



ENVIRONMENTAL ASSESSMENT

Section 75W Modification Application

Felix Resources Ltd

Moolarben Coal Project Stage 1

(05_0117 MOD 5)

July 2009

CR 6015_5_v4.

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1. INTRODUCTION

The Moolarben Coal Project (MCP) is located in the Western Coalfields of New South Wales, east of Ulan and approximately 40 km northeast of Mudgee, in the Mid Western Regional local government area, and is adjacent to the Ulan and Wilpinjong coal mines.

Moolarben Coal Mines Pty Limited (MCM), the proponent for the MCP, is a wholly owned subsidiary of Felix Resources Limited (FRL), a publicly listed company on the Australian Stock Exchange. Felix Resources Limited has a 60% share in the Ashton coal mine and is a capital venture partner in the Newcastle Coal Infrastructure Group (NCIG).

On 6 September 2007, the Minister for Planning approved Stage 1 of the MCP (Stage 1), Major Project 05_0117. This has since been modified on 26 November 2008 (05_0117 MOD 1), 18 December 2008 (05_0117 MOD 2) and 30 June 2009 (05_0117 MOD 4).

Stage 1 consists of three open cut mines (OC1, OC2 and OC3); one underground mine (UG4); coal handling and preparation plant (CHPP) and raw and product coal stockpiles; a rail loop and rail loader; and office and workshop support facilities.

Stage 1 has approval to extract up to 8 million tonnes per annum (Mtpa) of run-of-mine (ROM) coal from the open cut mines and up to 4 Mtpa ROM coal from the underground mine. It can produce up to 10 Mtpa of product coals, which can only be transported from the site by rail. Stage 1 is approved to operate until 20 December 2028.

On 14 July 2008, MCM lodged a Major Project Application for Stage 2 of the MCP, Major Project 08_0135. On 3 February 2009, MCM made an application (05_0117 MOD 3) to modify the Stage 1 approval, to enable the operation of Stage 1 and Stage 2 to be integrated. The Stage 2 application and modification application 05_0117 MOD 3 are currently pending approval following assessment by the Department of Planning (DoP).

On 12 June 2009, MCM submitted a further application (05_0117 MOD 5) to modify the Stage 1 approval. The changes proposed in this application (05_0117 MOD 5) are:

- Surface infrastructure and layout changes, comprising:
 - o Relocation of the open cut ROM coal facilities (i.e., dump hopper, primary crusher, rejects bin and associated coal conveying facilities) from the approved location on the western edge of OC1 (see Plan 1) to a preferred location, south of the main infrastructure area (see Plan 2).
 - o Relocation of OC1 support infrastructure (i.e., office, workshop and associated support facilities) from the approved location on the western edge of OC1 (see Plan 1) approximately 500 m to the northeast (see Plan 2).
 - o Construction and operation of a water sharing pipeline from Ulan Coal Mine's East Pit to the Stage 1 infrastructure area (see Plan 2).
 - o Construction of a fence line along the mine lease boundary.

- o Construction of an additional 200 ML water storage dam within the footprint of OC1 (see Plan 2).
- Increasing construction hours from daylight hours (7:00 a.m. to 6:00 p.m.), 7 days a week, to 24 hours, 7 days a week.
- Amending Condition 7 of Schedule 3 of the Stage 1 approval so that increased construction noise criteria applies to construction of the noise bund and not to the first six months of construction.
- Allowing use of temporary ROM coal crushing and raw coal and rejects conveying facilities, where construction of the open cut ROM coal facilities in the proposed preferred location is not completed prior to commissioning of the mine.
- Making minor adjustments to the Stage 1 Project Boundary.

These changes will enable MCM to:

- Rationalise the design of Stage 1 infrastructure components and to make capital savings during construction.
- Further reduce its environmental footprint by:
 - o Relocating certain noise and dust generating activities further away from sensitive receivers.
 - o Providing infrastructure to share water with the Ulan Coal Mine, thereby reducing the need to extract groundwater for on-site use.
- Construct and commission the Stage 1 mine by March 2010, so that it can meet contractual obligations for the supply of coal to the NCIG.
- Continue to lawfully construct the Stage 1 project in accordance with the Stage 1 approval.

The proposed modification will not alter the size of mines (OC1, OC2, OC3 or UG4), the methods of mining, the rate of coal extraction and production, or the method and frequency of off-site coal transport, to that approved for Stage 1.

This report has been prepared by Coffey Natural Systems on behalf of MCM to support the application (05_0117 MOD 5) under Section 75W (S75W) of the *Environmental Planning and Assessment Act 1979* (EP&A Act) to make the proposed modifications to the Stage 1 approval.

2. BACKGROUND

2.1 Project Location and Setting

The MCP is located in the Western Coalfields of New South Wales, east of Ulan and approximately 40 km northeast of Mudgee, in the Mid Western Regional local government area (see Figure 1).

Stage 1 is bordered by the Goulburn River to the north; Goulburn River National Park, mine-owned grazing land, Wilpinjong Coal Mine and Munghorn Gap Nature Reserve to the east; privately-owned grazing land to the south; and privately-owned grazing land, Ulan village and Ulan Coal Mine to the west.

Stage 1 is situated within the Moolarben Creek valley, in the headwaters of the Goulburn River catchment. The dominant land uses are grazing, rural residential, conservation and mining. The Ulan village west of the mine comprises 16 residential dwellings, a small rural primary school, two churches and a hotel. All of the residences and vacant freehold land in the village are mine-owned. A rural residential development is located approximately 4 km to the southwest of the mine. A small number of farms and scattered homesteads occupy the rest of the surrounding freehold land.

The locality is serviced by the Ulan–Cassilis Road (linking Mudgee and Cassilis), Cope Road (linking Gulgong and Ulan) and Ulan–Wollar Road (linking Wollar and Ulan). The Gulgong–Sandy Hollow Railway provides the transport link for delivery of coal to domestic and export markets (via Muswellbrook).

2.2 Land Development Schedule

With the exception of the land described in Table 1, the land on which the modification will be developed was described in the Stage 1 Major Project Application.

Table 1 Land development schedule

Land Owner	Description	Parish	County
Ulan Coal Mines Ltd.	Pt Lot 75 DP 750773 (East Pit)	Ulan	Bligh
Crown	Pt Lot 43 DP 736630 (road reserve)	Lennox	Phillip

Ulan Coal Mines Ltd and Mid Western Regional Council (MWRC) have agreed to MCM developing the water sharing pipeline on land under their control.

2.3 The Moolarben Coal Project

2.3.1 Stage 1 of the Moolarben Coal Project

On 6 September 2007, the Minister for Planning granted project approval (05_0117) for Stage 1 of the MCP. A summary of the approved Stage 1 project is provided in Table 2.

Section 75W Modification Application
Moolarben Coal Project Stage 1 – MOD 5

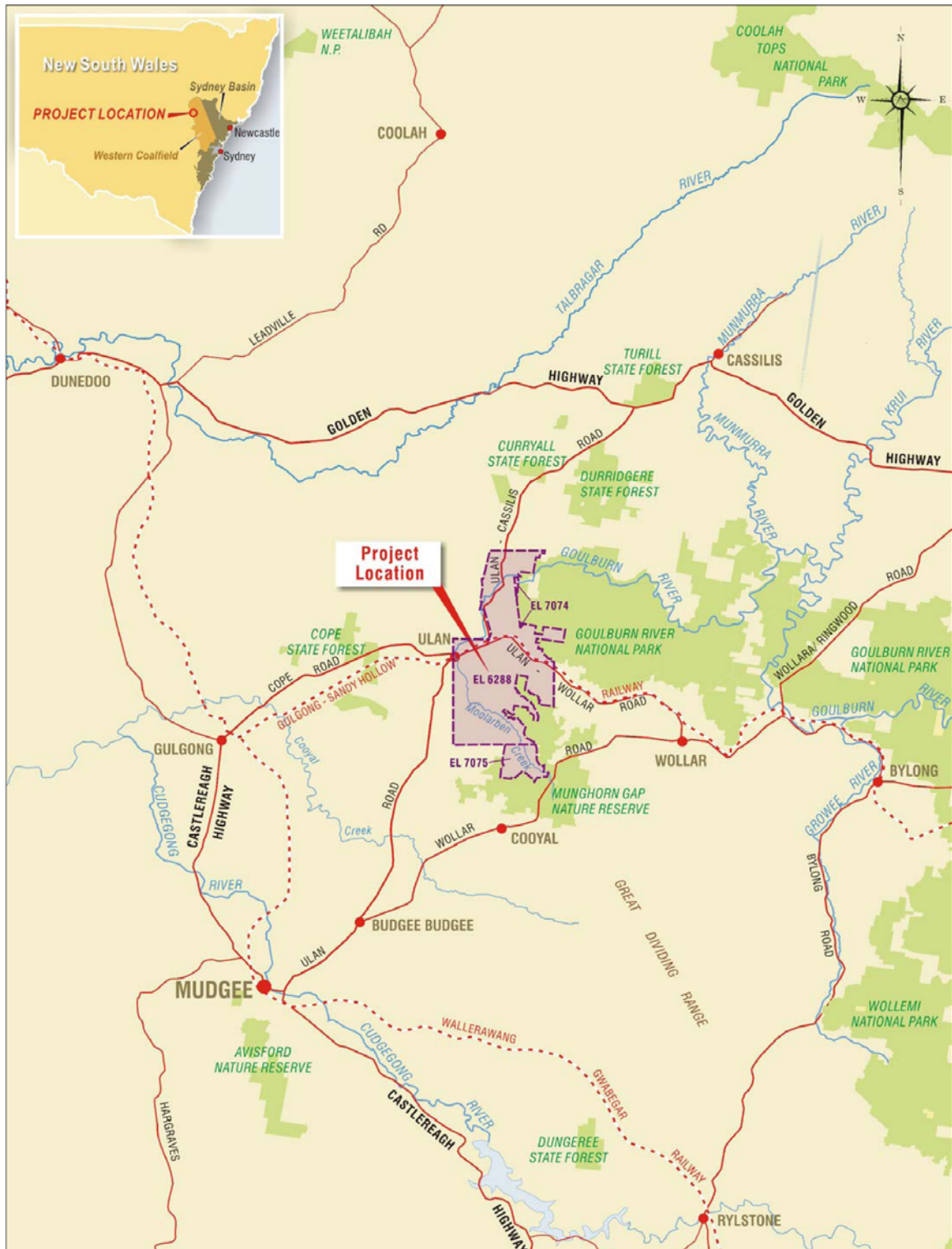


Figure 1 Project location

Table 2 Stage 1 project summary

Aspect		Description
Project life		21 years, to 20 December 2028.
Mining operations	Open cut	Three open cut mines (OC1 – 302 ha, OC2 – 150 ha and OC3 – 550 ha) will be mined at a combined rate of up to 8 Mtpa ROM coal. Overburden (30 m average depth) will be blasted where necessary and be removed using excavator and truck operations. Coal will be blasted and recovered using excavator and truck operations.
	Underground	One underground mine (UG4 – depth 70 to 140 m) will be mined at up to 4 Mtpa ROM coal. Coal will be recovered by longwall mining and transferred to surface by conveyor. UG4 mine drift entries in the Stage 1 Main Infrastructure Area.
Coal handling, preparation, and processing		Coal from open cut and underground mines will be transferred to the CHPP ROM coal stockpile by conveyors. Coal from OC2 and OC3 will be transferred by truck to the OC1 ROM coal facility, prior to transfer to the CHPP ROM coal stockpile. Crushing and sizing facilities will be included at both the OC1 ROM coal facility and CHPP. Up to 12 Mtpa of ROM coal will be processed.
Coal production, loading and rail transport		Product coal will be produced at up to 10 Mtpa. Product coal will be loaded onto trains on a dedicated rail loop and rail load out facility, and railed to market on the Gulgong–Sandy Hollow rail line in up to four trains a day (four trains during any 24 hour period).
Water demand and supply		Water demand at peak production will be about 6.9 ML/day (2,520 ML/year). Water will be supplied from bores and surface water storages from across the site, and where possible, through sharing arrangements with adjoining mines.
Waste rock, coarse rejects and tailings management		Excavated overburden will initially be used to form environmental bunds through out-of-pit emplacement on the western side of OC1 and OC2, around the OC3 facilities and along the haulage road between OC3 and the OC1 ROM coal facility. Remaining overburden will be placed within open cut mine voids. Coarse rejects and tailings will be emplaced with overburden in open cut mine voids. An emergency tailings dam will be established adjacent to the CHPP.
Mine access		Access to the open cut mines OC1, OC2 and OC3, will be from Ulan–Wollar Road. Access to UG4 and the CHPP will be from Ulan–Cassilis Road, north of Ulan–Wollar Road junction.
Support facilities and utilities		Support facilities, including offices, bathhouses, workshops and fuel storages (where required), will be established at the Stage 1 Main Infrastructure Area (to service UG4 and the CHPP), and at OC1 and OC3. Power will be supplied from the 66 kV Ulan to Wilpinjong transmission line, via a 66/11 kV substation constructed on-site.
Hours of operation		Construction will occur during daylight hours. Some noisy activities will be conducted outside of school hours to minimise noise impacts on Ulan Public School. Mining operations to occur 24 hours a day, 7 days a week.
Employment		220 construction and 317 full time positions.
Rehabilitation		All disturbed areas will be progressively rehabilitated.

Since gaining approval for Stage 1, MCM has made four separate applications under S75W of the EP&A Act to modify the Minister's approval for the project:

- In August 2008, an application was made to the DoP to make administrative changes and to rearrange specific items of approved infrastructure so as to improve operational efficiency and provide improved conservation outcomes. The application (05_0117 MOD 1) was approved on 26 November 2008.
- In December 2008, an application was made to the DoP to allow preliminary construction activities to commence prior to completion of required mine access road works. The application (05_0117 MOD 2) was approved on 18 December 2008.
- In February 2009, an application was made to the DoP to allow Stage 1 to receive and process ROM coal from the proposed Stage 2 project (see Section 2.3.2); increase throughput of processing, handling and rail loading to 17 Mtpa ROM coal and 13 Mtpa product coals; increase off-site transport of product coal to 13 Mtpa; and extend the approved operating life of Stage 1 infrastructure so that Stages 1 and 2 of the MCP will be fully integrated. The application (05_0117 MOD 3) is currently being assessed by the DoP.
- In April 2009, an application was made to the DoP to change the configuration of the rail loop from a figure-8 to a balloon loop layout. The application (05_0117 MOD 4) was approved on 30 June 2009.

The approved Stage 1 infrastructure layout is shown in Plan 1.

2.3.2 Stage 2 of the Moolarben Coal Project

In July 2008, MCM lodged a Major Project Application (08_0135) with the DoP for Stage 2 of the MCP. The Environmental Assessment (EA) for Stage 2 was publicly exhibited for six weeks from 18 March 2009 and is currently being assessed by the DoP.

The proposed Stage 2 project (Stage 2) comprises one open cut mine (OC4), two underground mines (UG1 and UG1), ROM coal handling and stockpiling facilities, offices and workshops and various other mine support facilities. It is proposed that up to 12 Mtpa ROM coal will be extracted from the open cut mine and up to 4 Mtpa ROM coal from the underground mines.

Once approved, Stage 2 will be integrated with Stage 1, and Stage 2 ROM coal will be transferred to the Stage 1 CHPP for processing, stockpiling and off-site transport via the Stage 1 rail loop.

The integrated mining complex will process and handle up to 17 Mtpa of ROM coal and produce up to 13 Mtpa of product coals for domestic and export markets.

3. PROPOSED MODIFICATION

3.1 Summary of Proposed Modification

The proposed modification (05_0117 MOD 5) involves:

- Surface infrastructure and layout changes, comprising:
 - o Relocation of the open cut ROM coal facilities (i.e., dump hopper, primary crusher, rejects bin and associated coal conveying facilities) from the approved location on the western edge of OC1 (see Plan 1) to a preferred location, south of the main infrastructure area (see Plan 2).
 - o Relocation of OC1 support infrastructure (i.e., office, workshop and associated support facilities) from the approved location on the western edge of OC1 (see Plan 1) approximately 500 m to the northeast (see Plan 2).
 - o Construction and operation of a water sharing pipeline from Ulan Coal Mine's East Pit to the Stage 1 infrastructure area (see Plan 2).
 - o Construction of a fence line along the mine lease boundary.
 - o Construction of an additional 200 ML water storage dam within the footprint of OC1 (see Plan 2).
- Increasing construction hours from daylight hours (7:00 a.m. to 6:00 p.m.), 7 days a week, to 24 hours, 7 days a week.
- Amending Condition 7 of Schedule 3 of the Stage 1 approval so that increased construction noise criteria applies to construction of the noise bund and not to the first six months of construction.
- Allowing use of temporary ROM coal crushing and raw coal and rejects conveying facilities, where construction of the open cut ROM coal facilities in the proposed preferred location is not completed prior to commissioning of the mine.
- Making minor adjustments to the Stage 1 Project Boundary.

3.2 Need for Proposed Modification

The proposed modification is required to enable MCM to:

- Rationalise the design of Stage 1 infrastructure components and to make capital savings during construction.
- Further reduce its environmental footprint by:
 - o Relocating certain noise and dust generating activities further away from sensitive receivers.

- o Providing infrastructure to share water with the Ulan Coal Mine, thereby reducing the need to extract groundwater for on-site use.
- Construct and commission the Stage 1 mine by March 2010, so that it can meet contractual obligations for the supply of coal to the NCIG.
- Continue to lawfully construct the Stage 1 project in accordance with the Stage 1 approval.

3.3 Description of Proposed Modification

3.3.1 Surface Infrastructure and Layout Changes

Moolarben Coal Mines proposes making adjustments and changes to the approved Stage 1 surface infrastructure layout to enable it to make capital savings and further reduce the environmental footprint of the mine. These surface infrastructure changes include relocating open cut ROM coal facilities and OC1 office, workshop and support facilities; establishing a water sharing pipeline between the Ulan and Moolarben coal mines; erecting a mine lease boundary fence line; and constructing an additional water storage dam within the footprint of OC1. The proposed surface infrastructure and layout changes are described below.

3.3.1.1 Open Cut ROM Coal Facilities

The Stage 1 project includes open cut ROM coal facilities comprising:

- ROM coal stockpile, 100,000 t capacity.
- Dump hopper, 400 t capacity.
- Turn slab.
- Primary crusher and sizer, to reduce the coal to 350 mm topsize.
- Secondary crusher and sizer, to reduce the coal to 125 mm topsize.
- Overland ROM coal conveyor, approximately 2 km in length.
- Overland rejects conveyor, approximately 2 km in length.
- Rejects bin.

These facilities are approved to be constructed to the west of the OC1 footprint (see Plan 1).

In planning for the proposed Stage 2 project, MCM had planned to construct separate open cut ROM coal facilities (ROM coal dump hopper, turn slab, crusher, conveyors and rejects bin) for handling of OC4 ROM coal, located south of the Ulan–Wollar Road and directly opposite the main mine infrastructure area (Wells and Coffey, 2009). The proposed location of these additional open cut ROM coal facilities is about 2 km northeast of the approved location for Stage 1 open cut ROM coal facilities. Constructing both facilities would duplicate open cut ROM coal facilities at the MCP.

The ability for MCM to integrate the two stages and to use Stage 1 infrastructure for Stage 2 will provide MCM with improved coal handling efficiencies and reduced capital expenditure and operating costs. To achieve these savings, MCM is proposing to construct the Stage 1 open cut ROM coal facilities in the location proposed for the Stage 2 open cut ROM coal facilities. This proposed location for open cut ROM coal facilities is preferred over the existing approved location as noise and dust generating activities will be moved further away from the Ulan Public School and other private receivers.

The relocated Stage 1 open cut ROM coal facilities (see Plans 2 and 3) will comprise:

- Dump hopper, approximately 400 t capacity.
- Turn slab.
- Primary crusher and sizer, to reduce the coal to 350 mm topsize.
- Secondary and tertiary crushers and sizers, to reduce the coal to 50 mm topsize.
- Raw coal transfer conveyor, approximately 250 m in length.
- Rejects conveyor, approximately 300 m in length.
- Rejects bin.

The relocated open cut ROM coal facilities will be constructed to handle up to 17 Mt of ROM coal annually, in preparation for receiving future Stage 2 ROM coal.

Open cut ROM coal will be transported from the open cut pits (OC1, OC2, and OC3) by truck along an internal haul road to the relocated open cut ROM coal facilities. This will result in the use of an additional 2 km of haul roads during the life of Stage 1 open cut mining.

The Stage 1 EA proposed using 170 t coal haul trucks. These will now be replaced with larger 240 t trucks. This will reduce the number of trips between the active coal extraction area and the ROM coal dump hopper.

Mining is proposed to commence in the southwest of OC1 and progress northwards, as generally described in the Stage 1 EA (Wells, 2006). Following completion of mining in OC1, the internal haul road will be extended to OC2 and OC3, as described in the Stage 1 EA. However, due to the increased haul distance from OC2 and OC3 to the relocated open cut ROM coal facilities, 50 t C-triples (3 trailer off-road trucks) will be used, rather than the 240 t coal haul trucks. This arrangement was described in the Stage 1 EA.

Haul trucks will dump open cut ROM coal directly into the dump hopper. It will then be crushed and sized, then transferred to the CHPP as direct wash plant feed, or to the approved raw coal stockpile for future beneficiation (i.e., washing), via a raw coal transfer conveyor. Direct dumping of open cut ROM coal into the dump hopper removes the need for the approved 100,000 t ROM coal stockpile to be constructed, west of OC1. However, a 100,000 t ROM coal stockpile is proposed in the Stage 2 project for the stockpiling of OC4 ROM coal in future years. The Stage 2 ROM coal stockpile will be located to the east of the relocated Stage 1 ROM coal facilities (Wells and Coffey, 2009), but this won't be constructed until after the Stage 2 project is approved.

The proposed preferred location of the open cut ROM coal facilities takes advantage of a previously excavated Council owned road base borrow pit and waste transfer station. Moolarben Coal Mines is currently liaising with MWRC to find a suitable replacement site for the waste transfer facility.

The dump hopper will be positioned against the highwall at the rear of the borrow pit, constructed partly below ground level. The side walls of the borrow pit will provide acoustic and visual shielding of the dump hopper. This requires the haul road entry and turn pad to be located above the highwall of the borrow pit, so that haul trucks can dump directly into the dump hopper. The top of the dump hopper will have 1 to 2 m side walls and will support water sprays for dust suppression.

Open cut ROM coal will pass directly from the dump hopper into the primary crusher, which will be located on the floor of the borrow pit below the dump hopper (see Plan 3). The primary crusher will reduce the coal to 350 mm topsize. Raw coal will pass from the primary crusher to secondary and tertiary sizers downstream of the primary crusher (see Plan 3). This will reduce the coal to 50 mm topsize. Following tertiary sizing, raw coal will be directed to the CHPP via the raw coal transfer conveyor.

A rejects bin will be located near the dump hopper with the rejects conveyor from the CHPP running parallel to the raw coal transfer conveyor (see Plans 2 and 3). Trucks dumping open cut ROM coal into the dump hopper will backhaul rejects material for disposal in the open cut pits, as generally described in the Stage 1 EA.

The raw coal transfer conveyor and rejects conveyor will pass underneath Ulan–Wollar Road (see Figure 2) and over the Gulgong–Sandy Hollow rail line and Stage 1 rail loop. Culverts enabling the conveyor underpass will be installed during construction of the approved Ulan–Wollar Road diversion. The raw coal transfer conveyor and rejects conveyor will be partially enclosed, and their arrangement will be the same as that approved for Stage 1. Apart from the road underpass, conveyors will be above ground with heights ranging from 1 m to up to about 30 m at the CHPP surge bin delivery point and at the rejects bin. Light vehicle access will be provided adjacent to all conveyors to allow access for maintenance purposes.

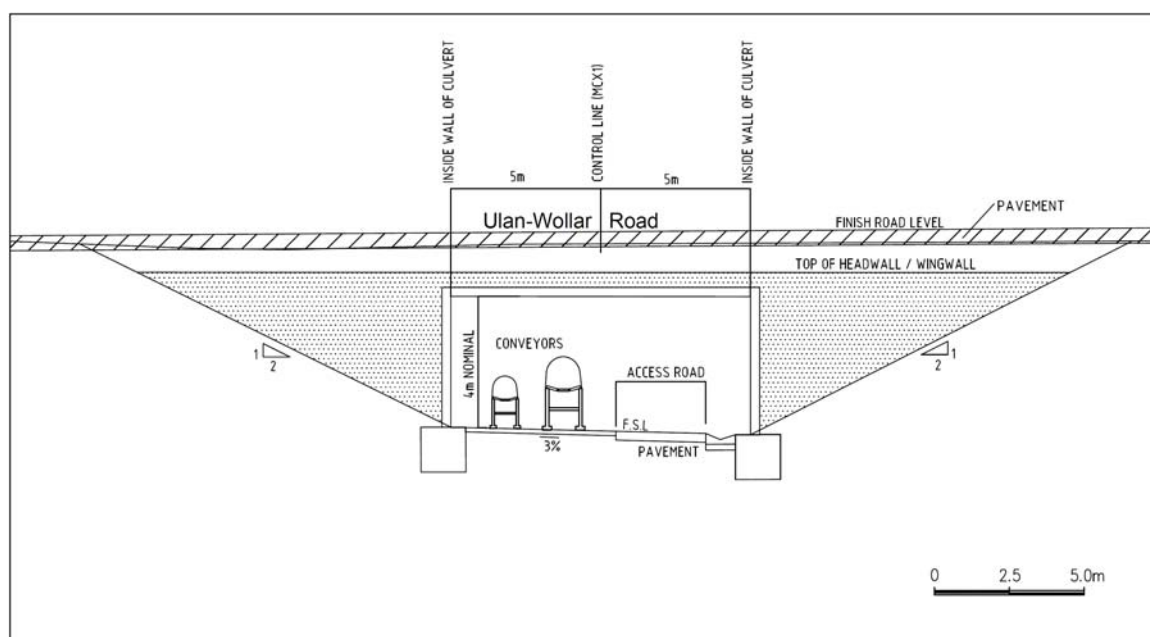


Figure 2 Conveyor underpass

3.3.1.2 Open Cut 1 Support Infrastructure

The approved Stage 1 project includes office, workshop and associated support facilities located to the west of OC1 (see Plan 1), comprising:

- Offices (including crib room), bathhouse, and employee and visitor light vehicle parking.
- Workshop, hardstand and heavy vehicle parking.
- Fuel and lubrication stores.

With the relocation of open cut ROM coal facilities (see Section 3.3.1.1), MCM also proposes relocating the OC1 office, workshop and associated support facilities approximately 500 m to the northeast of the approved location. The OC1 office, workshop and associated support facilities will now be located at the site of the previously approved OC1 ROM coal stockpile, dump hopper, turn slab and rejects bin (see Plans 1 and 2).

Access to the OC1 office, workshop and associated support facilities will remain via the approved access road, off the Ulan–Wollar Road.

3.3.1.3 Ulan–Moolarben Water Sharing Pipeline

The Ulan Coal Mine (underground and open cut coal mines) is located immediately west of the Stage 1 main infrastructure and underground (UG4) mine areas. The Ulan Coal Mine has a gross water make of about 4,120 mega litres per year (ML/year), and, after on and off-site disposal, a net water surplus of about 2,720 ML/year, or approximately 7.45 ML/day (Umwelt, 2008). Dewatering of the underground mine is the predominant source of Ulan Coal Mine's surplus water.

In August 2008, the Ulan Coal Mine lodged a Major Project Application with the DoP for continued operations. This will extend underground mining for a further 21 years. It is expected that the Ulan Coal Mine will continue to have surplus water for the duration of its continued underground mining operations.

Moolarben Coal Mines is currently finalising an agreement with the Ulan Coal Mine to access 1,000 ML/year (about 2.73 ML/day) of the Ulan Coal Mine's surplus water. This water sharing initiative will greatly reduce the requirement for MCM to extract groundwater to supplement its water supply, at least in the short to medium term. Water sharing will also assist the Ulan Coal Mine manage its on-site surplus water. The water in the East Pit has an average electrical conductivity (EC) of about 2,500 micro Siemens/cm ($\mu\text{S}/\text{cm}$). Water with an EC value of this magnitude is considered to be brackish in quality.

To facilitate water sharing between the two mines, MCM will construct a pipeline from the Ulan Coal Mine's East Pit to a 75 ML water treatment dam located in the rail loop of the Stage 1 main infrastructure area. The proposed water sharing pipeline route is shown in Plan 4.

Between the East Pit and the 75 ML water treatment dam, the pipeline will:

- Ascend the East Pit highwall.
- Run along the southern side of the Ulan underground mine access road and alongside or under the mine access road bridge across the Goulburn River diversion.
- Follow the road reserve south, on the western side of the Ulan–Cassilis Road.
- Cross the Ulan–Cassilis Road, slung on the underside of an existing road culvert over Bora Creek (see Plan 5).
- Follow a route along an existing cleared fence line and across the north of the Stage 1 main infrastructure area to the north of Bora Creek.
- Cross Bora Creek on the underside of a rail loop culvert (see Plan 5) and discharge into the 75 ML water treatment pond within the rail loop (see Plan 4).

The proposed route has been selected to avoid the clearing of trees.

The pipeline will be constructed of high density polyethylene (HDPE) pipe, typical of that used for water supply and conveyance at other NSW coal mines. Between the East Pit and the Ulan–Cassilis Road reserve, 355 mm diameter pipe will be used. At this juncture, the pipeline will be stepped down via valves to 250 mm diameter. Once in the road reserve, the pipeline will be buried in a 1 m wide trench at a depth of about 1 m, and will only surface at road and creek crossings and within the rail loop.

The pipeline trench will be excavated using a backhoe or trench digger. Excavated spoil will be placed alongside the trench and used to backfill the void once the pipeline is laid. The disturbance footprint is expected to be about 5 m wide, sufficient to allow excavation and temporary placement of spoil, pipe lay-down, joint welding and construction.

Once the pipe segments are welded and positioned in the trench, the trench will be backfilled to a depth of 0.5 m. Utility service tape will then be laid on top of the backfill to mark the location of the pipeline. The remaining 0.5 m deep void will be filled with the remaining excavated spoil and the entire length of the disturbed area rehabilitated. The completed pipeline will be pressure tested to ensure it meets relevant design and construction standards.

Water will be supplied to the water sharing pipeline via a pump with the capacity to supply up to 4,000 ML/year, located in the northeast corner of the East Pit. Power will be supplied to the pump from the Ulan Coal Mine's main power supply.

Two additional 250 mm diameter HDPE pipelines will be buried in the same trench, horizontally adjacent and next to the water sharing pipeline (see Plan 5). One of these pipelines will form part of the water conveyance works for the Stage 1 borefield, which will be developed at a later date. The other pipeline will be installed in anticipation of future water sharing between the Ulan Coal Mine and Wilpinjong Coal Mine.

Inclusion of the two additional pipelines will remove the future need to construct additional trenches, or re-excavate the water sharing pipeline trench, when the borefield and Wilpinjong Coal Mine water sharing pipeline are developed. These two additional pipelines will follow the length of the Ulan–Moolarben water sharing pipeline from where it meets the Ulan–Cassilis Road reserve through to the 75 ML water treatment dam.

Construction of the third pipeline (i.e., the Wilpinjong Coal Mine water sharing pipeline) will be contingent on Wilpinjong Coal Mine agreeing to the inclusion of the pipeline at the time the pipeline trench is excavated. The continued construction and development of the water sharing pipeline from the 75 ML water treatment pond through to the Wilpinjong Coal Mine is not part of this modification.

3.3.1.4 Mining Lease Boundary Fence Line

In response to Xstrata Coal's (Xstrata¹) objections to the granting of a mining lease for Stage 1 operations (Complaints No. 51 and 52 of 2008, in the Mining Wardens Court of NSW), the Mining Warden, in granting Mining Lease 1606 (ML 1606), directed MCM to:

- Fence the boundary of ML 1606.
- Maintain Ulan Coal Mine's access to Moolarben Dam.

In complying with these directions, MCM has erected a wire strand farm stock fence around part of the boundary of ML 1606. In erecting the fence, a swath of intact native vegetation between 6 and 10 m wide was cleared along the mine lease boundary (see Plan 2). Although directed by the Mining Warden to construct the boundary fence, and agreed to by the land owner (Ulan Coal Mines Ltd), the impact of the associated clearing was not described or assessed in the Stage 1 EA or subsequent modifications.

Moolarben Coal Mines is now proposing that the Stage 1 project description be updated to specifically include the clearing that was carried out to establish the mining lease boundary fence.

In constructing the mining lease boundary fence, the existing access track to the Moolarben Dam was cut off. Vehicular access between cut off segments of the Moolarben Dam access track has been reinstated along the western side of the mining lease boundary fence, across an existing cleared paddock area (see Plan 2). It is expected that with the passage of light vehicles over time the access track along the western side of the mining lease boundary fence will become permanently formed. Currently, no further work is proposed for the Moolarben Dam access track.

3.3.1.5 Additional Open Cut 1 Water Storage

An additional 200 ML water storage dam is proposed to be located in the central part of OC1 (see Plan 2). The dam will be part of the initial water management infrastructure for OC1 and will be mined through in subsequent years. Its location within the footprint of OC1 will not result in any additional impacts.

3.3.2 Increased Construction Hours

The Stage 1 EA proposed construction to be carried out during daylight hours (only 7:00 a.m. to 6:00 p.m.), seven days a week, over an 18 month period to March 2010. With the granting of approval in September 2007, this was thought sufficient to enable MCM to construct and commission the mine by first quarter 2010, when it is contractually obliged to supply coal to the NCIG terminal.

Construction of Stage 1 commenced in January 2009 after long delays resulting from legal challenges to the Stage 1 Approval and objections to the granting of mining leases by Xstrata (see Section 3.3.1.4).

¹ Xstrata Coal NSW is the majority shareholder of Ulan Coal Mines Ltd, which owns part of the land on which the MCP will be developed.

Despite these delays MCM's intention is to construct and commission the mine by first quarter 2010. This will enable it to meet its coal supply obligations without penalty, but will require temporarily extending construction hours to 24 hours, seven days a week. The extended construction hours will only apply to construction activities within the main infrastructure area, and until the mine is commissioned and product coal can be transported from the site, which is now expected to be in March–April 2010.

Night time construction activities are required to advance the construction of the train loadout bin, product coal stockpile reclaim tunnel and the relocated open cut ROM coal facilities. Night time construction activities will be mainly restricted to civil works, such as concrete finishing (from earlier day time pours), formwork and steel tying (in preparation for following day concrete pours) and mechanical and electrical works on the CHPP. There will be no night time concrete pours, no metal fabrication works involving the use of rattle guns or other construction activities that could potentially generate loud impulsive noise. Non-tonal (quacker) reversing alarms, or smart alarms, will be used on vehicles required for night time construction activities. This will reduce the potential for annoyance on residential receivers, even though the closest receiver is located more than 4 km from proposed night time construction activities.

Night time construction activities will require the use of about 10 lighting towers (e.g., up to 6 m high trailer mounted flood light stands), one forklift, one Franna crane, some light vehicle use and up to about 60 night time construction workers. These construction workers will be required to car pool to reduce the impact of additional night time traffic, and it is expected that about 20 vehicle movements will be generated, at the start (i.e., about 6:00 p.m.) and finish (i.e., about 5:00 a.m.) of the night shift.

Moolarben Coal Mines will ensure that noise generated from night time construction activities is below the night time noise impact assessment criteria approved for Stage 1 operations.

3.3.3 Noise Bund Construction

The Stage 1 EA anticipated that increased noise goals would be required to enable construction of a noise bund around the western perimeter of OC1. The bund was proposed as one of a number of measures to mitigate mine noise impacts on the Ulan Public School. The EA indicated that the noise bund would be constructed during the first six months of construction.

The requirements for noise mitigation during initial construction of the mine are set out in Condition 7 of Schedule 3 of the Stage 1 Project Approval. The condition requires MCM to prepare and implement a Construction Noise Management Plan to the satisfaction of the Director-General, prior to commencement of construction. The condition also requires that:

This plan must:

- (c) *contain construction noise goals for the first 6 months of construction; [and]*
- (d) *describe what measures would be implemented to minimise the construction noise impacts of the project during the first 6 months of construction, with particular emphasis on minimising the impacts on the Ulan Public School and its pupils.*

A Construction Noise Management Plan has been prepared and implemented for Stage 1. The plan sets noise criteria of background +10 dB for construction of the noise bund, in line with the *Industrial Noise Policy 1999* and the *NSW Construction Noise Guideline 2008*. The plan was approved by the Director-General in December 2008.

Construction of Stage 1 commenced in January 2009. Construction of the noise bund is planned to commence in September–October 2009. Consequently, MCM proposes modifying Condition 7 of Schedule 3 so that the six month period of approved increased construction noise goals relates directly to the construction of the noise bund. Moolarben Coal Mines proposes modifying this condition as follows:

- (c) *contain construction noise goals for the 6 months of construction of the open cut 1 noise bund; [and]*
- (d) *describe what measures would be implemented to minimise the construction noise impacts of the project during the 6 months of construction of the open cut 1 noise bund, with particular emphasis on minimising the impacts on the Ulan Public School and its pupils.*

3.3.4 Temporary ROM Coal Crushing and Raw Coal and Rejects Conveying

Moolarben Coal Mines has applied for a mining lease over the area in which the relocated open cut ROM coal facilities will be developed. The mining lease application (MLA 327) area includes the MWRC borrow pit and waste transfer station and Ulan Coal Mine-owned land. A delay in the granting of the mining lease will also delay construction of the open cut ROM coal facilities, which are required to be completed and ready for use by March 2010.

Where the granting of the mining lease and subsequent construction of the open cut ROM coal facilities are delayed, MCM is seeking approval to use temporary ROM coal crushing and raw coal and rejects conveying facilities for up to 12 months. This temporary arrangement will only be required if the construction of the relocated open cut ROM coal facilities is not completed in time for the commissioning of the mine, scheduled for March 2010. Use of the temporary facilities will be halted once construction and commissioning of the relocated open cut ROM coal facilities is completed

The temporary ROM coal crusher will be located within the OC1 footprint, adjacent to the Ulan–Wollar Road and the open cut access road. The general location of the temporary ROM coal crusher is shown on Plan 2. In this location, the temporary ROM coal crushing facilities will be about 750 m further away from the Ulan School (a distance of about 2.8 km) and the nearest privately-owned residence (a distance of about 3.3 km) than the existing approved location for open cut ROM coal facilities.

Open cut ROM coal will be transferred from the active coal extraction area to the temporary ROM coal crusher via haul trucks. The haul trucks will deliver coal to a temporary ROM coal stockpile located adjacent to the temporary ROM coal crusher, within the OC1 footprint. The temporary ROM coal stockpile will have a capacity of up to 25,000 t and a height of about 4 m. This will enable up to 24 hours supply of open cut ROM coal to be available to the temporary ROM coal crusher. A front end loader will transfer ROM coal from the ROM coal stockpile directly into a low

level hopper at the temporary ROM coal crusher. The front end loader will be fitted with rubber tyres.

The temporary ROM coal crusher will be capable of handling up to 800 t of ROM coal per hour. This is 70% of the throughput rate approved for the open cut ROM coal facilities. This reduced crushing rate will enable up to 5.5 Mtpa of raw coal to be delivered to the CHPP from the temporary ROM coal crusher, compared with the approved 8 Mtpa (see Table 2). The temporary ROM coal crusher will be about 6 m in height, and will be fitted with dust sprays. Noise barriers will be installed around the temporary ROM coal crusher.

The crushed raw coal will be transferred to the CHPP via a temporary raw coal conveyor. The temporary raw coal conveyor will be located within the corridor of the approved overland ROM conveyor (see Plans 1 and 2). The temporary raw coal conveyor will be about 800 m in length, have a belt width of 900 mm, and have a maximum carrying capacity of 1,200 t/hr.

A second smaller (600 mm belt width) temporary rejects conveyor will be erected adjacent to and parallel with the temporary raw coal conveyor. The temporary rejects conveyor will transfer coal rejects from the CHPP back to the temporary crushing facility for disposal with overburden in the open cut void.

The temporary raw coal conveyor and temporary rejects conveyor will pass under the Ulan–Wollar Road, as per existing approved arrangements, and then over the Gulgong–Sandy Hollow Rail Line, as proposed for the relocated permanent conveyors (see Section 3.3.1.1). Conveyor underpass culverts will be installed during construction of the Ulan–Wollar Road diversion.

These temporary ROM coal facilities will be operated 24 hours a day, 7 days a week.

Once construction of the relocated permanent open cut ROM coal facilities is completed, the temporary facilities will be dismantled and removed from site.

At no stage will the temporary ROM coal crushing and raw coal and rejects conveying facilities be operated when the relocated open cut ROM coal facilities are operational. Nor will there be a need for use of the temporary facilities where the relocated open cut ROM coal facilities are constructed in time for commissioning of the mine, in March 2010.

3.3.5 Stage 1 Project Boundary Amendments

The Stage 1 Project Boundary needs to be amended to facilitate the proposed changes to the Stage 1 approval. This requires extending the approved Stage 1 Project Boundary to encompass the proposed relocated open cut ROM coal facilities and the water sharing pipeline (see Plan 2). It is further proposed to adjust the Stage 1 Project Boundary to the east of UG4 to align it with an adjustment that was made to the adjoining Goulburn River National Park boundary (see Plan 2).

4. PLANNING FRAMEWORK

4.1 Section 75W EP&A Act

Under Section 75W of the EP&A Act, the proponent may request the Minister's approval for a project to be modified.

The terms of the Minister's approval can be modified by revoking or varying a condition of the approval or by imposing an additional condition of the approval, and by changing the terms of any determination made by the Minister under Division 3 in connection with the approval.

This application (MOD 5) to modify the Minister's approval for the Stage 1 project will not alter the size of approved mines (OC1, OC2, OC3 or UG4), the methods of approved mining, the rate of approved coal extraction and production, or the method and frequency of approved off-site coal transport. Further, the proposed changes will not radically alter or transform the existing approved project and the Stage 1 project will be substantially the same development as approved by the Minister, that being 3 open cut and one underground coal mines producing up to 10 Mtpa product coals, with supporting infrastructure, including a CHPP and rail loop.

Therefore, the proposed amendments sought for approval come under the power of the Minister to modify the Stage 1 approval, in accordance with the provisions of Section 75W of the EP&A Act.

4.2 Section 147 EP&A Act

Moolarben Coal Mines has disclosed reportable political donations, as required under Section 147 of the EP&A Act.

5. ENVIRONMENTAL ASSESSMENT

5.1 Potential Impacts and Mitigation

The proposed modification will result in dust, noise, clearing and disturbance to existing vegetation, fauna habitat and aboriginal cultural heritage sites. The impacts and mitigation measures MCM will use to minimise the risk of adverse environment and social effects as a result of the proposed changes to Stage 1 are described below. This is in addition to the mitigation and management measures MCM is committed to implementing for the Stage 1 project.

5.1.1 Air Quality

The air quality impacts of the modification have been reviewed and reassessed by PAE Holmes, with reference to the air quality impact assessment carried out for the Stage 1 EA (Wells, 2006). The PAE Holmes review is attached as Appendix 1.

The commitment by MCM to use larger trucks (i.e., 240 t rather than 170 t) and additional dust control measures (i.e., 85% control of dust emissions on haul roads) for Stage 2 (Wells and Coffey, 2009) has been extended to Stage 1.

Air quality modelling for Stage 1, including this modification, has been updated to reflect these commitments (Appendix 1). These dust control measures together with the proposed new arrangement for Stage 1 ROM coal facilities will result in lower air quality impacts everywhere, except for an area occupied by the Ulan Coal Mine to the northwest of OC1, where minor increases in dust concentration and dust deposition rates are predicted, as described in Appendix 1. The review and reassessment indicates that use of improved dust controls on haul roads and larger trucks for hauling OC1 ROM coal to the relocated ROM coal dump hopper more than compensates for any additional dust that would otherwise be generated by the increased haul distance.

PAE Holmes concluded that approval of the modification would not adversely impact on the amenity of any privately-owned residential receiver. Further, that the modification together with MCM's commitments to control dust emissions (Wells and Coffey, 2009) will result in a reduction in short-term and long-term PM₁₀, TSP and dust deposition levels compared with levels predicted for the approved Stage 1 project. This will reduce the air quality impacts predicted in the Stage 1 EA.

PAE Holmes has not separately considered the use of temporary ROM coal crushing and raw coal conveying facilities. However, by locating these temporary facilities 750 m further away from sensitive receivers (compared to the approved location for open cut ROM coal facilities), using reduced capacity crushing equipment and installing dust sprays, MCM expect that the dust emissions from the temporary ROM coal crushing and raw coal and rejects conveying facilities will be less than that predicted for the approved facilities.

5.1.2 Noise

The noise impacts of the modification have been reviewed by Spectrum Acoustics, with reference to the noise impact assessment carried out for the Stage 1 EA (Wells, 2006). This review assumes the Stage 1 modification will use noise attenuated trucks, as proposed and committed to by MCM in the Stage 2 EA (Wells and Coffey, 2009). Moolarben Coal Mines has committed to applying the Stage 2 noise attenuation measures to trucks for Stage 1. The Spectrum Acoustics' review is attached as Appendix 2.

5.1.2.1 Open Cut ROM Coal Facilities

At the time of the Stage 1 EA noise impact assessment, the Ulan village comprised the most significant collection of sensitive receivers. Moolarben Coal Mines has since acquired all Ulan village private residences. However, the Ulan Public School remains as one of the closest sensitive receivers to OC1 operations. Hence, the Ulan village has been used as a reference location for evaluating the noise impacts of the modification.

The approved open cut ROM coal facilities were predicted to be the most significant source of noise in the Ulan village (Wells, 2006). Of the total 39 dB(A) $L_{eq(15minute)}$ predicted noise impact on the Ulan village, 37 dB(A) was attributed to the ROM coal facilities, even with the inclusion of an acoustic barrier to mitigate this noise source.

Spectrum Acoustics concludes that relocating the open cut ROM coal facilities to the proposed location south of the main infrastructure area will reduce the total predicted noise level in the Ulan village (Appendix 2). The revised model predicts a total noise level of 37 dB(A) in the village, with 25 dB(A) attributed to the open cut ROM coal facilities in their new location, with the bulk of the remaining noise attributed to the required extended haul route.

Consequently, the modification will result in a reduction in noise level in the Ulan village (i.e., at the Ulan Public School) and at the nearest privately-owned residence (property no. 25, see Plan 1) by at least 2 dB(A).

This will reduce the noise impacts predicted in the Stage 1 EA.

5.1.2.2 Increased Construction Hours

Spectrum Acoustics has reviewed potential noise levels from proposed night time construction activities against the predicted noise level in the Ulan village from the main infrastructure area, when Stage 1 is fully operational (see Appendix 2).

Night time construction activities will be less than 30 dB(A) in Ulan village, which is 8 dB below the night time operational noise criterion. Hence, night time noise levels due to construction activities in the main infrastructure area will be at least 8 dB below the night time operational noise criterion at the nearest privately-owned residence (property no. 25, see Plan 1).

Spectrum Acoustics concluded the night time activities described in this modification would not adversely impact on the amenity of any privately-owned residential receiver.

To ensure that night time construction activities do not adversely impact on surrounding residences, Moolarben Coal Mines will:

- Ensure that the noise generated from night time activities complies with the operational night time noise impact assessment criteria in the Stage 1 approval.
- Carry out attended noise monitoring at the closest privately-owned residence.
- Require night time construction workers to car pool.
- Use non-tonal (quacker) reversing alarms, or smart alarms, on vehicles required for night time construction activities.

5.1.2.3 Temporary ROM Coal Crushing and Raw and Rejects Coal Conveying.

Spectrum Acoustics has not separately considered the use of temporary ROM coal crushing and raw coal and rejects conveying facilities. However, by locating these temporary facilities 750 m further away from sensitive receivers (compared to the approved location for open cut ROM coal facilities), using reduced capacity crushing equipment and installing noise barriers, MCM expect that the noise emissions from the temporary ROM coal crushing and raw coal and rejects conveying facilities will be less than that predicted for the approved facilities.

5.1.3 Biodiversity

An ecological impact assessment has been carried out by Ecovision Consulting (Ecovision) to determine the impact of the modification on threatened species, endangered populations (EPs), endangered ecological communities (EECs) and habitats. Ecovision's assessment draws on publicly available scientific databases and the ecological impact assessments undertaken for the approved Stage 1 and proposed Stage 2 projects (Wells, 2006 and Wells and Coffey, 2009). The Ecovision assessment report is attached as Appendix 3.

Vegetation across the site and surrounding areas comprises:

- Open woodland, shrublands and grassy woodland on the valley floor.
- Shrub and or grassy woodlands and open forest on the midslopes.
- Shrubby woodlands and forests on the adjoining stepper slopes and ridgelines.

The main landscape context for the site is transitional shrubby/ grassy woodlands/ forests characterised by Ironbarks, Box and Gum. White Box Yellow Box Blakely's Red Gum Woodland (WBYBBRW) and derived grasslands EEC (and its Commonwealth declared equivalent critically endangered ecological community – CEEC) is known to occur across the site. Forested areas may contain up to two tree hollows per hectare.

Field investigations indicate that the modification areas, particularly along the mining lease fence line boundary, are inhabited by threatened woodland birds, such as the Diamond Firetail, Hooded Robin, Grey-crowned Babbler and Speckled Warbler, and that the vegetation types provide suitable habitat for microchiropteran bats. Further, that WBYBBRW EEC (and CEEC) occurs within the areas to be impacted.

The relocation of the open cut ROM coal facilities and the clearing for the mining lease boundary fence line will result in clearing of native vegetation additional to that approved for Stage 1, some of which has already occurred. This will have an adverse impact on WBYBBRW EEC (and CEEC) and habitat for threatened (and declining) woodland bird species and microchiropteran bats.

Use of the existing MWRC borrow pit to host the dump hopper and primary crusher avoids clearing and land disturbance that would otherwise be required to construct the open cut ROM coal facilities. However, clearing will be required for the haul road entry and turn slab. As access above the borrow pit highwall is required to enable haul trucks to dump open cut ROM coal directly into the dump hopper, this clearing cannot be avoided.

The water sharing pipeline route avoids the need to clear existing native vegetation cover, but will require the temporary disturbance of a small area during construction (see Section 3.3.1.3). Most of the pipeline route along the road reserve has been previously disturbed. No additional clearing is required for the relocation of the OC1 office, workshop and support facilities, as they will be relocated to the site of the approved open cut ROM coal facilities area, the impacts of which were approved in Stage 1.

The modification will require clearing of about 6.23 ha of intact native vegetation, of which about 1.45 ha is conservatively estimated to be EEC (Table 3). There is also potential for indirect biodiversity impacts in areas immediately surrounding the modification areas (see Appendix 3). This includes impacts on surrounding areas from weed infestations, sediment and water release, and light and noise. It is estimated that a further 5 ha may be indirectly impacted, assuming a 30 m impact buffer. However, the application of standard controls, such as erosion and sediment and weed and pest control measures, will greatly reduce the risk of indirect impacts.

Table 3 Vegetation impacts

Vegetation Type	Open cut ROM coal facilities (ha)	Mining lease boundary fence line¹ (ha)
Blakely's Redgum - Rough-barked Apple Woodland (EEC)		0.26
Blakely's Redgum – Yellow Box - Rough-barked Apple Woodland (EEC)		0.13
Lowland Box – Redgum (EEC)		1.06
Shrubby White Box Forest		0.40
Broad-leaved Ironbark Grey Gum Forest	0.11	0.39
Footslope Box - Gum - Ironbark	0.50	0.09
Grey Box - Narrow-leaved Ironbark Forest	1.79	0.32
Hardcap Scribbly Gum - Ironbark Woodland		0.38
Lowland Ironbark Forest		0.64
Ridgetop Broad-leaved Ironbark - Black Cypress Pine on shallow sands		0.16
Total	2.40	3.83

¹ Based on an assumed continuous clearing width of 8 m.

Ecovision concluded that:

- Habitat of moderate to high value exists within the Stage 1 (and surrounding) area for various *Threatened Species Conservation Act 1995* (TS Act) and *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) listed threatened flora and fauna species.
- Known habitat for at least four threatened fauna species listed on the TSC Act occurs within the modification area.
- White Box Yellow Box Blakely's Red Gum Woodland and derived grasslands EEC (and CEEC) will be impacted by the modification.

- There are no TSC Act or EPBC Act listed EP's or Critical Habitat within the modification area.
- There will be an impact on matters of national environmental significance, but this will be in acceptable tolerance limits provided that recommended management and offset measures are implemented.
- The impact on local and/or regional wildlife corridors will be low as the modification will not sever areas of moderate to high ecological value that contribute to the function of important wildlife corridors.

Ecovision recommends the following biodiversity impact management measures be adopted:

- Avoiding construction works during the breeding cycle of known and potential threatened woodland species, where possible.
- Implementing a plan of management for the removal of hollow bearing trees, including removal techniques, hollow salvage and compensatory measures (such as provision of additional artificial nesting boxes).
- Undertaking local revegetation works to minimise the cumulative impact of vegetation loss from the locality, hence the retention and maintenance of fauna habitats within the locality.
- Undertaking weed and feral animal control.
- Establishing a 'like for like' offset for vegetation directly impacted by the proposed development.
- Monitoring to assess the success of these measures and biodiversity enhancement.

Moolarben Coal Mines commits to adopting these measures. Further, it will:

- Carry out pre-clearing fauna surveys and recovery and relocation of arboreal fauna and nesting sites.
- Manage potential indirect impacts on biodiversity through appropriate implementation of management measures outlined in approved Stage 1 construction environmental management plans (EMPs).
- Progressively rehabilitate the cleared fence line areas along the mining lease boundary to enable the areas of impacted EEC to re-establish.

The Environment and Community Relations Manager (ECRM) will be responsible for ensuring that management and monitoring measures and commitments are implemented prior to vegetation and habitat clearing for the modification, including pre-clearance fauna and habitat (tree hollows) surveys. The ECRM will also be responsible for ensuring that construction crews are aware of the all environmental management and mitigation measures relevant to construction of the modification, and that they comply with any environmental management requirements or directions.

The cumulative impact of the Stage 1 project on EEC, including this modification, totals an estimated 66.65 ha. The Minister's approval for Stage 1 requires MCM to offset the loss of EEC at a ratio of 2:1. Moolarben Coal Mines believes that its planned dedication of 135 ha of land containing WBYBBRW EEC to the national conservation network to satisfy Condition 41(a) of Schedule 3 of the Stage 1 Project Approval, is more than adequate to offset the additional loss of

1.45 ha of WBYBBRW EEC as a result of the modification, at an offset ratio of 2:1. Nevertheless, MCM will also:

- Enhance the natural regeneration of at least 2.9 ha of WBYBBRW EEC, through measures such as weed control, seeding and planting, on property no. 24 (Wells, 2006), now owned by MCM. This property is located to the west of OC1 and Moolarben Dam (shown on Plan 2 as “Proposed EEC Revegetation Area 1”) and immediately east of the Ulan–Cassilis Road, between Lagoon and Toole roads. This property comprises at least 4 ha of good quality naturally regenerating WBYBBRW EEC (Ecovision, pers. com., July 2009). Assisting the natural regeneration of EEC on this property will increase the general ground cover, reduce soil erosion and generally improve the quality of surface water run-off from this property.
- Undertake rehabilitation works and vegetation enhancement programs using WBYBBRW EEC species on two existing cleared areas to the west and south west of OC1 (shown on Plan 2 as “Proposed EEC Revegetation Area 2” and “Proposed EEC Revegetation Area 3”). While these two areas form part of the general rehabilitation strategy for Stage 1, this did not include revegetation with EEC species. Revegetation with EEC will enhance the existing extent of EEC in areas proximal to the two revegetation areas. This will potentially add a further 10 ha of EEC to MCM’s offset and rehabilitation strategy for Stage 1.
- Undertake rehabilitation works and vegetation enhancement programs on land identified as property no. 25 (Wells, 2006) immediately adjacent to and west of OC1, and north of Moolarben Dam (see Plan 1) and property no. 24. Ecovision (pers. com., July 2009) has identified that this property contains WBYBBRW EEC. This property is currently under private ownership but has acquisition rights under the Stage 1 approval and will be impacted by dust and noise from mining in OC1. If this property remains in private ownership then MCM will seek to undertake vegetation enhancement works to conserve and enhance areas of EEC on this property with the land owner.

Enhancement and revegetation of EEC in these areas will be commenced within the first five years of mining, and will be monitored and managed throughout the duration of the Stage 1 project to ensure a viable and healthy rehabilitation and revegetation outcome.

The total amount of WBYBBRW EEC to be regenerated, enhanced and protected through these measures, will be more than 15 ha.

Moolarben Coal Mines believes that through these commitments, the modification will meet the government’s ‘maintain and improve’ requirements for threatened biodiversity.

5.1.4 Aboriginal Cultural Heritage

The impact of the modification on Aboriginal cultural heritage has been assessed by Archaeological Risk Assessment Services Pty Ltd (ARAS). Field surveys were carried out with representatives from local Aboriginal stakeholder representatives on 6 May and 1 and 2 June 2009. Survey transects covered the proposed water sharing pipeline route and site of the relocated Stage1 ROM dump hopper. The ARAS assessment report is attached as Appendix 4.

Archaeological Risk Assessment Services and local Aboriginal representatives have previously determined that the area cleared to fence the mining lease boundary (see Section 3.3.1.4) is not sensitive from an Aboriginal cultural heritage perspective (ARAS, pers. com., 2009).

Based on a review of background archaeological and historical research and land use history, recent field assessment and advice from Aboriginal consultation and stakeholder representatives, ARAS determined:

- There are no sites or Aboriginal objects in the area proposed for the relocated Stage 1 ROM dump hopper. However, sites may have been obscured by existing vegetation cover.
- There are three isolated artefact sites (isolated stone flakes) (sites S1MC 310, S1MC 311 and S1MC 312) along the pipeline route, within the Ulan–Cassilis Road reserve, and that over 95% of the route in the road reserve has previously been disturbed from prior road and infrastructure construction activities.
- In the context of landscape setting, sites S1MC 310, S1MC 311 and S1MC 312 are not rare or of cultural or scientific significance. Each of the three sites will be impacted during construction of the water sharing pipeline.
- No sites or Aboriginal objects having research potential, regional research value, educational potential, or rarity in the context of landscape setting have been identified through the field surveys undertaken in the assessment of the modification to Stage 1.
- The surveyed areas (water sharing pipeline route and site of the relocated open cut ROM coal facilities) are considered to have low potential for Aboriginal heritage.

However, despite the lack of identified sites and low Aboriginal heritage potential determined in the assessment of the modification, ARAS made the following recommendations:

- Sites S1MC 310, S1MC 311 and S1MC 312 should be salvaged using the methods outlined in the approved Aboriginal heritage management plan (AHMP) for Stage 1. This includes storing the salvaged artefacts in the Keeping Place provided by MCM to the local Aboriginal stakeholder groups.
- The water sharing pipeline route across MCM's mining leases, east of Ulan–Cassilis Road, should be marked and fenced off with all construction activities confined within the fenced off corridor. This is to avoid disturbance to Aboriginal sites and objects identified in the Stage 1 EA, adjacent to the pipeline route in this area.
- The area immediately to the west of the proposed relocated open cut ROM coal facilities should be subject to cultural heritage monitoring prior to construction taking place.
- Cultural heritage monitoring and salvage work is undertaken by a qualified archaeologist and members of the Aboriginal Stakeholder community groups: Mudgee Local Aboriginal Land Council based in Mudgee; North-East Wiradjuri Pty Ltd, based in Ulan; Murong Gialinga Aboriginal and Torres Strait Islander Corporation, based in Mudgee; and Warrabinga Native Title Claimants Aboriginal Corporation, based in Kandos.
- If additional Aboriginal sites or objects are identified as result of the cultural heritage monitoring and cannot be permanently avoided, further archaeological assessment may be required prior to continuing with construction.

These recommendations are in accord with the protocols and management measures developed by MCM in its approved AHMP for Stage 1. Further, MCM is committed to ensuring that impacts on Aboriginal cultural heritage are minimised and appropriately mitigated through the implementation of these approved measures. This includes involving local Aboriginal community representatives in the monitoring of ground disturbance activities; and in the recording, salvaging and storing of Aboriginal objects disturbed or impacted by site works.

The ECRM will be responsible for ensuring that shift managers and construction workers are aware of their responsibilities under the AHMP, and that any Aboriginal objects unearthed during construction or operational activities required for the modification are appropriately recorded, reported, salvaged and stored.

5.1.5 Other Impacts

5.1.5.1 Soils

The modification will require the disturbance of up to about 6.8 ha of land and soil (about 2.7 ha for the ROM coal facility; about 0.3 ha for the water sharing pipeline; and about 3.8 ha for the mining lease boundary fence and access track, which has already occurred).

The erosion and sediment control measures detailed in the approved ESCP will be implemented to control and arrest soil erosion in all areas proposed to be disturbed by the modification. These management and monitoring measures will inhibit the release of sediment into local drainage lines and down slope of working areas.

Soils will be stockpiled and following completion of construction and will be used to rehabilitate areas not required for ongoing operations.

The ECRM will be responsible for ensuring that erosion and sediment control measures are implemented and fully functioning prior to, and for the duration of, all relevant earthwork and construction activities.

5.1.5.2 Water

A leak or rupture in the water sharing pipeline would release water (EC of about 2,500 $\mu\text{S}/\text{cm}$) to the Goulburn River or Bora Creek, or into surrounding soils, depending on the site of failure. However, the risk of this potential impact occurring is considered low, as the pipeline will be:

- Industry standard HDPE pipe, of a type widely used for industrial water conveyance.
- Constructed to industry standards.
- Pressure tested prior to use.
- Monitored during use.

During operation, water pressure will be monitored at the inlet and outlet of the pipeline. Any loss of pressure will be investigated immediately. In addition, the pipeline will be inspected regularly as part of the general site water management and monitoring regime. In the event that a leak or loss of pressure is detected, pumping will cease and the resultant cause investigated and remediated.

The additional 200 ML water storage dam is within the open cut pit footprint and will not result in additional impacts to that described in the Stage 1 EA.

5.1.5.3 Lighting

About 10 lighting towers (i.e., flood light stands) will be required to illuminate night construction activities. These will be located in the area of the CHPP, rail loop and relocated open cut ROM coal facilities. Each light on these towers will be directed so as to avoid directly shining in the path of passing motorists.

The closest privately-owned residence (property no. 25) is located to the northeast of Moolarben Dam (see Plan 1), more than 4 km away from the proposed night time construction activities, and there is no direct line of sight to where lighting towers will be located. This residence has acquisition rights under the Stage 1 approval and MCM is currently negotiating with the owner to acquire this property. Lighting for night time construction activities will not impact on any privately-owned residence.

5.1.5.4 Visual

The relocation of the Stage 1 open cut ROM coal facilities adjacent to and south of the Stage 1 main infrastructure area will have the effect of increasing the amount of infrastructure development in this area. However, the relocated open cut ROM coal facilities will be situated about 750 m from Ulan–Cassilis Road and 300 m from Ulan–Wollar Road, and will only be visible to vehicles travelling past these points. This is of low concern due to the type and low number of probable viewers, the majority of which will be mine workers at either the Ulan or Wilpinjong coal mines.

There are no privately-owned residences with a direct view of the relocated open cut ROM coal facilities site and the nearest privately-owned residence (property no. 25) is over 4 km to the southwest of the main infrastructure area. In addition, existing surrounding vegetation outside the open cut ROM coal facilities disturbance footprint (i.e., turn pad, dump hopper, rejects bin and haul road) will be retained to provide natural screening to viewers in vehicles passing by the site.

The water sharing pipeline and mining lease boundary fence line will not be visible to non mine-owned residences or from public view points, including the road network, once constructed.

Consequently, the modification will not increase the visual intrusion of the approved Stage 1 project on the surrounding locality.

5.1.5.5 Traffic

Night time construction activities will contribute about 20 additional one way vehicle movements to existing traffic volumes. Night time construction crew traffic will arrive on site at about 6:00 p.m. and depart from site at about 5:00 a.m. These times generally coincide with vehicle movement times for the Wilpinjong Coal Mine and will lead to a small increase in traffic on the road network at these times.

5.2 Existing Environmental Controls

In December 2008, the DoP approved EMPs for the construction phase of Stage 1, including:

- Environmental Management Strategy.
- Environmental Monitoring Program.
- Construction Noise Management Plan.
- Noise Monitoring Program.
- Air Quality Monitoring Program.
- Aboriginal Heritage Management Plan.
- Water Management Plan, including:
 - o Erosion and Sediment Control Plan.
 - o Water Monitoring Program.
 - o Surface Water (and Groundwater) Response Plan.

These EMPs detail the monitoring and management measures that MCM has implemented (or has committed to implementing) to minimise, manage and mitigate the impacts of Stage 1 construction activities.

The management and monitoring measures described in these plans and programs will be extended to cover construction activities for the modification.

Prior to commencement of mining the EMPs will be updated to include operational impacts.

Moolarben Coal Mine's ECRM is responsible for ensuring that the management, monitoring, mitigation and contingency measures and commitments detailed in these plans are appropriately implemented. Together with MCM's General Manager, the ECRM is also responsible for ensuring that the construction and operation of Stage 1 complies with the Minister's approval for the project.

6. COMMITMENTS

In addition to the commitments made in the Stage 1 approval, MCM commits to implementing the following management and mitigation measures (Table 4) to ensure that the impacts associated with the proposed modification are minimised:

Table 4 Management and mitigation commitments

Environmental Aspect	Management and Mitigation Commitments
Air quality	• 240 t haul trucks (rather than 170 t) will be used on the internal haul road in OC1. • Dust control measures will be used on internal haul roads. • Raw coal transfer and rejects conveyors will be partially enclosed. • Dust sprays will be fitted to the dump hopper. • Dust sprays will be fitted to the temporary ROM coal crusher.
Noise	• 240 t haul trucks will be fitted with noise attenuation equipment to meet sound power levels assumed in the Stage 1 EA noise Impact assessment. • Raw coal transfer and rejects conveyors will be partially enclosed. • Night time construction activities will be restricted to the main infrastructure area. • Night time construction activities will be restricted to civil works, such as concrete finishing, formwork and steel tying and mechanical and electrical works on the CHPP only. There will be no night time concrete pours or metal fabrication works involving rattle guns. • Night time construction activities will only apply until the mine is commissioned and first product coal is transported from the site. • Vehicles required for night time construction activities will be fitted with non-tonal (quacker) reversing alarms, or smart alarms. • Night time construction noise will comply with the approved operational night time noise impact assessment criteria. • Attended monitoring will be undertaken at the nearest privately-owned residence, during the period of night time construction. • Acoustic barriers will be installed around the temporary ROM coal crushing facility.
Biodiversity	• Where possible, construction works in areas of known and potential threatened woodland species habitat will be avoided during their breeding cycle. • Pre-clearing fauna surveys will be undertaken and arboreal fauna and nesting sites will be recovered and relocated. Tree hollows will be salvaged for use as compensatory habitat. • Feral animals, weeds and pests will be controlled. • The cleared area along the mining lease boundary will be rehabilitated and revegetated to enable cleared EEC to re-establish. • The loss of 6.23 ha of intact native vegetation including 1.45 ha of EEC will be offset by rehabilitating, revegetating and enhancing at least 15 ha of EEC.

Table 4 Management and mitigation commitments (cont'd)

Cultural heritage	• Cultural heritage sites S1MC 310, S1MC 311 and S1MC 312 will be salvaged and stored in the Keeping Place. • Construction activities for the water sharing pipeline on MCM's mining leases will be confined within a fenced off corridor. • The area immediately west of the ROM dump hopper site will be monitored for cultural heritage prior to construction taking place. • Cultural heritage monitoring and salvage will be undertaken by a qualified archaeologist and members of the Aboriginal Stakeholder community groups. • Where additional cultural heritage sites are identified, further archaeological assessment will be carried out prior to continuing with construction. • Local Aboriginal community representatives will be involved in monitoring ground disturbance activities; and in the recording, salvaging and storing of cultural heritage objects impacted by site works.
Soil and water	• Soils will be stockpiled and used to rehabilitate areas not required for ongoing operations. • Erosion and sediment control measures detailed in the approved ESCP will be implemented. • Water pressure will be monitored at the inlet and outlet of the water sharing pipeline and the entire length of pipeline will be inspected regularly. • In the event that a leak or loss of pressure is detected in the water sharing pipeline, pumping will cease and the resultant cause investigated and remediated.
Traffic	• Night time construction workers will be required to car pool to minimise the addition of night time traffic to the local road network.

7. CONCLUSION

The proposed modification will enable MCM to:

- Rationalise the design of Stage 1 infrastructure and make capital savings.
- Reduce Stage 1 environmental impacts.

The modification will not alter the size of approved Stage 1 mines, the mining methods, the rate of approved coal extraction and production, or the method and frequency of off-site coal transport. Further, the proposed changes will not radically alter or transform the approved project and the Stage 1 project and it will be substantially the same development as approved by the Minister.

The proposed environmental management and mitigation measures will reduce the noise and dust impacts of the approved Stage 1 project.

The modification will potentially directly impact on about 6.23 ha of intact native vegetation, additional to that approved for Stage 1. Of this, about 1.45 ha is EEC. Moolarben Coal Mines will implement mitigation and offset measures that will 'maintain or improve' biodiversity for threatened species (including EEC). This will ensure that the overall impact of the modification on biodiversity is minor.

The modification will directly impact on three isolated individual Aboriginal artefact sites. The sites and artefacts are not rare or significant, and will be salvaged and stored in the Keeping Place, provided by MCM to the local Aboriginal community.

Adoption of the management and mitigation measures recommended by specialist consultants, implementation of management and mitigation measures in approved EMPs, and the carrying out of construction and operations in accordance with MCM's project commitments and the Stage 1 approval will mitigate any adverse environmental effects of the modification.

8. REFERENCES

- Umwelt (Australia) Pty Ltd (Umwelt) (2008). Ulan Coal - Continued Operations Preliminary Environmental Assessment. Report prepared for Ulan Coal Mines Limited by Umwelt (Australia) Pty Ltd.
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- Wells and Coffey (2009). Moolarben Coal Project Stage 2 Environmental Assessment Report. Report prepared for Moolarben Coal Mines Pty Ltd by Wells Environmental Services and Coffey Natural Systems Pty Ltd.
- Wells (2006). Moolarben Coal Project Environmental Assessment Report. Report prepared for Moolarben Coal Mines Pty Ltd by Wells Environmental Services.