. The key issues raised by each authority are considered below.

The **Department of Environment, Climate Change and Water** (DECCW) supports the proposed modification, but identified concerns relating to resolution of noise impacts on an adjacent landowner, potential impacts on DECCW estate and the adequacy of the EA's biodiversity assessment and offset.

DECCW's **NSW Office of Water** (NOW) advised that it has issued the bore licences required to facilitate the construction and operation of the borefield, however noted that 3 of the bores are located within potential drawdown interference zones to neighboring bores and/or the Goulburn River and its connected alluvium. NOW requested that MCM resolve the monitoring locations and cease to pump limits for these bores.

The **Mid-Western Regional Council** (Council) requested that the Department consider potential noise impacts at "The Drip" landform feature and picnic area, and the need for MCM to offset the loss of all native vegetation.

Special Interest Group and General Public

All submissions from the general public and the submission from the special interest group objected to the proposed modification. The vast majority of issues raised were in relation to the impact on the amenity of guests at the Goulburn River Stone Cottages, a tourist accommodation cottage located approximately 800 m from the nearest bore (TB 105). Other issues raised related to:

- noise and dust impacts;
- impacts on biodiversity;
- impacts on groundwater quality and quantity;
- long term sustainability issues associated with coal mining;
- cumulative impacts, particularly at "The Drip";
- removal of Aboriginal heritage sites;
- loss of water for agricultural uses; and
- existing compliance issues.

3.4 Response to Submissions

MCM has provided a Response to Submissions (RTS) report to address the issues raised by government agencies, the special interest group and the general public (see **Appendix A**). The RTS report also details a number of changes to the proposed modification which MCM has committed to in order to reduce impacts associated the construction and operation of the borefield. The amendments include:

- burying pipelines and power supply cables;
- narrowing the width of the infrastructure and access easement (from 20 m to 10 m);
- removing above ground water storage tanks and transfer pumps;
- reducing the extent of clearing around borehead works;
- using a single generator; and
- adjusting the pipeline route.

The modifications will reduce the total amount of vegetation required to be cleared, eliminate potential noise impacts at privately-owned properties and reduce visual impacts.

4 ASSESSMENT

The Department has assessed the application, EA, submissions, the RTS report and the amendments to the original modification. The following provides a summary of the key issues.

4.1 Biodiversity

Construction of the proposed borefield would require the disturbance or clearing of approximately 9.8 hectares (ha) of native vegetation and 0.5 ha of White Box-Yellow Box-Blakely's Red Gum Grassy Woodland, which is listed as both an endangered ecological community (EEC) under the *Threatened Species Conservation Act 1995* (TSC Act) and a critically endangered ecological community (CEEC) under the *Commonwealth Environmental Protection and Biodiversity Conservation Act 1999* (EPBC Act).

The borefield proposal as first described in the EA would have resulted in an additional 13.7 ha of native vegetation being disturbed or cleared. However, in response to issues raised in DECCW's submission, MCM substantially reduced the amount of clearing by proposing to bury the water and power lines in a common trench, thereby reducing the width required for the infrastructure and access easements.

In order to compensate for the clearing of 9.8 ha of native vegetation and 0.5 ha of EEC/CEEC, MCM proposed to include additional offsetting areas to those already required under the Stage 1 approval. The Department did not accept the offset proposed due to its small size, isolated location, lack of connectivity and lack of value in respect of strategic vegetation corridors. Furthermore, the Department rejected MCM's request to transfer sections of the existing Stage 1 offset to other areas (for the same reasons) and questioned the continued wisdom of MCM's proposed offset of nearby land owned by Ulan Coal Mine ("Property 46", as referred to in existing condition 41A(c)).

In its RTS report, MCM consequently proposed a major restructuring of its Stage 1 biodiversity offset requirements (ie existing conditions 41A and 42), as well as the offset associated with this modification. As indicated in **Figure 4** and summarised in **Table 1**, the proposed new Stage 1 biodiversity offset includes three key areas, two of which were included in the original Stage 1 offset (Area 1 and Area 2) and one (Area 3) – known as Dexter Mountain - which is a new area located southwest of the project. All proposed offset areas are located on land owned by MCM.

MCM engaged Eco Logical Australia Pty Ltd to undertake a review of the vegetation communities present within offset Areas 1 and 3, in particular assessing EEC/CEEC communities. Eco Logical concluded that approximately 17 to 19 ha of good quality EEC/CEEC was present within the two areas.

Table 1: Revised Stage 1 Biodiversity Areas

Offset Area (Figure 4)	Identifier	Land Area (ha)	Offset Area (ha)	Native Vegetation Offset Area (ha)	EEC / CEEC Offset Area (ha)	Cleared Area (ha)
1	Red Hills Property 12, 13, 14, 15	416	386	363	0	23
2	UG 4 Property 10	705	705	646	52	7
3	Dexter Mountain Property 6	470	470	445	10	15
Total		1591	1561	1454	62	45

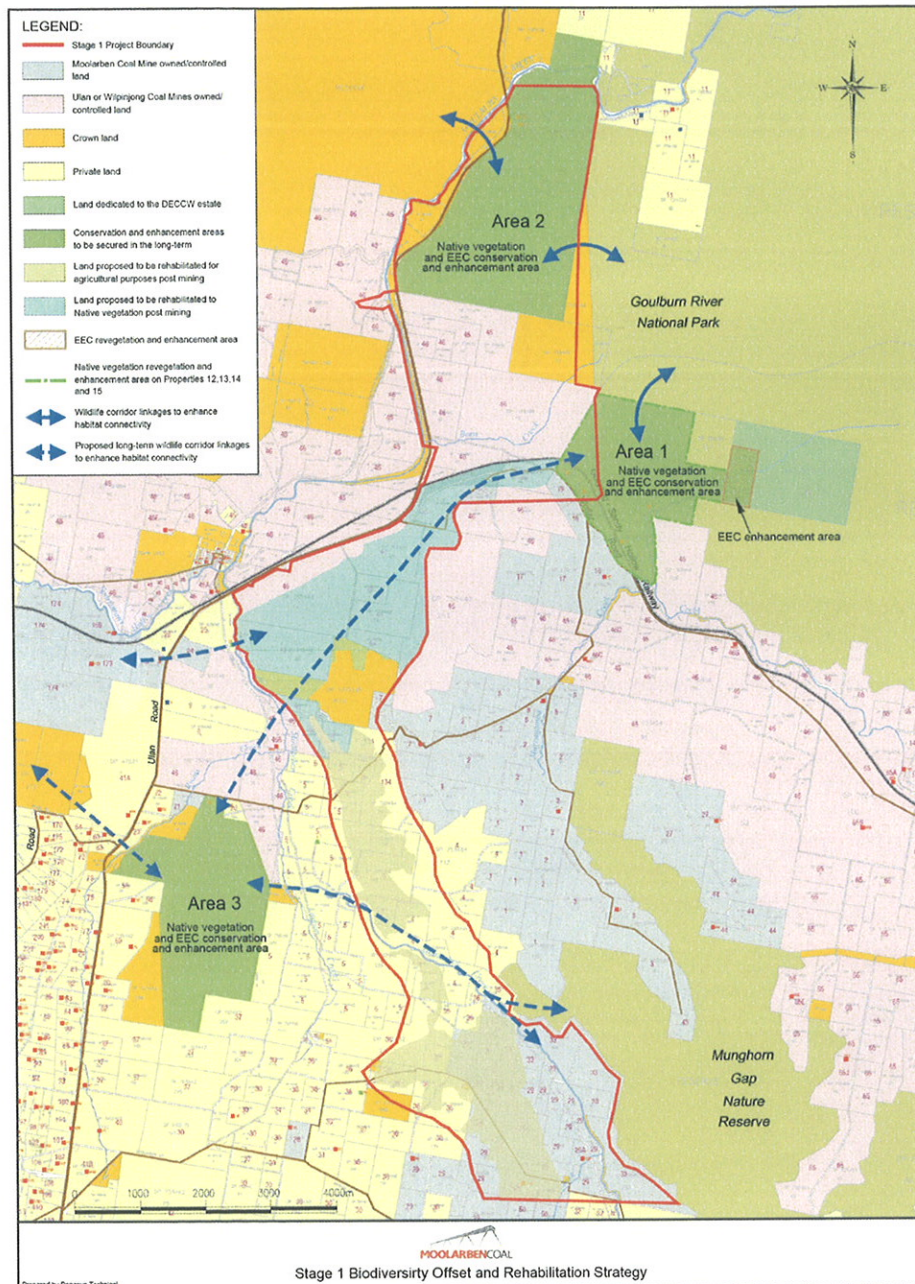


Figure 4: Revised Stage 1 Biodiversity Offset

The Department is satisfied that the revised Stage 1 offset adequately meets conditions 41A and 42 in the existing consent and provides an additional 19.6 ha of land containing native vegetation and 2 ha of land containing EEC/CEEC to compensate for the clearing associated with this modification. The Department believes that the revised offset provides consolidation of existing offset requirements into three strategically located areas and that these areas will provide improved long-term biodiversity outcomes, including habitat protection and secure wildlife corridor linkages and habitat connectivity throughout the area. The Department notes that the modification offset provides conservation of native vegetation at a ratio of 2:1 and of EEC/CEEC at a ratio of 4:1. These offset ratios are consistent with those provided for other projects in the Western and Hunter Coalfields.

Consequently, the Department has recommended that conditions 41A and 42 of the existing project approval be amended to reflect the new offset areas. In addition, the Department recommends that the Rehabilitation & Offset Management Plan required under other existing conditions of approval be revised to include specific measures to provide adequate long-term protection and management of these areas.

4.2 Water Resources

As indicated above, the impacts associated with extraction of water from the borefield have been assessed and approved as part of the Stage 1 assessment.

NOW subsequently issued bore licences 20BL171999 and 20BL172001 to construct and operate the bores. These licences include offset distances to third order streams, recording of extracted groundwater volumes, monitoring to determine impacts on surrounding groundwater users and pumping restrictions. However, in its submission, NOW indicated that proposed bores TB 105, M7 and M6 are located within potential drawdown interference zones to neighbouring privately-owned bores and/or the Goulburn River and its connected alluvium, and that cease to pump limits for these bores were not included in the bore licences.

Under an existing condition of approval, MCM is required to update its Groundwater Management and Groundwater Response Plan to include groundwater level monitoring and trigger levels applicable to existing privately-owned groundwater bores in the vicinity of the UG4 borefield, as well as baseflows to the Goulburn River and associated creeks. The monitoring regimes and trigger levels will need to be determined in conjunction with NOW prior to the commencement of construction of the borefield. The Department notes that, if nominated trigger levels are reached, MCM would be required to investigate and develop cease to pump limits on the UG4 bores in consultation with NOW. The Department also notes that existing conditions of approval require MCM to offset any loss of baseflow to the Goulburn River and associated creeks and provide suitable compensation or compensatory measures to the owners of any privately-owned land whose water supply is adversely affected by the project.

The Department has, however, recommended that the existing condition be amended to require that baseflow offsets are provided via retirement of adequate water entitlements and that water compensatory measures to be provided within 24 hours of the loss being identified. The Department is satisfied that these measures will ensure adequate monitoring of groundwater levels, offsetting of baseflows and compensation for groundwater users.

Many submissions which objected to the modification raised concerns about impacts of groundwater interference on sensitive natural features in the vicinity of the Goulburn River, such as "The Drip". In its RTS report, MCM indicates that the borefield will be developed in aquifers within the Permian coal measures. MCM contends that these aquifers are below the level of the Goulburn River and are not hydraulically connected either to the river or "The Drip". MCM also committed to casing the bores in order to prevent ingress of groundwater from aquifers in Triassic rocks higher in the sedimentary sequence.

Hydrogeological studies undertaken as part of the Ulan Continued Operations Project¹ and the Moolarben Stage 1 and 2 projects² support the opinion that "The Drip" is a perched aquifer system, which is independent of the deeper groundwater and therefore "isolated" hydraulically from any drawdown effects due to mining. The Department engaged Dr Frans Kalf, an independent hydrologist, to undertake a peer review of predicted impacts of the surrounding projects on "The Drip". Dr Kalf did not disagree in principle that "The Drip" system is a perched, isolated aquifer, however he noted that:

"there is no hard evidence available that would confirm this opinion or the conceptual model used by the mining company's consultants" and "further investigation of this flow system and monitoring of seepage over time could only confirm this".

Consequently, the Department has recommended conditions requiring that MCM, in collaboration with Ulan Coal Mines Limited, monitor and/or validate the water supply to "The Drip" and ensure that the project, including the UG4 borefield, has negligible impacts on this aquifer system.

4.3 Noise

The EA includes a noise impact assessment undertaken by Spectrum Acoustics. The assessment indicated that, although the noise generated by the modification would comply with the mine's noise impact assessment criteria, the noise generated from ground-level transfer pumps and generators would be audible at the nearest affected premises (ie the Goulburn River Stone Cottages).

Council and the majority of submissions objecting to the modification raised concerns about the impact of noise from the borefield on the users of the Goulburn River National Park and "The Drip" and guests at the Stone Cottages. In its RTS report, MCM committed to modifying the borefield layout to avoid all additional noise impacts.

¹ Mackie Environmental Research, July 2009, *Ulan Coal Mines Ltd Continued Operations – Groundwater Assessment*.

² Aqua Terra, November 2008, *Moolarben Stage 2 Groundwater Assessment*.

The revised borefield layout removes the need for transfer pumps and uses a single generator located to the east of Ulan-Cassilis Road and adjacent to the Ulan underground mine access road (**Figure 3**). The revised location of the generator is approximately 4 km from the Goulburn River Stone Cottages, "The Drip" and the Goulburn River National Park. The RTS states that operational noise from the borefield will not be audible at the Stone Cottages or any other private residence. There would also be no noise impacts on users of the national park or "The Drip".

The Department also requested additional information in relation to construction noise associated with the modification. Given the limited amount of equipment required to construct the borefield, the short construction time-frames (ie 7-8 weeks), and MCM's commitment to limit construction hours to daytime hours only, the Department is satisfied that construction noise would not be significant. The Department also notes MCM's commitment to liaise closely with the owners of the Stone Cottages regarding construction of the borefield.

The Department is therefore satisfied that the proposed amendments to the borefield layout would avoid any significant noise impact from the modification.

4.4 Other Issues

Other residual issues associated with the proposed modification are examined in **Table 2** below.

Table 2: Assessment of other Potential Issues

Issue	Potential Impacts/Consequences and Conclusion
<i>Aboriginal Heritage</i>	<ul style="list-style-type: none"> An Aboriginal Cultural Heritage Assessment was undertaken for the proposed modification by Archaeological Risk Assessment Services Pty Ltd (ARAS), in consultation with local Aboriginal groups. A total of 13 Aboriginal cultural heritage sites were identified during surveys of the proposed disturbance areas, including 8 isolated finds, 2 artefact scatters and 3 artefact scatters with potential archaeological deposits. Ten of the sites were assessed as being of low significance and 3 were assessed as moderately significant. MCM has committed to re-routing the infrastructure easement in the vicinity of TB 103 (refer to the yellow section of easement on Figure 3) in order to avoid 2 of these sites, including 1 of moderate significance. The project would therefore only directly impact 11 sites. MCM has committed to implementing ARAS's recommendations for site recording and salvage, as well as continued consultation with the local Aboriginal community. MCM would also be required, under an existing Stage 1 approval condition, to update and revise the existing Aboriginal Heritage Plan to incorporate commitments made in the EA and RTS report. DECCW and the Department are satisfied that the measures proposed would minimise impacts to Aboriginal cultural heritage and that the overall impacts would not be significant.
<i>Air Quality</i>	<ul style="list-style-type: none"> The modification has the potential to generate dust during construction activities such as earthworks, vegetation clearing and bore drilling. During the operation of the borefield, the main dust generating activity is predicted to be vehicles travelling on unsealed roads. MCM has indicated that the dust generated from the borefield construction and operation would be minor. However MCM has committed to implementing standard control measures, such as the use of a watercart on access roads. The Department is satisfied that the dust generating potential associated with the proposal is minimal and that no additional controls, beyond those set out in Moolarben's existing Air Quality Management Plan, are necessary.
<i>Soil and Sediment</i>	<ul style="list-style-type: none"> Barnson Pty Ltd prepared an Erosion and Sediment Control Plan for the proposed modification. The plan requires specific erosion and sediment control measures along the length of the infrastructure easement and rehabilitation requirements for disturbed areas in order to minimise potential erosion and contamination of downstream drainage lines. Under an existing Stage 1 approval condition, MCM is required to update and revise the existing Erosion and Sediment Control Plan to incorporate the commitments made in the EA and submissions report. DECCW and the Department are satisfied that the implementation of these measures would minimise impacts associated with erosion and sedimentation, including impacts on the Goulburn River National Park.
<i>Traffic</i>	<ul style="list-style-type: none"> Access to the borefield for construction and operation is proposed to be via an existing 4WD access track on a Crown road off the Ulan-Cassilis Road. MCM has indicated that only a small number of vehicles (earth moving equipment, drill rigs, delivery trucks and support vehicles) are required during construction, and that a very small number of light vehicles would be required during operations. MCM has committed to implementing appropriate traffic control measures for vehicles entering and leaving the borefield site. The Department is satisfied that the increase in traffic movements is small and would not result in any significant traffic impacts to the local road network.
<i>Visual</i>	<ul style="list-style-type: none"> In response to issues raised in public submissions, MCM committed to revising the borefield layout to minimise visual impacts of the original proposal to the owners and guests at the

	<p>Goulburn River Stone Cottages. The revised modification would involve burying power and water lines and removing the need for water storage tanks. The only aspects of the revised modification potentially visible from the entrance road to the Stone Cottages would be a switch pad (with a maximum height of 2 m) and one bore pad located on MCM-owned land. MCM has committed to planting trees and shrubs to provide a visual screen and inhibiting views to this infrastructure.</p> <ul style="list-style-type: none"> • The Department is satisfied that the proposed modification would not significantly impact on existing visual amenity and that any potential visual impacts can be minimised by plantings.
<i>Impacts on Goulburn River National Park</i>	<ul style="list-style-type: none"> • DECCW initially raised concerns about the potential impacts of the borefield on the adjoining Goulburn River National Park, including erosion and sedimentation, stormwater runoff, pests and boundary encroachment. DECCW and the Department are now satisfied that proposed erosion and sediment control measures would minimise impacts to the national park. • DECCW also requested that MCM be required to fence the boundary of the National Park to avoid boundary encroachments. In its RTS report, MCM indicated that infrastructure required as part of the modification would be located at least 80 m from the boundary of the national park. MCM committed to maintaining a buffer of at least 50 m between any part of the borefield and the park boundary and to managing the borefield site to minimise weeds and pests and avoid encroachments to the park. MCM objected to the construction of a fence due to additional land disturbance and clearing that it would require. However, the Department believes that a simple star-picket fence could be constructed with minimal clearing and has recommended that such a fence be erected prior to construction within 100 m of the park boundary. • Under an existing Stage 1 approval condition, MCM is also required to update and revise the existing Rehabilitation and Offset Management Plan to incorporate commitments made in the EA and RTS report, including commitments in relation to protecting the national park.
<i>Compliance Issues</i>	<ul style="list-style-type: none"> • A number of public submissions raised concerns over previous and current issues relating to MCM's compliance with its existing conditions of consent. • The Department was recently successful in prosecuting MCM for the illegal clearing of native vegetation and the erection of a fence within the Stage 1 project approval area. In addition, the Department is currently investigating two further breaches of project approval conditions relating to the removal of nine Aboriginal sites within the Stage 1 approval area and two noise exceedances that occurred at monitoring points in the Ulan Village in April and June of 2010. • In addition, DECCW has successfully prosecuted MCM for a water pollution incident that occurred in June 2009 and is awaiting judgment. Further, DECCW is currently investigating another water pollution incident that is alleged to have occurred in December of 2009. • These compliance issues do not impact on the determination of the modification application.

5 RECOMMENDED CONDITIONS

The Department has drafted recommended conditions for the modification. Apart from proposed conditions discussed in Section 4 above, a number of Appendices in the project approval need to be updated. These include the Schedule of Land, General Layout of the Project, Statement of Commitments, Property Numbers, Rehabilitation and Offset Strategy, Aboriginal Heritage and Non-Aboriginal Heritage.

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

6 CONCLUSION

The Department has assessed the modification application, EA, submissions on the modification and MCM's RTS report in accordance with the relevant requirements of the EP&A Act, including the objects of the Act and the principles of ecologically sustainable development. The operation and extraction of groundwater from the borefield has already been approved and that the modification to access the borefield is a necessary and logical extension of Stage 1 of the Moolarben Coal Mine. The environmental impacts of the proposed modification are minor and are readily controlled by measures proposed by both MCM and the Department to avoid, offset, minimise, control and manage them.

The Department is of the view that the restructuring of the Stage 1 biodiversity offset (including the addition of the offset associated with this modification) would provide an improved net biodiversity benefit and that the implementation of additional groundwater, noise, visual and erosion and sedimentation monitoring and management measures would ensure negligible impact on the environment, including at "The Drip", the Goulburn River National Park and the owners and guests of the Goulburn River Stone Cottages.

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

7 RECOMMENDATION

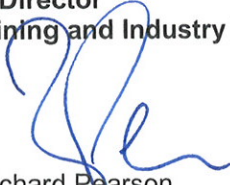
It is RECOMMENDED that the Minister:

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



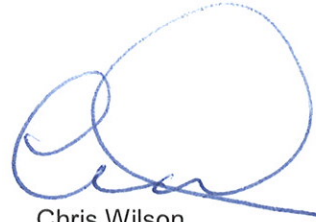
Howard Reed
A/Director
Mining and Industry Projects

7.1.11



Richard Pearson
Deputy Director-General
Development Assessments and Systems Performance

18/1/11



Chris Wilson
Executive Director
Major Projects Assessment

10.1.11



Tony Kelly
Minister for Planning

- 3 FEB 2011

APPENDIX A
ENVIRONMENTAL ASSESSMENT,
PUBLIC AND AGENCY SUBMISSIONS, and
RESPONSE TO SUBMISSIONS

See attached CD ROM.